MEDIUM-TERM REVIEW

David Duffy
John Fitz Gerald
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Conall MacCoille

SEPTEMBER 2001 NUMBER 8

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Authors

John Fitz Gerald is a Research Professor, Ide Kearney is a Research Officer, David Duffy is a Research Analyst, Jonathan Hore and Conall MacCoille are Research Assistants with The Economic and Social Research Institute.

Contributors

Denis Conniffe, Brendan Whelan and Miriam Wiley are Research Professors; Tony Fahey and Sue Scott are Senior Research Officers and Edgar Morgenroth is a Research Officer with The Economic and Social Research Institute. The paper has been accepted for publication by the Institute, which is not responsible for either the content or the views expressed therein.

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Work on this year's *Medium-Term Review* has been an ongoing process, which involved many experts both from within and outside of The Economic and Social Research Institute. Significant contributions to this *Review* have come from Denis Conniffe, John Eakins, Sue Scott, Edgar Morgenroth, Miriam Wiley, Brendan Whelan, all of the ESRI, and from Aedin Doris, of NUI Maynooth, and Frances Ruane of TCD, a visitor at the ESRI. The editors are very grateful to Danny McCoy, editor of the *Quarterly Economic Commentary*, for assistance with the interface between the *QEC* and the *Review*. In preparing the *Review* for publication the authors have drawn heavily on the expertise of the Director and staff of the ESRI.

Over the last six months, we have been in contact with several leading institutions and experts from various fields of the economy. Such meetings as always proved to be more than useful. In particular we would like to thank the Departments of Finance, Public Enterprise, Trade and Employment, Environment and Local Government, Teagasc, Forfás, the CSO, the ESB, SIPTU, IBEC, EIRGRID, BORD GÁIS, John Beggs, Marian Finnegan, Patrick Honohan, Jim O'Leary, Jim Power and Brendan Riordan.

Once again the National Institute of Economic and Social Research, London, proved to be invaluable in offering advice and in allowing us access to their global econometric model, NiGEM which enabled us to formulate the External Environment section of this year's *Review*, as well as allowing us to carry out various shocks in the model.

The cartoons that appear in the summary were prepared by Jimmy Burns.

The last word of thanks goes to Pat Hopkins, Regina Moore, Mary Cleary and Deirdre Whitaker all of the ESRI, because without their professionalism, expertise and attention to detail, publication would simply not have been possible. Finally, the authors themselves are solely responsible for the views and conclusions reached throughout the *Review*.

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SUMMARY

Introduction

This *Review* has been finalised in the aftermath of the appalling events of the 11th of September 2001. The full significance of these events will obviously take some time to sink in and it is too early to assess their short-term implications for the world economy, or for Ireland. However, the focus of this *Review* is on the medium term out to 2007 and our analysis suggests that, whatever serious temporary difficulties the Irish economy may face over the next two years, it is probable that the eventual recovery phase will see a return to rapid growth. While the world economy experienced a severe shock, for example, at the time of the Gulf War, longer-term trends ultimately reasserted themselves. Given the underlying strength of the Irish economy, it is likely that it will also make up for any lost ground over the course of the decade.

The detailed analysis in the *Review* was undertaken before the 11th of September, but because of the uncertainty that already existed, two scenarios were considered: a reasonably benign scenario, as in our *Benchmark* forecast (Chapter 4), and an alternative *Slowdown* scenario (Chapter 5, Section 5.2). When undertaking the analysis it was anticipated that the most likely outturn would be closer to the *Benchmark* forecast. However, it now seems more likely that the *Slowdown* scenario may be closer to reality. In the case of both scenarios the medium-term growth rate for the economy over the decade is very similar, the main differences being over the timing of future improvements in living standards.

The last five years of growth have finally convinced doubters that the process of accelerated economic convergence is not a mirage and that the Irish economy has come of age. The last *Review*, published two years ago, proved unduly pessimistic in that it expected the exceptional growth rates of the 1995-1998 period could not continue into the present decade. The record shows that growth in 1999 and 2000 remained at exceptional levels and that it continued into this year. However, a change in pace was inevitable, even without a shock to the world economy. The unused resources, especially in the labour market, that made exceptional growth possible, are almost used to capacity, and infrastructural constraints are apparent to all.

In this *Review* we explain why the Irish economy still has the capacity to grow more rapidly than most of its EU neighbours, albeit at a slower pace than in the last five years. This analysis shows a reassuringly robust economy facing into an uncertain external environment. However, because of ominous external developments, the economy may have a difficult period in the immediate future. Provided that prudent domestic policies are followed, the damage done by a temporary slowdown should not be too serious, and any negative effects should be readily reversible.

Growth in the 1990s

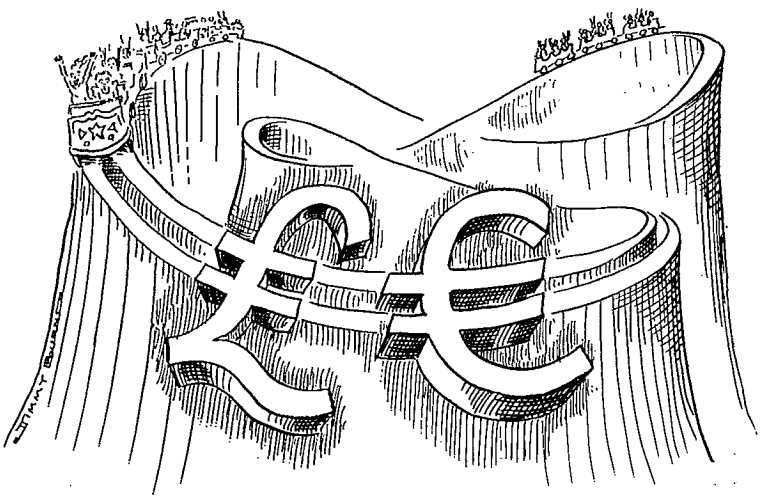
A key factor in expanding the growth potential of the economy over the 1990s was the very rapid growth in labour supply. For centuries Ireland had "too much" labour and not enough jobs. Chapter 2 shows that what made the last decade different was that the combined benefits of improved access to the EU market and increased foreign direct investment raised the demand for

goods and services produced in Ireland, while Irish productivity was greatly increased by investment in human capital.

The very large inflow of young people into the labour force was further augmented by the rapid rise in female labour supply. In addition, over the last five years substantial immigration of skilled labour expanded the productive capacity of the economy, facilitating the employment of many of the less skilled who had been unemployed.

The External Environment

The changing structure of the Irish economy has, if anything, made it more dependent on developments in the EU and world economies. Thus in Chapter 3 we give detailed consideration to the prospects for the US, the EU and the UK economies. In the case of the US, the imbalance between domestic savings and investment, reflected in the US balance of payments deficit, has been increasing steadily over recent years. While the US economy has slowed this year, it seems unlikely that this structural problem will be solved without a major change in the external value of the dollar. Under these circumstances it is assumed that the current period of low growth in the US continues through 2002 with the euro reaching parity with the dollar. This change in the exchange rate will help move the US economy back onto a sustainable growth path.



For the Euro area, the appreciation of the currency will adversely affect competitiveness, aggravating the problems arising from the weakness of world trade. While euro interest rates will fall substantially as inflation rates fall, it will be 2003 before the EU returns to a growth rate in line with its potential. For the UK the weakness in world demand will be partly offset by a weakening in sterling.

The Benchmark Forecast

Looking out to the end of the current decade we view the Irish economy as having the potential to continue growing rapidly. However, the growth in potential output, which averaged over 7 per cent between 1995 and 2000, will probably fall to 5 per cent for the period to 2005. Thereafter it should slow first to around 4 per cent a year between 2005 and 2010, before falling to roughly the EU average of just under 3 per cent in the next decade as the process of convergence is completed.

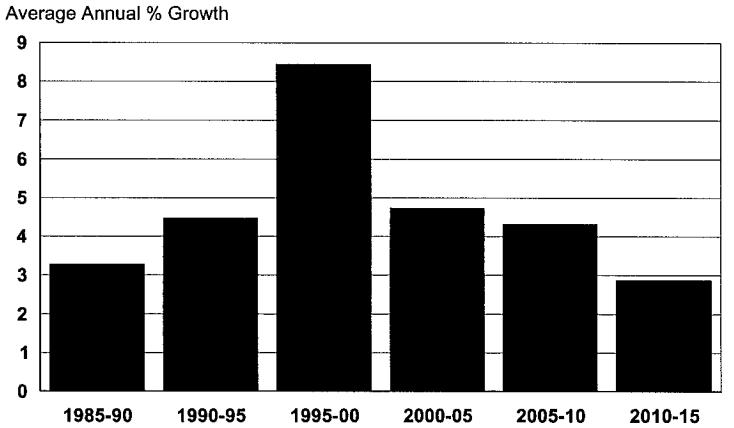
Table 1: Benchmark Forecast, Growth in Major Aggregates

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
	Per Cent								Annual Average % Growth				
GNP	9.9	6.0	5.4	4.4	4.0	4.0	4.4	4.3	4.5	8.4	4.8	4.3	2.8
Consumption Deflator	5.8	4.8	3.9	3.8	3.5	3.3	3.3	3.3	2.7	3.6	3.9	3.2	3.2
Employment, April	4.8	4.3	2.2	1.2	1.0	1.4	1.7	1.8	1.9	4.9	2.0	1.8	0.7
Real After Tax Non-Agricultural Wage	2.1	5.2	5.8	4.2	2.8	2.1	2.3	2.5	1.6	1.8	4.0	2.5	2.4
	Per Cent of GNP								1995	2000	2005	2010	2015
Balance of Payments Surplus	-0.7	-0.9	-1.7	-1.5	-1.0	-0.8	-1.1	-1.4	3.2	-0.7	-0.8	-1.5	0.8
Debt – GNP Ratio	42.1	34.5	29.0	24.3	20.9	18.3	15.7	13.2	83.5	42.1	18.3	6.8	-2.3
General Government Surplus	5.4	4.2	3.3	2.1	1.3	0.8	0.9	0.9	-2.5	5.4	0.8	0.9	1.5
	Per Cent of Labour Force (ILO basis)								1995	2000	2005	2010	2015
Unemployment Rate	4.3	3.8	3.6	4.3	5.3	5.8	5.7	5.5	12.2	4.3	5.8	4.0	4.1

In this *Review* our *Benchmark* forecast, presented in Chapter 4, assumes that the economy slows gently from the exceptional growth rate of the last five years. This must be considered a relatively benign scenario as there is the very real possibility that the US economy will face an unpleasant adjustment process over the next few years. If the economic difficulties of the US continue into next year, other aspects of the external environment will turn sour and the alternative *Slowdown* scenario, discussed in Chapter 5, may turn out to be correct.

In the *Benchmark* forecast, shown in Table 1, growth in GNP over the period 2000 to 2005 is projected at an average of 4.8 per cent a year (see Figure 1), compared to the annual growth in potential output of around 5 per cent. The result will be some rise in unemployment, peaking in 2005 at around 5.8 per cent of the labour force. In the subsequent five year period the economy could grow more rapidly than potential, averaging 4.3 per cent a year, returning the labour market to full employment. However, as in the past, the labour market will be slower than output to respond both to a slowdown and a recovery, and once unemployment rises temporarily, it will take a number of years before "full employment" is restored.

Figure 1: Average Annual Volume Growth Rates in GNP



Over the next three years the general government surplus is likely to fall by around 2.5 percentage points of GNP (Table 1).[1] This reduction is expected as the economy grows below its long run potential. It is assumed

[1] The forecasts for the government surplus are based on numbers available in June. Current numbers suggest a somewhat lower surplus for this year is likely.

that throughout this period the government neither tightens its belt nor stimulates the economy, adopting a broadly "neutral" fiscal policy.[2]

The prolonged growth of the 1990s has moved Ireland from being one of the least developed members of the EU to a position where it enjoys a GNP per head that is roughly at the EU average. While on this basis Ireland could enjoy an income per head 8 per cent above the EU average in 2010, because of the infrastructural deficit that exists, the standard of living, broadly defined, will still only approach the EU average in 2010.

In the medium term, the growth in employment will be significantly slower than over the last decade. The growth over the five years 2000 to 2005 will average 2 per cent a year, compared to almost 5 per cent a year between 1995 and 2000. In the 1990s the very rapid growth in employment needed to move the economy to full employment, in turn, required a considerable improvement in competitiveness. This was achieved through moderate wage growth and a resulting rise in the profit rate. However, with the economy currently close to full employment, this situation has changed dramatically. Wage rates are now rising rapidly relative to our competitors and the resulting loss of competitiveness will restrain future employment growth. There remains the danger that we could find that too much competitiveness has been lost, especially in the face of a serious downturn. However, in our *Benchmark* forecast we assume that market circumstances produce a moderation in wage inflation in the medium term and that the growth in productivity, while slower than in the late 1990s, still greatly exceeds that in our competitors.

The rapidly rising population in the young adult age groups will continue to put pressure on the housing market. It is anticipated that around 45,000 dwellings a year will be needed to meet demand over the course of the decade.

The growth in the economy, while much less energy intensive than in the 1970s, will result in a continuing rise in the demand for energy. While policies in place will see some savings in greenhouse gas emissions compared to a business as usual scenario, on the *Benchmark* scenario forecast emissions will still be over 21 per cent above 1990 levels in 2010 compared to the limit under the Kyoto protocol of 13 per cent.

Alternative Scenarios

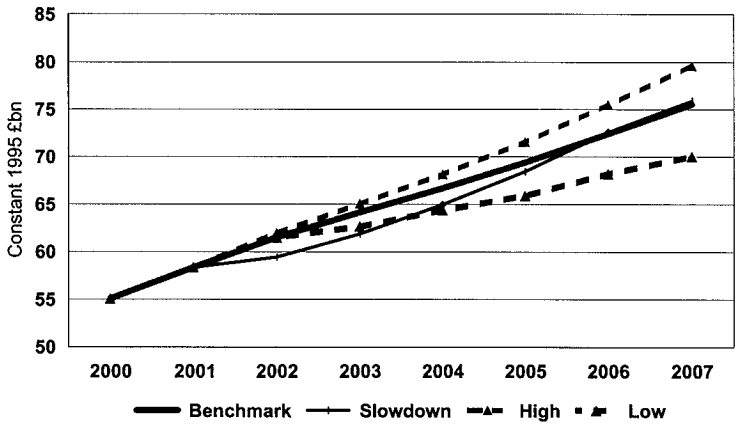
In Chapter 5 we consider a number of different scenarios for the future. In the *Slowdown* scenario we assume that the US economy undergoes a more severe economic adjustment than in the *Benchmark* forecast and that it does not return to a satisfactory growth rate until 2003. The result would be a major reduction in foreign direct investment into Ireland. This, combined with the fall in world trade, would create an atmosphere of considerable uncertainty. With rising unemployment many would feel insecure and the result would be a rise in personal saving and a temporary fall in the demand for housing. The consequence could be a fall in house prices of 25 per cent, further aggravating the atmosphere of insecurity. While the analysis in this *Review* would suggest that this would be a temporary setback, the domestic response by firms and households fearing a more permanent reversal of economic fortunes could aggravate the slowdown.

[2] We assume a broadly "neutral" budgetary stance where tax rates and bands are indexed so that average tax rates remain unchanged. It is assumed that welfare benefits are indexed and provision is made for increased numbers unemployed. In addition, there is assumed to be a limited improvement in public services involving an increase in public sector employment of around 3 per cent per annum. It is also assumed that the *National Development Plan* is fully implemented.

Table 2: Slowdown Forecast, Major Aggregates

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
	Growth, Per Cent								Annual Average % Growth				
GNP	9.9	6.0	1.8	4.2	5.1	5.3	6.1	4.6	4.5	8.4	4.5	4.7	2.8
Consumption Deflator	5.8	4.8	2.2	2.5	3.7	4.4	4.3	3.8	2.7	3.6	3.5	3.5	3.1
Employment, April	4.8	4.3	-0.9	0.2	2.0	2.9	3.4	2.4	1.9	4.9	1.7	2.4	0.6
	Per Cent of GNP								1995	2000	2005	2010	2015
Debt – GNP Ratio	42.1	34.4	32.0	29.6	26.7	23.6	19.8	16.2	83.5	42.1	23.6	6.9	-6.7
General Government Surplus	5.4	4.2	2.5	0.1	-0.3	0.1	1.1	1.6	-2.4	5.4	0.1	1.8	2.7
	Per Cent of Labour Force (ILO basis)								1995	2000	2005	2010	2015
Unemployment Rate	4.3	3.8	6.3	7.6	7.4	6.5	5.1	4.6	12.2	4.3	6.5	3.0	3.8

Figure 2: Alternative Forecasts for GNP



Under this scenario growth next year would fall to just under 2 per cent (Table 2). However, the economy would begin to recover in 2003 and, from 2004 onwards, growth would be more rapid than in the *Benchmark*. The loss of potential output would be made up by 2005. The result of such a shock would be a small fall in employment next year and a significant rise in the unemployment rate. The unemployment rate would peak at around 7.6 per cent of the labour force in 2003, before returning to the full employment level at the end of the forecast period. This scenario could also push the general government balance into deficit in 2004.

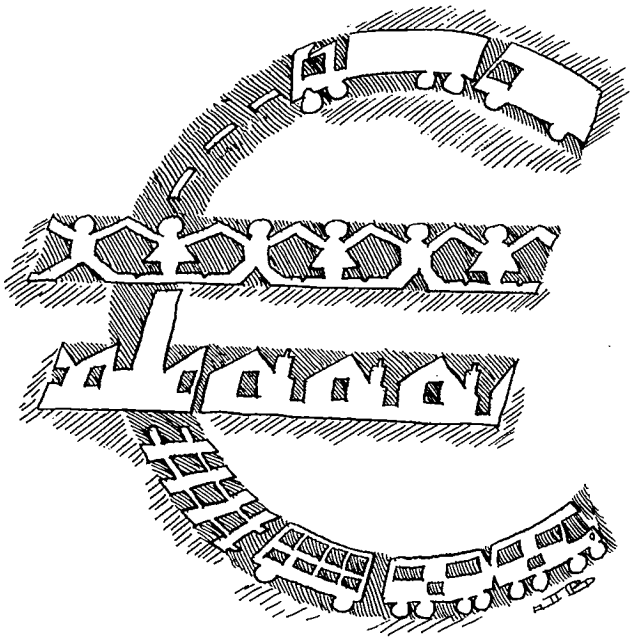
As shown in Figure 2, while this scenario implies much slower growth in GNP in the next two years than in the *Benchmark*, the eventual rapid recovery phase would, before the end of the decade, return the Irish economy to where it would have been without the serious external shock. The ultimate economic cost would be the temporary rise in unemployment and the loss of output and income in the intervening years.

We also consider scenarios where the average annual growth in potential output of the economy over the decade is either one per cent higher or one per cent lower than in the *Benchmark* forecast (see Figure 2). The simulation involving higher growth suggests that if that higher growth were achieved through much higher rates of immigration there would be a need for a considerably larger investment in infrastructure over the course of the decade. On the other hand, if it were achieved through higher productivity growth there would be a significant positive impact on the standard of living.

We also consider the consequences of a failure to make adequate investment in infrastructure and of an excessive rise in labour costs. This scenario shows that bad management of the domestic economy could result in serious underperformance in the medium term.

Policy Implications

The analysis in the *Review* suggests that, over the course of the coming decade, a number of domestic constraints may prevent the economy achieving its potential growth rate. The most obvious constraint arises from the inadequacy of current infrastructure. There are not enough dwellings to accommodate the growing population of adults, augmented by the likely continuing net immigration of skilled labour. The shortage will directly affect the standard of living and will reduce the incentive for Irish emigrants (or new immigrants) to return. However, the problems in the housing market are a symptom of a wider infrastructure deficit in sanitary services, in public transport, in roads and in many other areas of public infrastructure.



The second related constraint on the economy arises from the deceleration in labour supply growth. It is only through further increasing participation or immigration above the levels assumed in the *Benchmark* that this constraint can be relaxed. However, this might not significantly increase income per head in the economy.

The uncertainty about the forecasts suggests that future governments should aim for policies that will be robust in the face of surprises. Attempting to fine tune the economy could result in incorrect forecasts producing inappropriate policies. Robust policy would suggest a concentration on areas where public policy can impact on the supply potential of the economy in the medium term:

- It is important that fiscal policy is prudent, pursuing a broadly neutral stance. This would involve significant restraint compared to the experience of the last five years. However, if such an approach is adopted, even in the *Slowdown* scenario the public finances would only show a small deficit before returning to surplus by 2005. This would not pose a problem, allowing the *National Development Plan* (NDP) programme of accelerated investment in infrastructure to continue. It would also be well within the Maastricht criterion and the requirements of the *Stability and Growth Pact*. In the medium term it is appropriate to aim for an average general government surplus of 1 per cent of GNP each year, equal to the contribution to the national pension fund.
- The forecasts here assume a limited improvement in public services in the medium term. However, depending on public preferences, a more rapid improvement in services, including health services, could be achieved at the cost of higher taxes, or taxes could be cut further at the cost of a lower quality of public services.
- The full implementation of the infrastructural investment under the NDP will play a vital role in expanding the capacity of the economy to grow in the future. It remains essential that all such investment represents good value for money.
- Immigration of skilled labour in the past has expanded the capacity of the economy, and it is likely to continue to do so in the future. However, there is a need to develop a transparent and fair policy on immigration that also covers unskilled labour. Such a policy should be administered directly by the state and it should allow immigrants the freedom to choose their own employment.
- In the new environment of EMU it is important that the flexibility of the labour market, that has resulted in wage increases well above the *Programme for Prosperity and Fairness* (PPF), will be continued in times

of adversity. This could require downward flexibility in wage rates should a deterioration in the economy prove more severe than expected.

- While significant progress has been made in advancing competition and regulatory reform, with beneficial effects on productivity growth, it will be important to make further progress in the medium term in important areas such as energy, transport and local authority services.
- Rapid economic growth will put continuing pressure on the quality of our environment. In taking action to tackle these problems it will be important that suitable fiscal instruments, such as taxes and charges, are used to ensure that the desired environmental objectives are met at minimum cost.

The exceptionally rapid rate of economic growth in the last five years has meant that Ireland has not yet fully adjusted to its position as one of the wealthiest countries in the world. This new affluence provides a range of opportunities to improve the standard of living.

While in the past the priority has been the maximisation of the growth in GNP to deal with the problem of unemployment, the advent of near full employment may change priorities. The experience elsewhere in Europe has been that citizens chose to take some of the increase in their standard of living in the form of increased leisure, rather than in increased nominal incomes. Over the coming decade Irish citizens will have the same choice. Another choice made by many of our EU neighbours was to take some of the increase in their standard of living in the form of more family friendly policies, such as flexible working arrangements. This too is an option for Ireland. While the move to very low unemployment rates has made a significant contribution to reducing poverty, the new found wealth of the current decade will provide the opportunity to make significant further progress in coming years.

The population will age quite rapidly over the coming decade. While it will not bring major problems for the health services in the forecast period, it will impact on the economy and society. It will make the economy less flexible and it will see a change in the pattern of demand for goods and services. The rapid rise in the average educational attainment of the population will also change behaviour and aspirations.

Finally, the Irish success story of the last decade has been built on the basis of EU membership and the completion of the single market. Enlargement of the EU will provide an important opportunity for Ireland to expand into new markets. Within the EU there will be a need to rethink our strategy and our priorities. By the end of the decade, as one of the wealthiest members of the EU, Ireland will have new responsibilities and changing needs. Where the Common Agricultural Policy and the Structural Funds were vital national interests in the past there will be a need to decide for ourselves where our long-term interests and responsibilities lie in the future.

1. INTRODUCTION

1.1 Introduction

This *Review* has been prepared in the aftermath of the appalling events of the 11th of September 2001. The full significance of these events will obviously take some time to sink in and it is too early to assess their short-term implications for the world economy, or for Ireland. However, the focus of this *Review* is on the medium term out to 2007 and our analysis suggests that, whatever serious temporary difficulties the Irish economy may face over the next two years, it is probable that the eventual recovery phase will see a return to rapid growth. While the world economy experienced a severe shock, for example, at the time of the Gulf War, longer-term trends ultimately reasserted themselves. Given the underlying strength of the Irish economy, it is likely that it will also make up for any lost ground over the course of the decade.

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The last five years of growth have finally convinced doubters that the process of accelerated economic convergence is not a mirage and that the Irish economy has come of age. The last *Review* published, two years ago, proved unduly pessimistic in that it expected the exceptional growth rates of the 1995-1998 period could not continue into the current decade. The record shows that growth in 1999 and 2000 remained at exceptional levels and that it continued into this year. However, a change in pace was inevitable, even without a shock to the world economy. The unused resources, especially in the labour market, that made exceptional growth possible, are almost used up, and infrastructural constraints are apparent to all.

Because the Irish economy has outperformed all other developed economies in recent years there is a danger that we could forget the basis on which this success is built. Ireland is an exceptionally open economy and is even more dependent on what happens in the outside world than ever before. The single biggest factor that underpins all the success of the economy is membership of the EU. European integration did have costs, especially in the form of industrial restructuring, that were paid in the 1970s and early 1980s. However, since then, the development of the single EU market has provided the backdrop for the modernisation of the Irish economy. The bulk of firms that have developed in the high-technology sector, whether Irish owned or foreign owned, have located in Ireland to service the wider EU market. In the case of many firms in the pharmaceuticals sector the market they depend on now is a global one. The services sector, which is much larger and more important than manufacturing, is also benefiting increasingly from sales to a wider EU

market. Looking to the prospects for the economy over the coming decade, we have assumed that no change in policy in Ireland or outside will seriously endanger this fruitful relationship.

Recent economic growth in Ireland has not rewritten the laws of economics and, in the short to medium term, whatever policies we adopt, Ireland will not be able to avoid a major international downturn, should it occur. Thus, we have a very keen interest in seeing policies pursued at a wider EU level that will help minimise the problems caused by any temporary slowdown.

Whether or not the Irish economy achieves a "soft landing" in the next two or three years, the medium-term prospects out to the end of the decade remain bright, with the economy having the potential to grow more rapidly than its EU neighbours. Thereafter, the special factors that are currently enhancing its growth potential, will be spent. The labour force growth rate, excluding migration, will fall steadily over the decade as the population ages. Also by 2010, female labour force participation will be very high – broadly comparable to the rest of the EU members in Northern Europe. In addition, as the labour force and the population as a whole age, the current degree of labour market flexibility will diminish.

However, such outperformance is not inevitable and domestic policies will play an important part in ensuring that this potential is realised in practice. Over the next three years it will be important that domestic policies act to stabilise the economy in the face of the uncertain external environment. This will involve a cautious approach to fiscal policy, combined with a continuing focus on suitable infrastructural investment.

The prolonged growth of the 1990s has moved Ireland from being one of the least developed members of the EU to a position where it enjoys a GDP per head that is well above the EU average. However, in Ireland's case, GDP provides a misleading indication of the growth in the standard of living. As discussed in Chapter 4, when GNP per head is used as the income measure, Ireland's convergence is seen to be slower, approximating the EU average this year. Indeed, even using the more appropriate measure of GNP per head, the *Benchmark* forecast showing Ireland could enjoy an income per head 8 per cent above the EU average in 2010, is also something of an exaggeration. The rest of the EU is currently investing around 21 per cent of its income to maintain or upgrade its infrastructure, while Ireland is spending closer to 28 per cent. This higher investment rate is necessary to raise the private capital stock and to provide the necessary public infrastructure. Even with this higher level of investment, Irish infrastructure, and the related welfare enhancement that it provides, will still be inferior to the EU average in 2010. This reflects the fact that, while Ireland may now enjoy an EU average income per head, in terms of wealth it remains a poorer neighbour. It is only after a sustained period of above average investment has closed this gap, likely to occur after 2010, that the higher income per head will translate into a higher standard of living.

1.2 Outline of Review

The success of the economy over the last decade is analysed in Chapter 2. The results provide an essential basis for the rest of the *Review*.

The changing structure of the economy has, if anything, made it more dependent on developments in the EU and world economies. Thus in Chapter 3 we give detailed consideration to the prospects for the US, the EU and the UK economies. In the case of the US we develop our own forecast for the medium term. The imbalance between domestic savings and investment, reflected in the US balance of payments deficit, has been increasing steadily over recent years. While the US economy has slowed this year, it seems unlikely that this structural problem will be solved without a major change in the external value of the dollar. Under these circumstances

the euro is assumed to reach parity with the dollar next year, and this will help move the US economy back onto a sustainable growth path.

For the Euro area, the appreciation of the currency will adversely affect competitiveness, aggravating the problems arising from the weakness of world trade. While euro interest rates will fall substantially as inflation rates fall, it will be 2003 before the EU economy returns to a growth rate in line with its potential. For the UK the weakness in world demand will be partly offset by a weakening in the value of sterling.

All of this indicates a temporary deterioration in the external environment facing the Irish economy next year. However, if the world economy bounces back in 2003 there should be no long-term damage to the domestic economy.

Chapter 4 describes the *Benchmark* forecast for the Irish economy out to 2007. The forecasts for 2001 and 2002 are taken directly from the July *Quarterly Economic Commentary*. In the short term this scenario must be seen as moderately optimistic. However, for the medium term it provides our best estimate of the potential growth rate of the economy.

The growth in potential output over the period 2000-2005 seems likely to be around 5 per cent a year – unchanged from our estimate in the last *Review*. In the second half of the decade it is likely to fall to 4 per cent a year and to 3 per cent a year in the early years of the next decade. This forecast decline in the potential growth rate is primarily due to the changing demographic profile of the population.

The short-term unfavourable external situation may see the economy growing somewhat less rapidly than its potential out to 2005. The consequence could be some limited rise in unemployment. Thereafter, more rapid growth should return the economy to full employment.

The implications of this forecast for the housing market and for energy demand and emissions of greenhouse gases are explored at the end of Chapter 4.

In Chapter 5 we examine a range of alternative scenarios, a range within which the actual future outturn should fall. In the first scenario we consider the possible impact of a major slowdown in the world economy in the next few years. The results suggest that the Irish economy is fairly robust and, with good management, should weather the effects of a slowdown without any long-term damage.

We also consider scenarios where the growth in potential output of the economy is either 1 per cent higher or 1 per cent lower than in the *Benchmark* forecast. These scenarios show that bad management of the domestic economy could result in serious underperformance in the medium term. Success is not guaranteed. The simulation involving higher growth suggests that if that higher growth were achieved through much higher rates of immigration, there would be a need for a considerably larger investment in infrastructure over the course of the decade. On the other hand, if it were achieved through higher productivity growth there would be a significant positive impact on the standard of living.

In Chapter 6 we first consider how the likely improvement in living standards in the medium term may be used. While the prospect of higher GNP per head will mark an improvement in living standards, it is not a perfect measure of welfare. Wider quality of life issues are likely to pose new choices for society. Second, we explore the policy options and we discuss what measures will be needed to steer the economy through the possibly unsettled waters of the next few years. The growing wealth of the economy and the rapidly changing demographic profile will alter the environment in which the economy operates. There will be a need to look anew at the strategic priorities for the economy.

In Chapter 7 we present the conclusions of our analysis. While the economy may face a bumpy ride over the next few years, the medium-term prospects remain as good as they appeared at the time of the last *Review* in

1999. Any temporary loss of output and rise in unemployment in the short run can be reversed within the time horizon of this forecast. There is a danger that essentially transient difficulties could lead to a panic reaction, further aggravating the temporary problems.

1.3 Methodology

In this *Review* we have chosen to emphasise the forecast changes in major aggregates over a number of years, generally five-year averages, rather than the forecasts for individual years. That is because we feel that much wider margins of error attach to the forecasts for individual years than to the forecast trend growth rates.

As discussed in the Appendix to Chapter 4, our forecasting record, while better than average, is still not perfect. As a result, in preparing our forecasts we have presented a number of scenarios reflecting the range of uncertainty that surrounds our forecast of the growth in the potential output of the Irish economy.

The forecast presented in this *Review*, and the analysis underlying the range of different scenarios, has been developed with the assistance of four different economic models.

In developing our forecast for the world economy and the external environment for the Irish economy we have used the NiGEM world model of the *National Institute of Economic and Social Research* in the United Kingdom. Using this model allows us to simulate different options on how the US economy is likely to cope with its internal imbalances and how these different options are likely to affect the rest of the world. It also allows us to examine how changes in exchange rates may affect the economic prospects for the major world economies. The benefit of such a model is that it allows "what if" experiments to see how sensitive our forecasts are to changes in different underlying assumptions. This model has proved an essential tool in preparing a consistent set of forecasts for the major world economies of relevance to Ireland.

In analysing changes in the population structure that are taking place we have used a demographic model of the Irish economy. This model uses very detailed data from successive CSO *Labour Force Surveys* and *Quarterly National Household Surveys* on labour force status broken down by level of education, age and sex. The model is driven by the educational attainment of the population. In the model individuals, as they reach the age of 20, are assigned a level of education based on current trends. This level of education has a major impact on their labour force behaviour. The model is used to project births, deaths, the population, the labour force, the number of households, and the human capital of the work force. The level of migration is input into the demographic model having itself been determined in the macroeconomic model.

The HERMES macroeconomic model[3] has been used for over a decade in preparing successive *Medium-Term Reviews*. While any forecast involves many assumptions that rely on the authors' judgement, this model is an essential tool in ensuring the internal consistency of the resulting forecast. In addition, the model is an indispensable tool for undertaking the kind of sensitivity testing we have used extensively in the *Review*, and in developing a range of scenarios that are internally consistent.

The latest version of HERMES has been re-estimated using data from *National Income and Expenditure, 1999*. A number of significant changes

[3] The first version of the model is described in Bradley, J., J. Fitz Gerald, D. Hurley, L. O'Sullivan and A. Storey, 1993, "HERMES: A Macrosectoral Model for the Irish Economy", in Commission of the European Communities (ed.), *HERMES: Harmonised Econometric Research for Modelling Economic Systems*, North Holland. Also see Bradley, J. and J. Fitz Gerald, 1991, "The ESRI Macro-Economic Model", in *Medium-Term Review: 1991-96*, J. Bradley, J. Fitz Gerald and D. McCoy, (eds.), Dublin: The Economic and Social Research Institute. More recent developments have been documented in articles in *The Economic and Social Review* and in *Economic Modelling*.

have been made to the latest version of the model. These include the addition of a model of the housing market, based on the work of Murphy and Brereton, 2001,[4] and a new model of consumer behaviour that incorporates the effects of changes in the value of personal housing wealth.

Finally we have developed and used a model of the labour market that breaks labour demand and supply down into its unskilled and its skilled components. This model is described in Chapter 2,[5] and has already been used in the December 2000 *Quarterly Economic Commentary*.

[4] Murphy, A., and F. Brereton, 2001, "Modelling Irish House Prices: A Review", paper presented at the Irish Economic Association Annual Conference, April.

[5] Also see Fitz Gerald, J. and I. Kearney, 2000, "Convergence in Living Standards in Ireland: The Role of the New Economy?", Dublin: The Economic and Social Research Institute Working Paper, No. 134.

2. GROWTH IN THE 1990S

The growth performance of the Irish economy in the 1990s led to rapid convergence of GDP per capita with the EU average and rapid growth in employment and living standards. In this chapter we identify and assess factors which have been important in driving this recent growth. We concentrate on medium-term supply-side factors that increased the growth *potential* of the economy during the 1990s. Of course accommodating domestic policies and a stable macroeconomic environment were central to the realisation of this growth potential over the period.

In Chapter 2 of the previous *Medium-Term Review*[1] we explored the convergence in Irish GDP per head on the EU average in terms of two processes, convergence in productivity levels and convergence in economic dependency rates. There has been a relatively steady pace of convergence in levels of productivity since accession to the EEC in 1973, which accelerated in the late 1980s as Irish productivity growth rates increased. By contrast, Irish economic dependency rates were much higher than the EU average until the beginning of the 1990s. The rapid decline in the Irish dependency ratio in the 1990s arose through falling unemployment, rising participation rates and an increase in the working age population.

In Section 2.1 we review these processes. Convergence in productivity levels to the EU average began with accession to the EU. Since then the Irish economy has become very open with very large flows of Foreign Direct Investment (FDI) from the US that accelerated sharply in the 1990s. Throughout this period rising levels of education have increased the productive potential of the labour force.

The growing importance of the foreign-owned multinational sector has led to large changes in the structure of the economy that have had profound implications for the labour market. Persistent high unemployment in the 1980s led to massive out-migration flows, particularly among more educated workers who were attracted abroad by higher wages and better employment opportunities. This stock of skilled labour abroad effectively meant that even though the demand for labour shifted in favour of more educated workers there was a ready supply of skilled labour from abroad to meet the higher demand. The acceleration in growth in the 1990s led to large in-migration flows as emigrants returned home, while labour force participation rates rose, driven by increased participation of women in the workforce.

In Section 2.2 we formalise this discussion using a small structural model of the Irish labour market, separately distinguishing between skilled and unskilled labour. This model is used to examine the role of a range of different factors in driving the growth in productivity and GDP per capita in the 1990s. Specifically we look at the role of FDI and investment in human capital in driving productivity growth. We also assess the role of favourable shifts in labour supply, through immigration, increasing female labour force participation and demographic changes, in increasing the productive capacity of the economy. Section 2.3 concludes.

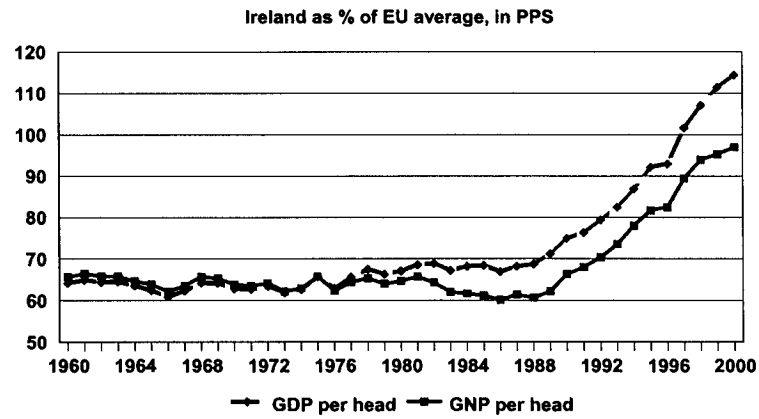
[1] See Duffy, D., J. Fitz Gerald, I. Kearney, D. Smyth, 1999. *Medium-Term Review 1999-2005*, No. 7, Dublin: The Economic and Social Research Institute.

2.1 Convergence and Productivity

2.1.1 THE GROWTH RECORD

The Irish economy almost doubled in size between 1990 and 2000 in terms of GDP (increase of 98 per cent). This remarkable performance led to full convergence with EU average GDP per capita in 1997 and close to full convergence of GNP per capita by 2000. Figure 2.1 plots the ratio of Irish GDP and GNP per capita to the EU average. Between 1960 and 1990 there was effectively no convergence with the EU, but over the past decade the sharp acceleration in growth has led to full catch-up. The graph also illustrates the widening gap between GDP and GNP in Ireland – a consequence of the growing importance of the foreign-owned multinational sector in the economy.

Figure 2.1: Irish GDP and GNP Relative to the EU-15 Group of Countries



Looking back across the growth performance over the past forty years it is clear that in the last decade the economy has grown at a rate well above its past trend. Figure 2.2 plots the average growth rate in GDP, GNP and GNDI (Gross National Disposable Income). The last is GNP adjusted for the terms of trade and transfer income and is a more accurate measure of national income. With the exception of the first half of the 1980s, when fiscal retrenchment and the external recession knocked the economy off course, between 1960 and 1990 there was relatively little deviation from an apparent trend growth in GDP of 4 per cent a year, with similar growth in GNP and GNDI. In the 1990s average growth in GDP was 7 per cent per year, while GNP averaged 6.5 per cent and GNDI 5.5 per cent. So, while the widening gap between output and incomes in the 1990s means that ever higher growth rates in output are necessary to maintain a constant growth rate in income, the recent acceleration in output growth has been sufficient to also raise the growth in income above past trends.

This pattern of development suggests a marked change in gear around 1990 although the situation looks somewhat different when considered in terms of output per person employed – national productivity broadly defined. Figure 2.3 shows productivity relative to the EU measured in GDP and GNP terms. Irish productivity levels have been closer to those of the EU average than levels of output per head throughout the period. Furthermore, measured in terms of GDP, the Irish economy has been converging towards EU standards of productivity fairly steadily since the 1970s and in terms of GNP since the mid-1980s.

Figure 2.2: *Per Capita* Measures of Output and Income

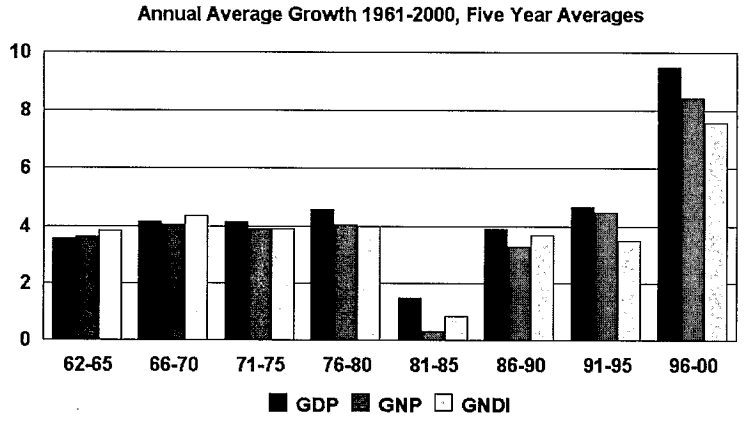
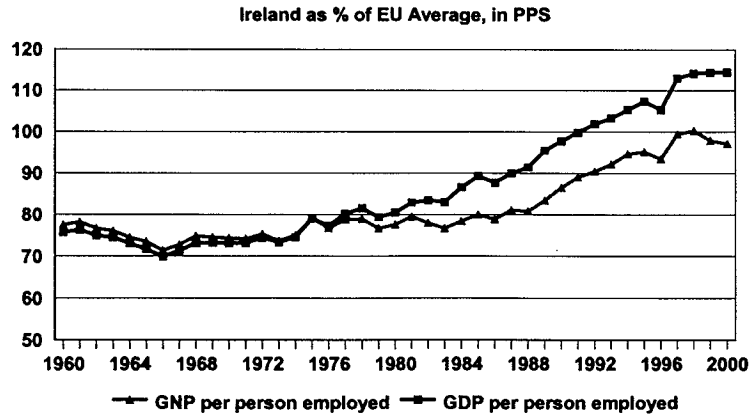


Figure 2.3: Relative Productivity



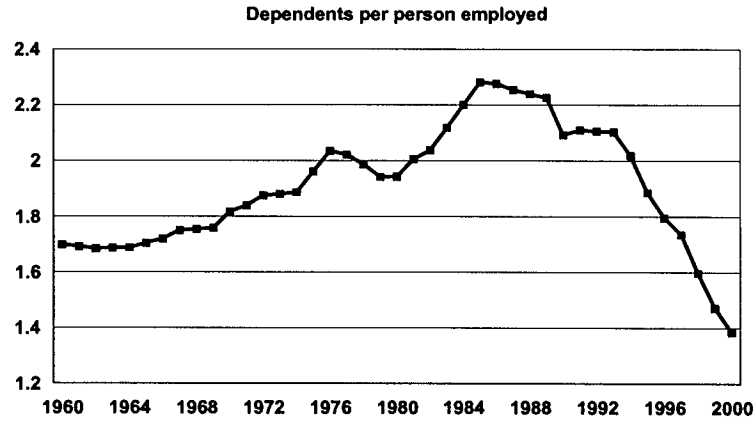
The explanation for the contrast between relative output per head and per person employed lies in the movement of the economic dependency ratio – the ratio of the population not in paid employment to those who are at work. The relationship between productivity, economic dependency and GNP per head can be understood as follows:

$$\underbrace{\frac{GNP}{\text{Population}}}_{\text{GNP per capita}} = \underbrace{\frac{GNP}{\text{Employment}}}_{\text{GNP per worker}} \cdot \underbrace{\frac{\text{Employment}}{\text{Population}}}_{\text{Economic Dependency (inverse)}}$$

In terms of economic dependency, it was not until the beginning of the 1990s that the very high levels of Irish dependency started to fall (Figure 2.4). The rapid improvement in the Irish dependency ratio in the 1990s arose through falling unemployment, rising participation rates and demographic changes in the age structure of the population. To illustrate these changes we use the following decomposition:

$$\underbrace{\frac{\text{Employment}}{\text{Population}}}_{\text{Dependency Ratio (inverse)}} = \underbrace{\frac{\text{Employment}}{\text{LabourForce}}}_{\text{Employment Rate}} \cdot \underbrace{\frac{\text{LabourForce}}{\text{Pop15–64}}}_{\text{Participation Rate}} \cdot \underbrace{\frac{\text{Pop15–64}}{\text{Population}}}_{\text{AgeDependency Ratio(inverse)}}$$

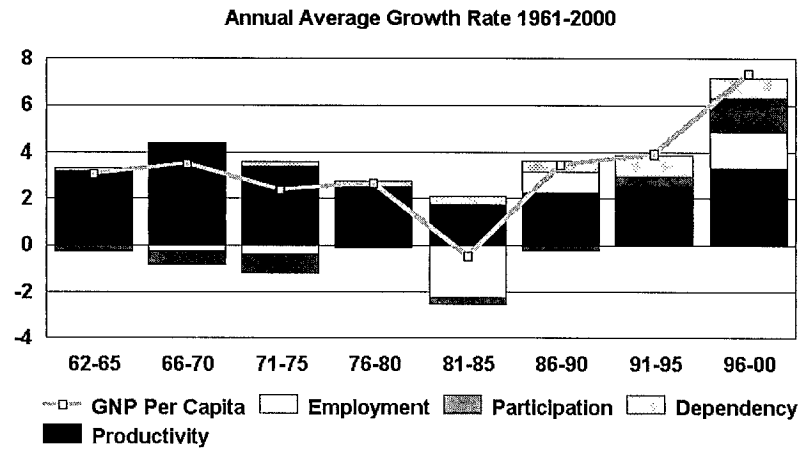
Figure 2.4: Economic Dependency



The first term on the right hand side of the equation measures employment as a proportion of the labour force. This is equal to one minus the unemployment rate. The second term measures the labour force participation rate. The third term is the inverse of one plus the age dependency ratio, the population aged below 15 and above 65 as a proportion of the population of working age.

Figure 2.5 plots the growth in GNP per capita decomposed into growth in productivity, employment, participation and age dependency. It is clear from the chart that productivity growth has been strong throughout the past forty years. The fall in GNP per capita in the early 1980s was primarily due to a sharp decline in employment.

Figure 2.5: Decomposition of GNP Per Capita



The graph indicates that since 1990 each of the factors – productivity, employment, participation and dependency – have made net positive contributions to growth. In this section we discuss each of these factors in turn before turning to a more formalised analysis of their interaction in Section 2.2.

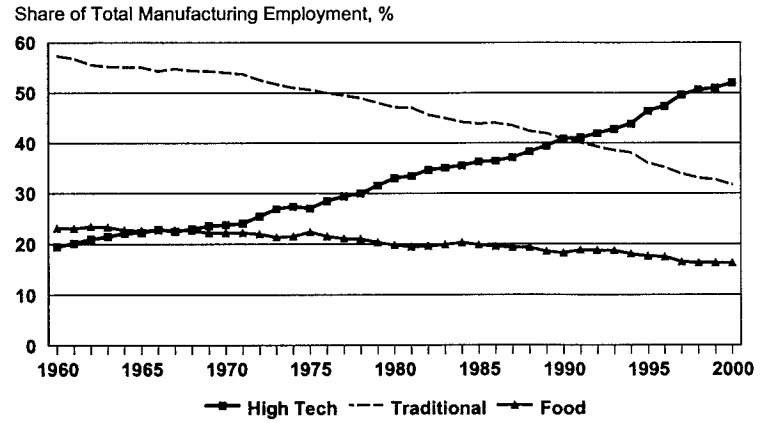
2.1.2 PRODUCTIVITY: FDI AND HUMAN CAPITAL

The growth of productivity (GDP per capita) is a key determinant of the long-run per capita growth rate. As we have seen, average productivity growth has been strong throughout the last four decades. However, this relatively steady pattern masks the dramatic changes that have occurred in the underlying structure of the Irish economy in these years. Put simply, the move towards

export-oriented growth in high-technology sectors increased the productivity of the manufacturing sector and an increase in general education levels increased the productive capacity of the workforce.

Beginning in the 1960s the economy began to industrialise – the share of agriculture in GDP fell from one-quarter to one-fifth in the 1960s alone. The opening up of the economy to trade and accession to the EEC in 1973, culminating in the completion of the single market in 1992, led to increased international competition within the Irish traded sector and dramatic changes in the size and structure of the sector. In the 1970s and 1980s there was significant restructuring away from low-productivity, traditional industries towards high-productivity high-technology[2] industries. By the end of the 1990s, the high-tech sector accounted for more than half of all manufacturing employment (see Figure 2.6).

Figure 2.6: Structure of Manufacturing Employment



Within the manufacturing sector, measured productivity in the high-tech sector has, since 1980, recorded extraordinarily high growth rates. Although profit-switching transfer pricing seriously distorts these data,[3] they do also capture the very high productivity rates within the high-tech sector,[4] as reflected in the much higher wages earned in foreign industry.[5]

There have been profound implications arising from the large inflows of Foreign Direct Investment (FDI) into the Irish manufacturing sector since accession to the EU. First, it has led to the development of a high-growth, export-oriented sector and has led to a shift towards more high-skilled production. Second, it has reduced dependence on the UK as the main market for Irish exports. Third, Ireland has become a major conduit of US technological innovation into Europe, especially in the 1990s. As can be seen in Figure 2.7, the level of US FDI flows into Ireland increased significantly in the 1990s and there has also been a marked increase in Ireland's *share* of US

[2] High-tech industries include chemicals and metals and engineering. In 1998 over 90 per cent of net output and over 65 per cent of employment in these sectors were in foreign-owned companies. *Source*: CSO *Census of Industrial Production 1998*.

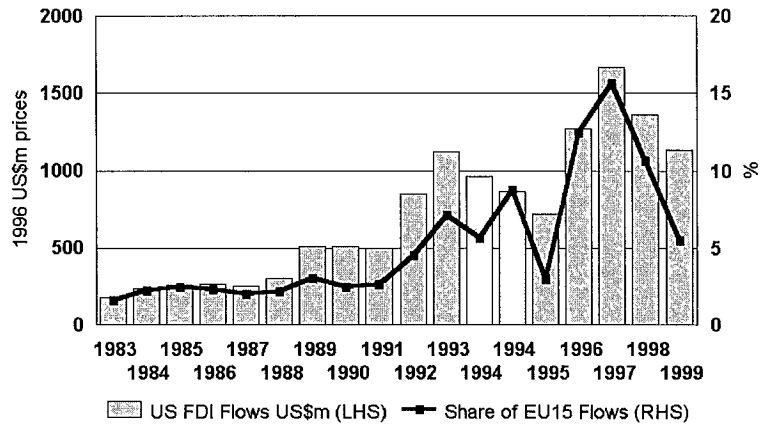
[3] See Honohan, P., B. Maître and C. Conroy, 1998. "Invisible Entrepôt Activity in Irish Manufacturing", *Irish Banking Review*, Summer.

[4] Foreign-owned companies in the UK have been found to have a substantial productivity lead over domestically-owned ones. See Oulton, N., 1998. "Labour Productivity and Foreign Ownership in the UK", National Institute of Economic and Social Research, Discussion Paper No. 143.

[5] Barry, F., J. Bradley and E. O'Malley, 1999. "Indigenous and Foreign Industry: Characteristics and Performance", Chapter 3 in F. Barry, (editor) *Understanding Ireland's Economic Growth*, UK: Macmillan. p. 54.

FDI within the EU in the 1990s. Fourth, the policy of concentration on a small group of sectors has meant that Ireland has now become a major location for specific industries. This has had spill-over effects into the domestic economy both in terms of received expertise and technological know-how and via direct linkages with the domestic economy and the local labour market.

Figure 2.7: US Manufacturing FDI Flows to Ireland



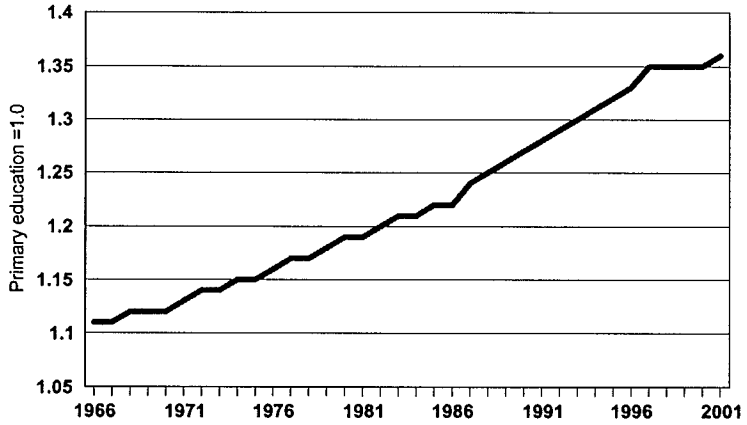
Source: US Survey of Current Business: various issues; discontinuity in data in 1994.

Alongside these changes in trade orientation and industrial structure, there has been a steady increase in average education levels in the population in these decades (Figure 2.8), where investment in human capital occurred rather later than in other Northern European countries.[6] This has increased the productive potential of the workforce. Recent estimates suggest that improvements in labour quality, due to rising education levels, particularly in the 1980s and 1990s, accounted for almost 20 per cent of total growth in output.[7]

[6] Free second level education was only introduced into Ireland in 1967.

[7] See Durkan, J., D. Fitz Gerald and C. Harmon, 1999. "Education and Growth in the Irish Economy", Chapter 6 in F. Barry (ed.), *Understanding Ireland's Economic Growth*, UK: MacMillan.

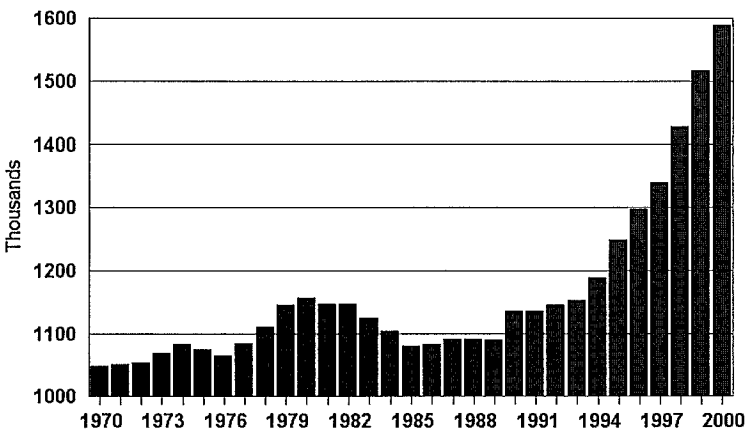
Figure 2.8: Index of Human Capital 1966-2001[8]



2.1.3 EMPLOYMENT

The growth in employment in recent years has far exceeded any growth seen in the past four decades (see Figure 2.9). Many factors have contributed to the strong pick-up in the demand for labour in these years. As discussed above, strong growth in FDI and improvements in competitiveness boosted the performance of the industrial sector. Since 1990 total employment in the industrial sector has increased by almost 150,000. This strong performance has had spillover effects on domestic demand, leading to strong growth in market services sector output and employment. Employment in the market services sector increased by 250,000 since 1990.

Figure 2.9: Total Employment, 1970-2000

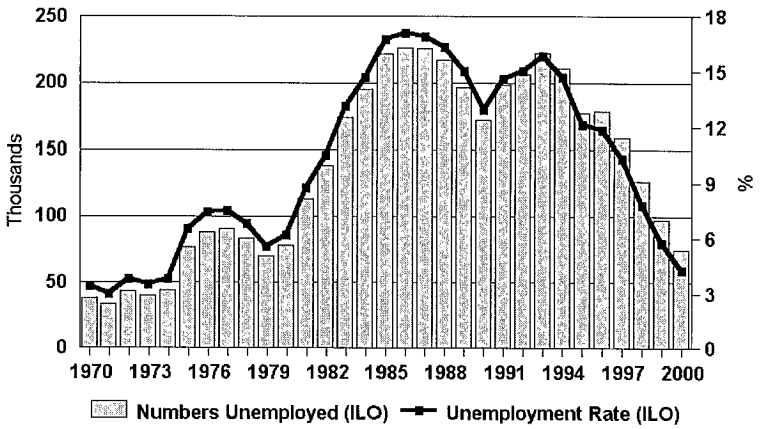


In the 1980s falling employment rates led to stagnation in output per head and a large increase in long-term unemployment. Since 1993 there has been a ten percentage point reduction in the overall unemployment rate (see Figure 2.10). The boom in the 1990s has since the middle of the decade made

[8] This index is constructed using data on four education levels (Primary, Junior Certificate, Leaving Certificate and those educated beyond second level) from successive *Censuses of Population* from 1966 to 1996. These data are then weighted based on estimates of the returns to education for each level to construct an index of human capital. See Barrett, A., T. Callan, A. Doris, D. O'Neill, H. Russell, O. Sweetman, and J. McBride, 2000, *How Unequal? Men and Women in the Irish Labour Market,* General Research Series No. 176, Dublin: Oaktree Press in association with The Economic and Social Research Institute.

significant inroads in reducing the numbers in long-term unemployment and moved the Irish labour market from a position of labour surplus to labour shortage.[9]

Figure 2.10: Unemployment 1970-2000 (ILO Basis)



2.1.4 LABOUR SUPPLY: MIGRATION, PARTICIPATION AND AGE DEPENDENCY[10]

The Irish population structure in the 1990s has been unusually favourable in increasing labour supply. The expansion in the labour force has been much greater than in the rest of the EU, reflecting different demographic circumstances; namely rising female participation rates, inflows of migration, a high natural increase in the labour force and a corresponding reduction in age dependency.

Figure 2.11: Net Immigration Rate

The rapid rise in unemployment in the 1980s would have been much worse but for the large flows of outward migration equivalent to over 3 per

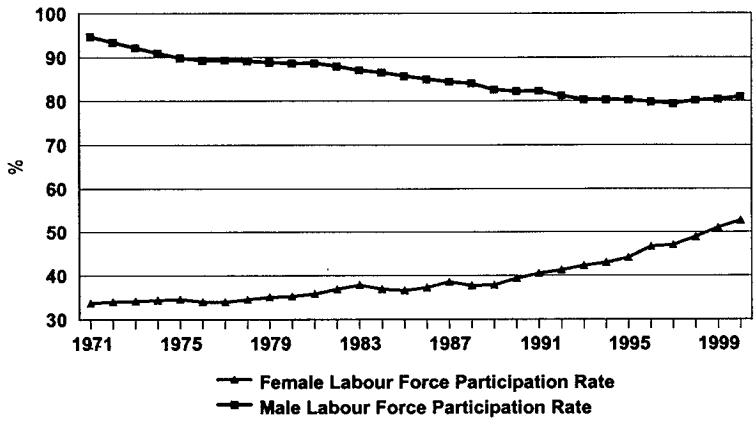
[9] See O'Connell, P.J. 2000. "The Dynamics of the Irish Labour Market in Comparative Perspective", in B. Nolan, P.J. O'Connell and C.T. Whelan, *Bust to Boom? The Irish Experience of Growth and Inequality*, Dublin: IPA for a discussion. He argues that the dramatic reduction in the rate of long-term unemployment must be interpreted with some caution since large-scale participation in labour market training and temporary employment schemes may confound measures of the balance between short-term and long-term unemployment.

[10] For a more detailed discussion of demographic changes in Ireland in recent years see Section 4.4 of Chapter 4.

cent of the labour force in 1989 (Figure 2.11). This high propensity to migrate among Irish workers has made the supply of labour relatively elastic, with the Irish labour market effectively functioning as a region within the UK. In more recent years the strong increase in labour demand has led to a resumption of immigration averaging over 1 per cent of the labour force since 1997.

As we have seen, increases in immigration in the 1990s increased the supply of labour to meet the increase in labour demand. A second source of increase in labour supply came from increases in female labour force participation rates. In 1980 Ireland had one of the lowest participation rates for women in the paid labour force in Europe. However, a combination of cultural changes, rising education and increasing labour demand has led to sharp increases in female participation rates in the 1990s (see Figure 2.12).

Figure 2.12: Labour Force Participation, 1971-2000



Finally the age structure of the Irish population differs from that of other EU countries. The baby boom of the 1960s and 1970s, together with a sharp fall in the birth rate since 1980, means that the age dependency of the population has fallen sharply. The natural increase in the population has contributed over one percentage point per annum to the growth in the labour force in the 1990s.

2.2 Growth Transmission Mechanisms

In this Section we expand the analysis in Section 2.1. We consider the contributions of various factors to the rapid convergence in Irish living standards to the EU average using a small structural model of the Irish labour market, separately identifying skilled and unskilled labour.[11] The use of a structural model of the economy provides greater insights into the transmission mechanisms than is possible with the simple accounting identity decomposing output per head used in Section 2.1.

The model we use is a small and highly stylised representation of some of the key relationships discussed in the previous section. It focuses on the transmission mechanisms through which the increase in FDI flows in the 1990s and the increase in human capital may have impacted on productivity and convergence. It also explores the economic factors which determine labour supply, and hence the productive capacity of the economy, through the migration decision and the labour force participation decision. The details of the model are set out in full in Appendix 2.1 to this chapter.

[11] See Fitz Gerald, J. and I. Kearney, 2000, "Convergence in Living Standards in Ireland: The Role of the New Economy?" Working Paper No. 134, Dublin: The Economic and Social Research Institute for a full description of the model and the estimation results.

We used this model to separately examine the effects of FDI, human capital investment and labour supply on the Irish labour market and on productivity. The details of this analysis are contained in Appendix 2.2 to this chapter.

"FDI Effect"

A very important factor in explaining the rapid convergence in living standards in the 1990s to the EU average has been the strength of foreign direct investment flows to Ireland. The success of the strategy of attracting foreign investment is illustrated in Figure 2.7 above. In particular in the 1990s, Ireland's share of all US foreign direct investment into the EU averaged well over 5 per cent, with even higher levels achieved in the most recent years. With the increasing concentration of these firms in high-technology sectors, this new investment has significantly tightened the market for skilled labour.

In the model we attribute the acceleration in the demand for Irish output in the 1990s to this surge in FDI flows – termed the "FDI effect". The model results indicate that this "FDI effect" resulted in higher productivity growth together with increased employment. This improvement in employment opportunities in turn attracted immigration into Ireland of skilled labour from abroad.

Rising demand for skilled labour has occurred throughout the industrialised economies over the 1980s and the 1990s,[12] with the increase in demand in Ireland accentuated by the impact of foreign direct investment on the economy. This move away from unskilled labour led to a big increase in unemployment in Ireland in the 1980s, since unskilled labour is less likely to migrate to find employment. The boom in the 1990s was primarily driven by skilled employment sectors (high-technology industries), but the transmission mechanism suggested by the model results suggest that it also had significant indirect effects on the demand for unskilled labour, thereby making significant inroads in reducing unemployment.

Human Capital

A second important factor in understanding the acceleration in growth in the 1990s is the effect of human investment. In the model we examine the effect of the growth in average education levels since 1980 on the labour market. The model results indicate that this growth increased both output and employment and reduced unemployment. Furthermore, the increase in the supply of skilled labour due to rising human capital prevented a substantial rise in the skilled wage rate with a consequent deterioration in competitiveness and widening wage dispersion.

To understand this contribution to growth from investment in human capital, account must be taken of the rise in demand for skilled labour world-wide.[13] Ireland has gained its share of this demand partly through the entry of new foreign firms investing in the country as outlined above. Without this increase in the demand for skilled labour, the big increase in the supply of skilled labour would have resulted in a large fall in the skilled wage rate with deleterious effects on living standards. In other words the increase in the supply of skilled labour occurred at a time when demand was rising thus preventing large positive or negative swings in the skilled wage rate. What this means is that the interaction of FDI has been significantly enhanced by the simultaneous impact of increased investment in human capital.

[12] Nickell, S. and B. Bell, 1995, "The Collapse in Demand for the Unskilled and Unemployment Across the OECD", *Oxford Review of Economic Policy*, Vol. 11, No 1, pp. 40-62.

[13] See Nickell and Bell, 1995, *op cit.*

Labour Supply

The third key factor in driving the growth in the 1990s was the rapid expansion of the labour force. The total labour force increased by 413,000 between 1990 and 2000 – an increase of almost one-third. In the first half of the decade labour supply increased by 1.8 per cent per annum, this rate almost doubled to 3.4 per cent in the period 1995-2000. This high growth of labour supply in the 1990s was facilitated through rapid growth in the population of working age, together with rising female participation rates and high immigration flows in the latter half of the decade.

Table 2.1: Factors Affecting Labour Supply Growth

	1990-95	1995-00
Annual Average Increase %		
Natural Increase	1.4	1.2
Female Labour Force Participation	0.6	1.1
Male Labour Force Participation	-0.6	0.0
Education	0.4	0.4
Migration	0.0	0.8

Table 2.1 breaks down labour supply growth into the contributions due to the natural increase, changes in participation, education attainment and migration. The natural increase in the population of working age added 1.4 per cent per annum to the growth in labour supply in the period 1990-1995, slowing to 1.2 per cent in the second half of the decade. Increases in female labour force participation offset the decline in male participation in the first half of the 1990s, while the acceleration in female participation rates added 1.1 per cent per annum to the growth in labour supply in the latter part of the decade – roughly equivalent to the contribution from the natural increase. The table separates out the growth in labour supply due to increasing levels of educational attainment. The increase is entirely attributable to rising education levels among women – female participation rates are higher among those with higher education levels so rising education levels also increase labour supply. Finally immigration in the latter half of the decade have added on average 0.8 per cent to labour supply growth.

In the model the effect of the natural increase, immigration and increases in female labour force participation in the 1990s was to significantly increase the supply of skilled labour. With education levels among the population rising, inflows into the population of working age have higher education levels than the average, while immigration flows and increases in female labour force participation are also concentrated among skilled workers. This served to reduce the pressure on skilled wage rates precisely when the demand for skilled labour was increasing. The model results indicate that increases in the skilled labour supply all served to accommodate the boom in the demand for Irish output and labour in the 1990s. Without this increase in the labour force, skilled wages would have risen and the competitiveness of the economy would have been adversely affected.

The general expansion in production in the 1990s also increased the demand for unskilled labour, which by the mid-1990s finally made inroads in reducing unemployment among the unskilled. These model results offer an interesting contrast with the findings of Borjas, Freeman and Katz, 1997,[14] for the United States. Their research indicated that immigration of unskilled labour has adversely affected the position of unskilled inhabitants. The results of the model for Ireland suggest that the immigration of skilled labour improved the position of unskilled labour in Ireland.

[14] Borjas, G. R. Freeman and L. Katz, 1997. "How Much Do Immigration and Trade Affect Labour Market Outcomes?", *Brookings Papers on Economic Activity,* Vol. 1, pp. 1-67.

Summary of Model Results

The acceleration in the demand for Irish output in the 1990s, due to the increase in FDI in high-tech sectors, increased productivity and the average growth rate. This also increased the demand for skilled labour. In the absence of a substantial increase in skilled labour supply this would have led to a widening wage dispersion between skilled and unskilled labour within the economy. The benefits of the increase in human capital investment was to increase the supply of skilled labour precisely when the demand for skilled labour was rising thereby maintaining the competitiveness of the economy.

Furthermore the general increase in labour supply in the 1990s, through rising female participation rates, a high natural increase in the working age population and immigration also reduced pressure on the skilled wage rate and served to maintain the competitiveness of the economy. While the increase in labour supply did not affect the rate of productivity growth it increased the capacity of the economy to grow.

2.3 Conclusions

The rapid growth in output and income per head in the 1990s is a result of the interaction and mutual dependence of several favourable underlying factors. In this chapter we focused on exploring the key medium-term supply side factors driving productivity and labour supply growth. Using a simple decomposition of GDP per capita, we examined the contributions of the growth in productivity, human capital, employment, female labour force participation and the natural increase in the labour force. These are only determinants of the growth *potential* of the economy and without the supporting stable macroeconomic environment – including *inter alia*, healthy fiscal balances, low interest and inflation rates, a strong competitive position internationally and a favourable external environment – this growth potential would not have been realised. Furthermore, the rapid growth has in recent years led to severe and worsening congestion problems, particularly in relation to public infrastructure and most notably in the housing market. These issues are discussed in Chapter 6 of this *Review*.

Our analysis highlighted the role of the recent increase in FDI flows to Ireland in driving the high growth rates of the 1990s. The rapid development of the high-technology sector led to an increase in employment of more highly educated workers. The subsequent analysis shows that rising investment in human capital helped to realise this shift in gear while the increase in labour supply increased the productive capacity of the economy.

APPENDIX 2.1: THE MODEL EQUATIONS

The model includes five key behavioural relations; output determination; labour supply; migration; labour demand and the wage/unemployment equilibrium. The equation specifications and variable definitions are listed at the end of this Appendix.

Output determination: This is based on a small open economy model where multinational enterprises select a location for production on the basis of world demand and Ireland's relative cost competitiveness.[15] To estimate the effect of the recent acceleration in FDI flows in the 1990s we include an additional term in US GDP from 1990 onwards; this increases the elasticity of Irish output with respect to foreign output from 1990 onwards. Effectively this causes the demand curve for Irish output to shift outwards in the 1990s. This latter is a relatively crude proxy for the "FDI effect" discussed in Section 2.1.

Labour supply: The Irish labour market is modelled differently depending on the educational qualifications of workers. Those with high levels of education are typically more mobile and will emigrate (immigrate) in periods of low (high) labour demand, so that participation rates and unemployment rates among these workers are relatively stable. Those with lower levels of education have more volatile participation rates, so that in periods of low labour demand they either withdraw from the workforce or are unemployed. Because of these important distinctions, we model the participation decision for high-skilled and low-skilled workers separately. High-skilled is defined as workers who have completed second-level education to at least Leaving Certificate level. Estimates of the elasticity of the labour supply decision with respect to the wage are taken from Doris (2001)[16] based on detailed microsimulation analysis of the participation decision (see Box 4.2 in Chapter 4).

Migration is modelled as a function of the expected real after tax earnings in Ireland relative to the UK. While in the 1960s and 1970s most emigrants were unskilled, since 1980 most migration both into and out of the country has been skilled.[17] As a result, all migration is assumed to be high-skilled, and it is through this mechanism that the high-skilled labour market is cleared.

The demand for labour is modelled as a function of output, the real consumption wage and a time trend based on the assumption that all firms are profit-maximisers. To explore the effect of changing educational attainment on the demand for labour a second equation estimates substitution between high-skilled and low-skilled employment within the total labour bundle.

[15] See Bradley, J. and J. Fitz Gerald, 1988. Industrial Output and Factor Input Determination in an Econometric Model of a Small Open Economy", *European Economic Review,* Vol. 3, pp. 1227-1241 for details.

[16] Doris, A., 2001, *Quarterly Economic Commentary* Special Article (forthcoming).

[17] See Fahey, T., J. Fitz Gerald and B. Maître, 1998. "The Economic and Social Implications of Population Change", *Journal of the Statistical and Social Inquiry Society of Ireland* 1997/1998.

Equilibrium determines the wage and unemployment rate for both types of worker. In the high-skilled labour market equilibrium occurs through the migration mechanism and changes in participation. Labour supply will adjust to match labour demand and there is no structural high-skilled unemployment. In the low-skilled labour market, low wage rates until recent years meant there has been a high effective replacement rate which acted as a floor on the wage rate. With no adjustment in wages, equilibrium in the low-skilled labour market is reached through adjustments in the unemployment rate. This latter is a simplified representation of the wage determination process for unskilled labour. Furthermore, while such an assumption was reasonable for the 1980s and much of the 1990s, in the last few years with significant reductions in unskilled unemployment and the general tightening of the labour market, it is no longer realistic.

1. Output Determination: this equation determines GDP

$$\log(GDP)_t = c_{31} + c_{32}\log\left(\frac{W}{W_{GER} * e_{GER}}\right)_t + c_{33}\log\left(\frac{W}{W_{UK} * e_{UK}}\right)_t + c_{34}\log(GDP_{USA})_t + c_{35}\log(GDP_{USA})_t * D_{90} + c_{36}\log(GDP)_{t-1}$$

2. Labour Force Participation: these equations determine WH , NL, POPH, POPL

$$\left(\frac{N_H}{POP_H}\right)_t = c_{11} + 0.42\log\left(\frac{W_H}{P_C}\right)_t + c_{13}T_t$$

$$\left(\frac{N_L}{POP_L}\right)_t = c_{21} + 0.42\log\left(\frac{W_L}{P_C}\right)_t + c_{23}UR_{t-3} + c_{24}T_t$$

where

$$POP_{H,t} = POP_{H,t-1} + \Delta POP_{H,t} + 0.75M_t$$

$$POP_{L,t} = POP_{L,t-1} + \Delta POP_{L,t}$$

3. Migration: this equation determines M

$$M_t = c_{61} + c_{63} * \left(\frac{W * (1 - RGTYP)}{P_C}\right)_t \Big/ \left(\frac{W_{UK} * (1 - RGTYP_{UK})}{P_{C\_UK}}\right)_t + c_{64}M_{t-1} + c_{65}D_{1990}$$

4. Labour Demand: these equations determines LNA, LNA_H and LNA_L

$$\left(\frac{LNA}{GDP}\right)_t = c_{41} + c_{42}\log\left(\frac{W}{P_C}\right)_t + c_{43}T_t$$

$$S_H = \left(\frac{W_H.LNA_H}{YWNA}\right)_t = c_{51} + c_{52}\log\left(\frac{W_H}{W_L}\right)_t + c_{53}T_t$$

$$LNA = LNA_H + LNA_L$$

where

$$YWNA = W_H * LNA_H + W_L * LNA_L$$

5. Labour Market Equilibrium: these equations determine W_L, W, N_H

$$\log\left(\frac{W_L}{P_C}\right)_t = c_{71} + c_{72}UR\_UK_t + c_{73}\log\left(\frac{UB}{P_C}\right)_t + c_{74}\log\left(\frac{GDP}{L}\right)_t + c_{75}\log\left(\frac{W_L}{P_C}\right)_{t-1}$$

$$W = \frac{W_H LNA_H + W_L.LNA_L}{LNA}$$

$$\frac{N_H}{L_H} = \beta$$

Given *LA* as exogenous the following identities close the model:

$$L_H = LNA_H + LA_H, \qquad L_L = LNA_L + LA_L, \qquad L = L_H + L_L, \quad N = N_H + N_L,$$

$$U = N - L, \qquad UR = \frac{U}{N} * 100, \qquad UR_H = \frac{N_H - L_H}{N_H} * 100$$

D_90	Dummy variable: =0 before 1990, =1 1990 onwards
e_GER	IR£/DM exchange rate
e_UK	IR£/Sterling exchange rate
GDP	GDP in constant prices
GDP_USA	US GDP in constant prices
LNA	Non-agricultural employment
L	Total employment
M	Net immigration
N	Labour Force
P_C	Personal Consumption Deflator
POP	Population
RGTYP	Income Tax Wedge
RGTYP_UK	UK Income Tax Wedge
T	Time Trend
UB	Unemployment benefit payments for adult with 3 dependants
UR	Unemployment Rate
UR_UK	UK Unemployment Rate
W	Non-agricultural average annual earnings
W_GER	Manufacturing wage rate in Germany
W_UK	UK wage rate
YWNA	Non-agricultural wage bill
_H	High Skilled Labour – those with Second Level education or higher
_L	Low Skilled Labour – those with less than Second Level education

APPENDIX 2.2: GROWTH TRANSMISSION MECHANISMS IN THE MODEL

In this Appendix we report the technical details underlying the discussion in Section 2.2. We use the model outlined above to examine the effect of individual factors on growth, productivity and employment. This is done by altering the path of a single variable with respect to its "history" while everything else is left unchanged – technically a "simulation" of the model. The first factor we consider is the impact of the big increase in foreign direct investment in the 1990s. We then consider the role of investment in human capital. Finally, we examine the effects of a number of labour supply factors – migration, female labour force participation and demographic changes.

These simulation results are only partial in nature and do not take account of the wider impact of the higher growth in the 1990s in putting increased pressure on existing infrastructure, in particular on housing. The model also incorporates some simplifying assumptions that are probably inappropriate under current circumstances. While the model assumption that unskilled wage rates are unaffected by labour market pressures was reasonably appropriate in the 1980s and early 1990s, it is clearly unrealistic under current circumstances. Since the model is small and highly stylised the results are intended for illustrative purposes only rather than to quantify precise magnitudes.

Effects of Acceleration in Demand for Output in 1990s – "FDI Effect"

In this model simulation we hold the post-1990 "FDI effect" term unchanged in the model. This eliminates the acceleration in the demand for Irish output and hence labour in the 1990s – technically it shifts the demand curve for Irish output and Irish labour inwards. As shown in Table A2.1, this simulation shows a reduction by 1998 of almost 18 per cent of GDP relative to its actual level – a reduction in the growth rate of around two percentage points a year. While the identification of this effect as "the effect of FDI" is crude, probably overestimating the effect, it does indicate the potential importance of this channel. As a result of such a shock the reduction in employment would have been almost 14 per cent by 1998. The lower percentage fall in employment than in output means that average productivity would have been 4.5 per cent lower by 1998.

Table A2.1: Impact of No "FDI Effect" after Eight Years

		1998
GDP	%	-17.6
Total Employment	%	-13.7
Unemployment rate	percentage points	+5.5
Skilled Labour Supply	%	-12.1
Skilled/Unskilled Wage Rates	%	-14.1

The reduction in output and employment would have resulted in substantial emigration (reduced immigration) over the period. This response would have occurred as a result of the fall in skilled wage rates (an estimated fall of 14 per cent by 1998). However, with unskilled wage rates fixed by the replacement rate and with no unskilled migration, unskilled unemployment would have been more than five percentage points higher by the end of the period than it actually was.

This simulation indicates the importance to the Irish economy of the growth of new high-technology sectors that has come about through the rise in FDI. Given the simplicity of the model specification these results are partial in nature and based on a very crude proxy for the post-1990 "FDI effect". Effectively this shock to the model explores the impact on the labour market of a 2 per cent annual reduction in GDP growth rather than the effect of FDI itself.

Human Capital

In this simulation the relative educational attainment of the population was held fixed at its 1980 level and immigration was also held fixed. This would have seen a very big reduction over time in the supply of skilled labour matched by a very much bigger increase in the supply of unskilled labour. The impact of such a reduction in the supply of skilled labour would have been a rise in skilled wage rates to a level of close to 18 per cent above their actual 1998 level (see Table A2.2). With unskilled wage rates fixed by the replacement rate average wage rates would have risen by over 12 per cent.

Table A2.2: Impact of Unchanged Human Capital after Eighteen Years

		1998
GDP	%	-6.1
Total Employment	%	-8.5
Unemployment rate	percentage points	+13.6
Skilled Labour Supply	%	-11.2
Skilled/Unskilled Wage Rates	%	+17.6

Such a rise in domestic labour costs would, in turn have had a big effect on the competitiveness of the economy. As shown in Table A2.2, by 1998 the level of GDP would have been 6 per cent below its actual level.

The dramatic reduction in employment would have increased average productivity marginally, by 2.5 per cent in 1998. However, this scenario would not have been sustainable. The unemployment rate would have been almost 14 per cent above its actual level by the end of the period. With unemployment already high over most of the 1980s and 1990s such a level of unemployment (unskilled) would have put impossible pressure on the public finances – pressure which is not modelled here. Instead the replacement ratio would have had to fall and with it unskilled wage rates to make the economy more competitive. This would have involved a further increase in wage dispersion between skilled and unskilled labour.

Labour Supply: Migration, Female Participation and Natural Increase

In the first labour supply simulation we explore the impact of the natural increase in the population on the Irish labour market. The natural increase in the population of working age from 1980 onwards is held unchanged with migration constant. Within the model this reduces labour supply through the participation equations and leads to a deterioration in competitiveness. This simulation effectively reduced the productive capacity of the economy with unchanged demand for Irish output.

Table A2.3: Impact of No Natural Increase after Eighteen Years

		1998
GDP	%	-7.1
Average Wage	%	+15.2
Labour Force	%	-19.6

The impact of this simulation is to reduce the total labour force by almost 20 per cent (holding migration unchanged). The consequent increase in the average wage of over 15 per cent reduces the competitiveness of the economy so that GDP would have been over 7 per cent lower by 1998.

The second simulation looks at the impact of migration on the labour market. In recent years net immigration of skilled labour has played an important role in expanding the supply of skilled labour. Within the model the effect of immigration of skilled labour is to reduce upward pressure on the skilled wage rate. In turn, this reduces the cost of producing in Ireland and increases output. Because Irish skilled and unskilled labour are effectively complements in production, the increase in competitiveness due to falling skilled wage rates is to increase the demand for unskilled labour. Thus the effect of skilled migration is to reduce the pressures for growing inequality in wage rates through reducing skilled wage rates and tightening the market for unskilled labour.

Over the four years 1996 to 2000 net immigration averaged over 16,000 a year. The bulk of these people, whether they were returning emigrants or foreigners, had a high level of education.[18] As a result, they significantly increased the supply of skilled labour over that period. The effect of this increase in the supply of skilled labour was to reduce labour market pressures.

Table A2.4: Effects of 16,000 Net Immigration Over Five Year Period

GDP	%	1.2
Total Employment	%	1.6
Unemployment rate	Percentage points	-0.5
Skilled Labour Supply	%	4.9
Skilled Wage Rates	%	-8.8

In the model simulation net immigration is reduced by 16,000 each year to assess the counter-factual effect of such a reduction on labour supply. The simulation suggests that after five years, the impact of the immigration was to increase the supply of skilled labour by almost 5 per cent and reduce skilled wage rates by 8.8 percentage points (Table A2.4). This relaxation in the skilled labour supply constraint, and the resulting reduction in skilled wage rates, made Ireland more competitive on world markets. The model would suggest that this raised the level of GDP in the short run by 1.2 percentage points. The long run impact would be substantially greater, due to the slow adjustment of productive capacity to changing economic circumstances.

The unemployment rate is estimated to fall by around 0.5 percentage points, all of which is concentrated among unskilled labour. Over the medium term the improvement in competitiveness reduces this further by over 1.7 percentage points.

Within the model it is not possible to separately identify and shock the female participation decision. However, the effect would be similar to the effect of an increase in immigration since rising female participation has increased total labour supply and the supply of skilled labour.

[18] See Barrett, A. and F. Trace, 1998. "Who is Coming Back? The Educational Profile of Returning Migrants in the 1990s", *Irish Banking Review*, Summer.

3. THE EXTERNAL ENVIRONMENT

3.1 Introduction

The Irish economy is very much influenced by events in the world economy. Ireland has now been part of Economic and Monetary Union (EMU) since its inception in January 1999. Membership of the single currency means that Ireland is now effectively a regional economy, accounting for around 1.4 per cent of Euro area GDP. For a number of reasons Ireland's economic performance is not tied to that of the Euro area alone. As a small open economy total trade in goods and services as a percentage of GNP amounted to 228 per cent in 2001. While Ireland is dependent on economic activity in the Euro area, high levels of foreign direct investment flows from the US means that Ireland is exposed to the US economy and traditional links to the UK also mean exposure to the UK economy.

Over the medium term the forecasts presented here indicate that the outlook is reasonably positive. However, the current year has seen a sharp slowdown in economic activity and in many ways the short-term outlook is more uncertain than before. One of the prime reasons for this is uncertainty about the future of the US economy. Large macro economic imbalances have emerged and if these were to correct themselves suddenly this would have a serious negative impact on the world economy.

In the last *Medium-Term Review* this chapter assessed the factors underpinning medium-term growth in Europe and the US. This is updated here. The chapter then separately sets out the economic prospects for the main geographic areas that influence Ireland's economic outlook – the US, Euro area and UK economies. Finally, we outline the implications for Ireland of the forecast international environment.

In preparing the forecasts we have utilised a number of different sources (especially the National Institute *Economic Review,* July 2001, and the IMF *World Economic Outlook,* May 2001). We used the National Institute of Economic and Social Research (NIESR) July 2001 forecast as input to the medium-term forecast for the major world economies. This forecast was modified to take account of additional information available to us from a range of different sources, as well as our view that exchange rates will change in the medium term.[1] In carrying out these modifications and in examining alternative assumptions we have used the NIESR Global Econometric Model (NiGEM). As outlined in the Introduction the forecasts presented here do not take account of the appalling events that took place on September 11th.

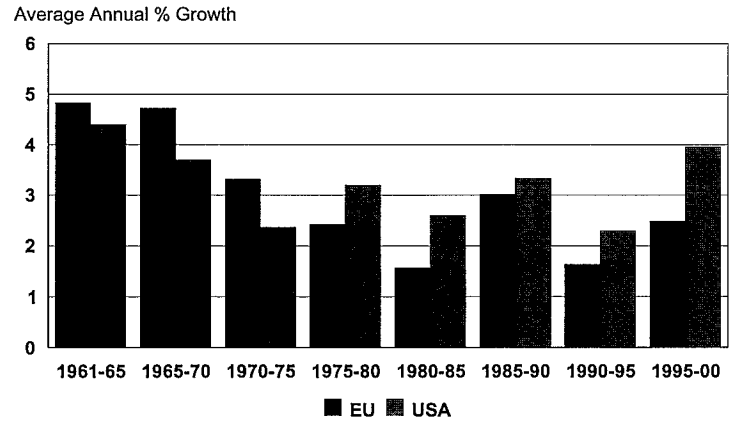
3.2 Driving Forces of Growth

The performance of the US and European economies has been very different over the course of the 1990s. The US economy has displayed above potential rates of growth while Europe has experienced growth rates below the potential growth of the region. In the last year growth in both regions has slowed. However, this has been more dramatic in the EU than in the US

[1] We are very grateful to Ray Barrell, Karen Dury and Ian Hurst of NIESR for their assistance in using the NiGEM model. The forecast itself remains the sole responsibility of the authors.

economy. GDP growth in the EU averaged 3.4 per cent a year during the 1970s. In the 1990s this had slowed to 1.9 per cent. The slowdown in the average growth rate has not been as severe in the US, where GDP growth averaged 3.3 per cent during the 1970s, and averaged 3 per cent on an annual basis between 1990 and 1999. Chapter 2 of this *Review* examines productivity growth and the supply side of the Irish economy. The analysis decomposes GDP per capita into a series of key relationships: productivity, the employment rate, the participation rate and the inverse of the age dependency ratio. A more detailed explanation of the approach is contained in Section 2.1 of Chapter 2. This framework is used to examine the performance of these relationships in the international environment, providing an insight into the factors determining the medium-term growth potential of the world and EU economies.

Figure 3.1: GDP Growth in the US and EU, 1961-2000



Source: OECD *Statistical Compendium*, 2001/01.

PRODUCTIVITY

A principal element in determining the growth potential of an economy is the growth in labour productivity. As illustrated in Table 3.1, there has been a slowdown in productivity growth over the last four decades in the EU. Productivity growth in the 1980s and 1990s was much lower than in previous decades, which may in part be due to structural shifts in employment over the period. The 1960s and 1970s saw a decline in agricultural employment as industrial employment expanded. More recently the services sector has emerged as the main engine of employment growth, a sector in which output, and therefore productivity, is more difficult to measure. It is noticeable that, while productivity growth slowed proportionately more in the EU, it remained higher than in the US for most of the period. This trend came to an end in the second half of the 1990s with productivity growth averaging 1.5 per cent, almost a full percentage point lower than US productivity growth of 2.4 per cent.

Table 3.1: Growth in Labour Productivity

	Annual Average Per Cent						
	1960s	1970s	1980s	1990s	1990-2000	2000-2005	2005-2010
USA	2.4	1.0	1.3	2.1	2.4	2.1	1.5
EU	4.6	3.0	1.8	1.5	1.5	1.7	2.1

Source: 1960-1997 based on data from OECD *Statistical Compendium* 2001/01.

This surge in productivity growth has been credited with the strong growth and low inflation performance in the US during the 1990s. The acceleration of labour productivity has been explained firstly by large cyclical

effects, but also structural improvements in productivity growth. It is argued that investment in information and communications technology (ICT) has led to an increased sustainable level of productivity growth or a "new economy". Gordon (2000) finds that much of the productivity growth has been of a cyclical nature.[2] Berry (2001) in an article that reviews evidence from Gordon and other analysis concludes "the evidence to date suggests that the strong growth of labour productivity in the United States over the past five years is not just a cyclical phenomenon". This, however, is tentative on the grounds that it may still be too early to tell. Berry maintains that in the face of the US slowdown during 2001 "if productivity growth slows only modestly, this would be supportive of the evidence available so far that structural improvements have played a substantial role in recent productivity gains".[3]

While opinion is divided as to the source of the acceleration in US productivity the question is whether the EU may benefit from any "new economy" effects over the coming decade. Research on this topic has thus far failed to reach many concrete conclusions. A recent report from the European Commission suggests that the EU may lag the US by roughly five years in the contribution of the ICT sector to the macro economy.[4] Furthermore, research by the European Central Bank (ECB) finds that while there is evidence of an increased contribution by the ICT sector to production and investment there is little evidence thus far of spillover effects into overall productivity growth.[5]

Despite little evidence to suggest "new economy" productivity gains it seems likely that productivity growth in the EU will show marginal improvement during the first half of this decade. EU productivity growth is forecast to increase to a average annual rate of 1.8 per cent until 2010. This increase is in large part due to robust GDP growth at a time when the rate of increase in employment remains stable. Productivity in the US is forecast to average 2.1 per cent in the first half of the decade. This represents a decline in US productivity as compared with the later half of the 1990s reflecting in part slowing growth in the economy. It is forecast that US productivity growth will slow further to 1.5 per cent a year between 2005 and 2010.

LABOUR SUPPLY

One of the main determinants of the growth in potential output is the growth of labour supply. A range of factors, including natural population change, net immigration, labour force participation rates and change in the working age population, affect the growth of labour supply. While demographic factors change slowly over time, changes in participation rates and immigration can have more significant effects over the medium term in individual countries.

As illustrated in Figure 3.2 the US has outpaced the EU in terms of labour force growth over the last four decades. Looking forward the EU labour force is expected to grow by 0.7 per cent per year on average between 2000 and 2005. This is forecast to slow to an annual average of 0.3 per cent between

[2] Gordon, R.J., 2000, "Does the 'New Economy' Measure up to the Great Inventions of the Past?" *Journal of Economic Perspectives,* Vol.14, No. 4, Fall, pp. 49-74.

[3] Berry, S., 2001, "Has There Been a Structural Improvement in US Productivity?" Bank of England *Quarterly Bulletin,* Summer, pp. 203- 209.

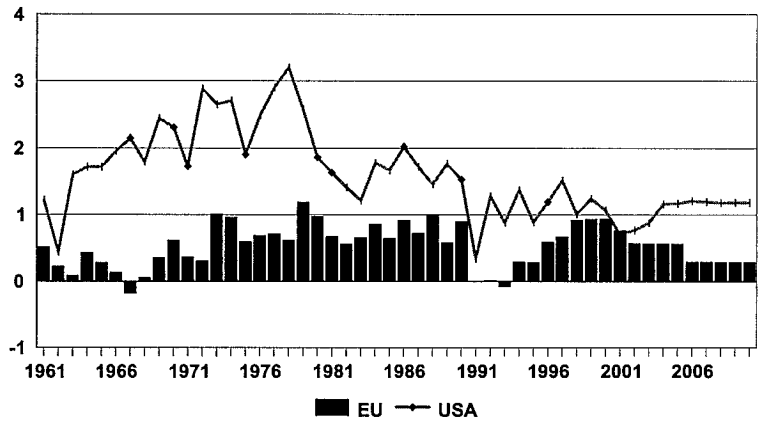
[4] European Commission, 2000. "Economic Growth in the EU, Is a 'New' Pattern Emerging?", Chapter 3 in *Review of 2000,* Brussels: European Commission.

[5] European Central Bank, "New Technologies and Productivity in the Euro Area", ECB *Monthly Bulletin,* July 2001.

2005 and 2010.[6] The bulk of the increase is expected to come from increased participation rather than a rise in the numbers in working age groups.

The US labour force has experienced strong growth in recent decades doubling in size since 1960. Labour force growth peaked in the late 1970s following on from strong growth throughout the decade and in the 1960s. This expansion came as the result of strong inward migration to the US and also consistent increases in the level of participation. Labour force growth rates declined in the 1980s and 1990s to levels closer to those in the EU, as increases in participation slowed. Growth in the US labour force is expected to remain stable over the forecast period averaging 1 per cent a year between 2000 and 2005 and 1.2 per cent between 2005 and 2010. Continued high participation, in addition to the positive contribution of migration flows, will maintain steady labour force growth.

Figure 3.2: Growth in Labour Force, Per Cent



Source:: Data to 1997 from Eurostat and OECD *Statistical Compendium*, 2001/01.

In recent years the strong growth in the US has resulted in significant increases in employment. Since the mid-1990s there has been some increase in the US employment rate (total employment divided by labour force) reflecting the pace of expansion in the US economy. To a lesser extent economic growth translated into European employment growth where the employment rate was marginally lower in the second half of the nineties. The improvement in European labour market conditions between 1998 and 2000 stands in stark contrast to the overall long run trend. During the 1960s, and for much of the 1970s, the EU employment rate averaged 95 per cent, as compared with 92.5 per cent in the US, (see Table 3.2). Following the oil shocks of the mid- and late 1970s the employment rate in both areas declined. Since then the employment rate in the US has been consistently above that in the EU. Over the forecast period no major change is expected in the US employment rates. Thus, the gap between the EU and US employment rate is expected to narrow slightly, with the EU employment rate forecast to increase to an annual average of 92 per cent between 2005 and 2010.

[6] Labour Force estimates come from Eurostat Statistics in Focus – Regional Labour Force in the EU: recent patterns and future perspectives, 2/2001.

Table 3.2: USA and EU Employment Rate

	Annual Average Per Cent						
	1960s	1970s	1980s	1990s	1995-2000	2000-2005	2005-2010
USA	93	92	91	94	95	95	95
EU	96	94	89	91	90	91	92

Source: 1960-1997 based on data from OECD *Statistical Compendium* 2001/01.

The above analysis illustrates the under performance of European labour markets relative to their US counterparts. Unemployment has steadily increased since the 1960s within the EU. Since 1960 unemployment rates have deteriorated rising from 2.3 per cent in 1960 to a high of 11.2 per cent in 1994. Over the same period the unemployment rate in the US has remained relatively stable. Recent years have seen improvements in the labour market positions of both the US and EU, with unemployment falling in the year 2000 to 4 per cent and 8.9 per cent respectively. While this fall has brought unemployment in Europe to its lowest level in almost a decade, the overall trend since the 1960s has remained upwards. In addition, the European unemployment rate still remains well in excess of the rate in the US, having being half the US rate in the 1960s.

The figures contained in Table 3.3 represent the working age population as a share of the total population. Over the last four decades there has been a general increase in the proportion of those aged 15 to 64 in the total population of both the US and EU, increasing by 6 percentage points. It is noticeable that from the 1960s to the 1990s the proportion of the population in working age groups remained higher in the US relative to the EU. The 1990s saw an end to this trend as the effects of German unification on the age profile of the EU population increased the proportion of the population in working age groups. Looking forward it is expected that the proportion aged 15-64 should stabilise over the coming decade in both the US and EU. This stabilisation will mark the beginning of a change in long-term demographic trends, which will see the proportion in the working age groups declining in both the US and EU after 2010. Various demographic studies point to a marked increase in the average age of the population in coming decades in both the US and EU.[7] A decline in fertility rates in recent years, combined with increased life expectancy, imply that there will not be a sufficient increase in the number of young people to keep the share of the working age population constant in the future.

Table 3.3: Average Share of Population Aged 15 to 64 in Total Population

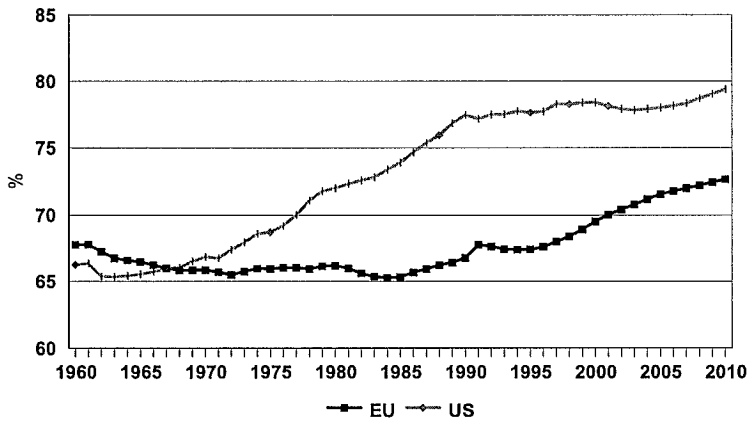
	Annual Average Per Cent						
	1960s	1970s	1980s	1990s	1995-2000	2000-2005	2005-2010
USA	60	64	66	66	66	66	67
EU	61	61	64	67	67	66	65

While growth of the working age population has played an important role, increased participation, particularly female participation, has been the main contributory factor to strong labour force growth in the US in recent decades. The participation rate in the US increased from 66 per cent in 1960 to stand at 78 per cent in 2000. In contrast, the failure of EU participation rates to increase significantly over the same period led to relatively low labour force growth relative to the US. The EU participation rate has remained relatively stable increasing from 68 per cent in 1960 to just 69 per cent in 2000. These differing trends in participation have led to a large participation rate differential between the EU and US (Figure 3.3). Looking

[7] OECD *Economic Surveys* 1998-1999, United States. "Coping with Ageing", Chapter IV.

forward the gap in participation rates is expected to narrow significantly over the next decade as increases in female participation have a comparatively larger effect in the EU. The participation rate in the EU is forecast to rise to 72 per cent by 2010. The US participation rate is forecast to rise over the same period by just one percentage point to 79 per cent.

Figure 3.3: Labour Force Participation Rates



Source: Historic rates based on data from US Census Bureau and OECD.

3.3 World Economy

COUNTRY PROSPECTS

The analysis above shows the expected development of some of the forces driving potential output growth in the main economic areas. The results are broadly optimistic. However, current forecasts suggest that world activity has slowed sharply this year and that growth will be low for a number of years, before returning to potential in the medium term. Thus, while the medium-term outlook is relatively positive, the current uncertainties and risks suggest that it is by no means certain that the world economy will achieve this.

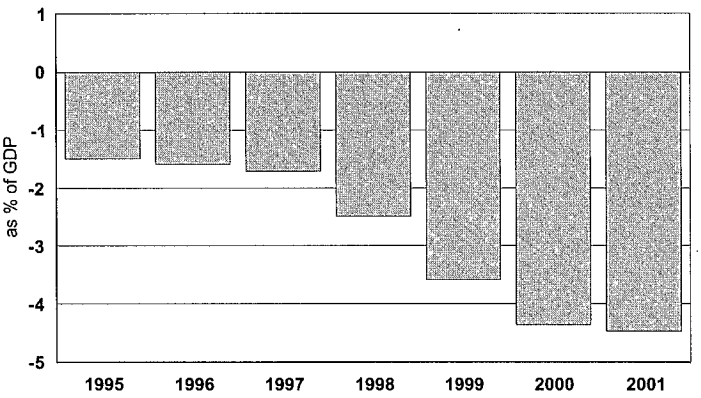
USA

For much of the 1990s the American economy has played an important role as the main source of world demand. The current expansion of the US economy started after a marginal decline in 1991 and, although this expansion has weakened severely, it is already the longest US expansion on record. However, the very significant imbalances that have arisen in the US economy over the course of this expansion give major cause for concern about the future medium-term growth path for that economy, and also for the wider world economy. Even with the slowdown in economic activity this year, there is no sign of a major readjustment that would put the US economy back on a stable growth path for the future. For Ireland and the rest of Europe this overhang of problems in the US is a considerable source of anxiety. The risk is that these imbalances correct themselves sharply rather than in a gradual manner.

Over the last four years the rapid growth in the US was accompanied by a steady disimprovement in the US current account balance of payments deficit. For 2001 this deficit is estimated to be 4.5 per cent of GDP (Figure 3.4). However, the underlying situation was probably worse than these data would suggest as the methodology used for calculating the current account of the

balance of payments does not take full account of the rapid rise in US foreign liabilities.[8]

Figure 3.4: US Balance of Payments Deficit



Source: OECD Outlook, Summer 2001

The steady deterioration in the US current account reflected the fact that domestic demand in the US economy over the period 1997 to 2000 was growing more rapidly than productive capacity. This rapid growth in demand was fuelled by a fall in household savings and a rapid rise in company sector borrowing needed to finance an investment boom. The necessary capital inflow from the rest of the world to finance the deficit proved easy to arrange, as foreign investors were keen to participate in the US boom and they were happy to invest in the US stock market. This meant that the cost of capital remained low for US firms and US households throughout the period, further encouraging demand.

The willingness of foreigners to invest in the US in recent years has meant that there was no upward pressure on long-term interest rates. Even if the deficit remains at its current level it is quite possible that for the immediate future the capital inflow could still finance the deficit without putting undue pressure on interest rates. However, an ever rising deficit is not sustainable in the long run. The Bush administration's policy of reducing or eliminating the government surplus over the next few years will, other things being equal, actually aggravate the imbalance in domestic savings, through directly reducing government savings and sustaining consumers' purchasing power.

Last year two leading US economists suggested that if the US imbalances were to be restored suddenly, purely through a readjustment in the dollar, the dollar would have to fall by between 25 per cent and 40 per cent.[9] Such a rapid adjustment would be very disruptive and they suggested that it would be preferable if the adjustment was a much more gradual process. This

[8] Quite a high proportion of US investment abroad is in the nature of foreign direct investment (FDI) whereas a higher proportion of the rest of the world investment in the US is in the form of portfolio investment in US equities. In the case of FDI, the profits, whether or not they are repatriated, are included as a positive item in the US current account as factor inflows. However, where the returns to foreigners on their investment in US equities occurs in the form of capital gains these capital gains do not appear in the US current account. Instead they appear as an increase in US net foreign indebtedness that is not explained by movements in the current account. For further discussion see Lane, P. and G. Milesi-Ferretti, 2001, "External Wealth, the Trade Balance., and the Real Exchange Rate", Paper presented at National Bureau of Economic Research International Seminar on Macroeconomics, Dublin, 9th June.

[9] Obstfeld, M. and K. Rogoff, 2000, "Perspectives on OECD Economic Integration: Implications for the US Current Account Adjustment", in Federal Reserve Bank of Kansas City, *Global Economic Integration: Opportunities and Challenges.*

highlighted the dangers inherent in the current imbalances in the US economy. This view was reflected more recently in an article by another leading economist who expressed concerns about how the adjustment process could involve a serious US recession.[10]

The possibilities for unwinding the current US imbalances involve a combination of the following changes:

- Export led growth could help reduce the external imbalance while stimulating domestic recovery.
- A reversal of the fall in domestic savings, through reducing demand for imports, could also reduce the external imbalance.
- A substantial tightening of US fiscal policy could also increase domestic savings.
- A major change in the external value of the dollar, through increasing US competitiveness, could help reduce imports and increase exports.

While the recession in the high-technology sector explains some of the slowdown in the US manufacturing sector, the sector as a whole is also suffering seriously from the dollar's strength. Until there is a major change in the external value of the dollar it is hard to see external demand, through increased exports, driving a US recovery and redressing the imbalances in external payments. Specifically, given the slowdown in the world economy, the rest of the world will not increase its demand for relatively expensive US goods and services next year.

The US personal sector savings ratio is at an historic low. The rapid rise in household wealth, consequent on the favourable stock market developments of the last decade, has contributed to this trend. This has meant that in recent years the household sector has felt increasingly wealthy as their equity portfolios increased in value and they have spent some of this capital gain on goods and services. However, the reversal in the rise in the stock market has changed the environment for households. Their financial wealth has actually fallen over the past year; their indebtedness relative to their income is exceptionally high; and the increased economic uncertainty is also raising doubts about the sustainability of the current level of consumption.

At some stage US consumers will find that their situation is unsustainable. Even if consumers remain unconcerned banks should be becoming increasingly worried about the security of their loans. Whatever the trigger mechanism, it seems likely that there will be a downward adjustment in US consumption, reflected in a rise in personal savings. Whenever this occurs there will be a significant further negative impact on firms supplying goods and services to US consumers. This will serve to reduce imports. In so far as these companies are American it will also adversely affect corporate profits.

The US company sector in recent years has maintained a rapid growth in investment. In turn, the high level of investment has allowed the economy to grow very rapidly. However, rising profits only funded part of this investment and the sector had a continuing need to acquire funds. The buoyancy in equity markets made this a cheap and easy task. However, with the downturn in prospects for the US economy, there has been a reduction in investment and, as a result, in funding needs of the company sector. Profitability has also fallen dramatically. Overall these changes should see a reduction in the claims of the US company sector on savings and should contribute in the short term to an improvement in the balance of payments. However, the reduction in investment will also reduce the future growth potential of the US economy with negative long-term consequences for the balance of payments.

The rising US public sector surplus has to some extent offset the shortfall in domestic savings by the private sector. However, the current administration

[10] Blanchard, O., 2001, "La Récession Américaine", *Liberation*, 12-2-2001.

plans to use the surplus to undertake substantial tax cuts in coming years. A slowdown in domestic activity will, in any event, reduce the surplus. However, major tax cuts will tend to reduce domestic savings with consequential negative implications for the balance of payments. If consumers use tax cuts to maintain or increase levels of consumption this will postpone the necessary long-term adjustment on the current account of the balance of payments. It would have been preferable if the US had run a tighter fiscal policy last year to make up for the shortfall in domestic savings. While a tighter fiscal policy today would help promote a more rapid adjustment in the balance of payments, it would seem undesirable at a time when the US economy is already slowing. Instead, the adjustment in the economy is best achieved through the other mechanisms discussed here.

Ultimately the most likely and most satisfactory way that the US economy will be brought back into balance will be through a readjustment in the external value of the dollar. How that occurs and how rapidly it takes place is of considerable importance to both the US and the rest of the world.

As a result of the internal imbalances, a slow-down in the US economy was inevitable at some stage in the medium term. The question now is whether the deficit will decline to a long-run sustainable level without major disruption of the real economy. The prospect of slower growth rates than in the second half of the 1990s must make the US look less attractive in absolute terms for investors, although US investments could still appear more attractive than investments elsewhere. In the *Benchmark* forecast we have assumed that there is some adjustment downwards in the value of the dollar over the next two years and that this is associated with an increase in the personal savings ratio in the US. This scenario assumes that the US economy adjusts slowly to redress its internal imbalances and that there is no major disruption to economic activity. The fall in the dollar's value restores US competitiveness and in the medium term the demand for US goods rises as a result.

We also consider a more unsatisfactory form of adjustment. In this case we assume that there is a sudden loss of faith in the sustainability of the US growth path and that this is reflected in a reduction in inflows into the US to invest in US firms. In turn, the price of US equities falls by a substantial amount, further reducing the value of US households' financial wealth. The resulting uncertainty could see a substantial fall in US consumption and a related rise in personal savings. Under these circumstances, with rising costs of capital, there would be a fall-off in investment. This reduction in domestic demand would see a reduction in the US savings imbalance and a reduction in the balance of payments deficit. Over time, the improvement in US competitiveness would result in increased demand from abroad helping to produce a return to growth in the US and further adjustment in imbalances (see Chapter 5).

This sharp slowdown, if it were to occur, would pose difficult questions for the US Federal Reserve. A loss of faith in US assets would tend to raise long-term interest rates in the US. A major fall in the dollar, other things being equal, would tend to increase the US inflation rate. How would the US Federal Reserve react? Here we assume that they attach a higher weight to stabilising demand and a lower weight to minimising inflation than does the European Central Bank (ECB). Under these circumstances we have assumed that the Federal Reserve operate a more permissive monetary policy, holding interest rates down and allowing a possible rise in the rate of inflation. Such a policy would reduce the danger of a prolonged US slowdown.

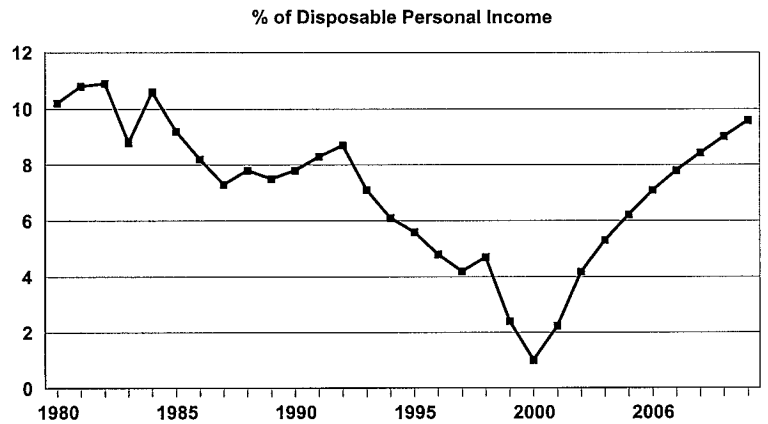
At the time of writing the last *Medium-Term Review* there were no signs of the US expansion slowing down. The economy expanded by 4.2 per cent in 1999 and by a remarkable 5 per cent in 2000. However, towards the end of 2000, the rapid growth rate slowed sharply. Growth rates in the short term will be much lower than the potential growth rate of the US economy and the growth rates achieved in the late 1990s. Real GDP is forecast to increase by

1.7 per cent this year, the lowest level in a decade. An annual average rate of 3 per cent is forecast between 2000 and 2005, increasing to an annual average of 3.2 per cent between 2005 and 2010.

The expansion of the 1990s is reflected in the labour market, where the unemployment rate fell to an annual average of 4 per cent in 2000. Given the forecast for lower growth, the unemployment rate in 2000 is expected to represent the lowest rate for the medium term. Indeed, the unemployment rate is expected to increase to an average of 5 per cent by 2002. However, this rate of increase in the unemployment rate will not continue and between 2000 and 2005 the rate is expected to average 5 per cent, increasing to an annual average of 5.4 per cent between 2005 and 2010.

Much attention has been focused on the personal savings ratio (personal savings expressed as a percentage of personal disposable income) which has fallen steadily since 1992, when it averaged 8.7 per cent. Contributing to the decline have been large gains in household wealth, income growth and high consumer confidence levels. While the personal savings ratio may deteriorate marginally again in 2001, the more uncertain outlook for the US economy is expected to result in a gradual improvement, with the ratio reaching over 6 per cent in 2005 and 9.6 per cent by 2010.

Figure 3.5: US Personal Savings Ratio



Source: Bureau of Economic Analysis, National Income and Products Accounts Table 5.1, to 2001. 2002-2010 Benchmark forecast.

A feature of the expansion of the 1990s was the fact that inflation remained low, at a time when the unemployment rate declined. Given our forecast that the dollar will depreciate rather than remain at current levels, inflation, as measured by the consumer expenditure deflator, is expected to increase. Between 2000 and 2005 the US consumer expenditure deflator is expected to average 2.4 per cent. A marginal decline to an annual average of 2.3 per cent is forecast between 2005 and 2010.

Throughout much of the 1990s the US Federal Reserve sought to operate monetary policy in a "pre-emptive" manner. Indeed, for much of the time this policy was successful and succeeded in avoiding a downturn in the economy in 1995 and subsequently during the financial crises of 1997/98. However, despite the emerging imbalances in the US economy during the late 1990s the Federal Reserve did not act to overcome these, despite some acknowledgement of their existence.[11] Evidence that the US economy was

[11] Alan Greenspan, Chairman of the Federal Reserve, spoke of "irrational exuberance" in equity markets in December 1996. In a separate speech the same month he acknowledged that "for relatively short periods of time we can finance part of domestic investment in plant and equipment with foreign savings as we are doing to-day. History, however, tells us there is a limit to how far that can go."

slowing in the latter half of 2000 was not acted upon until early 2001. Since then official interest rates have been cut sharply, taking official interest rates from 6.5 per cent to 3.5 per cent. On the assumption, outlined above, that growth in the US recovers over the forecast period, official interest rates are forecast to increase to 4.6 per cent on an annual average basis between 2000 and 2005 and 5.1 per cent between 2005 and 2010. These rates are still well below the peak of 6.5 per cent that was in place during much of 2000.

The current account provides a measure of the difference between a country's saving and its investment. If investment is higher than savings, resources must come from abroad – leading to a current account deficit. A persistent current account deficit implies an increasing indebtedness to foreigners. Since 1995, there has been a fairly steady deterioration in this balance (see Figure 3.4). The moderation in economic activity is expected to bring about some reduction in the size of this deficit, although the pace of this will be slow. The US current account deficit is expected to average 3.3 per cent of GDP between 2000 and 2005. Some further improvement is expected between 2005 and 2010 when the annual average is expected to decline to 2.3 per cent of GDP.

Although the growing current account deficit would imply a need for some depreciation in the value of the dollar, a feature of the American economy in recent years has been the strength of the dollar. This is contrary to the expectation that the launch of the euro would result in some weakening of the dollar. To date the tendency has been for the dollar to remain strong against the euro, despite converging interest rates and a disimproving US economic performance.[12] Based on interest rate movements and the changing pattern of world growth, some appreciation of the euro against the dollar is anticipated over the forecast period. In 2001 the exchange rate is expected to average 1.14 euro per dollar. We anticipate that the current high value of the dollar does not continue and that in 2002 the euro per dollar depreciates by around 11 per cent to an annual average of 1.01 dollar. On this basis, an annual average exchange rate of 1.05 euro per dollar is assumed between 2000 and 2005, depreciating to an annual average of 1.01 euro per dollar between 2005 and 2010. Over the forecast period the dollar/sterling exchange rate is expected to decrease from an average rate of $1.51 per pound in 2000, to $1.48 in 2001 and $1.46 per pound in 2010.

Table 3.4: Forecasts for the US Economy

	2000	2001	2002	2003	2004	2005	2006	2007	2000-2005	2005-2010
Real GDP Growth	5.00	1.70	2.40	2.20	3.10	3.20	3.20	3.20	3.00	3.20
Inflation*	2.40	2.10	1.70	2.40	2.60	3.00	2.70	2.30	2.40	2.30
Unemployment, Percentage of Labour Force	4.00	4.50	5.00	5.60	5.50	5.40	5.40	5.50	5.00	5.40
Exchange Rate, euro per dollar	1.09	1.14	1.01	1.01	1.01	1.01	1.01	1.01	1.05	1.01
Short-term interest rate	6.50	4.20	3.80	3.70	4.40	5.00	5.10	5.10	4.60	5.10

* Consumer Expenditure Deflator

THE EURO AREA ECONOMY

The performance of the Euro area economy had improved up to the end of last year following poor rates of growth over much of the 1990s. In 2000 the Euro area enjoyed its highest rate of GDP growth for almost a decade, growing by 3.4 per cent. The turnaround in fortune was largely due to a pick up in domestic demand. Consumer spending grew at a healthy pace with

[12] For an overview of what is driving the euro/dollar exchange rate see IMF *World Economic Outlook* May 2001, pp. 66-75 and McCoy *et al.*, *Quarterly Economic Commentary*, December 2000, Dublin: The Economic and Social Research Institute, pp.11-12.

confidence supported by improved labour market conditions. The Euro area economy has also benefited from strong external demand. In addition, the prolonged weakness of the euro has allowed European exporters to maintain a competitive position in export markets. In total exports rose by 11.7 per cent in 2000 providing a positive stimulus from net trade to economic growth. However, with imports growing by 10.4 per cent in 2000 domestic demand rather than net trade has provided the main engine of economic growth within the Euro area.

The outlook for the Euro area economy is broadly favourable over the medium term. However, the outlook for 2001 and 2002 is far below trend GDP growth as the Euro area experiences a sharp slowdown in export growth due to the forecast adjustment in exchange rates. Export growth is expected to improve thereafter to average 6.7 per cent between 2000 and 2005. Continued employment and earnings growth should sustain the growth of consumer spending. Some easing of monetary policy will partly compensate for the effects of the world slowdown on domestic demand. GDP is forecast to grow by 2.1 per cent in 2001. The negative impact on competitiveness from the forecast appreciation of the euro will reduce growth to 1.1 per cent in 2002 before improving to produce an average of 2.5 per cent between 2000 to 2005. Thereafter, a marginal increase is expected, with GDP growth forecast to average 2.7 per cent between 2005 and 2010.

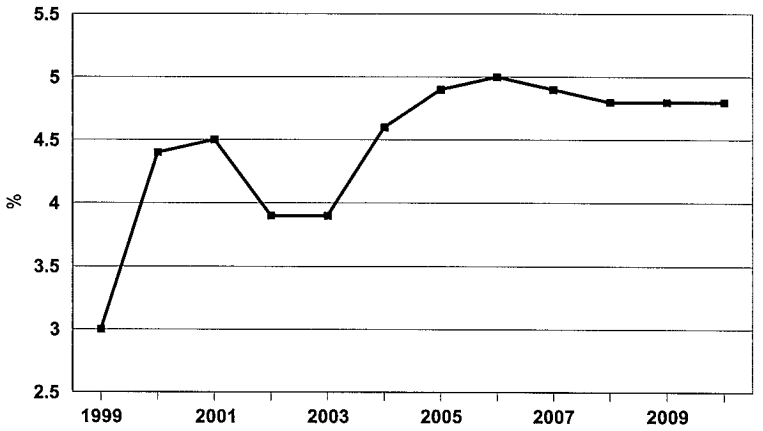
The expansion of the Euro area economy contributed to an improvement in labour market conditions between 1997 and 2000. Employment growth in recent years has resulted in the unemployment rate for the Euro area falling from 11.7 per cent in 1997 to 8.9 per cent in 2000. Various wage agreements throughout the Euro area have limited the scope for wages to respond to inflationary pressures, while productivity growth has helped in limiting the increase of unit labour costs. The improvement in labour market conditions is also in some part due to continuing labour market reforms throughout the Euro area. The trend in the Euro area economies in recent years has been towards structural reform of labour markets so as to bring greater flexibility and increased employment growth. Additional reform of labour markets should contribute to further reductions in the level of unemployment in the Euro area. Looking forward, unemployment rates are forecast to decline less rapidly than in recent years due to the slower rate of economic expansion. The Euro area unemployment rate is expected to average 8.7 per cent between 2000 and 2005 before decreasing to an annual average of 8.2 per cent between 2005 and 2010.

Since the launch of Economic and Monetary Union (EMU) in the beginning of 1999, monetary policy has been conducted by the European Central Bank (ECB). The primary role of the ECB is to maintain price stability. Secondary, and without prejudice to ensuring price stability, the ECB is required to support the general economic policies in the Community, including sustainable and non-inflationary growth. Decisions on monetary policy are made against the background of a 4.5 per cent reference value for the growth of the M3 measure of broad money supply and also a target headline inflation rate of 2 per cent.[13]

Since taking control of monetary policy the ECB has maintained a relatively tight monetary stance, although rates are still well below levels experienced after German reunification. Interest rates are expected to fall in 2002 as monetary policy is eased to offset the slowdown in economic activity and inflation is lower following the appreciation of the euro. Official interest rates are forecast to increase until 2005 and thereafter are expected to average 4.9 per cent between 2005 and 2010.

[13] For an overview of ECB policy see Duffy *et al.*, 2000, *Quarterly Economic Commentary*, Dublin: The Economic and Social Research Institute, March.

Figure 3.6: Euro area Short-term Interest Rates



An unexpected feature of Economic and Monetary Union (EMU) has been the pronounced weakness of the euro. Since its inception the euro has depreciated significantly against not only the dollar but also sterling and the yen. With an initial value of $1.17 the euro fell to a low of $0.83 in October 2000. The driving force behind the depreciation of the euro has been continuing outward flow of capital funds from the Euro area to the US. These flows have been driven by the perception of greater prospects for growth and profits within the US relative to the Euro area. However, with both interest rates and output growth in the Euro area and US converging since the launch of the euro, economic fundamentals suggest that the euro has been undervalued. Greater returns within the Euro area should have attracted inward capital flow supporting the euro. Indeed, although portfolio equity capital flowed out of the Euro area, on balance European equity markets actually outperformed their US counterparts over the past few years. The imbalances in the US suggest that the possibility of a sharp appreciation of the euro is becoming more likely. Looking forward, it is expected that the euro will appreciate to average close to parity in 2002 and maintain parity thereafter throughout the forecast period. This sharp appreciation in 2002 will bring about a loss of competitiveness for the euro area as a whole, resulting in slowing export growth. The implications for Ireland of a much larger appreciation of the euro as the result of a possible severe downturn in the US economy is considered in Chapter 5.

Table 3.5: Forecasts for the Euro area Economy

	2000	2001	2002	2003	2004	2005	2006	2007	2000-2005	2005-2010
Real GDP Growth	3.4	2.1	1.1	2.7	3.1	2.9	2.7	2.7	2.9	2.8
Inflation*	2.1	2.4	1.3	0.9	1.0	1.0	1.1	1.3	1.5	1.4
Unemployment Rate, Percentage of Labour Force	8.9	8.4	8.3	8.2	8.0	7.9	7.9	8.0	8.3	7.6
Short-term interest rate	4.4	4.5	3.9	3.9	4.6	4.9	5.0	4.9	4.4	4.9

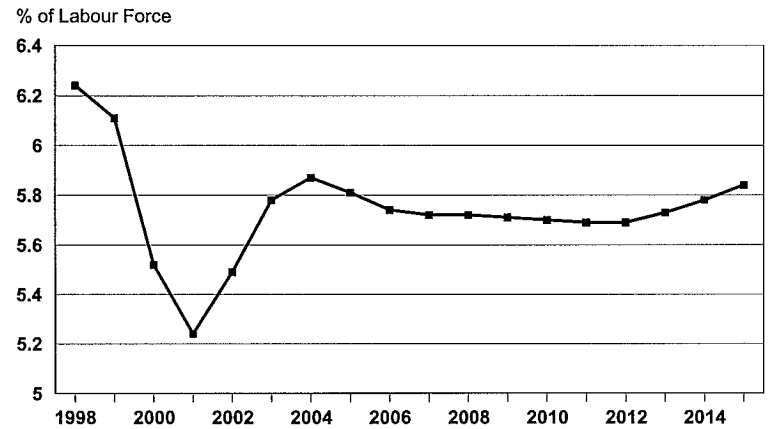
* Consumer Expenditure Deflator

UK

Events in the UK remain important for Ireland. Despite the fact that sterling has been strong on international current markets since 1997 the UK economy has performed well, growing by 3 per cent in 2000, underpinned by rapid increases in consumer expenditure. Over the forecast period GDP growth is expected to average 2.7 per cent, implying a continuing steady performance from the UK economy. The economy is expected to benefit from our forecast adjustment in exchange rates, which will see the UK gain in competitiveness.

The strength of the UK economy has had a substantial impact on the unemployment rate. This has fallen to an annual average of 5.5 per cent in 2000. Given indications that employment growth is slowing it seems unlikely that there will be further substantial falls in the unemployment rate. An annual rate of 5.2 per cent is forecast for 2001. Some slowdown in the overall rate of economic activity is expected to result in an increase in the unemployment rate in 2002. However, this is unlikely to be dramatic and the unemployment rate is anticipated to remain between 2000 and 2005 at an annual average rate of 5.6 per cent. A marginal increase to an annual average of 5.7 per cent is forecast for 2005 to 2010.

Figure 3.7: UK Unemployment Rate



Although Ireland is now a member of the euro, the performance of sterling on foreign exchange markets continues to be a significant determinant of our competitiveness and our inflation rate. A sharp appreciation of sterling occurred in 1997 and the currency has remained strong on the financial markets ever since. This appreciation has been primarily against the euro, as sterling has remained broadly stable against the US dollar. A number of reasons have been cited for this appreciation. These include monetary and fiscal policy, changes in financial portfolio allocation in the lead up to EMU, a rise in oil prices, a shift in demand for UK tradable goods and services and higher productivity in the production of tradable goods and services.[14] Between July 1996 and January 2000 the effective exchange rate has risen by 26.7 per cent. The widely held view is that the UK currency is currently overvalued, although estimates of the extent of the overvaluation have ranged between 14 and 25 per cent.[15]

Following the success of the Labour party in the recent general election, one of the main influences on sterling in the medium term will be speculation about entry of the UK to EMU. This is not an easy subject. There is also the issue of the appropriate entry rate, a somewhat sensitive issue, given sterling's exit from the ERM in 1992. Despite the speculation that followed the general election, it does not appear as if EMU membership is an immediate priority and for this *Review* it is assumed that the UK does not join

[14] For example, see Bank of England *Inflation Report,* February and May 1997.

[15] Alberola, E.S., G. Cervero, H. Lopez and A. Ubide, 1999, "Global Equilibrium Exchange Rates: Euro, Dollar, 'Ins', 'Outs' and other Major Currencies in a Panel Cointegration Framework", IMF Working Paper WP/99/175, December; or S.B. Wadhwani, 1999, "Currency Puzzles", Speech delivered at the London School of Economics, September.

EMU.[16] Post-election speculation of a referendum on the euro led to sterling weakening on international exchanges. It seems likely that sterling will remain vulnerable to such speculation and rumour.

The Monetary Policy Committee (MPC) of the Bank of England are responsible for setting interest rates in the UK with a view to an inflation target (excluding mortgage interest payments) of 2.5 per cent. Short-term interest rates are expected to average 5.4 per cent per annum over the decade. UK inflation, as measured by the consumer expenditure deflator, is expected to remain low over the forecast period, although some increase is expected. Inflation is forecast at an annual average of 1.8 per cent between 2000 and 2005, before increasing to an annual average of 2.5 per cent between 2005 and 2010.

Table 3.6: Forecasts for the UK Economy

	2000	2001	2002	2003	2004	2005	2006	2007	2000-2005	2005-2010
Real GDP Growth	3.1	2.1	2.4	2.8	2.9	2.7	2.6	2.7	2.7	2.7
Inflation*	2.4	1.6	0.8	1.4	1.5	2.0	2.6	2.6	1.8	2.5
Unemployment rate	5.5	5.2	5.5	5.8	5.9	5.8	5.7	5.7	5.6	5.7
Short-term interest rate	6.1	5.2	5.0	5.1	5.4	5.5	5.5	5.4	5.4	5.4

* Consumer Expenditure Deflator

THE CONTEXT FOR IRELAND

The latter half of the 1990s saw the Irish economy experience exceptionally strong rates of growth. This growth has exceeded that of many other economies and has occurred at a time when growth in many European economies was under-performing. This does not mean that Ireland is immune to events in the international economic environment. Membership of the European Union has been one of the factors contributing to the success of the Irish economy. Any uncertainties surrounding Ireland's position in the EU could prove damaging to the medium-term prospects for the economy.

Despite our historic links with the UK changes that have occurred in the Irish economy now mean that Ireland is more exposed to events in the US economy. A severe and sharp downturn in US economic performance would reduce Irish growth. Furthermore, Ireland now faces sterling volatility in the face of uncertainty regarding UK entry to EMU. A sudden fall in the value of sterling back to the equivalent of parity with the Irish pound could also affect Irish growth.[17] Since shortly after the launch of EMU Ireland has enjoyed a very favourable exchange rate against the UK currency, averaging 84 pence sterling in 1999 and 77 pence sterling in 2000. Appreciation of the euro will mean that this boost to competitiveness will not be present in the future.

Overall, the international environment is more uncertain, with a less positive outlook than at the time of the last *Medium-Term Review*. The slowdown in Europe means that Ireland is likely to once again benefit from a low interest rate environment. However, consumer uncertainty about the future means that this is unlikely to fuel the spending and borrowing boom in the US or Ireland that was seen in the latter years of the 1990s. Based on the performance of the euro, the equivalent Irish pound/sterling exchange rate is expected to average 0.83 pence in 2002 and 0.852 pence in 2005. Against the dollar we are likely to see the Irish pound average 1.265 in 2002 and 1.259 in 2005.

[16] The options facing the UK with regard to the euro are discussed in the National Institute *Economic Review*, No. 177, July 2001 pp.6-7.

[17] Duffy, D., J. Fitz Gerald and D. Smyth, 2000, "Ireland's Exposure to a Sterling Shock", Dublin: The Economic and Social Research Institute, Working Paper No. 135, December.

4. THE BENCHMARK FORECAST

4.1 Introduction

In this chapter we set out in detail the *Benchmark* forecast for the Irish economy to 2007. While this is our view of the most likely path the economy will follow in the medium term, it is probably unduly optimistic about the short term, being based on the forecasts prepared earlier in the summer. Because of the uncertainties, in particular about the short term, we also consider a number of different scenarios in Chapter 5. As outlined in the Introduction, we have not attempted to consider the implications of the appalling events of 11th September.

The Irish economy has the potential to grow more rapidly than its EU neighbours for the rest of the decade, albeit at a much slower rate than the exceptional growth rates witnessed in recent years. In the *Benchmark* forecast the economy achieves such a "soft landing", with growth rates gradually slowing over the decade.

Given the structural imbalances in the US economy, we expect an appreciation of the euro to parity with the dollar next year, as discussed in Chapter 3. This exchange rate appreciation, together with a temporary deterioration in the external environment will slow growth below potential until 2005. However, this forecast must be seen as moderately optimistic over the short term as there is now a real danger that the current difficulties in the US economy could lead to a temporary recession in world demand. Such an outcome would lead to much lower growth rates over the short term. This alternative scenario is explored in detail in Chapter 5.

The *Benchmark* forecast is discussed in depth in Sections 4.2 through to 4.9. The forecast describes a relatively optimistic scenario, with sustained economic growth over the medium term averaging 4.8 per cent between 2000 and 2005, before slowing slightly to 4.3 per cent per annum to 2010. Beyond the medium term, we foresee a gradual winding down to an estimated long-run potential growth rate of just under 3 per cent per annum beyond 2010. This growth scenario should facilitate a continuation of the recent convergence towards average standards of living in the EU.

In this chapter, we present detailed annual forecasts out to 2007, together with indicative forecasts out to 2015. Our forecasts are based on the *National Income and Expenditure (NIE) 1999* accounts together with the July *Quarterly Economic Commentary* forecasts for 2001 and 2002. The ESRI's medium-term macroeconomic model, HERMES, was used to produce the majority of the forecasts, although we also availed of information and forecasts contained in the ESRI's *Quarterly Economic Commentary.*[1]

Section 4.2 summarises our forecasts for the key macroeconomic aggregates. The assumptions underlying these forecasts in relation to the public finances and labour supply are outlined in Sections 4.3 and 4.4 respectively. Section 4.5 looks at the crucial supply side of the economy, the driving force behind the growth process. Given the supply side, we then move on to look at incomes, expenditure and prices in Section 4.6, clearly of importance in terms of the likely future implications of growth for living standards. Section 4.7 then

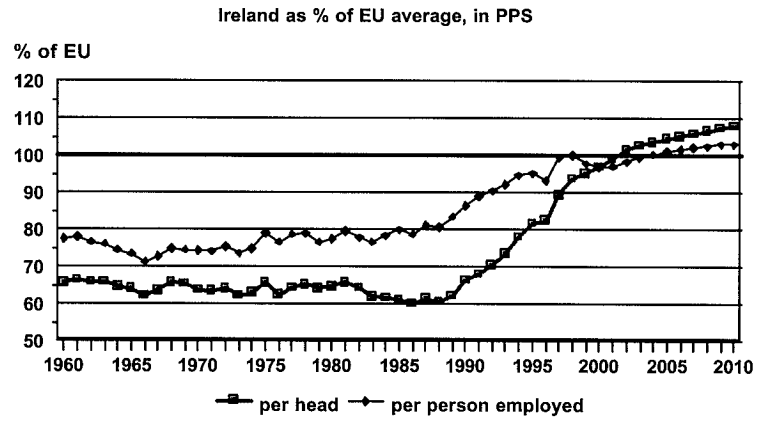
[1] McCoy, D. *et al.*, 2001, *Quarterly Economic Commentary*, July, Dublin: The Economic and Social Research Institute.

considers the labour market with forecasts for employment and unemployment. Section 4.8 discusses the balance of payments and the public finances. The likely implications of our forecast for the housing market and for the environment and the demand for energy are analysed in Section 4.9 before our overall conclusions are reached in Section 4.10. Finally, the track record of previous editions of the *Review* is analysed in the Appendix.

4.2 Overview

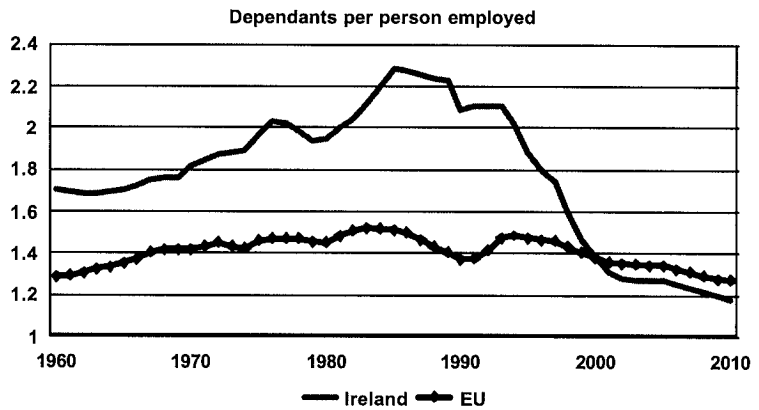
As discussed in Chapter 2, Irish per capita output levels converged rapidly on the EU average in the 1990s. In the *Benchmark* forecast we expect output growth rates to continue to exceed those of the EU out to 2010, with GNP per capita 8 per cent above the EU average by 2010 as shown in Figure 4.1.

Figure 4.1: Relative GNP



In Chapter 2, we used a relatively simple decomposition of this convergence in *per capita* GNP levels in terms of two separate factors: convergence in productivity levels and convergence in the economic dependency ratio, defined as the ratio of economically active to the economically inactive. Over the forecast period we envisage a continuation of rising productivity levels (GNP per person employed) slowing from an average growth rate of 2.7 per cent per annum in 2000-2005 to 2.5 per cent in 2005-2010. This implies that GDP per worker will also be higher than the EU average towards the end of the next decade (Figure 4.1).

Figure 4.2: Economic Dependency

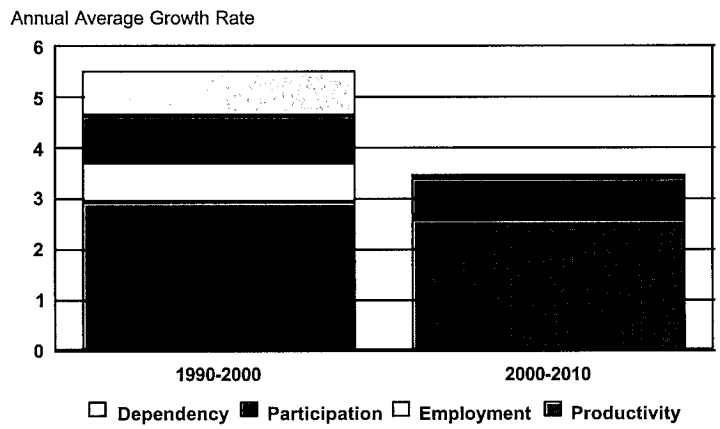


As can be seen from Figure 4.1, and in contrast with the experience of the last forty years, relative income per head will marginally exceed relative productivity. This is because we expect the Irish economic dependency ratio to

fall below EU levels over the next decade (see Figure 4.2). In the 1980s economic dependency rates in Ireland far exceeded the EU average through a combination of high unemployment, low female participation rates, and a high proportion of children. The factors which drove down the economic dependency rate rapidly in the 1990s – rising employment, rising participation rates and a fall in youth dependency – are likely to plateau over the next decade. However we envisage further limited increases in female participation out to 2010 sufficient to drive the Irish economic dependency rate below the EU average.

Figure 4.3 illustrates the much more limited contribution from these special factors to the forecast growth in GNP in the next decade. Average productivity growth is forecast to decline slightly as high-technology industries mature and the economy continues to become more services intensive. However, the main reason for the forecast decline from the exceptional growth rates recorded in the 1990s is that the scope for further reductions in economic dependency are limited. The economy is now operating at, or close to, full employment and participation rates are now close to the EU average. This means that for the forecast period underlying productivity will be the key determinant of the potential growth rate, while further increases in (female) labour force participation will add 0.7 per cent to the growth in GNP per capita.

Figure 4.3: Decomposition of GNP Per Capita Growth Rate



While on a GNP per capita basis Ireland is forecast to exceed the EU average by 2010, this does not translate directly into higher living standards in Ireland. The investment to GNP ratio for Ireland is expected to average at least 28 per cent over this decade as we remedy infrastructure deficiencies, while the EU average is around 20 per cent of GDP. This means that we are using eight percentage points of GNP to remedy our wealth deficiency – all of the excess of GNP per capita over the EU average. This would suggest that until the infrastructure is put in place we will, in terms of what we consume, be on a similar standard of living to the rest of the EU. It is only when we have accumulated sufficient infrastructure that we will be able to enjoy our higher income.

We envisage that GNP growth will slow over the decade to an annual average growth rate of 4.8 per cent between 2000 and 2005, falling to 4.3 per cent per annum thereafter to 2010, and to 2.8 per cent in the period 2010-2015 (see Table 4.1). With the growth rate in potential output being around 5 per cent between 2000 and 2005, this forecast incorporates a period of below trend growth out to 2005. This temporary reduction in the growth rate below potential is due to less favourable external conditions and the expected sharp appreciation of the exchange rate as outlined in Chapter 3.

A more appropriate measure of changes in a country's overall level of income is Gross National Disposable Income (GNDI),[2] which is equal to GNP adjusted for the terms of trade plus transfers. In recent years, GNDI growth has fallen short of that for GNP mainly because of unfavourable movements in the terms of trade.[3] Over the forecast period, this gap is likely to persist, as current transfers from the EU decline and Ireland becomes a net contributor to the EU.

The current structure of the Irish economy is relatively unusual. Both in employment and output terms it is more heavily concentrated in industry than is typical for our main trading partners. Because of the importance of foreign multinationals in the manufacturing sector, their profit repatriations have grown rapidly, resulting in the ever-widening gap between GDP and GNP. A key element of our forecast over the next decade and a half is that as the economy matures, it will gradually shift out of manufacturing activities into high-productivity services, in particular internationally traded services. This, in turn, should stabilise the gap between GNP and GDP.

In the 1990s labour's share of value added fell as profitability and competitiveness improved. The main benefits of growth came in increased employment. Between 1995-2000 employment is estimated to have grown by an average of 4.9 per cent. Over the next decade and a half there should be a slowdown in the rate of employment growth, a stabilisation of labour share and a gradual loss of competitiveness (increase in the real exchange rate). The benefits of growth will increasingly be taken in the form of rising real wages. We forecast that the after tax real wage will rise by 4 per cent per annum in between 2000 and 2005, higher than the growth rates of the past 25 years.

One of the most noteworthy features of Irish growth in the 1990s, was the ability to keep inflation levels low and under control. The annual rate of increase in the consumption deflator between 1990 and 1995 was at 2.7 per cent, well down on the levels reached in the 1980s. This increased to 3.6 per cent in the 1995-2000 period, and is forecast to increase to 3.9 per cent per annum between 2000 and 2005 given the tight labour market. Forecasts to 2015 envisage inflation, defined in terms of the consumers' expenditure deflator, remaining at a level of 3.2 per cent on average per annum.

The huge reduction in unemployment in the 1990s is particularly impressive in the light of the significant growth in the size of the labour force. The rate of unemployment fell to 4.3 per cent on an ILO basis in 2000, compared with 12.2 per cent in 1995. Over the next few years we expect that the rate of unemployment will rise moderately to reach 5.8 per cent in 2005 as the economy grows below trend. This will decline thereafter, as growth rates recover, to reach 4.0 per cent in 2010, roughly full employment. Employment growth is expected to be less rapid over the next decade as compared with the 1990s, with numbers employed forecast to rise by 2.0 per cent per annum between 2000 and 2005, and by 1.8 per cent annually thereafter to 2010.

The public finances have been improving now for a number of years as the benefits of buoyant economic growth and sustained prosperity begin to bear fruit. In the light of our forecasts for continued high growth in both output and employment, this overall "strengthening" in exchequer finances should continue in the future. It would seem that the government will have the opportunity over the next decade or so to repay the national debt, while simultaneously investing large amounts in our physical infrastructure. Above all, if the country acts wisely and prudently, living standards and wealth levels could rise above the EU average by the end of the next decade.

[2] As explained in Chapter 2.

[3] The terms of trade measure the purchasing power of exports in terms of imports, i.e. how many imports a unit of exports can purchase.

Table 4.1: Benchmark Forecast, Growth in Major Aggregates

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
	Per Cent								Annual Average % Growth				
GNP	9.9	6.0	5.4	4.4	4.0	4.0	4.4	4.3	4.5	8.4	4.8	4.3	2.8
GNDI (incl. Capital Transfers)	6.6	4.7	5.4	3.0	3.2	2.7	3.8	3.6	3.5	7.6	3.8	3.6	2.5
Consumption Deflator	5.8	4.8	3.9	3.8	3.5	3.3	3.3	3.3	2.7	3.6	3.9	3.2	3.2
Employment, April	4.8	4.3	2.2	1.2	1.0	1.4	1.7	1.8	1.9	4.9	2.0	1.8	0.7
Real After Tax Non-Agricultural Wage	2.1	5.2	5.8	4.2	2.8	2.1	2.3	2.5	1.6	1.8	4.0	2.5	2.4
	Per Cent of GNP								1990	1995	2000	2005	2010
Balance of Payments	-0.7	-0.9	-1.7	-1.5	-1.0	-0.8	-1.1	-1.4	-2.1	3.2	-0.7	-0.8	-1.5
Debt – GNP Ratio	42.1	34.5	29.0	24.3	20.9	18.3	15.7	13.2	100.0	83.5	42.1	18.3	6.8
General Government Balance	5.4	4.2	3.3	2.1	1.3	0.8	0.9	0.9	-2.5	-2.5	5.4	0.8	0.9
	Per Cent of Labour Force (ILO basis)								1990	1995	2000	2005	2010
Unemployment Rate	4.3	3.8	3.6	4.3	5.3	5.8	5.7	5.5	12.9	12.2	4.3	5.8	4.0

4.3 Underlying Assumptions on the Public Finances

In Chapter 6 we discuss the appropriate stance of fiscal policy over the coming decade. In preparing our forecast we have assumed a broadly "neutral" fiscal policy stance on the income side of the government accounts, with essentially indexation of tax rates and bands. This contrasts with most recent budgets where the stance of fiscal policy has been largely pro-cyclical (see Box 4.1). On the expenditure side we have assumed that there is a major increase in public investment in infrastructure over the planning period to 2006 and beyond, in line with the provisions of the *National Development Plan* (NDP). Overall, the public sector is assumed to run a surplus averaging around one percentage point of GNP over the course of the decade. This would amount to the annual contribution to the national pension fund. It would also provide room for unforeseen emergencies causing a sudden unexpected deterioration in the public finances.

The corporation tax rate is assumed to fall to 12.5 per cent by 2003. As discussed in Chapter 6, we assume that it rises from 12.5 per cent in 2010 to 17.5 per cent in 2015.

On the expenditure side full implementation of the increase in investment in the NDP is assumed, with further increases after 2006. The rates of personal transfers are assumed to be fully indexed to average wage rates. Adjustments are made for the changing demographic balance and for the forecast change in unemployment. Finally, national debt interest payments will gradually disappear over the coming decade, as the national debt is eventually repaid.

The increase in the volume of expenditure by public authorities on goods and services is expected to remain below the rate of growth of GNP – around 3.5 per cent a year from 2000 to 2005. This will still represent a considerable improvement in the quality of publicly provided services. Underlying this improvement in services is an assumed 3.1 per cent a year increase in employment in the non-market services sector. The decline in the numbers of children of school-going age will help relieve pressures on expenditure on education, allowing significant scope for targeted interventions, along the lines

recommended in the ESRI's *National Investment Priorities* report.[4] Because the changing demographics will reduce the pressures on educational services, it is expected that a substantial share of this increase in employment and expenditure will be used to improve the quality of the health services.

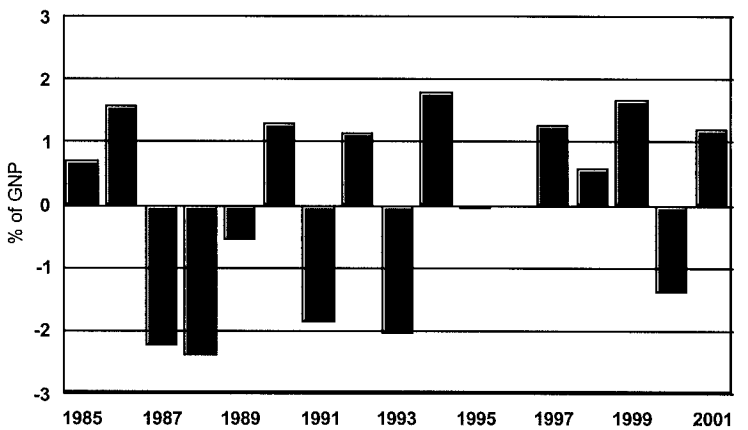
We have assumed that average pay rates rise more rapidly in the public sector than in the private sector over the next two years because of the delayed impact of the "benchmarking" provisions of the national agreement. However, a continuation into the medium term of current pressures in the public sector would fall outside the provisions assumed in the *Benchmark* forecast.

Box 4.1: Measuring Fiscal Stance in the 1990s

Figure 4.1 shows a measure of the short-term fiscal stance computed by simulating the ESRI macromodel. This measure compares the actual Exchequer Borrowing Requirement (EBR) in a given year with that which would have pertained in the absence of any budgetary changes in that year, an *indexed* EBR. This is not a comprehensive measure of overall fiscal stance; it measures the *change* in budgetary policy relative to the previous year but is silent on the *level* and, therefore, on the sustainability of successive budgets.

The indexed budget is computed assuming no change in average tax and expenditure rates from the previous year, and applying the actual growth rate to the revenue and cyclical expenditure base. The use of average tax and expenditure rates ensures full indexation of the tax and welfare system. The non-cyclical expenditure base grows at trend growth rate.[5] The concept underlying this indexed budget is that, in the absence of any policy changes, revenues and cyclical expenditure items will grow in line with actual output growth while non-cyclical expenditure items will grow in line with trend output growth. It is relatively straightforward to estimate an indexed budget outcome in some detail using the ESRI HERMES macroeconomic model. This includes a detailed series of relations describing public sector activity and its interaction with the rest of the economy.[6]

Figure 4.4: Difference Between Indexed and Actual EBR



[4] Fitz Gerald J., I. Kearney, E. Mogenroth and D. Smyth (eds.), 1999. *National Investment Priorities for the Period 2000-2006*, Policy Research Series, No. 33, Dublin: The Economic and Social Research Institute.

[5] In previous estimates in the last *Review*, there was no volume growth in non-cyclical expenditure which built in a deflationary bias to the indexed budget measure. This has now been corrected by using trend volume growth.

[6] Kearney I., *et al.*, 2000 "Assessing the Stance of Irish Fiscal Policy", in A. Barrett *et al.*, *Budget Perspectives*, September, gives full details on the derivation of an indexed budget using the HERMES model.

The difference between the indexed and actual EBR is an indicator of discretionary change in policy. A positive indicator suggests a loosening of fiscal stance. It can be seen that according to this measure the last five budgets, 1997-2001, with the exception of 2000, have all been expansionary in their impact, imparting a cumulative stimulus of over 3 percentage points of GNP to the economy. This would suggest that fiscal policy has been highly pro-cyclical in recent years. The estimated contractionary stance implied for Budget 2000 contrasts with estimates computed in July 2000 that Budget 2000 was stimulatory.[7] This is due to a higher inflation outcome than anticipated at the time of the Budget increasing the tax base in 2000. Tax reliefs, by contrast, were indexed to expected inflation.

Table 4.2: Cyclicality of Budgetary Policy

	GNP Annual Average Growth Rate	Cumulative Impact of Budgetary Policy (% of GNP)*
1987-89	3.26	-1.74
1990-96	5.23	0.03
1997-01	8.16	0.66

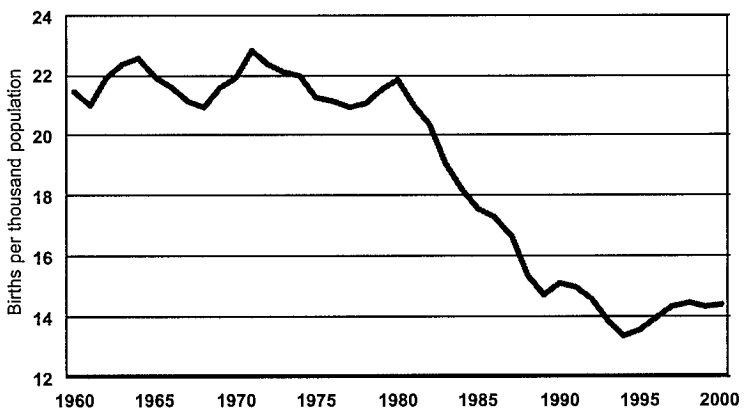
* Sum of Measured Fiscal Impulse Over Period.

Table 4.2 contrasts the cumulative impact of the fiscal stance with the annual average GNP growth rate since 1987. This suggests that during the period of fiscal consolidation 1987-89 fiscal policy was counter-cyclical while in the first part of the 1990s it was broadly neutral. Since the mid-1990s the fiscal stance has again been pro-cyclical. The slippage in terms of fiscal control has been masked by the historically high growth rates recorded in the late 1990s.

4.4 Labour Supply

For most of the past two hundred years the Irish economy has had a surplus of labour and its underperfomance has meant that this labour supply was not fully utilised at home. However, in recent years circumstances have changed and the economy has moved to full employment. As a result, in looking forward over the coming decade one of the two key factors that will determine the growth potential of the economy is the potential supply of labour.

Figure 4.5: Birth Rate

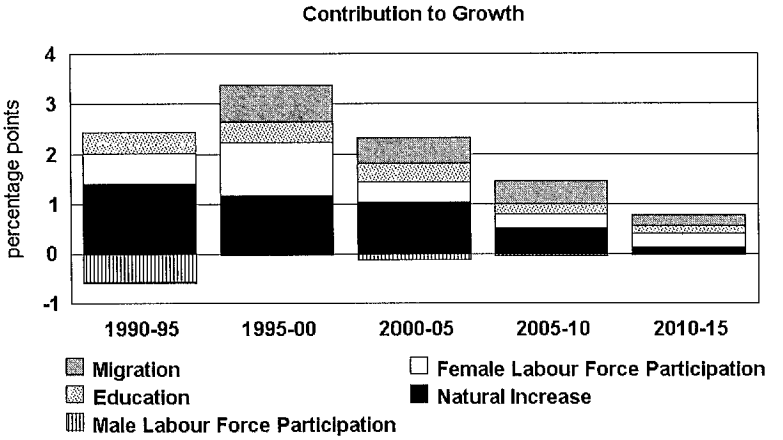


The birth rate remained high in Ireland in the 1970s long after it had fallen elsewhere. However, from 1980 onwards it fell steadily (Figure 4.5). This means that as the generation born after 1980 reaches adulthood there will be a steady decline in the potential inflow into the labour market (Figure 4.6 shows a breakdown of the expected contributions to labour supply). Thus, while the

[7] See Kearney I. *et al.*, 2000 *op. cit.* Dublin: The Economic and Social Research Institute.

high birth rate of the 1970s meant a big increase in labour supply in the 1990s, the falling birth rate of the 1980s will result in a steady decline in the natural increase in the labour force over the coming decade.

Figure 4.6: Decomposition of Growth in Labour Supply



The second major factor driving the growth in labour supply in the last decade has been the rapid rise in female labour force participation. Part of this has been caused by the rising educational attainment of the population and part of it has been due to cultural changes interacting with the changing structure of the economy. Female participation rates have always been higher for women with a good education. As an increasing proportion of the female population have completed their Leaving Certificate and, more recently, gone on to third level education, this has served to increase participation rates. Probably a third of the rise in rates over the last 20 years has arisen from this effect[8] and over the last decade it contributed just under 0.4 percentage points each year to the growth in female labour supply.

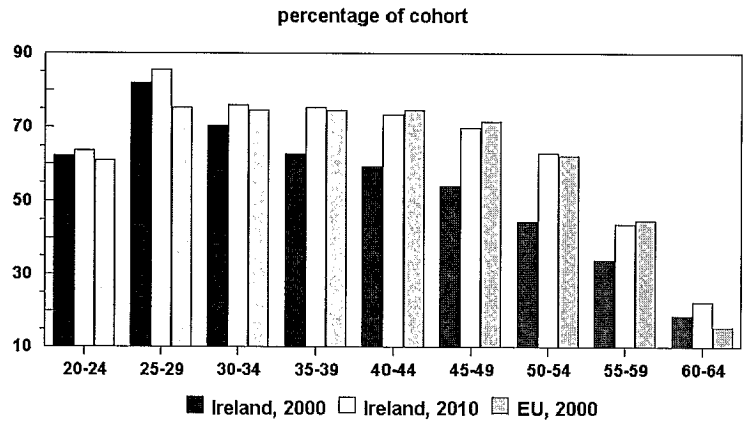
As shown in Figure 4.6, the rise in female participation over the 1990s, whatever the causes, was particularly rapid, contributing between one per cent and one and a half percentage points a year to the growth in labour supply (this includes the effect of education). Participation rates were already higher for younger women in 1990 so that by the end of the 1990s the rates for these groups had reached very high levels. For women in the 25 to 30 age groups, controlling for educational attainment, participation rates are now among the highest in the EU.

The rise in participation means that there are very much fewer women left out of the labour force. This helps explain why the elasticity of female labour supply – the response of supply to a change in wage rates – has fallen over the 1990s (See Box 4.2). It is only unskilled women (with a Junior Certificate level of education or less) who are still very responsive to changes in wage rates. While the economy benefited greatly from the ready supply of skilled female labour over the 1990s, over the coming decade the increase in female labour supply is likely to come predominantly from the unskilled (because the skilled are already working).

Looking to the next decade, the scope for further increases in female labour force participation are thus more limited because of the high rates already achieved in the younger age groups. As shown in Figure 4.7, over the next ten years we anticipate a limited further increase in participation rates among younger women. It is among the older cohorts that Irish rates remain low by EU standards and substantial further increases are projected in the coming years.

[8] Fahey, T., J. Fitz Gerald, and B. Maitre, 1998, "The Economic and Social Implications of Population Change", *Journal of the Statistical and Social Inquiry Society of Ireland* 1997/1998.

Figure 4.7: Female Labour Force Participation



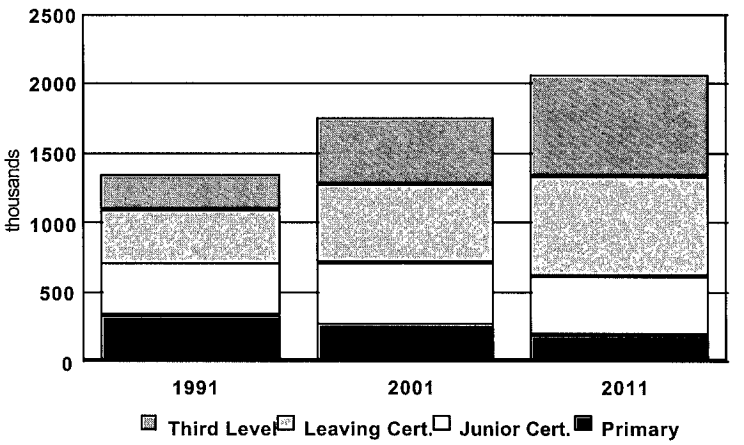
The final important contributor to the change in labour supply is migration. Throughout the 1980s bleak employment prospects in Ireland encouraged many people to emigrate. The majority of emigrants were young people, and many were highly educated leading to fears of a "brain drain". In the early 1990s employment conditions deteriorated elsewhere relative to Ireland, thus reducing potential earnings abroad. As a result, net migration was quite flat during the first half of the 1990s and had little impact on employment growth. Once the Irish economy started to boom, with increased employment and earnings, it became more attractive to work in Ireland than abroad and there was a net inflow of migrants, initially many of them returning emigrants. More recently around half of the gross inflow has been foreign nationals. Also, the majority of the migrants were skilled, and the implications of this were considered in Chapter 2.

This migration added about 0.75 percentage points per annum to the growth in labour supply between 1995 and 2000. This contribution will decline slightly in the coming years as increasing housing and congestion costs begin to constrain migration, resulting in an average contribution of 0.7 percentage points between 2000 and 2005. As the growth in the economy slows Ireland will become less attractive for immigrants into the future. We forecast net immigration will eventually decline to levels of about 5,000 by 2015, contributing no more than 0.2 percentage points a year to labour supply growth.

When taken together, these forecasts suggest that the growth in labour supply, which ran at 3.4 per cent a year over the period 1995-2000, will fall to 2.2 per cent a year in the current five years 2000-2005. It will fall further to 1.7 per cent a year in the second half of the decade and to around 0.7 per cent in the early years of the next decade. This slowing of the rate of increase in labour supply will play a key role in determining the potential growth rate of the economy in the coming decade.

The educational attainment of the labour force is shown in Figure 4.8. This shows that over the last decade there has been a substantial decline in the numbers with only primary education and these are set to decline further over the coming decade. The numbers with Junior Certificate level education actually rose slowly over the last decade but they will fall over the next ten years. The net increase in labour supply in the next ten years will all be people with at least a Leaving Certificate. However, as was the case over the last ten years, the biggest absolute and percentage increase will be in the supply of people with some form of third level education.

Figure 4.8: Educational Attainment of the Labour Force



This very rapid increase in the human capital of the labour force will sustain higher rates of productivity increase in Ireland compared to its neighbours for the coming decade. The benefits of such a rapid increase in the stock of human capital were felt in countries like Germany in the 1960s and the 1970s. For Ireland, a late starter, the pattern will be rather similar and the rate of increase in the stock of human capital will slow appreciably in the next decade.

Box 4.2: Labour Supply Elasticities

In a paper to be published in the *Quarterly Economic Commentary*, Doris, 2001,[9] describes estimates of the elasticity of labour supply for two dates in the 1990s. The elasticities are shown in Table 4.3. These elasticities show the percentage response in labour supply for a 1 per cent change in the gross wage.

Table 4.3: Elasticities of Participation with Respect to Gross Hourly Wage

	1994	1998
Low Education Men	1.21	0.69
High Education Men	0.21	0.06
All Men	0.46	0.19
Low Education Women	1.73	1.80
High Education Women	0.75	0.55
All Women	0.90	0.75
All	0.63	0.42

For men with primary education the elasticity was quite high in 1994 at 1.21. This meant that a 1 per cent increase in wage rates would have led to a 1.2 per cent increase in labour supply of men with primary education in 1994. However, they fell quite rapidly over the 1990s. For men with at least a Junior Certificate level of education their supply response was already quite weak in 1994 and had fallen to almost zero by 1998. Further increases in wage rates are unlikely to have any substantial effects on participation for this group.

For women, as one might expect, the elasticities are higher. In the case of women with only primary education the supply elasticity has remained very high. This means that any tightness of the labour market resulting in increased wages is likely to be met by a significant increase in labour force participation by this group. In addition, there are still a large number of women in this group who are out of the labour force, many of them in the older age groups. Over the coming decade, if the labour market remains tight, a substantial part of the

[9] Doris, A., 2001, *Quarterly Economic Commentary*, Special Article, Dublin: The Economic and Social Research Institute, forthcoming.

rise in female labour supply will come from this group of older less skilled women.

Finally, the elasticity of labour supply for women with at least a Junior Certificate was already lower in 1994 than for women with limited education. However, it has fallen further. This partly reflects the fact that over those four years many of the women in this group who were out of the labour force had already rejoined it by 1998. As the group out of the labour market gets smaller a higher and higher proportion of the group will have small children and will face significant costs in returning to work, making them less sensitive to increasing wages.

These results also have important implications for tax and welfare policy aimed at increasing labour supply. They indicate that men generally, and women with some education will not be very responsive to changes in earnings. This would suggest that tax measures aimed at those on higher incomes (who have a good education) will not greatly affect labour supply. Instead, measures targeted at those on low incomes, especially women, are likely to achieve a bigger labour market response.

4.5 The Supply Side

The openness of the Irish economy implies that the productive capacity of the economy is driven principally by the performance of the tradable sector on world markets. Two factors determine the growth path of tradable sector output, namely global economic conditions and the international cost competitiveness of domestic inputs, particularly labour costs. Output in the non-tradable sector is driven by domestic demand, which is closely related to the performance of the tradable sector and domestic costs. The non-tradable sector also has an important role to play in determining competitiveness, as prices and wages in this sector will influence the cost of production.

The supply side of the economy has performed very strongly in recent years, with record levels of output growth. We are forecasting a slowdown in economic activity from its current peak into the medium term. It is likely that a combination of the world economic slowdown, and significant losses in competitiveness as labour costs increase and the exchange rate appreciates, will result in the economy producing below potential between 2003 and 2005. There will be a recovery thereafter as global economic conditions improve and we predict that the economy will grow close to its potential rate, with average GNP growth of 4.3 per cent between 2005 and 2010 moderating to 2.8 per cent between 2010 and 2015.

One structural change that is currently underway in the Irish economy is the move towards a more services-driven economy. Into the future, the services and high-tech manufacturing sectors will be the main driving forces of the economy.

INDUSTRY

The industrial sector consists of traded and non-traded sectors. The ESRI macroeconomic model analyses the industrial sector using a five-way breakdown as follows: traditional manufacturing; food processing; high technology; utilities; and building. The first three comprise the manufacturing sector, which broadly constitutes the tradable sector. The latter two belong to the non-tradable sector, with output being driven by domestic demand.

Table 4.4: Percentage Change in Output, GDP at Factor Cost at Constant 1995 Prices

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
					%						Annual Average % Growth		
Agriculture	3.9	-6.9	6.9	-0.7	-0.6	4.8	-1.7	-1.4	-0.9	1.3	0.6	-1.1	-0.1
Industry	12.3	8.2	7.5	6.4	6.7	6.6	6.0	5.7	7.3	12.2	7.1	5.8	4.0
Manufacturing	12.6	8.5	7.9	7.1	7.5	7.4	6.7	6.2	8.3	12.8	7.7	6.2	4.2
Utilities	5.5	4.5	4.5	3.4	3.0	3.0	3.1	3.2	5.0	3.8	3.7	3.2	2.3
Building	12.5	7.0	6.1	3.3	2.3	1.9	2.2	2.3	3.6	11.5	4.1	3.6	2.9
Market Services	10.6	7.5	5.6	5.5	5.1	4.9	5.2	5.0	3.8	9.2	5.7	4.9	3.0
Distribution	11.7	6.8	4.9	4.4	4.1	4.1	3.8	3.8	0.1	11.1	4.9	3.9	2.3
Transport & Communications	11.7	6.8	4.9	7.7	6.9	6.6	6.4	6.1	6.1	13.4	6.6	6.0	3.6
Other Market Services	9.9	7.9	6.1	5.4	5.1	4.9	5.4	5.1	4.9	7.5	5.9	5.0	3.1
Non-Market Services	5.9	3.2	3.2	3.0	3.0	3.0	3.0	3.0	2.2	3.2	3.1	3.0	1.7
Health & Education	6.3	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.1	3.6	3.4	3.0	1.5
Public Administration	5.0	1.5	1.5	3.2	3.2	3.2	3.2	3.2	0.4	2.3	2.5	3.2	2.2
Adjustment for Financial Services (-)	16.6	14.8	12.4	7.2	7.0	7.0	6.5	6.2	8.4	5.6	9.6	6.1	4.0
GDP at Factor Cost	10.8	7.0	6.4	5.1	5.1	5.3	4.9	4.7	4.4	9.4	5.8	4.7	3.2
Taxes on Expenditure	9.8	5.9	4.8	2.5	2.1	1.8	4.2	3.7	2.8	8.5	3.4	3.7	2.0
Subsidies	8.9	1.3	-2.5	0.5	0.7	3.1	0.5	0.6	-5.1	3.1	0.6	0.8	0.7
GDP at Market Prices	10.7	7.0	6.4	4.9	4.8	4.9	4.9	4.7	4.7	9.5	5.6	4.7	3.1
Net Factor Income	15.5	12.5	11.6	7.4	8.8	8.6	6.9	6.1	6.2	16.6	9.8	6.3	4.0
GNP at Market Prices	9.9	6.0	5.4	4.4	4.0	4.0	4.4	4.3	4.5	8.4	4.8	4.3	2.8

Manufacturing

The driving force behind the phenomenal growth in manufacturing since 1985 has been the performance of the high-technology group of industries, fuelled by significant FDI flows. Between 1990 and 1998, gross output in real terms increased by 221 per cent in the high-tech sector as compared with 30 per cent growth in traditional industries. This exceptionally high rate of growth has been made possible by significant gains in productivity and substantial levels of investment within the sector.

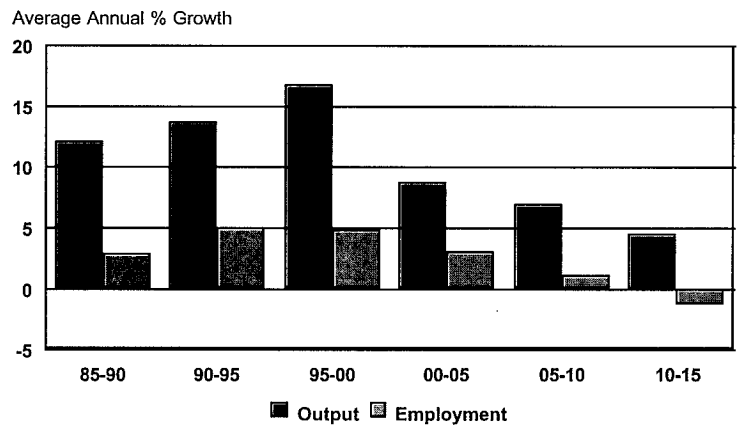
Manufacturing activity has increased at an exceptional rate since the mid-1980s. We expect growth to moderate somewhat from the double-digit figures recorded in the late 1990s, as the economy reaches capacity, and we face stronger competition from Eastern Europe. Average growth of 7.7 per cent is forecast between 2000 and 2005, and 6.2 per cent between 2005 and 2010.

There has been a strong and sustained pick up in manufacturing employment growth since the mid-1990s with numbers employed rising by 3.0 per cent per annum on average in 1995-2000. We expect that employment will grow at a much slower rate of 1.0 per cent per annum on average over the 2000-2005 period. This should lead to numbers employed in manufacturing rising by approximately 55,000 over the ten-year period between 1995 and 2005. The vast bulk of this increase will originate in the high-technology sector, as production techniques become increasingly reliant on high levels of human capital. The divergence in the growth paths of output and employment in manufacturing in the 1990s indicates that productivity has been very high. Over the next decade we expect to witness a slowdown in this productivity growth as industries mature.

High-Technology Industries[10]

The high-technology sector has been the main driver of growth in manufacturing for the last 25 years, registering average growth rates in double digits since the mid-1970s. This has been the result of a constant inflow of foreign multinational firms drawn to Ireland, initially by the IDA using fiscal incentives. The emergence of agglomeration forces coupled with the development of a highly skilled labour force has helped this sector to record such impressive growth figures. Gross output increased by an estimated 16.8 per cent per annum between 1995 and 2000 (see Figure 4.9).

Figure 4.9: Output and Employment in the High-Tech Sector



The medium-term prospects for this sector remain very positive, although some slowdown is inevitable. (As discussed in the next chapter, there is the possibility that in the short term the slowdown could be even more marked than we assume here in the *Benchmark*.) We forecast average growth of 8.8 per cent for 2000 to 2005, moderating to 7 per cent between 2005 and 2010. This may appear to constitute a sharp slowdown, but it is coming after a period of record growth and the high-tech sector will remain an important contributor to GNP growth. As the so-called "new" industries within this sector (e.g. e-commerce, biotechnology) increase in importance, it becomes more difficult to distinguish between high-tech industries and internationally traded services. As a result, growth figures may be underestimated, as these sub-sectors will be counted in other market services rather than high-tech manufacturing. In this context, such growth rates for the sector constitute a very favourable outlook.

As output expands at a more manageable rate, employment growth obviously cannot continue to grow at the average rate of about 5 per cent witnessed between 1995 and 2000. This is especially true given the current full employment situation and our forecasts for migration. Accordingly, we predict that employment will increase by an average of 3.2 per cent per annum to 2005, and 1.2 per cent between 2005 and 2010.

The unprecedented growth in this sector has been supported by rapid growth in investment, productivity and employment, all of which are forecast to moderate over the course of the next decade. Investment by high technology industries should increase by 7 per cent between 2000 and 2005, and 4.9 per cent from 2005 to 2010, following an annual average of 16.2 per cent between 1995 and 2000. This slowdown in investment is consistent with a deceleration in activity in the sector as a whole. Productivity growth reached almost 11.5 per cent over the same period in the late 1990s, and we estimate a more moderate 5.5 per cent for 2000 to 2005 and 5.8 per cent for 2005 to 2010, as both output and employment grow at more sustainable levels.

[10] This sector includes the chemicals, metals and engineering industries.

Traditional Manufacturing Industries[11]

Traditional manufacturing industries performed relatively well in recent years, although their rate of expansion has not nearly matched that of the high-tech industries. This is understandable given the nature of the sector, which is primarily indigenous with output driven by a combination of domestic and world demand. As a result, this sector is very sensitive to the competitive position of the Irish economy. Labour costs in Ireland are rising relative to other countries. The forecast appreciation of the exchange rate will further damage international competitiveness, which will have a detrimental impact on the sector as a whole. As a result growth in this sector is likely to stagnate, averaging a meagre 0.4 per cent per annum between 2000 and 2005, and contracting thereafter (see Figure 4.10).

Figure 4.10: Output and Employment in the Traditional Manufacturing Sector

Employment in this sector has fallen marginally since the early 1980s, and the rate of decline is forecast to accelerate over the course of the next decade. Numbers employed will fall by 1.9 per cent between 2000 and 2005, then 2.9 per cent between 2005 and 2010. The corresponding fall in actual employment in the sector is some 22,000 jobs between 2000 and 2010. Traditional manufacturing industries have typically had to compete with the more profitable high-tech sector for domestic inputs, especially skilled labour, and as a result their cost base has increased. The competitive pressures will exacerbate the problem, and we expect some businesses to cease activity in traditional industries.

Growth in productivity in traditional manufacturing has been quite high since the 1980s, and averaged a robust 3.7 per cent per year between 1995 and 2000. We forecast average productivity growth averaging 2.5 per cent per year to 2015. Investment in the sector remained sluggish in recent years, averaging just 2.5 per cent between 1995 and 2000 and investment prospects in the sector remain uninviting.

Food Processing Industries

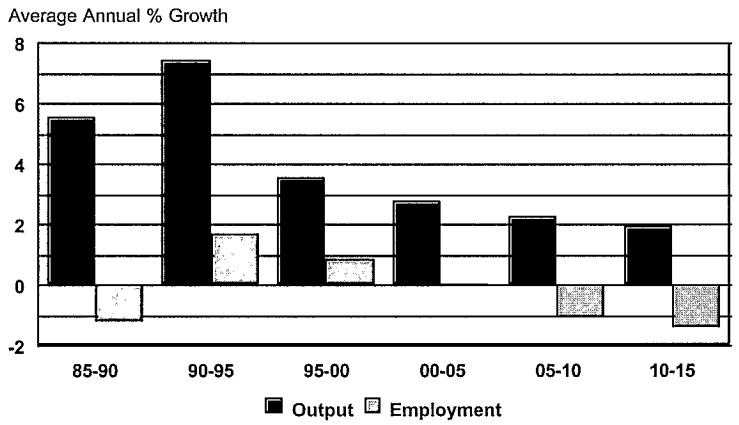
The food processing industry has traditionally been constrained by the available supply of inputs from the agricultural sector, and by the seasonal nature of that supply. However, developments over the 1990s have seen some lessening of this dependence. As a result of its special characteristics, the industry is separately identified in the ESRI macroeconomic model. The sector has witnessed considerable rationalisation and restructuring since the early 1980s and this, along with the emergence of the Irish agri-food multinational, has led to

[11] This sector includes drink and tobacco; textiles; leather; wood products; paper and printing; and mining and quarrying.

significant growth in the last 20 years (see Figure 4.11). It is likely that output growth peaked in the early 1990s when it averaged 7.4 per cent per annum between 1990 and 1995, before declining to 3.6 per cent between 1995 and 2000. This decline in the growth rate is forecast to continue over the next decade, with growth expected to average 2.8 per cent between 2000 and 2005, moderating to 2.3 per cent between 2005 and 2010.

Given the poor prospects for the agricultural sector (see below) and the food processing sector's close links with agriculture, employment in food processing industries is likely to be currently close to its peak. Employment increased by about 11,000 during the 1990s, but is likely to decline in this decade. Continued restructuring and international competitiveness will be the driving forces behind the job losses. Finally, the sector remains vulnerable to adverse supply-side shocks in the agricultural sector, such as the BSE crisis or the foot and mouth scare of early 2001.

Figure 4.11: Output and Employment in the Food Processing Sector



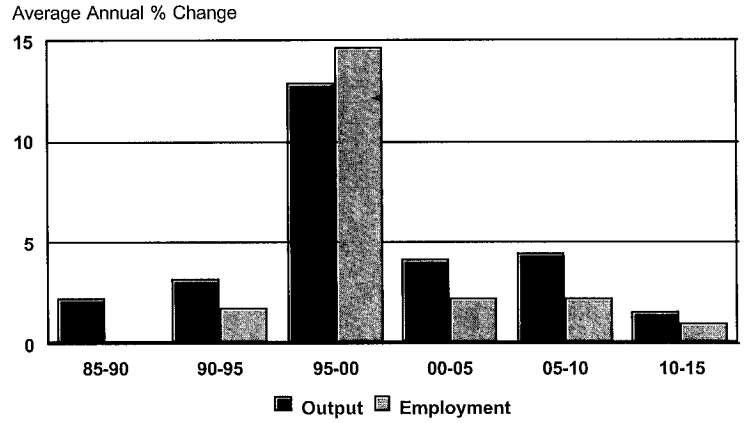
Building

The building industry has witnessed phenomenal growth every year since 1994. The boom in this sector was driven by the strength of the growth in the economy as a whole. Gross output in building grew by an annual average of some 12.9 per cent between 1995 and 2000 (see Figure 4.12). This rate of growth is unsustainable, and we predict moderation to an average rate of 4.2 per cent per year for 2000 to 2005, and an average of 4.5 per cent per annum between 2005 and 2010.

The demand for new housing has been the principal source of the boom. This demand is likely to remain high through the next decade (see Section 4.9). However the residential market is only one source of demand. The expansion in the services and industrial sectors has resulted in increased demand for commercial and industrial properties. Furthermore, these sectors are forecast to exhibit strong growth over the forecast period, which will provide further output stimulus to the building sector. Finally, the *Benchmark* forecast assumes that the government will fulfil its investment targets set out in the *National Development Plan*. This will involve substantial investment in roads, public transport and other environmental, social and recreational infrastructure during the coming years. The net result of this will be the continued expansion of the civil engineering sector.

Capacity constraints and labour shortages in the sector have resulted in excess demand, and prices have soared. The price deflator for gross output in building rose by 10.9 per cent between 1995 and 2000, and is expected to rise by an average of 4.6 per cent per year between 2000 and 2005.

Figure 4.12: Output and Employment in the Building Sector

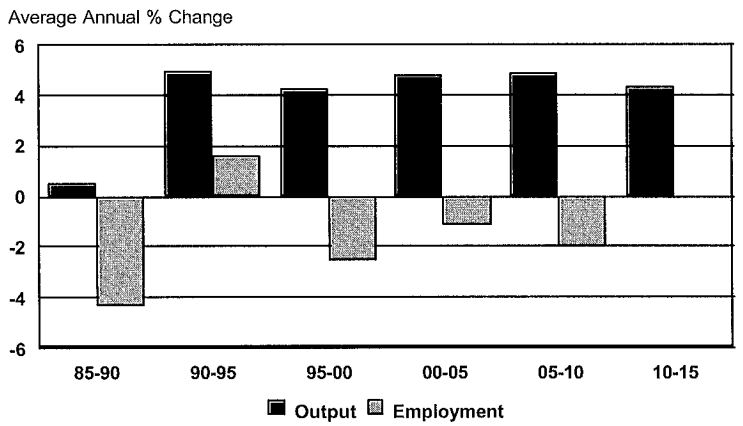


The building sector has traditionally been very labour intensive and hence, such output growth would have been impossible without a corresponding increase in employment. Employment in building more than doubled between 1990 and 2000, to over 160,000 people. In fact, the growth in employment between 1995 and 2000 exceeded the growth in output for the building sector. Employment will continue to rise as output expands, but the rate of increase will not be nearly as rapid. In terms of percentage changes, 1995 to 2000 saw employment grow by almost 15 per cent, from 2001 onwards employment will increase at a rate slightly above that of the economy in general at 2.3 per cent between 2000 and 2005, and 2.2 per cent between 2005 and 2010. By 2010 the building sector will employ over 200,000, equivalent to more than 10 per cent of total employment.

Utilities

Growth in the utilities sector (electricity, gas and water) is driven by the demand for energy in the rest of the economy (see Section 4.9), and hence growth tends to rise in line with growth in other sectors of the economy. We forecast that output growth in utilities will remain strong in the medium term, averaging about 4.8 per cent out to 2010, moderating to 4.3 per cent between 2010 and 2015 (see Figure 4.13). This will continue to be driven by the expansion of the commercial sector.

Figure 4.13: Output and Employment in the Utilities Sector

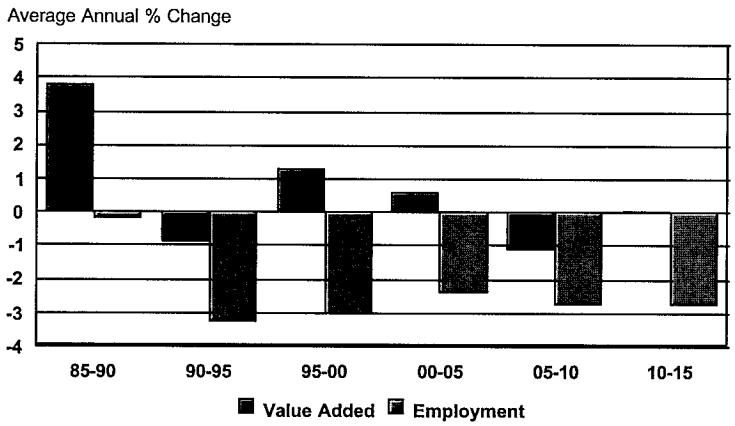


In spite of strong output growth, numbers employed fell by 2.6 per cent between 1995 and 2000. This was a result of a reduction in over-staffing in the sector. Employment in the sector now stands at about 11,000. We expect a slow reduction in employment in utilities over the forecast period.

AGRICULTURE[12]

Value added in agriculture showed a very small increase over the period 1995 to 2000. We anticipate that there will be a further moderation in activity over the forecast period, with value added declining between 2005 and 2010. With prices showing only a small rise over the period, agricultural income will also show only a very limited increase. There also seems likely to be a significant fall in livestock numbers over the forecast period due to the continuing unfavourable market situation.

Figure 4.14: Agriculture



When the fall in numbers employed in agriculture is taken into account it seems likely that agricultural income per head will not change in real terms between 2000 and 2005. This will contrast with substantial real increases in earnings in other sector of the economy. Of course the incomes of farm households will also be supplemented by increasing off-farm income but the situation will still be unfavourable. The reality is that agriculture can only offer a reasonable living to a declining proportion of the population.

MARKET SERVICES

The market services sector is modelled under three separate headings; distribution, transport and communications and other market services. Output is driven by the level of demand in the economy. Historically, the market services sector was largely non-tradable, but it has been increasingly exposed to international competition in recent years due to technological advancements and the development of the Single Market in the EU.

This sector has witnessed considerable expansion in recent times. Output growth averaged over 9 per cent between 1995 and 2000. We predict that output growth will trend gently downwards in the coming decade, averaging 5.7 per cent between 2000 and 2005, and 4.9 per cent between 2005 and 2010. The output of the market services sector is quite labour intensive and has been accompanied by a corresponding growth in employment. The number of people employed in market services increased by a quarter of a million between 1990 and 2000, to stand at 665,000. We forecast that by 2010 this will have risen to over 860,000. This will mean that the market services sector will be the dominant sector of the economy in terms of employment, with 66 per cent more people employed than in the industrial sector and almost nine times as many people as in the agricultural sector. We examine the three market services sectors in turn.

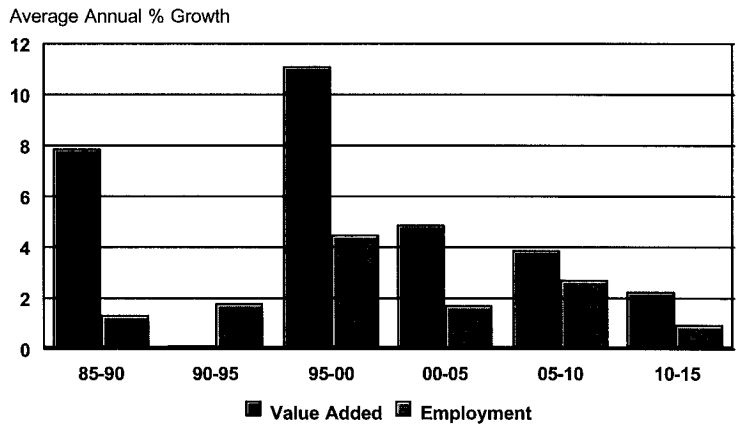
[12] The forecasts for the agricultural sector rely to a great extent on research carried out by Teagasc, although the authors accept full responsibility for the content of the section.

Distribution

The distribution sector includes both wholesale and retail services, and its output depends fundamentally on domestic demand, specifically the volume of consumption within the economy. Since the mid-1990s, the marked increase in the standard of living and changes in the underlying demographic structure of the economy have altered consumption patterns in Ireland. As people become wealthier the demand for higher quality goods, which carry much higher profit margins, increases. Furthermore, the significant decline in the dependency ratio has resulted in a younger and more affluent labour force. On the supply side the Irish wholesale and retail sectors have become increasingly internationalised, and this process will continue.

Output growth in distribution was particularly strong in the late 1990s, averaging over 11 per cent between 1995 and 2000. Prospects for the next decade are positive, buoyed by strong growth in consumption and overall economic activity. We predict that output growth will average 4.9 per cent between 2000 and 2005, moderating to 3.9 per cent between 2005 and 2010 as consumption returns to trend levels (see Figure 4.15). This is very much in line with overall economic activity.

Figure 4.15: Output and Employment in the Distribution Sector



The rate of increase in employment in distribution is expected to decline from its average of 4.4 per cent between 1995 and 2000 to 1.7 per cent between 2000 and 2005. With slightly faster growth in consumption, between 2005 and 2010 employment in distribution should grow faster than the average for the whole economy at around 2.7 per cent per annum.

Transport and Communications

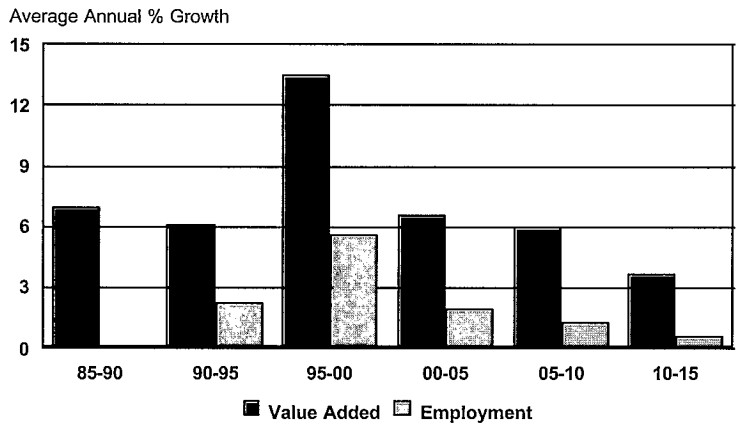
As is the case with distribution, output in the transport and communications sector is largely determined by the strength of domestic demand. However, this sector is fundamentally different from the rest of the market services sector as a result of government involvement in semi-state bodies. The introduction of competition into the telecommunications and aviation markets has greatly increased the openness of the sector, and this process of liberalisation is set to continue.

Output growth in transport and communications has been above the average for the overall market services sector since 1985. Output growth averaged 13.5 per cent between 1995 and 2000, underpinned by massive investment growth. Output growth will continue to outpace that of the rest of the market services sector into the future. We forecast average growth of 6.6 per cent between 2000 and 2005, and 6 per cent between 2005 and 2010.

Employment growth in transport and communications has traditionally lagged output growth to a significant degree (see Figure 4.16). Though the sector tends to be quite capital intensive, the recent spurt in output growth resulted in

average employment growth of 5.6 per cent between 1995 and 2000. In the future employment will increase in line with the rest of the economy, between 1 and 2 per cent for the next decade. The forecast moderation of employment growth will be partly due to further rationalisation.

Figure 4.16: Output and Employment in the Transport and Communications Sector



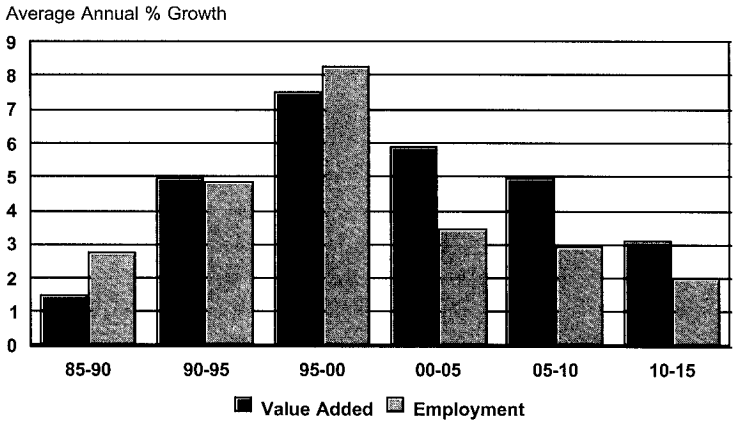
Other Market Services

The other market services sector is split into personal and professional services. Personal services include hotels, pubs, restaurants, motor repairs, hairdressers, etc. Professional services include banking, insurance, legal services, consultancy and other professions. Demand for these services is primarily driven by disposable income, both domestic and foreign. In the past, the majority of these services were non-tradable, and hence not subject to international competition. However, given technological advancements in recent years and the widespread use of the Internet and e-commerce many of these services have become internationally traded, especially in the financial and information technology sectors.

Fiscal retrenchment throughout the 1980s resulted in very low growth, as increased personal taxation reduced disposable income, with the result that value added only began to register significant increases in the 1990s as the economy recovered. Growth in value added averaged 7.5 per cent between 1995 and 2000. Over the five years 2000 to 2005 growth in value added should average 5.9 per cent per year, moderating slightly to 5 per cent between 2005 and 2010.

The other market services sector has witnessed very rapid employment growth. Employment growth has kept pace with growth in value added for almost two decades now, and significantly outpaced it between 1995 and 2000 (see Figure 4.17) so that employment in the sector almost doubled between 1990 and 2000. This above average employment growth is set to continue as economy-wide employment growth slows, and we predict that an extra 120,000 people will be employed in the sector by 2010 bringing the total to 456,000, more than half of the total employment in the market services sector. In terms of percentage changes, employment will grow by 3.4 per cent between 2000 and 2005, compared to 2 per cent for the whole economy, and 2.9 per cent between 2005 and 2010, compared to 1.8 per cent for the whole economy. Much of this labour will be skilled.

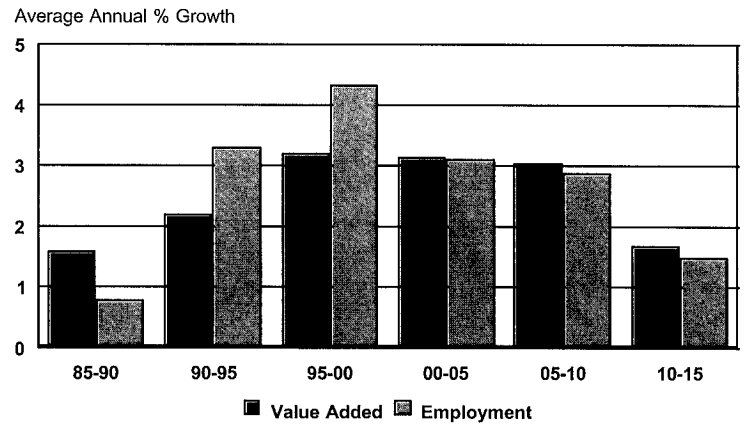
Figure 4.17: Output and Employment in Other Market Services



NON-MARKET SERVICES

The ESRI macroeconomic model splits the non-market services sector into two separately identifiable parts, namely health and education, and public administration and defence. The government predominantly funds these services and many can be classified as "public goods". Output in the sector is therefore determined by the government's demand for public services, and our assumptions regarding public expenditure are set out in Section 4.2. The state will always have an obligation to provide a certain level of non-market services, with demographic considerations and the current budget determining the overall expenditure in the sector. Value added in non-market services is expected to continue growing at a similar pace to the late 1990s throughout the next decade (see Figure 4.18). Following average growth of 3.2 per cent between 1995 and 2000, value added will increase by 3.1 per cent between 2000 and 2010.

Figure 4.18: Output and Employment in Non-Market Services



Employment in non-market services grew very strongly throughout the 1990s. By 2000 there were over 100,000 more people employed in the sector than in 1990, with total employment exceeding 330,000, so that the sector employs more people than manufacturing. As seen in Figure 4.18, this translates to average growth of 3.3 per cent between 1990 and 1995, and 4.3 per cent between 1995 and 2000. Average employment growth in health and education has exceeded that of public administration and defence since the mid-1970s, and is expected to continue to do so as the government continues to invest in these sectors. By 2010 the sector will employ about 445,000 people with approximately 345,000 in health and education and 100,000 in public administration and defence. In terms of average growth rates, this implies

employment growth of 3.1 per cent between 2000 and 2005, followed by 2.9 per cent between 2005 and 2010. The output of the non-market services sector is difficult to measure with precision (the output of gardai or teachers for example). As a result of this the low measured productivity in the sector partly reflects imperfections in measurement.

4.6 Income, Expenditure and Prices

INCOME

Following a period of sustained growth throughout the 1970s and 1980s, the growth of agricultural incomes slowed in the 1990s as employment dwindled and the BSE crisis damaged the sector. Incomes grew by a modest 4 per cent between 1990 and 1995, and declined by an average of 1.2 per cent per annum between 1995 and 2000. As discussed earlier the prospects for the coming decade are for very little growth in income in the sector.

Non-agricultural incomes have witnessed dramatic growth during the 1990s, due to strong wage growth coupled with increased employment of some 450,000. Between 1995 and 2000 non-agricultural incomes grew by an average of 11.6 per cent and these incomes are forecast to continue to grow strongly over the next decade, averaging 10.6 per cent per annum for the period 2000 to 2005 and 8.2 per cent for 2005 to 2010.

Transfer incomes are expected to remain on a strong growth path in the medium term. Following an increase of 7.4 per cent between 1995 and 2000, transfer incomes will grow by an average of 10.1 per cent between 2000 and 2005, moderating to 6.3 per cent between 2005 and 2010 (see Table 4.5). As the economy has reached near full employment, the reductions in transfer income paid to the unemployed, as a result of falling unemployment rates, have come to an end. Also, the reduction in the transfer payments base due to the falling dependency ratio in the 1990s, is slowing. Together with some increase in numbers unemployed, this is why there is an increase in the growth rate of transfer income in the first half of this decade. National debt nterest has fallen dramatically from the mid-1990s, and will continue to decline as the debt is gradually paid off.

Table 4.5: Personal Income, Percentage Change

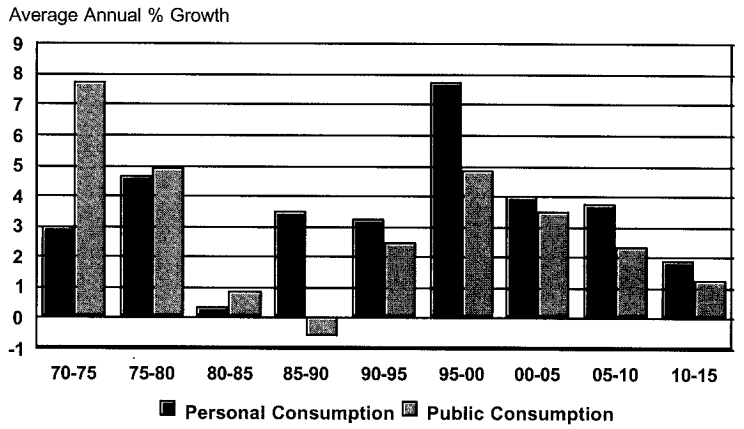
	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
					%				Annual Average % Growth				
Agricultural Incomes	11.3	-5.6	8.5	0.6	4.1	-2.3	-0.4	-1.3	4.0	-1.2	0.9	-0.9	1.7
Non-Ag. Wage Income	14.1	15.0	12.5	10.3	8.0	7.3	7.8	8.3	7.2	11.6	10.6	8.2	6.7
Transfer Income	6.5	13.0	10.3	9.5	9.4	8.5	6.6	6.6	7.7	7.4	10.1	6.3	6.7
Other Personal Income of which	22.0	8.9	9.6	0.8	0.8	0.7	3.0	1.9	3.2	17.3	4.1	1.8	-5.4
Non-Ag. Profits etc.	18.6	14.4	12.1	4.4	7.2	6.7	7.1	6.4	10.4	17.8	8.9	6.1	4.1
National Debt Interest	-3.8	-5.1	-2.7	-0.8	-9.8	-12.4	-4.6	-17.1	-0.2	-6.0	-6.3	-9.1	-30.8
Net Factor Income	22.1	17.0	16.1	8.8	10.5	9.8	8.6	7.9	7.5	21.1	12.4	8.0	5.8
Other Private Income	15.0	10.5	8.9	0.0	3.0	2.4	4.8	3.3	8.9	14.0	4.9	3.1	0.5
Undistributed Profits (-)	3.3	13.6	7.4	-1.5	7.5	5.6	8.1	5.8	21.1	8.7	6.4	5.1	7.6
Personal Income	14.4	12.5	11.4	7.9	6.6	6.0	6.5	6.7	6.3	11.2	8.8	6.6	5.2
Taxes on Personal Income	14.8	10.7	10.3	9.6	7.3	6.3	6.7	7.2	6.5	11.3	8.8	7.1	5.5
Personal Disposable Income	14.2	12.9	11.7	7.4	6.5	5.9	6.5	6.5	6.3	11.2	8.8	6.5	5.1
Personal Consumption	15.8	12.4	11.1	6.5	5.6	5.1	7.7	7.1	6.0	11.6	8.1	7.1	5.1
Personal Savings	-2.1	19.6	18.9	17.8	15.4	12.7	-4.0	0.9	8.5	6.2	16.9	0.8	5.1
					% of Disposable income								
Tax Ratio	20.1	19.8	19.6	19.9	20.0	20.1	20.2	20.3					
Savings Ratio	7.4	7.8	8.3	9.1	9.9	10.5	9.5	9.0					

The annual average growth rate in personal taxes is expected to moderate over the course of the next decade to 8.8 per cent per annum between 2000 and 2005 and then to 7.1 per cent from 2005 to 2010. With broadly unchanged personal tax rates, the annual average growth of personal disposable income is forecast to be virtually identical to that of personal income.

Consumption

One obvious factor that drives personal consumption in the Irish economy is the level of current personal disposable income. However, there are certain other factors that influence consumption such as demographics, wealth, interest rates, and credit conditions. All of these factors can affect consumer confidence and hence personal savings.

Figure 4.19: Personal and Public Consumption



Consumers tend to be forward looking and base their consumption on expected future levels of income rather than just on current income. This helps to explain why private consumption was so low in the early 1980s when weak economic prospects, high unemployment and the serious state of the public finances reduced consumer confidence. Since then there has been a marked reversal in fortunes, with the public finances being corrected, increasing disposable incomes and strong economic growth all contributing to current high levels of confidence about the future. Personal consumption has recovered accordingly, and averaged growth of 7.7 per cent between 1995 and 2000.

Growth will moderate to more sustainable levels over the next decade. In the latest version of the HERMES model, in addition to the normal effects of changes in disposable income, we incorporate the effects of changing house prices on consumer behaviour. Either because it affects household wealth or because it provides a good measure of consumer confidence, we find that rising house prices increase consumption while a fall in prices would cause households to reduce consumption. On this basis, as shown in Figure 4.19, we forecast average growth in personal consumption of 4.1 per cent between 2000 and 2005 and 3.7 per cent between 2005 and 2010. (see Box 4.3).

Box 4.3: The Changing Pattern of Consumer Demand

Rising incomes and changing demographics in the 1990s have increased the level and altered the composition of consumer expenditure in Ireland. The typical pattern for an increasingly affluent society is for consumption expenditure to shift away from necessity goods towards more luxury items, and this pattern is reflected in the Irish data.

In the table below we show results estimated using data on consumption patterns over the last two decades. The elasticities represent the percentage change in expenditure on each category of goods and services resulting from a one percentage point change in income or in price in 1999. Thus a doubling of

income in 1999 would see a 42.8 per cent increase in expenditure on food while a doubling of prices in 1999 would see a 34 per cent fall in expenditure on food.

The demand for food and fuel, which are two basic household items, is relatively insensitive to changes in price or income. As income rises above a level where basic nutritional and heating needs are being met, households spend a diminishing proportion of additional income on these items. Because these goods are necessity items in a household's total expenditure they are also insensitive to changes in price. There is a similar pattern with respect to expenditure on tobacco – because it is an addictive substance it is essentially a "necessity" within household expenditure behaviour.

Table 4.6: Income and Price Elasticities of Demand

	Income (at 1999)	Price (at 1999)
Food	0.4280	-0.3410
Alcohol	0.9364	-0.7304
Tobacco	0.1246	-0.1597
Clothing	1.1214	-0.8283
Fuel	0.4717	-0.3009
Durables	1.1970	-0.8858
Transport equipment	1.0321	-0.8398
Other goods	0.9162	-0.7269
Services	1.3130	-1.0165

Note: Elasticities are calculated in the period 1979 - 1999 (per head)

The areas of expenditure that are growing more rapidly than income per head are expenditure on transport equipment – principally related to cars – clothing, durable goods and services. In the case of clothing this reflects a move "upmarket" with rising incomes. These items are more sensitive to variations in price – in the case of services a doubling of prices would lead to a more than halving of expenditure on services. The increased demand for transport equipment has implications for the environment that are dealt with in Section 4.9. The income elasticity for services indicates that this category of expenditure is likely to grow most rapidly with rising incomes. This is reflected in the expected buoyancy in the output of the market services sector over the coming decade.

Though estimated with a different type of data, previous estimates for 1994/5 were broadly similar.[13]

The expansionary fiscal policies of the 1970s explain the significant growth in public consumption at that time, and the subsequent contraction during the 1980s reflects the painful process of fiscal retrenchment that had to be undertaken. Over the course of the 1990s the improvement in the public finances allowed a return to volume growth in public consumption, which averaged 4.8 per cent between 1995 and 2000. As outlined in Section 4.2, we expect that public consumption will grow at a slightly slower rate than personal consumption over the coming years, averaging 3.5 per cent between 2000 and 2005, moderating to 2.4 per cent between 2005 and 2010.

Investment

Investment growth last peaked in the late 1970s when it averaged 8.1 per cent between 1975 and 1980. However, growth in the second half of the 1990s was significantly higher again, averaging 14.7 per cent between 1995 and 2000 (Table 4.7). The period in between involved negative growth during the first

[13] See Duffy *et al., Medium Term Review 1999-2005*, No. 7, Chapter 5, p.75, Dublin: The Economic and Social Research Institute.

half of the 1980s followed by a recovery in the second half of the decade. With real interest rates increasing markedly in the early 1990s investment growth fell back once again, only to rebound in spectacular fashion from 1994 onwards.

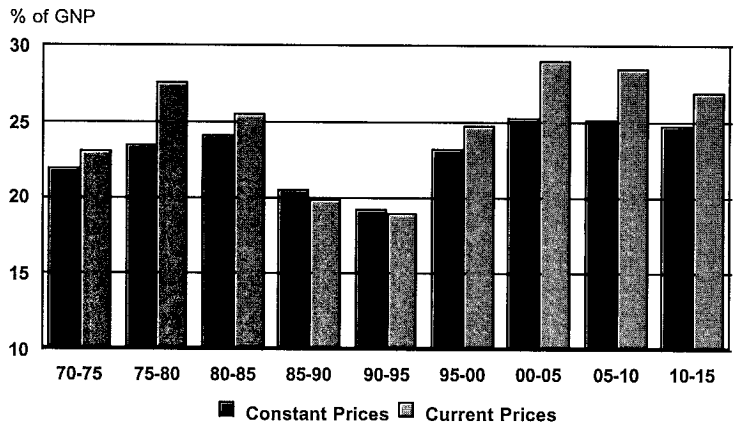
Table 4.7: Expenditure on GNP, Constant Prices, Percentage Changes

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
					%				Annual Average % Growth				
Personal Consumption	9.4	7.2	6.9	2.6	2.0	1.7	4.3	3.7	3.3	7.7	4.1	3.7	1.9
Public Consumption	5.0	5.5	5.2	2.3	2.3	2.3	2.3	2.3	2.5	4.8	3.5	2.4	1.3
Fixed Investment	10.6	4.8	6.6	3.7	3.5	3.7	4.2	4.4	2.3	14.7	4.5	4.3	2.1
Building	8.4	2.7	6.3	4.3	3.8	3.9	4.4	4.6	3.3	12.9	4.2	4.5	1.6
Machinery	13.2	7.2	7.0	3.0	3.2	3.5	4.0	4.2	1.2	16.9	4.8	4.1	2.6
Total Exports	18.5	11.5	8.8	6.8	6.6	6.6	5.6	5.5	12.8	16.4	8.0	5.6	4.7
Merchandise	19.9	12.1	9.0	7.0	6.8	6.8	5.6	5.6	13.2	15.2	8.3	5.6	4.7
Services	12.0	8.4	7.8	5.5	5.6	5.7	5.1	5.2	9.8	23.3	6.6	5.2	4.7
Total Demand	14.1	9.1	7.9	5.1	4.9	4.9	5.0	4.8	6.7	12.4	6.4	4.9	3.6
Total Imports	17.6	10.6	9.1	5.5	5.1	5.1	5.2	5.1	9.9	16.1	7.1	5.2	4.2
Gross Domestic Product	10.7	7.0	6.4	4.9	4.8	4.9	4.9	4.7	4.7	9.5	5.6	4.7	3.1
Net Factor Income	15.5	12.5	11.6	7.4	8.8	8.6	6.9	6.1	6.2	16.6	9.8	6.3	4.0
Gross National Product	9.9	6.0	5.4	4.4	4.0	4.0	4.4	4.3	4.5	8.4	4.8	4.3	2.8
GNP Adjusted for Terms of Trade	6.6	5.6	5.8	3.6	3.5	2.9	4.0	4.0	3.8	8.0	4.3	3.8	2.6
GNDI Incl. Capital Transfers	6.6	4.7	5.4	3.0	3.2	2.6	3.8	3.6	3.5	7.6	3.8	3.6	2.5

As real interest rates fell in the run up to EMU, investment recovered strongly, and there was a corresponding increase in investment's share of GNP. In nominal terms, investment accounted for less than 19 per cent of GNP between 1990 and 1995 but this increased to almost 25 per cent between 1995 and 2000 (see Figure 4.20). Investment's share should peak at over 29 per cent of GNP between 2000 and 2005 before embarking on a gradual decline out to 2015. As discussed earlier, this is quite high by international standards, and is indicative of the backlog of investment that must be completed for the economy to fully realise its potential growth. In real terms we expect investment's share of GNP to follow a trend similar to that in nominal terms, but at a lower level. We predict that the share will peak at just over 25 per cent between 2000 and 2005 and will remain at similar levels thereafter. The difference between these two measures has increased since the mid-1990s as a result of increases in the real price of investment, mainly due to significant output price inflation in the building sector. In recent years, per unit of output produced, it was necessary to spend proportionately more money on investment. With the slowdown in growth in the medium term it is expected that the increase in the relative price of investment will be halted or even reversed.

Investment in buildings peaked at an average of 12.9 per cent per year between 1995 and 2000, driven mainly by the demand for new houses. There was an increase in investment in machinery and equipment of an average of 16.9 per cent per annum over the same period. We are forecasting growth of 4.2 per cent per annum in investment in buildings between 2000 and 2005, strengthening to 4.5 per cent a year between 2005 and 2010. This may appear to be a sharp slowdown, but we are coming from a very high base in 2000. There is still a real necessity to improve infrastructure all around the country, and there remains a backlog of investment projects yet to be completed.

Figure 4.20: Investment as a Share of GNP



Exports

Export growth has been strong in Ireland since the 1970s as a direct result of foreign multinationals setting up an export base here, attracted by tax incentives and Ireland's location in the EU. In recent years Ireland's competitive position on international markets has been greatly enhanced by relatively low labour costs coupled with the weakness of the euro exchange rate. The prolonged expansion of the US economy also helped to boost exports, both as a destination for exports and as a source of foreign direct investment. The combination of these factors esulted in average annual volume growth in exports of 12.8 per cent between 1990 and 1995, and a massive 16.4 per cent per annum between 1995 and 2000 (see Table 4.8).

The industrial sector remains the main driving force behind the growth in exports. Volume growth in industrial exports has averaged at least 10 per cent per annum since the mid-1970s. As the economy boomed during the 1990s the sector registered volume growth of 14.3 per cent per year between 1990 and 1995, followed by 16.6 per cent a year between 1995 and 2000. Although exports of services do not have as significant an impact on growth, they have been increasing even faster than industrial exports recently. Between 1995 and 2000 exports of services grew by 23.3 per cent per annum.

We forecast that the growth in exports in the coming decade will be significantly less rapid than the 1990s. The main reasons for this are the expected deterioration in our competitive position. In the *Benchmark* forecast we are assuming that the euro appreciates against both sterling and the dollar in the medium term, which will make our exports more expensive abroad.

The tourism sector has grown strongly since the mid-1980s. After 15 years of impressive growth, which averaged 7 per cent between 1995 and 2000, growth in tourism exports is forecast to decline to just 1.4 per cent a year between 2000 and 2005. Strong growth in all of the world's major economies, especially the United States, has resulted in record numbers of visitors coming to Ireland. The slowdown in the world economy will mean disposable incomes will rise more slowly, and the expected appreciation of the euro will make Ireland a more expensive place to holiday. While the short-term prospects may be rather bleak, growth in tourism exports should recover later in the decade, and we predict average growth of 2.7 per cent between 2005 and 2010.

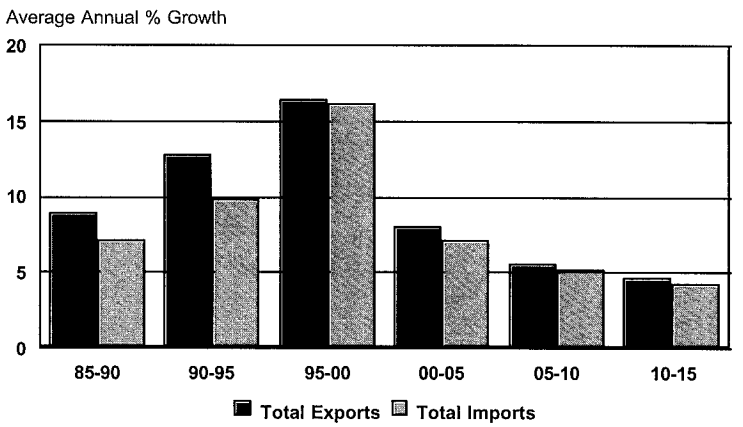
Table 4.8: Exports by Sector, Constant Prices, Percentage Changes

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
					%				Annual Average % Growth				
Agriculture	6.3	1.0	2.2	-0.5	0.4	1.5	-0.6	-0.6	6.6	1.0	0.9	-0.5	-0.8
Industry	20.9	12.8	9.4	7.4	7.1	7.0	5.9	5.8	14.3	16.6	8.7	5.9	4.8
Merchandise	19.9	12.1	9.0	7.0	6.8	6.8	5.6	5.6	13.2	15.2	8.3	5.6	4.7
Tourism	9.2	2.0	1.4	0.6	1.3	1.9	2.0	2.5	6.7	7.0	1.4	2.7	3.3
Other Services	12.5	9.7	9.0	6.4	6.3	6.4	5.5	5.5	11.6	29.3	7.5	5.6	4.9
Services	12.0	8.4	7.8	5.5	5.6	5.7	5.1	5.2	9.8	23.3	6.6	5.2	4.7
Goods and Services	18.5	11.5	8.8	6.8	6.6	6.6	5.6	5.5	12.8	16.4	8.0	5.6	4.7

Imports

We forecast that the growth of imports will mirror that of the entire economy. Recent years have witnessed strong volume growth in imports, which averaged 9.9 per cent per year between 1990 and 1995 before jumping to 16.1 per cent between 1995 and 2000. Import growth will slow in line with the slowdown in export growth as the euro appreciates and both output and income expand at a more moderate pace. Total imports of goods and services should average a robust 7.1 per cent per annum between 2000 and 2005 before slowing to 5.2 per cent between 2005 and 2010 (see Figure 4.21).

Figure 4.21: Volume Growth in Total Exports and Imports



NET FACTOR INCOME

Since the mid-1970s GDP has exceeded GNP in Ireland. The reason for this is substantial net factor income flows, which have been increasing in magnitude every year since 1976. Net factor income is made up of national debt interest payments, repatriated profits and "other" factor income flows. Taken together, these three items constitute a significant outflow of resources each year. The most important of these flows are profit repatriations (see Table 4.9). As we have seen previously, the high technology sector is the fastest growing, both in terms of gross output and productivity, and the vast majority of firms in this sector are foreign owned. Foreign owned firms operating in Ireland are predominantly, but not entirely, operating in the high-tech sector. Hence, these large negative outflows can be interpreted as an inevitable product of our success in attracting substantial foreign direct investment since the mid-1970s.

The contribution of net factor flows to GNP is detailed in Table 4.9. Repatriated profits have made a negative contribution to GNP since the 1970s, increasing in significance as the high-tech sector expanded.

Table 4.9: Contribution of Net Factor Flows to GNP Growth, Percentage Points of GNP

	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-15
National Debt Interest	-0.41	-0.19	0.04	0.11	0.12	0.08	0.08
Profits etc., Outflows	-0.79	-1.06	-1.48	-4.75	-2.46	-1.31	-0.91
Other Factor Income	-0.03	0.22	0.71	2.19	0.37	-0.28	-0.23
Net Factor Income	-1.23	-1.03	-0.74	-2.46	-1.97	-1.52	-1.05

"Other factor income" has made a positive contribution to GNP since the mid-1980s. This is mainly made up of the accumulation of private foreign assets. Irish people have invested abroad to a greater extent in recent years, and this has resulted in other foreign income inflows increasing by an annual average of over 30 per cent between 1985 and 2000. The process was also driven by a balance of payments surplus throughout the 1990s. However, this impressive growth began from a very low base and as a result other factor income had a negligible impact on GNP during the 1980s. These flows picked up in the late 1990s adding 2.2 percentage points to GNP. However, growth in other factor inflows is expected to average 5.2 per cent per annum between 2000 and 2005 and decline thereafter having a much smaller effect on GNP than during the 1990s..

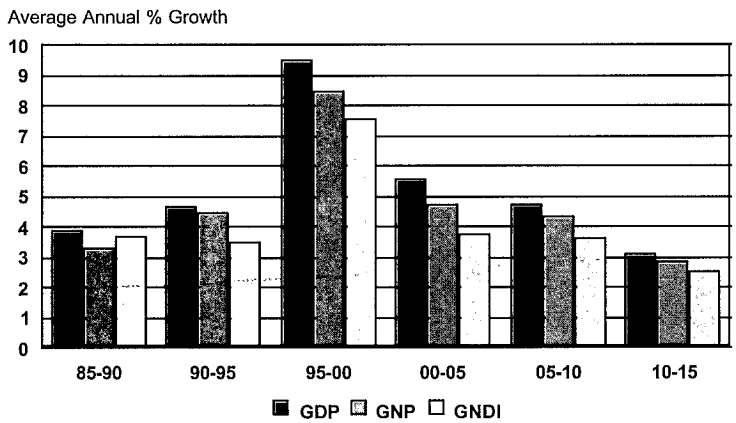
The deficit-driven expansionary fiscal policy of the late 1970s led to the accumulation of a significant national debt. There was a corresponding increase in interest payments, which have had a negative impact on GNP (see Table 4.9). The effect was strongest in the early 1980s when national debt interest reduced GNP by almost 0.5 percentage points each year. Over the course of the 1990s the debt was reduced both in absolute terms and as a percentage of GDP. On top of this, lower interest rates reduced the interest payments so that national debt interest now has a negligible impact on GNP.

GROSS NATIONAL PRODUCT

In recent years Ireland has enjoyed a period of sustained economic growth eclipsing that of our European partners. Following record growth over the period 1995 to 2000, when GNP averaged 8.4 per cent annual growth, we predict that volume growth in GNP will average 4.8 per cent per year between 2000 and 2005, slowing to 4.3 per cent per annum between 2005 and 2010 (see Figure 4.22).

As described above, GDP has exceeded GNP in Ireland consistently since the mid-1970s as a result of significant net factor income outflows. We expect that the gap will continue to decline over the forecast horizon, and will be just over 0.2 percentage points by 2015. The maturing of the high-tech sector (described above) will imply slower growth in profit repatriations, while at the same time the market services sectors will increase in importance. The combination of these factors will reduce the gap between the growth in GDP and in GNP.

Figure 4.22: Average Annual Volume Growth Rates in GDP, GNP and GNDI



GROSS NATIONAL DISPOSABLE INCOME

Gross National Disposable Income (GNDI) is a more complete measure of changes in the standard of living as it controls for the impact of both the terms of trade and current international transfers (EU). As can be seen from Table 4.10, in the 1980s the average annual growth of GNDI was approximately 0.5 percentage points above that of GNP. This was principally a result of an inflow of transfers from the EU over the period. Since then however, GNDI has grown less rapidly than GNP because of unfavourable developments in the terms of trade and falling EU transfers. In fact, over the 1990s the terms of trade knocked an average of about 0.5 percentage points off the average annual growth in GNDI. We expect this pattern to continue over the forecasting period.

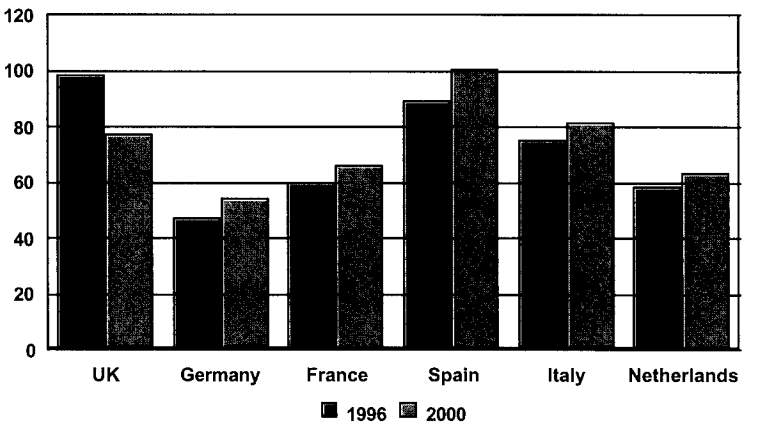
Table 4.10: The Terms of Trade Effect, Percentage Change

	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-15
GNP	0.3	3.3	4.5	8.4	4.8	4.3	2.8
Effect of Terms of Trade	0.5	0.0	-0.7	-0.4	-0.5	-0.5	-0.2
GNP adjusted for Terms of Trade	0.8	3.3	3.8	8.0	4.3	3.8	2.6
Effects of Transfers	0.0	0.4	-0.3	-0.4	-0.5	-0.2	-0.1
GNDI + Capital Transfers (National Resources)	0.8	3.7	3.5	7.6	3.8	3.6	2.5

PRICES AND WAGES

During most of the 1990s, the rapid rate of economic growth did not result in a corresponding acceleration in wage rates. Moderate wage demands were delivered by a succession of social partnership agreements, which bargained tax cuts for wage restraint, and also by strong growth in labour supply, boosted by female participation and changing demographics. However, more recently wage rates have risen faster than elsewhere in the EU as the labour market has tightened significantly and many sectors have experienced excess demand for labour. Conventional economic theory implies that an excess demand for labour will result in the wage rate being bid up in order to clear the market, and we are beginning to see evidence of this across all sectors of the economy. Non-agricultural wage growth averaged 5.5 per cent per annum between 1995 and 2000, while industrial earnings growth averaged 4.8 per cent over the same period. The market services sector has witnessed even stronger wage growth, averaging 7.3 per cent for the same period. In each case, the highest growth rates were recorded for 1999 and 2000.

Figure 4.23: Irish Labour Costs as a Percentage of Other Countries'

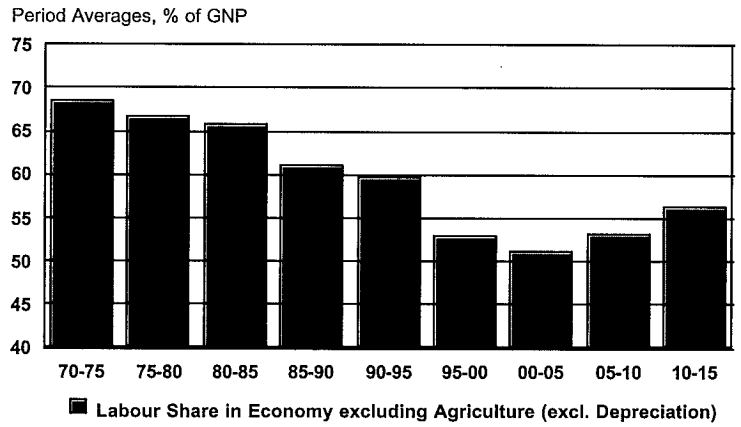


The Irish labour market has been very competitive internationally for many years now, and the abundant supply of relatively cheap but skilled labour has

been a significant factor in attracting foreign direct investment. Irish labour costs relative to other European countries are plotted in Figure 4.23. In 1996 our labour costs were very similar to those in the UK and Spain but still considerably below the other main Euro area countries. Since then exchange rate fluctuations have reduced Irish labour costs to below 80 per cent of the UK level. Labour costs have increased relative to the other main Euro area economies, but this is unsurprising as our standard of living converged to the EU average and wage rates have demonstrated a corresponding increase. However, labour costs have yet to converge fully to European levels.

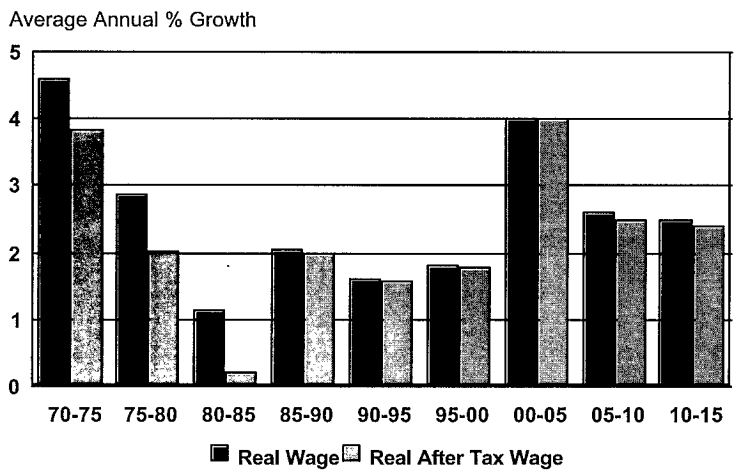
Labour's share of value added had been declining since the 1970s (see Figure 4.24). There was a fall in labour's share of value added in the non-agricultural sector from almost 70 per cent in the early 1970s to less than 53 per cent between 1995 and 2000. The continuing high level of unemployment and the related need for a rapid increase in employment helped bring this about. However, as the economy faces into a period of close to full employment, this downward pressure on market wage rates has been reduced and labour's share of value added is expected to show a limited increase.

Figure 4.24: Labour Share of Value Added, Non-agricultural 1970-2015



The combination of competitive labour costs and an excess demand for labour in the domestic economy implies that wages are set to grow faster in Ireland than elsewhere in the EU. Over the period 2000 to 2005 non-agricultural wages are forecast to grow at an annual average rate of 8 per cent. Once demand pressures ease by the middle of the decade, non-agricultural wage inflation will return to levels comparable to the late 1980s, with average annual growth of 5.9 per cent between 2005 and 2010 followed by 5.7 per cent between 2010 and 2015 (see Figure 4.25).

Figure 4.25: Trends in Real Non-Agricultural Wages 1990-2015



Over the course of the 1990s real wages grew by an average of just under 2 per cent per annum, with the real after tax wage showing similar increases. The full-employment situation and tightness of the labour market imply that real wage growth will double in the coming years, averaging 4 per cent per annum between 2000 and 2005. The net result will be average real after tax wage growth of 4 per cent per annum between 2000 and 2005, moderating to 2.5 per cent between 2005 and 2010.

The overall rate of consumer price inflation in Ireland is principally determined abroad, given the openness of the Irish economy. This is certainly true in the case of "tradables" (goods), where inflation is imported from our main trading partners. However, inflation in "non-tradables" (services) is influenced by domestic costs and wages, which in turn will have an impact on competitiveness.

The euro has depreciated considerably against both sterling and the dollar since its introduction in 1999, which has increased inflationary pressures throughout the Euro area. The recent spurt in inflation is also due in some part to oil price increases. The combination of a weak euro and high oil prices has meant that inflation in the Euro area has exceeded the ECB's target of 0 to 2 per cent and Ireland's inflation rate has, in turn, been above the EU average for some time now.

Looking to the future, it is likely that the international factors that have been driving inflation upward in recent years will reverse. The *Benchmark* forecast assumes a gradual appreciation of the euro over the coming years, and this appreciation will ease inflationary pressures across the Euro area. Also, the price of oil has stabilised within OPEC's target range of $22 to $28 per barrel, and assuming prices remain in that range, the impact on inflation will be minimal.

The price deflator for personal consumption increased from an average annual growth of 2.7 per cent between 1990 and 1995 to 3.6 per cent between 1995 and 2000 reflecting the factors described above. It is likely to increase further in the coming years, and should average 3.9 per cent per annum over the period 2000 to 2005 as domestic demand remains very strong and wages continue to increase. As the economy returns to average European growth rates, the personal consumption deflator will increase at a more moderate pace, averaging 3.2 per cent between 2005 and 2015.

Table 4.11: Prices and Wages, Percentage Change

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
	Prices, % Change								Annual Average % Growth				
Personal Consumption	5.8	4.8	3.9	3.8	3.5	3.3	3.3	3.3	2.7	3.6	3.9	3.2	3.2
Public Consumption	5.0	9.8	4.5	8.9	7.3	5.1	5.2	5.5	4.9	4.3	7.1	5.5	5.3
Investment Building	13.6	11.1	8.3	1.0	1.0	1.8	1.9	2.0	3.9	10.9	4.6	1.7	1.5
Investment Machinery	5.6	5.0	4.5	3.6	3.2	2.9	2.7	2.5	3.2	2.0	3.8	2.4	2.2
Exports	5.7	4.0	4.1	1.3	1.6	1.1	1.6	1.7	1.3	2.3	2.4	1.6	1.8
Imports - Energy	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	-4.0	3.1	2.5	2.5	2.5
Imports – Non-Energy	8.5	4.2	3.7	1.9	1.9	1.9	1.9	1.9	2.7	2.7	2.7	1.9	1.9
Agricultural Output – Gross	11.8	-9.5	1.2	0.5	4.2	-5.3	0.4	0.0	3.7	0.6	-1.9	0.5	1.0
Manufacturing Output – Gross	1.3	1.3	1.3	0.7	1.1	1.1	1.1	1.3	0.8	0.2	1.1	1.2	1.3
	Average Annual Earnings % Change								Average Growth Rate, %				
Industry	8.1	9.8	9.7	8.0	6.0	5.6	5.7	6.1	3.9	4.8	7.8	6.0	5.7
Non-Market Public Admin.	2.7	7.4	10.9	10.5	8.5	5.6	5.7	6.1	2.8	4.7	8.6	6.0	5.7
Non-Agricultural	8.1	9.8	9.7	8.7	6.6	5.5	5.7	6.0	4.4	5.5	8.0	5.9	5.7

4.7 The Labour Market

The Irish labour market is currently in uncharted territory, with virtually full employment and net immigration of about 20,000 people per annum. The speed of the turnaround has been remarkable, considering that at the start of the 1990s the unemployment rate was in double-digits, leaving many with little choice but to emigrate. There are two principal driving forces behind the exceptional rate of economic growth witnessed since the mid-1990s: productivity and employment growth. The growth path of productivity was considered previously, and employment is considered below.

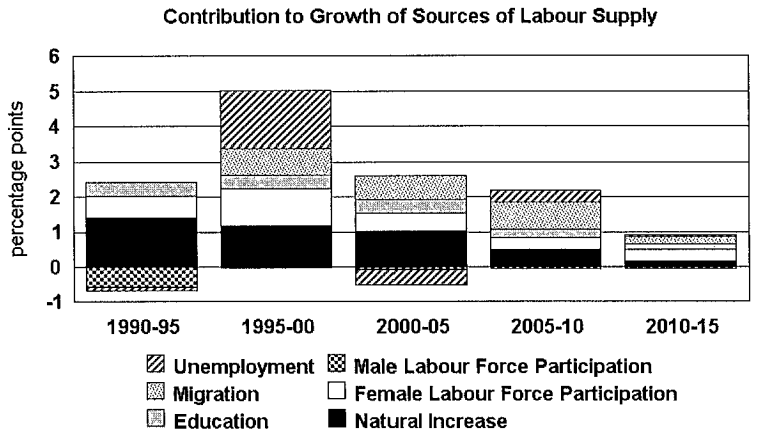
Employment growth accelerated markedly in the late-1990s. Between 1995 and 2000 annual employment growth averaged almost 5 per cent per annum. On a PES basis,[14] this translates into an increase of some 340,000 jobs over the period, bringing total employment to almost 1.6 million in 2000. However, employment growth will be constrained in the medium term by labour supply. We are forecasting annual average growth in total employment of 2 per cent between 2000 and 2005, slowing further to average 1.8 per cent between 2005 and 2010.

The impressive employment growth during the 1990s was associated with a corresponding reduction in unemployment. On an ILO basis, the number of people unemployed fell from 223,000 in 1993 to just 75,000 in 2000, giving an unemployment rate of just 4.3 per cent. Unemployment is forecast to continue its downward trend until 2002 when it will reach a trough of 65,000 or 3.6 per cent. After this, a combination of the weak external environment and a loss of competitiveness will result in the economy performing below its potential for a few years. There will be a consequential increase in unemployment, with some 113,000 or 5.8 per cent of the labour force unemployed by 2005. The slowdown will be relatively short-lived though, and a recovery in the rest of the world, coupled with a reduction in the growth of labour supply, will return the economy to its potential growth path. Unemployment will then resume its downward trend and should return to the full employment level of about 4 per cent of the labour force by 2010.

The contributions of the different sources of labour supply to employment growth are illustrated in Figure 4.26. This is similar to Figure 4.6 earlier in this chapter with the exception that here we include the unemployed as a potential source of new employment. Given the current full employment situation, the pool of available labour in the form of the unemployed has been largely exhausted. Reductions in unemployment accounted for over 30 per cent, or 1.65 percentage points, of the total increase in employment growth between 1995 and 2000. The increase in unemployment between 2000 and 2005 will reduce employment growth by an average of 0.5 percentage points over the period.

[14] Throughout the *Review* we use the PES definition of employment rather than the ILO basis because it is only on the basis of the former that consistent series are available back to the 1970s. When talking of the unemployment rate we use the more normal ILO basis.

Figure 4.26: Decomposition of Employment Growth



Unsurprisingly, those sectors that have demonstrated the most significant output growth have also enjoyed the most impressive employment growth. These sectors include building, high-technology manufacturing and all of the services sectors. Employment in the building sector was considered in some detail in Section 4.4. In the high-tech sector employment growth averaged 6.2 per cent between 1995 and 2000. Increases of this order are clearly not sustainable in a fully employed economy, and we forecast that employment growth will slow to 3.2 per cent between 2000 and 2005. This is still well above average employment growth for the entire economy for the same period (2 per cent), emphasising the importance of the high-tech sector to the economy. Once the industry matures employment growth will slow, and we predict average growth of 1.2 per cent between 2005 and 2010. This implies that the high-tech sector will employ 180,000 people by 2010, just under 10 per cent of total employment, representing an increase of almost 100 per cent since 1990.

Table 4.12: Employment and the Labour Force, Percentage Change, Mid-April

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
					%				Annual Average % Growth				
Agriculture	-2.9	-0.7	-3.0	-2.8	-2.8	-2.8	-2.8	-2.8	-3.3	-3.1	-2.4	-2.8	-2.8
Industry	5.6	3.5	2.9	0.3	0.3	0.2	0.4	0.5	1.7	6.1	1.4	0.6	-0.7
Manufacturing:													
Traditional	-2.5	0.0	0.0	-3.1	-3.2	-3.3	-2.7	-2.8	-0.2	-0.2	-1.9	-2.9	-3.4
Food Processing	0.0	0.0	1.1	0.3	0.1	-1.5	-0.9	-1.1	3.8	1.4	0.0	-1.1	-1.4
High Technology	2.6	4.1	3.8	2.6	2.8	2.7	1.1	1.0	2.8	6.2	3.2	1.2	-1.3
Manufacturing	0.4	2.0	2.1	0.3	0.5	0.2	-0.4	-0.4	1.7	3.0	1.0	-0.3	-1.8
Utilities	-2.6	0.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	1.6	-2.6	-1.2	-2.0	0.0
Building	17.0	6.5	4.5	0.4	0.1	0.2	1.9	2.3	1.8	14.6	2.3	2.2	0.9
Market Services	5.3	6.2	2.0	1.7	1.2	2.1	2.6	2.8	3.2	6.4	2.6	2.6	1.5
Distribution	4.5	4.4	1.0	0.8	1.0	1.2	2.8	2.8	1.8	4.4	1.7	2.7	1.0
Transport & Communications	5.7	4.6	2.1	0.9	0.9	1.1	1.3	1.2	2.3	5.6	1.9	1.2	0.5
Other	5.7	7.9	2.6	2.6	1.4	2.9	2.9	3.2	4.9	8.3	3.4	2.9	2.0
Non-Market Services	5.9	3.4	3.4	2.9	2.9	2.9	2.9	2.9	3.3	4.3	3.1	2.9	1.5
Health & Education	6.3	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.7	5.1	3.4	3.0	1.5
Public Admin.	5.0	1.5	1.5	2.5	2.5	2.5	2.5	2.5	2.4	2.0	2.1	2.5	1.5
Total Employment	4.8	4.3	2.2	1.2	1.0	1.4	1.7	1.8	1.9	4.9	2.0	1.8	0.7
Unemployment	-12.4	-18.4	3.3	17.3	18.0	9.6	0.5	-0.9	1.8	-10.6	5.1	-4.1	1.2
Labour Force	3.5	2.8	2.2	2.1	2.0	1.9	1.6	1.6	1.9	3.4	2.2	1.4	0.7
									1995	2000	2005	2010	2015
Unemployment Rate (ILO)	4.3	3.8	3.6	4.3	5.3	5.8	5.7	5.5	12.2	4.3	5.8	4.0	4.1
Net Immigration, Thousands	20.0	18.1	12.2	12.0	15.0	15.0	15.0	15.0					

Employment in each of the market services sectors was also considered in Section 4.4, where it was noted that market services as a whole would become the dominant sector in terms of economy-wide employment, representing almost 45 per cent of total employment by 2010. Employment growth in the sector has been above the average for the entire economy since the mid-1980s, and this trend is expected to continue over the forecast horizon. As the economy operates below full capacity, employment growth will slow to an average of 2.6 per cent per annum between 2000 and 2005. A similar growth rate is forecast for the period 2005 to 2010.

Within the market services sector, employment in other market services (business and personal services) has traditionally grown faster than either distribution or transport and communications, and this pattern is forecast to continue. In terms of actual numbers employed, in 2000 other market services accounted for exactly half of total market services at about 330,000 people.

The percentage growth in employment in non-market services is expected to be greater than in market services over the coming decade as public demand for state services increases in line with rising living standards. We are forecasting average growth of 3.1 per cent between 2000 and 2005 and 2.9 per cent between 2005 and 2010. For reasons discussed in Section 4.4, the majority of the jobs are likely to be in health and education,[15] particularly health, rather than public administration.

Employment is forecast to decline in agriculture, traditional manufacturing and food processing. By 2010 more people will be employed in public administration than in the agricultural sector. While employment in traditional manufacturing remained broadly stable over the 1990s, it is expected to fall by about 20 per cent over the coming decade. In food processing employment is forecast to decline marginally over the coming decade.

The forecast increase in employment is expected to be predominantly in "high skilled" sectors. While the high-tech manufacturing sector has risen rapidly in skill, it is not the most skilled sector and employs only a minority of the total skilled labour force. Accordingly, employment growth will be strongest in the other market services sector, which includes finance, banking and other internationally traded services. All of these activities are human capital intensive, requiring a skilled labour force. Another sector that will be growing rapidly over the next decade is health and education within the non-market services sector. Again, employment in these areas tends to be high skilled. Between 2000 and 2010 these three human capital intensive sectors (high-tech manufacturing, other market services and health and education) will account for some 75 per cent of total employment growth, with other market services comprising 37 per cent of new jobs.

While unskilled employment will fall over the coming decade the fall will be roughly in line with the fall in supply. In the medium term projected employment gains in predominantly less skilled sectors such as distribution, personal services and building will, to some extent, offset the falls in agriculture and traditional manufacturing. At the moment there is an excess demand for unskilled labour, which is probably causing wage dispersion to decline, as unskilled wages are rising faster than skilled. However, in the case of a temporary economic slowdown, this category of employees may be disproportionately affected.

[15] With falling numbers of young people, the quality of educational services measured in terms of the teacher pupil ratio could improve, even if there were no increase in employment.

Figure 4.27: Relative Hourly Wage Rates

Source: CSO Industrial Earnings Statistics

Using wage rates in the clothing sector[16] as a proxy for unskilled wage rates, we plot its trend relative to manufacturing in Figure 4.27. This suggests that since the mid-1990s wage dispersion has been reduced. It also conforms to other evidence[17] in showing that dispersion increased dramatically in the early 1980s. The change since the mid-1990s reflects the fact that, with full employment, unskilled labour has been in relatively short supply. As a result wages have been bid upwards in these sectors, and have been increasing faster than in skilled sectors. This has helped to reduce unemployment to current record lows as Irish unemployment has traditionally consisted of the lower skilled.

In recent years migration flows both into and out of Ireland have been of skilled people. We assume that future migration will continue to be mainly skilled. In the *Benchmark* forecast we anticipate that slower growth in the next few years will see some slowdown in net immigration (Table 4.12). However, significant net immigration will continue in the medium term.

4.8 The Balance of Payments, the Public Finances and Savings

THE BALANCE OF PAYMENTS

The current account of the balance of payments was in deficit throughout the 1970s and 1980s. However, the strength of economic growth throughout the 1990s has resulted in output growth significantly exceeding the growth in domestic demand. There has been a corresponding turnaround in the balance of payments, with an average current account surplus of 2.5 per cent of GNP between 1992 and 1999. The surpluses recorded during this period have made a significant positive contribution to economic growth.

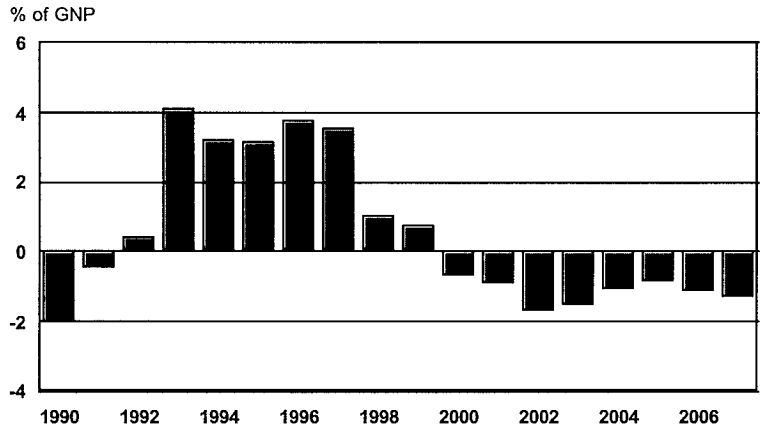
The balance on the current account returned to a deficit in 2000 and is expected to remain in deficit over the medium term, averaging 1.2 per cent of GNP between 2001 and 2007 (see Figure 4.28). Many factors will contribute to this, including the slowdown in export growth, increasing factor flows abroad and the fact that imports are forecast to increase in line with exports over the coming decade. Furthermore, Ireland will become a net contributor to the EU budget in 2006 and EU taxes are forecast to double in nominal terms over the coming decade. However, the single most important factor driving the forecast current account deficit is investment. Investment as a share of GNP has risen

[16] The clothing sector has traditionally had the lowest average level of human capital of all significant manufacturing sectors.

[17] Barrett, A., T. Callan, and B. Nolan, 1999. "Rising Wage Inequality, Returns to Education and Labour Market Institutions: Evidence from Ireland", *British Journal of Industrial Relations*. Vol. 37, No 1, pp. 77-100.

sharply in recent years and is expected to continue growing (Figure 4.20) as the country's infrastructural deficiencies are addressed. The fact that investment will exceed savings in the medium term implies that the balance of payments must remain in deficit. However, a deficit of 1 per cent of GNP does not represent a constraint on economic growth, as it is easily sustainable in the medium term.[18]

Figure 4.28: Balance of Payments Surplus as a Percentage of GNP



THE PUBLIC FINANCES

Over the course of the 1990s the government sector found itself part of a virtuous circle. The demographic changes, that aggravated the problems of the 1980s, began to work in the government's favour. As the public finances began to turn the corner falling debt interest payments replaced rising payments. All of this meant that instead of having to raise the tax burden it could begin to fall. As part of the "partnership process" the falling tax burden relieved pressures for large wage increases, making the economy more competitive.

As discussed earlier in this chapter, the dependency ratio has fallen exceptionally fast throughout the last decade. A record proportion of the population is in employment, generating tax revenue and, given their relative youth, their demand for state services and transfers is relatively limited. This low dependency rate contrasts with the situation in other EU countries where rising dependency is putting increasing pressure on government finances. It is chiefly in the area of investment in infrastructure that the government sector is facing a need for a major increase in the volume of expenditure.

The difference in demographics explains part, but only part, of the wide gap between the share of GNP accounted for by public expenditure in Ireland and elsewhere. As shown in Figure 4.29, from a peak in the early 1990s of almost 48 per cent of GNP, government expenditure fell to a low last year of 36 per cent. This fall has happened in spite of the increase in capital expenditure. The implications of the assumptions set out in Section 4.3 for the share of GNP accounted for by public expenditure over the coming decade is shown in Figure 4.29. They imply a small rise compared to the figure for this year.

However, as discussed in Chapter 6, this is not a normative projection. It would be quite possible for governments, through choosing different levels of provision of public services, to choose a rather different path for the expenditure share. Within reasonable limits the economic performance would

[18] Blanchard, O., 2001, "Country Adjustment Within the Euro Area: Lessons after Two Years", in A. Alesina, O. Blanchard, J. Gali, F. Giavazzi and H. Uhlig (eds.) *Defining a Macroeconomic Framework for the Euro Area*, London; CEPR.
http://web.mit.edu/blanchard/www/latecb.pdf

not be greatly affected by a slightly lower share or a slightly higher share, provided that tax rates were adjusted accordingly.

Figure 4.29: Government Expenditure and Taxation as a Percentage of GNP

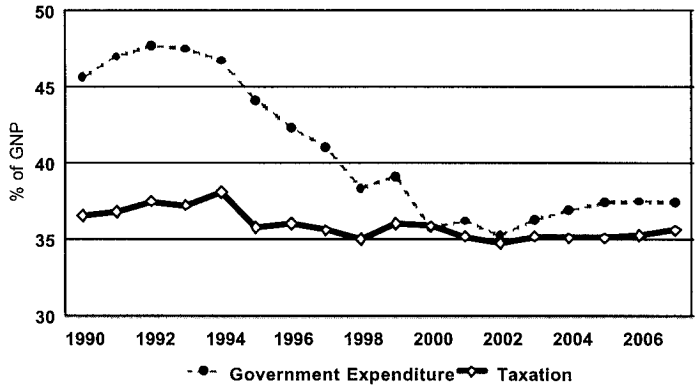
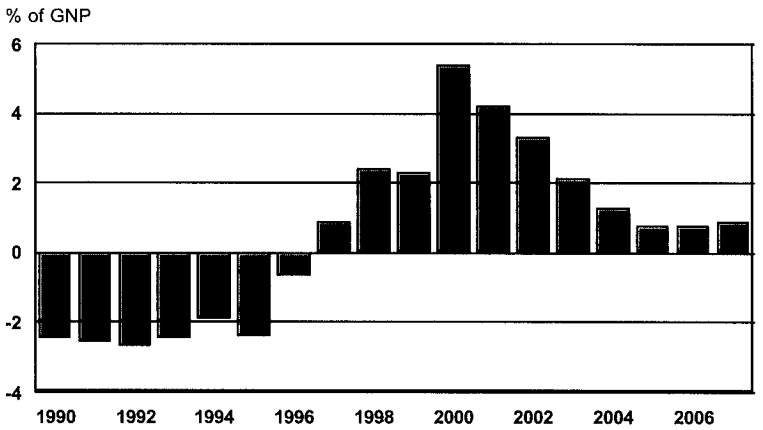


Figure 4.30: General Government Balance as Percentage of GNP



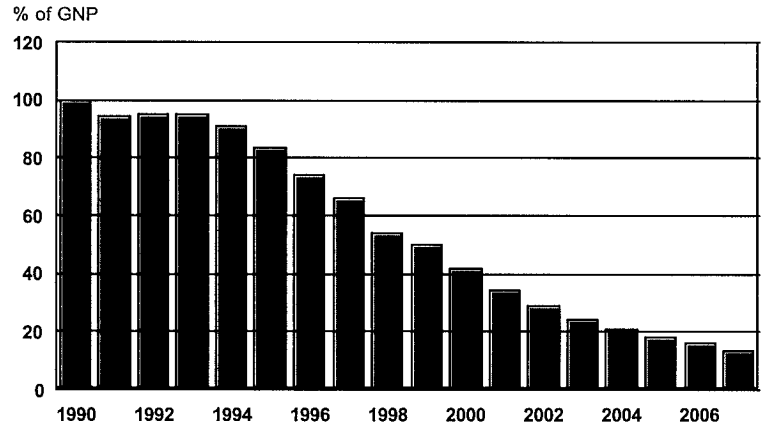
As discussed in Section 4.3, we have assumed that the objective of the government sector over the coming decade will be to run a general government surplus[19] averaging over the economic cycle one per cent of GNP (Figure 4.30). To run a higher surplus could possibly involve an unacceptable transfer of resources from the current to future generations. To aim to balance the budget or run a deficit could fritter away the window of opportunity provided by the favourable demographic situation. This issue is discussed further in Chapter 6.

The continuing small surplus, combined with sustained further growth in the economy, should see the debt to GNP ratio continuing to fall over the decade.[20] The rate of decrease is assumed to be slower than over the last five years because of slower growth and a smaller surplus. By the end of the forecast period it should probably be under 15 per cent of GNP. On the basis of the long-term projections underlying this *Review*, the ratio should fall to zero between 2010 and 2015.

[19] The one per cent a year contribution to the pension fund is included in the surplus and is not classified as expenditure.

[20] Here we net off the investments of the state pension fund against continuing liabilities. However, because of the pension fund the gross debt will be larger than shown here to the extent that the assets of the pension fund grow over the period.

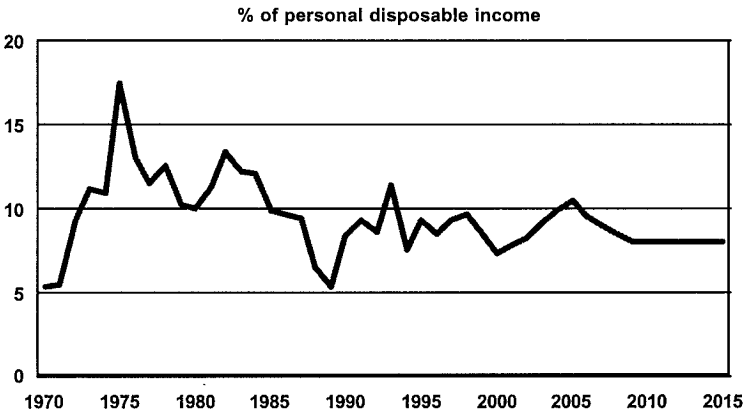
Figure 4.31: General Government Debt as Percentage of GNP



SAVINGS

During the latter half of the 1980s, as the economy began to show some signs of recovery, the personal savings ratio fell. Having fallen to a low of 5.4 per cent of disposable income in 1989 the ratio rose to 11.4 per cent in 1993 (Figure 4.32). This peak probably represents consumer caution following the currency crisis during late 1992 and January 1993, which saw sharp increases in interest rates.

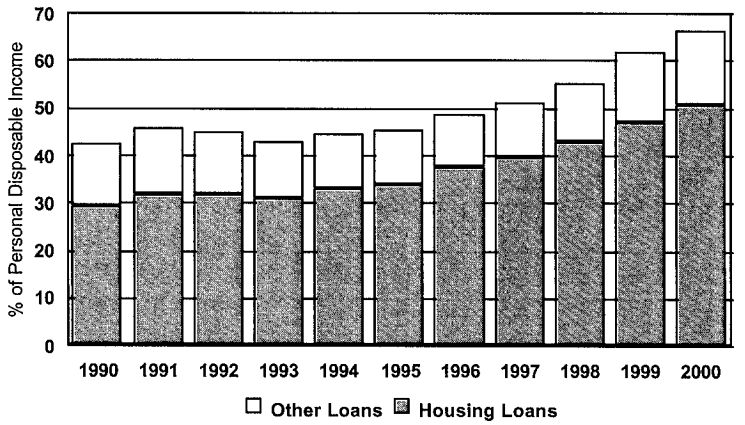
Figure 4.32: The Personal Savings Ratio, 1970-2015



The growth in the economy, increases in consumer wealth associated with higher disposable incomes, and increasing house prices contributed to a decline in the personal savings ratio over the course of the rest of the 1990s. Between 1994 and 1999 the ratio averaged 8.8 per cent of personal disposable income. It is estimated that the savings ratio fell to 7.4 per cent in 2000.

The increased uncertainty about immediate future developments in the economy and an ending of the rapid inflation in house prices are all expected to contribute to a rise in the personal savings ratio to 10.5 per cent by 2005. Thereafter, as the economy returns to full employment, it is assumed that the savings ratio returns to a long run level of 8 per cent.

Figure 4.33: Advances to the Personal Sector, All Credit Institutions



The consumption boom and the huge investment in housing by the personal sector that has accompanied the expansion of the Irish economy has resulted in an increase in the indebtedness of the household sector. Estimates of loans to the personal sector[21] as a percentage of personal disposable income give an indication of the level of personal debt. The level of debt remained broadly stable until 1993. However, since then the proportion of personal debt has increased quite rapidly.

Overall, the ratio of personal debt has increased from 43 per cent in 1990 to 66 per cent in 2000. Much of this increase has happened since 1995 (Figure 4.33). Between 1990 and 1997 the ratio of personal debt increased by nearly nine percentage points. In the period between 1997 and 2000 the ratio increased by sixteen percentage points. The increase has been driven by a large rise in borrowings for housing purposes. House mortgage finance and other housing finance amounted to just over 29 per cent of personal disposable income in 1990. By 2000, this had risen to 51 per cent. The rapid rise in the ratio of personal debt suggests that the exposure of households to an economic shock has increased. The fact that this increase is due to borrowing for housing purposes indicates the extent to which the economy is exposed to a shock affecting the housing market, such as a sharp upturn in interest rates or an employment shock.

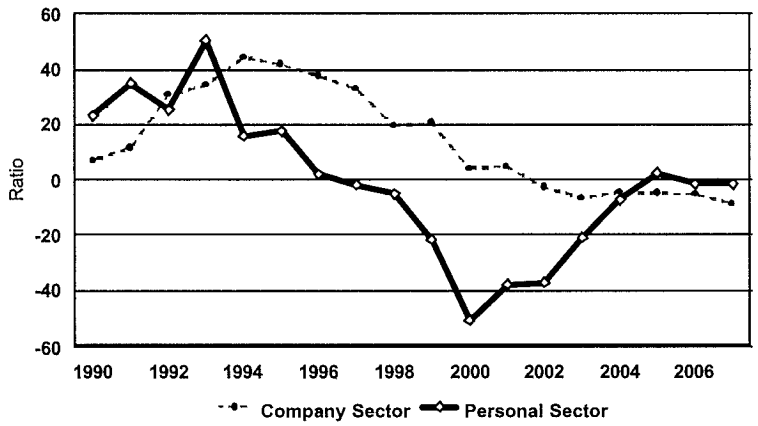
Figure 4.34 shows the proportions of gross savings by the personal and the company sectors that have been used to acquire financial assets. Traditionally, the personal sector saved much more than it needed to finance its investment in housing (and agriculture) and the residue was used to acquire financial assets. This acquisition of assets involved the transfer of the spare savings of the personal sector to the company or public sector that needed them to finance their investment programmes. However, the huge volume of investment in housing, which is exceptional compared to any other EU country, has meant that in recent years the savings of the personal sector were insufficient for the sector's needs. Instead of being a net lender it became a net borrower.

As can be seen from Figure 4.34 the personal sector will probably remain a net borrower out to 2005 so that the personal sector's indebtedness will continue to rise. This will put increasing pressure on households and it suggests that there may be a problem for the personal sector in funding all the investment in housing needed over the course of the decade. It may well be desirable and necessary to have the commercial sector fund some of the housing investment through an expansion of the private rental sector. This could

[21] Advances by all credit institutions to the personal sector, taken from successive Central Bank *Quarterly Bulletins* 1990-2000.

relieve the temporary financial pressures while ensuring that an adequate supply of dwelling is made available.

Figure 4.34: Ratio of Net Acquisitions of Financial Assets to Gross Savings



For the company sector the 1990s were a period of high profits. This encouraged firms to expand output in Ireland, contributing to the rapid growth. The level of company profits and, as a result, of company savings was such that the company sector's resources were more than adequate to fund its investment. While we see some squeezing of profitability in the short term, it still seems likely that the company sector's savings will be only slightly less than its requirement of funds for investment. There is likely to be a small amount of borrowing needed (negative acquisition of assets in Figure 4.34) relative to investment over the forecast time horizon.

4.9 The Implications of Growth

In this section we consider the detailed implications of the above forecasts for the housing sector and for energy demand and the emissions of greenhouse gases affecting global warming.

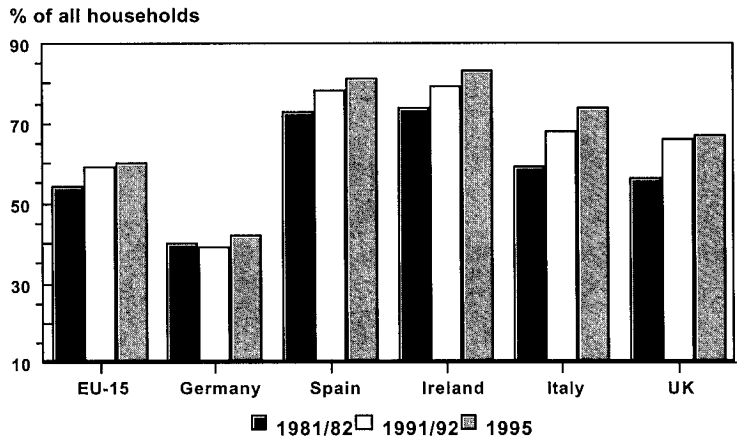
THE HOUSING MARKET

The rapid increase in house prices in the latter half of the 1990s focused public attention on the Irish housing market.[22] In recent times the rate of house price rise has increasingly been viewed as unsustainable. Measures of the increase in house prices show the annual rate of national house price change in the latter years of the 1990s at over 20 per cent per annum and there has been some analysis which has found evidence of a bubble in Dublin house prices.[23] High levels of home ownership in Ireland compared to many other EU member states means that the Irish economy is more exposed to the housing market. Ireland has the highest proportion of owner-occupiers in the EU, 83 per cent in 1995, up from 74 per cent at the beginning of the 1980s. Greece and Spain also have rates above 80 per cent. The proportion of owner-occupiers has risen throughout the EU since the beginning of the 1980s. Figures for 1981/82 show the EU average at 54 per cent, which by 1995 had risen to 60 per cent.

[22] For example, there have been three consultancy reports (Bacon *et al.*, 1998, 1999, 2000). In the IMF Article 4 *Review 2000* one of the selected issues was "Ireland's Property Boom from an International Perspective".

[23] Roche, M., 2001, "The Rise in House Prices in Dublin: bubble, fad or just fundamentals", *Economic Modelling*, Vol. 18, pp.281-295

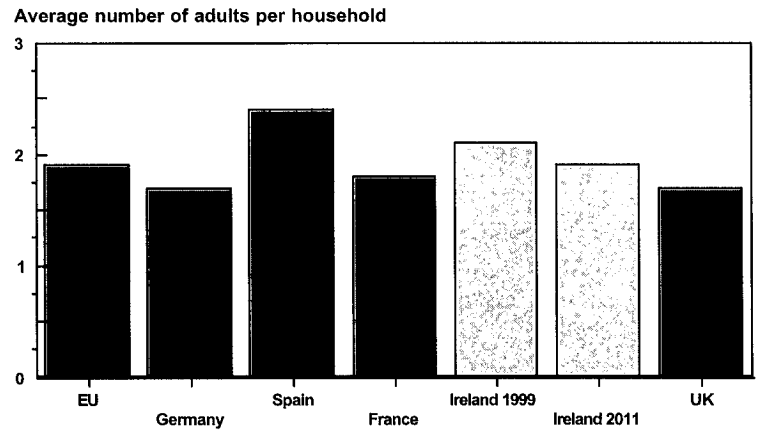
Figure 4.35. Owner Occupier Households



The upward trend in house prices resulted from rising demand for dwellings and a relatively inelastic supply of land, coupled with infrastructure constraints. Rising demand has been driven by a number of factors, all of which will be important in determining the number of independent households over the forecast period. These include:

- Overall economic growth, which is resulting in rising incomes and employment growth.
- Demographic factors, such as the proportion of the population in the household formation age groups and net inflows of people into the country.
- The Irish housing market has also benefited from a regime shift – entry to EMU – which resulted in a reduction in domestic interest rates due to convergence with euro rates. Interest rates are now expected to be lower and less volatile than in the past.
- Cultural changes in terms of family patterns and behaviour.
- Affordability is obviously very important. This determines whether young adults set up independent households or remain at home, and it affects immigration flows.
- Rising standards of living have also increased the demand for second dwellings i.e. holiday homes.

Figure 4.36: House Size: Average Number of Adults per Household, 1999



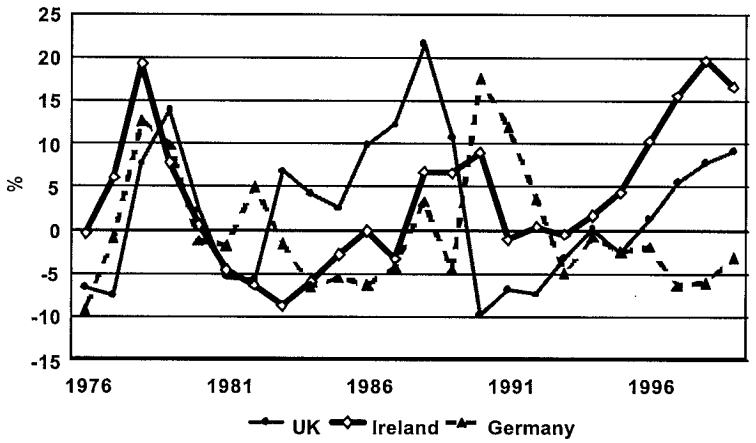
Note: EU figure excludes Denmark, Sweden and Finland.

In keeping with the trend across Europe, the average number of persons per household in Ireland has fallen since the start of the 1980s, from 3.6 to 3.1 in 1998. Currently this is still one of the highest in the EU, along with Spain and

Portugal. In the *Benchmark* forecast we have assumed that headship rates (the proportion of people of each age group who are heads of households) in Ireland fall from current levels towards current UK levels. The average number of adults per household in the UK in 1999 was 1.7 (see Figure 4.36).

Data from the Bank of International Settlements put the recent growth in Irish house prices in context. Between 1990 and 1999 prices fell in the UK, reflecting the slump in the UK housing market in the late 1980s and 1990s, while average growth in both Spain and Germany was low at just 0.8 per cent. In contrast average growth over the period in Ireland was 7.6 per cent. As is evident from Figure 4.37, annual growth in house prices in Ireland has been much higher in recent years.

Figure 4.37: Annual Change in Real House Prices



Sources: Ring Deutscher Makler; National Data, supplied by Bank of International Settlements.

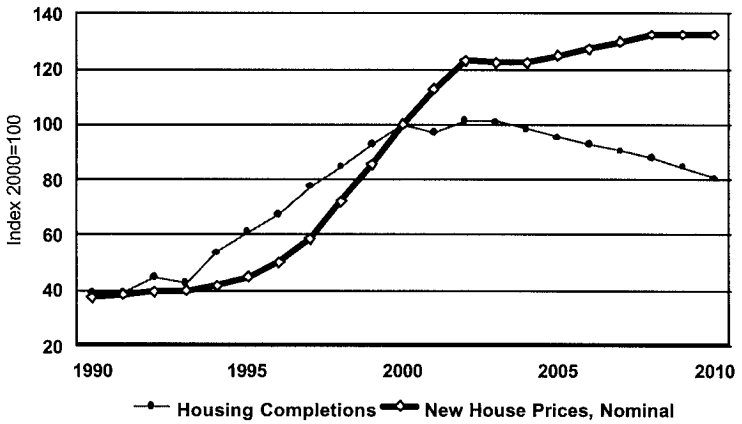
Despite the rapid increases in prices and concerns about the exposure of the economy to the property market, there are some indicators that suggest that exposure remains limited by international standards. For example, the level of outstanding residential mortgages is much lower than the level in other European countries. Of course, while this may limit exposure to a property market shock, it does not mean that the economy would be unaffected by a sharp downturn in house prices.

Table 4.13 Outstanding Residential Mortgages as a Percentage of GDP in 1998

Denmark	69
Netherlands	65
UK	57
Germany	53
Sweden	50
Ireland (1999)	33
Finland	30
Spain	24
France	21

Source: European Mortgage Federation Data, quoted in OECD *Economic Surveys*. For Ireland, *Central Bank Quarterly*, June 2001.

Figure 4.38: Housing Completions and House Prices (nominal)



As profitability in the building sector is gradually squeezed by the very gentle fall in real house prices, the supply of new dwellings will also gradually fall (Figure 4.38). By 2010 housing output should be down to about 40,000 units a year from a peak of around 50,000.

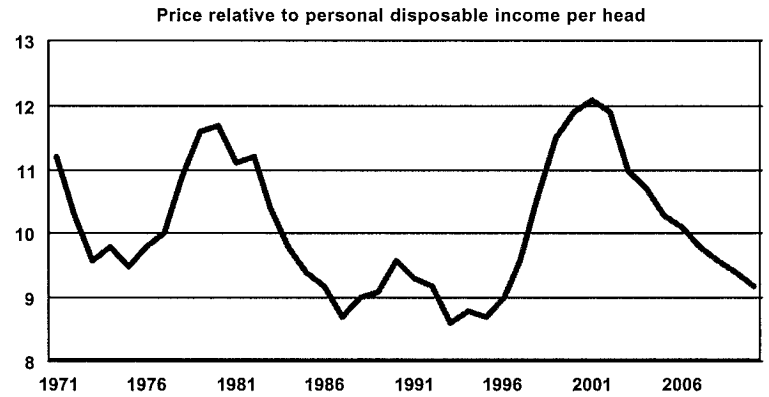
The recent growth in house prices has been much faster than income growth. As can be seen from Figure 4.39, the cost of new houses relative to personal disposable income per head is now higher than at any time since figures first became available in 1971. This ratio previously peaked in 1980 before declining steadily until 1987. Following a short-lived increase until 1990 the ratio declined until 1995 before increasing sharply. Growth in personal disposable income, at a time when house price growth is moderating will improve the affordability of new houses over the medium term. As a result, we anticipate that this year will see a peak in the ratio and that from 2002 onwards the ratio should improve. This reflects our forecast (Figure 4.38) that house prices should grow very slowly in nominal terms (falling slowly in real terms) from 2002 to the end of the forecast period (2007).

The model of the housing market,[24] embedded in the HERMES macro-economic model, can to some extent explain the rise in house prices in recent years in terms of changes in income, demographics and expected real interest rates. However, the equation explaining supply would suggest that at current prices the building industry would be producing over 60,000 dwellings a year. The explanation for this discrepancy is that the equation does not allow for changes in the real cost of building. In recent years the price of land and the profits accruing to landowners have mushroomed to an extent not seen before. In addition, the rise in labour costs in building has run well ahead of the rise in labour costs in the economy as a whole. Finally, builders' profits have also grown rapidly. In each case the rise is probably unsustainable. As the economy slows and as output gradually declines in the building industry, each of these elements of building costs should be squeezed. This helps explain how in spite of a slow fall in house prices in real terms over the forecast period, it is anticipated that housing completions will fall quite slowly.

Towards the end of the decade, as demographic pressures begin to ease, some further fall in house prices in real terms might be anticipated. This reflects the fact that house prices in Ireland are very high by EU standards. As demand slows and building costs are gradually squeezed, the gradually diminishing demand for housing should be met at a lower per unit cost in real terms.

[24] Based on Murphy, A. and F. Brereton 2001, "Modelling Irish House Prices: A Review", paper presented at the Irish Economic Association Annual Conference, April.

Figure 4.39: Relative Cost of New Housing, 1971-2010



Forces Driving the Irish Housing Market

The rise in demand for houses prompted an increase in the number of house completions over the 1990s. In 2000, the total number of houses built amounted to 49,812, of which 46,657 were private houses. The various forces driving the Irish housing market indicate that the economy will, on average, require that many completions each year on average until 2010.

Demographic pressures will play a key role. When both rising headship rates and the net migration flow into the country are accounted for, this implies that the demand for housing from these sources will require around 35,000 units a year between 2001 and 2011. In the next decade demand should fall back to about 23,000 a year out to 2015. Assuming that the demand for second or replacement dwellings averages around 10,000 a year this gives a total requirement of around 45,000 dwellings a year over the course of the current decade.

Figure 4.40 shows a breakdown of the factors underpinning the demand for housing by four main categories: the change due to pure demographic factors (rising numbers of adults); the change due to rising headship (proportion of each age group who are heads of households); the change due to net migration; and second or replacement dwellings (see also Table 4.14).

Figure 4.40: Housing Needs

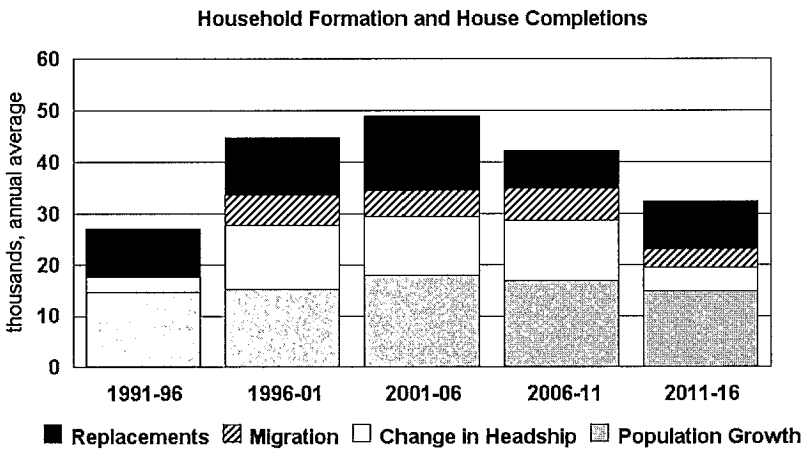


Table 4.14: Decomposition of Housing Demand, Thousands, Annual Averages

	1996-2001	2001-2006	2006-2011	2011-2016
Migration	5.9	5.2	6.1	3.7
Change in Headship	12.4	11.4	11.9	4.6
Population Growth	15.4	18.0	16.9	15.0
Second Dwellings	11.0	14.3	7.1	9.0

Pure demographic factors (the changing numbers in their late twenties and early thirties), excluding the effects of migration would require 16,600 dwellings a year. For much of the late 1990s the expectation that house prices would continue to rise rapidly is one of the factors that accelerated the propensity of young adults to form independent households. The rise in headship is likely to add 11,400 a year to housing demand between 2001 and 2006. This is forecast to rise to nearly 12,000 a year in the five years to 2011. Thereafter, we are forecasting that rising headship rates will require a lower numbers of houses, averaging 4,600 units a year in the 2011-2016 period. Since 1996 demand for housing has also been boosted by a net inflow of returning emigrants and immigrants, attracted by employment opportunities in the Irish economy. In the period between 1996 and 2001 this factor is estimated to have added nearly 5,900 dwellings a year to housing demand. The importance of migration is forecast to continue over the next decade. On the basis of the levels of migration assumed in the *Benchmark* forecast (a net inflow averaging 14,000 between 2000-10), there will be a need for between 5,200 and 6,100 dwellings a year over the next decade to accommodate these new households. However, the rise in house prices, the scarcity of available housing and high rental levels may work to deter immigration. In the short term these figures may well represent an upper bound for housing demand driven by migration.

ENERGY AND THE ENVIRONMENT

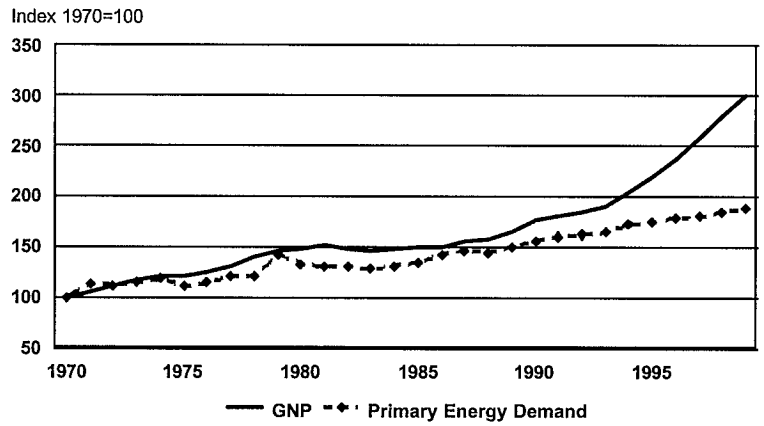
Trends in Energy Consumption

The demand for energy in Ireland is a derived demand, driven by economic growth. However, factors such as changing energy prices and technological progress can have a moderating influence on demand by causing a substitution away from energy products or by introducing more efficient use of fuels. In addition, with rising incomes, patterns of consumption can change, with food and heating accounting for a diminishing share of additional consumption while other goods and services increase their share (see Box 4.3). The demand for primary energy broadly kept pace with the growth in real GNP until the 1980s, as illustrated in Figure 4.41. Energy demand actually fell in the mid-1980s as the economy struggled. In recent years the growth in GNP has dramatically outpaced the growth in demand for primary energy. This reflects changing tastes and it is also likely that energy efficiency has increased in recent years as gas has increased its market penetration.

Total final consumption of energy (TFC) equals the sum of the consumption of each fuel by the principal sectors, excluding energy transformation (electricity production, oil-refining etc.). In Figure 4.42 we illustrate the breakdown of TFC by fuel in 1980 and 2000 showing the changes in the fuel mix over the last 20 years. It is obvious that oil is the dominant fuel in the Irish market, and has been for the last twenty years. Its share was over 64 per cent in 2000, broadly unchanged since 1980. Electricity is the second most important with 16.5 per cent, followed by gas with 11.5 per cent. Consumption of coal and peat has fallen dramatically since 1980, as both firms and households shift their consumption to cleaner, more efficient fuels. Coal was the second most popular fuel in 1980 with a 12 per cent share, but by 2000 this had fallen to just 5 per cent. Peat also suffered a similar fate, with its share decreasing from 5.5 per cent to a mere 2.9 per cent over the same time horizon. Although electricity has

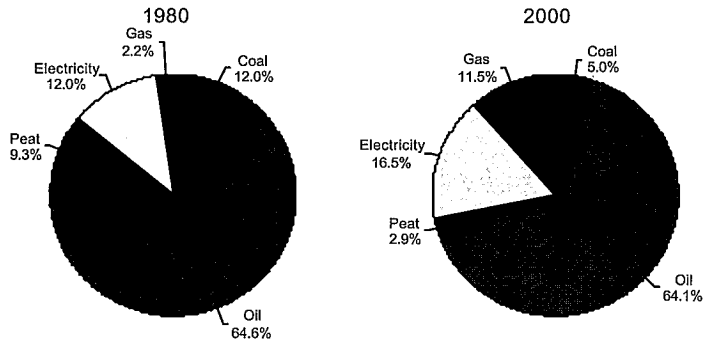
increased its share, natural gas was the main beneficiary of this shift in consumption patterns, increasing its share from just 2 per cent in 1980 to 11.5 per cent in 2000.

Figure 4.41: Total Primary Energy Demand and GNP 1970-1999



During the first half of the 1990s, final consumption of electricity grew by almost 25 per cent, an identical growth rate to that of GNP over the period. Between 1995 and 2000, final consumption of electricity grew by almost 35 per cent to stand at over 1700 TOE[25] in 2000. Although GNP grew by almost 50 per cent in real terms over the same period, this still constitutes very rapid growth in electricity consumption, and we expect further increases in the medium term. Ensuring adequate supply for the future will require significant investment in infrastructure in the coming years.

Figure 4.42: Total Final Consumption of Energy by Fuel



Energy Demand Forecast

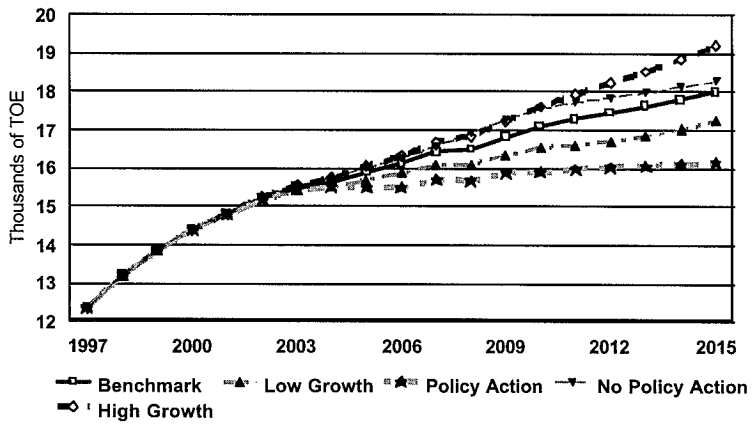
The demand for primary energy under different scenarios is illustrated in Figure 4.43. The solid line represents the *Benchmark*. Because of the uncertainty that surrounds our macro-economic forecasts, in the next chapter we consider a number of alternative scenarios for the growth in potential output. Here we also consider the implications of the scenarios referred to as the *High Growth* and *Low Growth* or *Missed Opportunities* scenarios for energy demand. In the low growth scenario primary energy demand would be almost 1 million TOE less than the benchmark annum by 2015. In the case of the high growth scenario

[25] TOE standing for tonnes of oil equivalent.

the *Benchmark* would underestimate the primary energy demand by over 1 million TOE per annum by 2015.

Forecast carbon dioxide emissions are considered in more detail below, but Ireland's commitments under the Kyoto Protocol will require some policy action if they are to be met. If no direct policy action of any kind is taken (the *Benchmark* scenario assumes some limited policy changes) primary energy demand would be similar to the high growth scenario until 2010, and would remain above the *Benchmark* throughout. This assumes that Moneypoint, a coal burning power station, remains on full power and oil stations reduce power by only two-thirds by 2015. In a final scenario we consider the impact on energy demand where a number of significant policy measures are implemented taking Ireland close to its emissions target. Under this scenario ("policy action"), described in the section on forecast emissions below, demand stabilises at about 16 million TOE from 2009, and would be some 2 million TOE below the *Benchmark* by 2015.

Figure 4.43: Primary Energy Demand under Different Scenarios



On the basis of the *Benchmark* forecast for economic growth, described previously in this chapter, the final consumption of energy is forecast to increase considerably in the medium term, as illustrated in Table 4.15. Total final energy consumption is predicted to increase to over 14.3 million TOE by 2015. This represents an increase of 35 per cent on the 2000 figure for TFC, and is practically double the 1990 level.

Table 4.15: Forecast Final Consumption of Energy by Fuel, Thousand TOE

	1990	1995	2000	2005	2010	2015	% Change on 1990
Coal	893	380	528	286	158	86	-90.3
Oil	3,874	4,609	6,563	7,594	8,541	9,004	141.7
Peat	757	615	303	259	231	141	-81.3
Electricity	1,032	1,284	1,726	2,,083	2,442	2,690	160.7
Gas	576	739	1,206	1,657	1,980	2,150	273.4
Renewables	109	129	135	131	128	125	14.9
Total	7,241	7,904	10,616	12,158	13,623	14,335	98.0

Oil is forecast to maintain its dominance, with its share declining only marginally to 63 per cent by 2015. Demand for oil will increase by over 140 per cent between 1990 and 2015, by which time final consumption will exceed 9 million TOE. Demand for electricity and gas will increase by a greater margin above their 1990 levels. Electricity demand will increase to over 160 per cent of its 1990 level to reach 2.7 million TOE by 2015. This implies that electricity's share of TFC will increase to almost 19 per cent from 16.5 in 2000. Gas is likely to witness the strongest growth of all the fuels, with demand in 2015 estimated to exceed its 1990 level by over 270 per cent. This translates to a final

consumption of almost 2.2 million TOE, which will increase gas' share to 15 per cent, up from 11.5 per cent in 2000 and just 2 per cent in 1990.

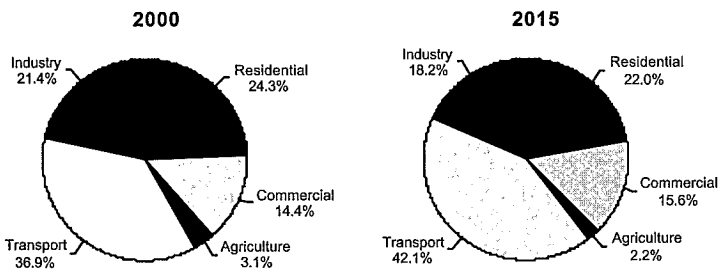
The decline in consumption of coal and peat is forecast to continue, and by 2015 their market shares will stand at just 0.6 per cent and 1 per cent respectively. In fact, by 2015 it is estimated that renewable energy will enjoy a greater share of final consumption than coal at 0.9 per cent of the overall market. What we are witnessing is a gradual movement to a situation where three fuels dominate the market. By 2015 oil, gas and electricity will constitute some 97 per cent of TFC, compared to 76 per cent in 1990.

Table 4.16: Forecast Final Consumption of Energy by Sector, Thousand TOE

	1990	1995	2000	2005	2010	2015	% Change on 1990
Residential	2,223	2,177	2,576	2,893	3,109	3,149	41.7
Commercial	1,006	1,229	1,526	1,763	2,058	2,236	122.3
Agriculture	252	288	333	321	302	311	23.4
Transport	2,025	2,461	3,913	4,751	5,590	6,032	197.9
Industry	1,735	1,749	2,268	2,430	2,564	2,607	50.3
Total	7,241	7,904	10,616	12,158	13,623	14,335	98.0
Change on 1990 (%)	0.0	9.2	46.6	67.9	88.1	98.0	

Total final consumption can also be differentiated by sector, as shown in Table 4.16. By 2015 all sectors are likely to have increased their demand for energy over 1990 levels. The most significant increase will come in the transport sector, where demand will be almost 200 per cent greater than in 1990, at over 6 million TOE. The commercial and public sector will also witness significant growth in energy consumption, as the sector is likely to be one of the fastest growing in the medium term, with both employment and office space forecast to increase significantly. Final consumption is expected to reach 2.2 million TOE by 2015, an increase of more than 120 per cent from 1990 levels. The other sectors are likely to witness more modest growth in final consumption because of lower levels of overall growth and general improvements in efficiency and energy conservation.

Figure 4.44: Total Final Consumption by Sector



In summary, final consumption of energy is forecast to increase significantly in the medium term. It is forecast to rise by 35 per cent between 2000 and 2015, from 10.6 million TOE to 14.3 million TOE. Oil, electricity and gas will constitute some 97 per cent of demand, while the most notable increase in energy consumption will come from the transport and commercial and public sectors.

Forecast Greenhouse Gas Emissions

The forecasts described above for energy demand have significant environmental implications, particularly in the area of global warming. The burning of fossil fuels releases carbon dioxide, which is the most significant contributor to greenhouse gas emissions into the atmosphere. The exact magnitude of the problem of global warming remains uncertain, but over the last decade the reality that a problem exists and requires attention has been accepted. A deal was struck at the United Nations Framework Convention on Climate Change held in Kyoto, Japan in December 1997 whereby the world's most developed countries agreed to reduce greenhouse gas emissions by an aggregate 5.2 per cent from 1990 levels between 2008 and 2012. The validity of the deal was brought into question by the refusal of the US to ratify the Protocol, but in July 2001 in Bonn 178 countries, excluding the US, signed up to the agreement. Ireland is committed to restricting its greenhouse gas emissions to 13 per cent above their 1990 levels between 2008 and 2012.

In order to forecast carbon dioxide (CO_2) emissions, consumption of each fuel must be multiplied by an appropriate "emission factor", since each different fuel will release a different amount of CO_2 when burned. Coal and peat have the highest emission factors, and these "dirtier" fuels have a much higher share of emissions than of total final consumption. Gas has an emission factor less than half that of peat, while oil lies somewhere in between. Emissions from electricity generation tend to be disproportionately high, as much of the energy of the individual fuels is lost in generation. The emissions due to electricity depend on the fuel-mix and the efficiency of generation, and to account for this we convert a given final consumption of electricity into a primary demand for coal, oil, peat and gas. We do not include renewable sources, as they do not emit carbon dioxide. Forecast CO_2 emissions by sector are shown below.

Table 4.17: Forecast CO_2 Emissions by Sector, thousand tonnes

	1990	1995	2000	2005	2010
Residential	10,252	10,097	11,066	11,561	11,156
Commercial	4,756	5,790	6,962	7,564	7,820
Agriculture	1,037	1,183	1,288	1,203	1,048
Transport	4,968	6,246	10,092	12,247	14,402
Industry	8,816	9,464	11,296	11,330	10,670
Energy Transformation[26]	331	480	415	520	579
Total	30,161	32,287	40,191	43,496	44,745
Change on 1990 (%)	0.0	7.0	33.3	44.2	48.4

Emissions of carbon dioxide are likely to increase significantly over the forecast horizon. Total emissions of CO_2 amounted to just over 30 million tonnes in 1990 (the Kyoto base year). By 2010 this is likely to have increased to almost 45 million tonnes, representing a 48 per cent increase on the base year. The residential, transport and industrial sectors are the main culprits, and these three will account for over 80 per cent of total CO_2 emissions by 2010. The fastest growing sector in terms of carbon emissions is the transport sector, which will have taken over from the residential sector as the dominant source of CO_2 by 2005, and is likely to experience growth of 190 per cent between 1990 and 2010. The commercial and public sector is also forecast to experience strong growth in carbon emissions, which will be almost 65 per cent above 1990 levels by 2010.

The Kyoto Protocol permits a 13 per cent increase in total emissions from the 1990 base. In order to achieve this it is necessary to gather information on

[26] This amounts to the amount of CO_2 emitted in electricity generation.

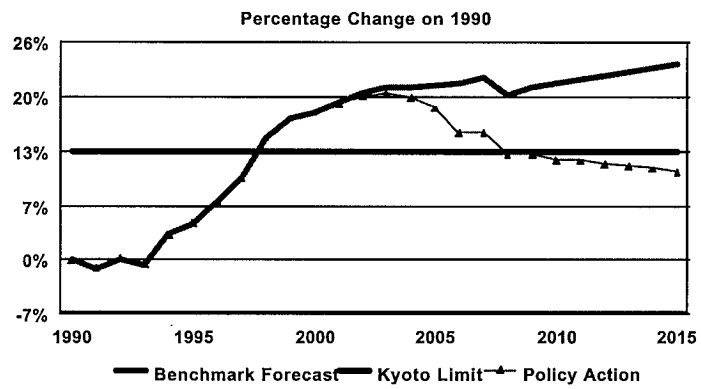
Ireland's emissions of the other greenhouse gases[27] as well as the extent of sequestration as a result of carbon sinks. Along with carbon dioxide, methane and nitrous oxide are the other gases that Ireland emits to a significant extent. A significant proportion of this is attributable to the agricultural sector; the cattle herd produce methane as part of their digestive process, while fertiliser usage is responsible for the majority of nitrous oxide emissions. Using data from a number of sources we have forecast emissions of the different gases below. In the case of methane, we have relied on Teagasc's forecast, using their FAPRI model, of the number of cattle consistent with the agricultural figures underlying the *Benchmark* projection.

Table 4.18 describes the *Benchmark* forecast for greenhouse gas emissions based on the above energy demand forecasts and certain other assumptions. First, Moneypoint is assumed to operate on half power from 2008. Second, the new gas stations are assumed to use only 2 per cent of output in generation compared to an average of 6 per cent for all current generating stations. Third, the existing peat stations are replaced from 2006 with new peat stations. Also, methane emissions are assumed to fall in line with our forecast for agricultural output. Finally, by 2010 some 10 per cent of electricity generated is assumed to come from renewable sources. Emissions increased by 18 per cent between 1990 and 2000. The pace of increase is likely to decline over the forecast horizon as the assumptions made begin to take effect. Carbon sinks will increase in magnitude. Our forecast assumes a fall in livestock numbers in the agricultural sector. Nevertheless, by 2010 it is likely that emissions will be over 21 per cent above 1990 levels, eight percentage points above the Kyoto target.

Table 4.18: Forecast Greenhouse Gas Emissions, kT of CO_2 equivalent

	1990	1995	2000	2005	2010
CO_2	32,159	34,501	43,359	47,130	48,914
Methane	12,836	13,311	1,666	11,590	11,081
Nitrous Oxide	9,086	9,505	9,629	9,673	9,719
Sinks	0	-893	-2,013	-3,008	-4,143
Total	54,081	56,423	63,642	65,387	65,571
Change on 1990 (%)	0.0	4.3	17.7	20.9	21.2

Figure 4.45: Forecast Greenhouse Gas Emissions



Given the commitment to meeting targets set down in the Kyoto Protocol and the possible financial penalties associated with non-compliance, we have constructed a scenario whereby emissions are kept below the Kyoto target. This scenario was mentioned above, and involves the reduction of emissions by implementing policies that will restrain primary energy demand ("policy action" scenario in Figure 4.45). In this scenario existing gas stations are assumed to be

[27] The gases covered by the Kyoto Protocol are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydroflourocarbons (HFCs), perflourocarbons (PFCs) and sulphur hexaflouride (SF_6).

phased out by 2015 in order to increase efficiency, while the two new peat plants that are planned are not built but rather replaced by new gas stations. Lower fertiliser usage in the agricultural sector will reduce agricultural emissions of nitrous oxide by 10 per cent. Finally, these policy measures are assumed to increase electricity and energy prices for residential, commercial and industrial customers by 10 per cent, which leads to a corresponding 2 per cent fall in energy use and emissions. Under this scenario emissions would peak at 20 per cent above their 1990 levels in 2003 before declining thereafter. By 2008 they would be below the 13 per cent threshold above 1990 levels, compared to 21 per cent in the benchmark scenario (see Figure 4.45).

However, this scenario could involve major costs. It would require early replacement of half of the current electricity generating capacity, which could cost between one and two billion pounds. Furthermore, no account is taken of the knock-on effects on the economy of the major costs involved in meeting this scenario nor of the wider effects of raising the price of energy. This policy mix is not necessarily optimal, and there would almost certainly be significantly cheaper methods of achieving the same result. It is likely that a more equitable burden sharing arrangement could be drawn up rather than focusing only on the electricity generating and agricultural sectors, as is assumed here. The purpose of this scenario is to illustrate that it is possible to meet our Kyoto commitments, but the mechanism for delivering such reductions in emissions will require considerable debate at a national level.

4.10 Conclusions

The main points that emerge from our forecast are as follows:

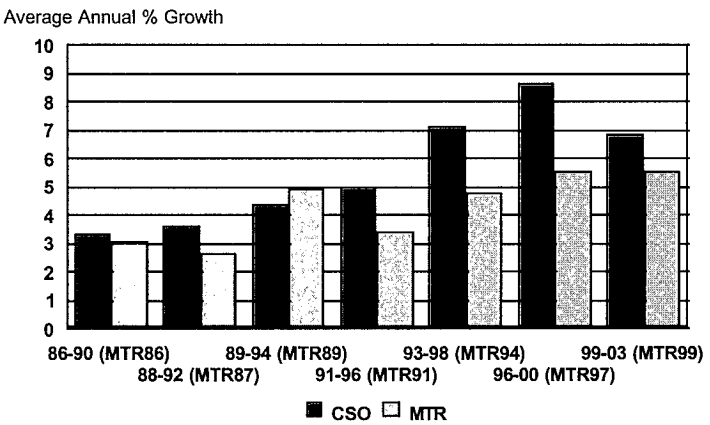
- The economy has, until now, been growing very rapidly. The most likely scenario for the next decade is that it will gradually slow, with a reversion to a "more normal" European growth rate after 2010. In the absence of external disturbances this would imply a growth rate for GNP over the next five years of around 5 per cent a year. However we anticipate that the current weaknesses in the US economy and the likely appreciation of the euro over the next year will lead to growth below potential averaging 48 per cent per annum. Thereafter, we expect the economy to grow at an average of 4.3 per cent to the end of the decade, a return to its underlying potential and full use of resources.
- There will be a gradual shift from high-tech. manufacturing to market services, especially internationally traded services, as the engine of growth over the course of the next ten years. This pattern of development has already been seen in other developed economies.
- Investment will remain high over the period to 2007, reflecting the fact that, while Ireland is enjoying an EU standard of living, it has not yet reached the average EU stock of wealth, especially in terms of infrastructure. The need for a high level of investment, especially in public physical infrastructure and housing, which is needed to close this gap, will limit the resources available for consumption.
- In the coming decade, the rate of growth in employment is likely to be much lower than in the 1990s, reflecting the expected sharp fall in the growth in the labour force. Real wage growth is expected to increase due to the recent labour market tightening so there will be a gradual increase in labour's share of value added. Together with the appreciation in the euro this will lead to a gradual decline in Ireland's competitiveness.
- Over the next decade, because of the demographic pressures, there will be a continuing need for around 45,000 dwellings a year. In recent times the rate of increase in real house prices and the rapid rise in personal indebtedness has increased the exposure of the economy to an economic shock.

APPENDIX 4

A4.1 Track Record

Previous *Medium Term Reviews* have tended to underestimate output growth, as measured by GNP. One notable exception to this trend was the 1989 *Review*, which failed to predict the slowdown in growth that occurred between 1991 and 1993. As a result, the predicted average growth of 4.9 per cent between 1989 and 1994 was above the actual growth rate of 4.4 per cent. However, if the 1989 *Review* turned out to be quite optimistic, the subsequent *Reviews* could be deemed quite pessimistic, given actual outturns. Successive *Reviews* throughout the 1990s significantly underestimated the growth potential of the booming economy. The gap between outturn and forecast grew from 1.5 percentage points in the *1991 Review* to 2.3 percentage points in the *1994 Review*, and peaked at over 3 percentage points in the *1997 Review*. The *1999 Review* is also likely to have understated growth, but we expect the gap to be of the order of about 1.4 percentage points. The comparison between actual growth rates and the *Review* forecasts is illustrated in Figure A4.1.

Figure A4.1: MTR Growth Forecasts vs. Outturn



Comparing actual employment growth with forecasts from successive *Reviews* reveals a similar pattern to GNP forecasts. In the case of employment though, every *Review* has underestimated employment growth, without exception. The pattern since the first *Review* in 1986 is shown in Figure A4.2. The *1989 Review* came closest to predicting actual employment growth, with an error of just 0.15 percentage points over the forecast period from 1988 to 1994. The average difference for the previous seven *Reviews* is 1.13 percentage points, although the *1994 Review* was more than two percentage points below the actual outturn. The *Medium-Term Review* forecasts have gradually become more accurate since then, and the *1999 Review* is likely to have underestimated employment growth by just 0.75 percentage points.

Our forecasts for unemployment are also inclined to be on the pessimistic side. As was the case with GDP forecasts, the *1989 Review* is an exception, when the actual unemployment was underestimated by an average of 1.7 percentage points over the forecast horizon (see Table A4.1). The average absolute error has been about 1.7 percentage points for the seven *Reviews*. Despite forecasting very sharp decreases in unemployment, estimates in the last

two *Reviews* were still an average of one percentage point below the actual fall in unemployment. For example, in the *1999 Review* unemployment (on a PES basis) was expected to fall continuously from 8 per cent in 1999 to 6.8 per cent by 2003, whereas current figures for 2000 put unemployment already below the previous target for 2003 at 6.4 per cent. The high margin of error in forecasting unemployment rates is symptomatic of the difficulties involved in forecasting migration flows. Given the magnitude of these flows relative to the size of the population, migration will play a significant role in determining labour supply, and hence unemployment, in the coming years.

Figure A4.2: MTR Employment Forecasts vs. Outturn

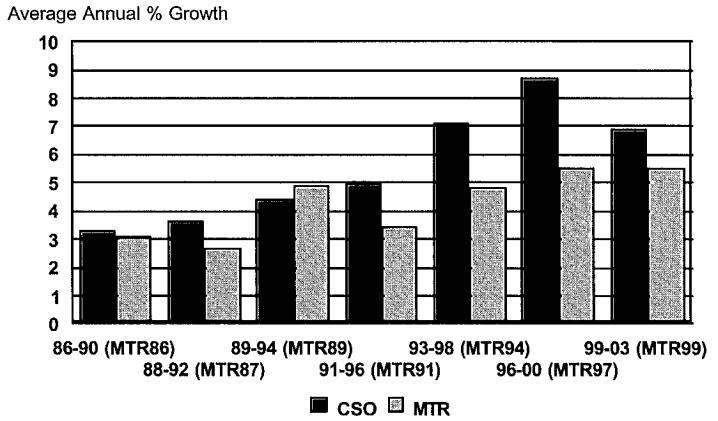


Table A4.1: Unemployment Rate (PES): Forecast vs. Outturn

Period	MTR Forecast	Actual Outturn	Forecast Error
1986-1990	17.9	16.1	1.7
1988-1992	18.7	15.4	3.3
1989-1994	13.8	15.4	-1.7
1991-1996	15.9	15.0	0.9
1993-1998	15.7	13.3	2.4
1996-2000	10.7	9.7	1.0
1999-2003	7.1	6.1	1.0

Finally, we consider the accuracy of annual MTR forecasts rather than averages, in order to observe how the forecasts have tracked "turning points" in the economic cycle. The results are shown in Table A4.2, and include latest figures from the *Quarterly Economic Commentary* for GNP growth in 2001. The evidence is quite mixed. The currency crisis of 1992 had negative implications for growth, and was not foreseen in the 1991 *Review*. As a result GNP growth was overestimated for 1992 and 1993. However, the sustainability of the current upturn was forecast in each of the subsequent *Reviews*, although the actual growth potential of the economy was underestimated.

Because of the uncertainty associated with such a forecasting exercise, in the last *Review*, as well as in the current one, we have considered a number of scenarios around the *Benchmark* forecast. This is designed to give some idea of the possible margin of error in the medium-term forecast.

Table A4.2: Comparison of Forecasts for GNP Growth Rate

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
MTR1986	2.5	3.3	3.5	3.0	3.0											
MTR1987			-0.4	3.0	3.3	3.7	3.6									
MTR1989				4.0	7.1	5.6	4.6	4.8	3.2							
MTR1991						2.0	3.7	4.3	3.3	3.6	3.7					
MTR1994								2.4	4.3	6.9	5.7	4.6	4.8	4.7	4.5	
MTR1997											6.4	5.7	5.9	5.3	4.5	3.7
MTR1999													7.9	6.3	5.8	5.5
Actual[1]*	-0.2	3.3	1.5	5.0	6.9	2.3	2.3	3.4	6.3	8.2	7.4	9.4	7.9	8.2	10.4	6.0

* GNP growth rates: There is a discontinuity in 1991 due to methodological revisions.

5. ALTERNATIVE SCENARIOS

5.1 Introduction

In the last chapter we have set out the *Benchmark* forecast for the development of the Irish economy over the medium term. However, in its portrayal of the prospects for the economy over the next two or three years it can probably be considered as being optimistic. Because of the uncertainty that necessarily surrounds any forecasting exercise, in this chapter we explore a number of alternative scenarios to test the sensitivity of our forecast to changes in the underlying assumptions.

What these exercises show is that there is very considerable uncertainty about the short-term forecast, with differences of up to four percentage points in the forecast growth rate for next year between the optimistic and the pessimistic scenarios. Looking to the medium term, we see a much narrower range between the "high" and the "low" forecasts of the potential growth rate of the economy. This reflects the fact that economic forecasters are not good at predicting where turning points in economic growth will occur. However, a full understanding of the factors driving economic growth allows greater certainty about the longer-term growth potential of the economy.

This is reflected in the *Review* in the emphasis that we place on the average growth rates over periods of five years rather than on the prospects for individual years. While we provide a year by year forecast out to 2007, our own preference is to concentrate on the averages over a suitable range of years.

To get some feeling how the outlook for the Irish economy might differ from the *Benchmark* we examine four different scenarios.

The first, and most fully discussed, assumes that the US economy undergoes a more prolonged downturn than many commentators anticipated. We feel that the imbalances within the US economy make such a scenario more likely than that of a rapid recovery. As discussed in Chapter 3, at some point the imbalances that exist in the US will have to be corrected. Although the mechanism that triggers such a correction is not necessarily important, we are assuming in this chapter that a fall in US equity markets, and its consequences for US personal consumption and investment, brings about a sharper correction in the imbalances than is assumed in the *Benchmark* forecast.

This sharp slowdown would involve a further adjustment downwards compared to the *Benchmark* in the external value of the dollar. In turn this would help improve the competitiveness of the US in the medium term and speed its recovery to a sustainable growth path. However, it would also involve a loss of competitiveness for the area, including Ireland, prolonging any slowdown in Europe. The consequences for Ireland of this scenario would be unfavourable in the short term.

What this scenario suggests is that, if the Irish economy is properly managed, it should grow more rapidly in the recovery phase after a slowdown, so that there would be no long-term effect on living standards from a temporary sharp slowdown. Under this scenario the economy would return to full employment by the middle of the decade. This shows a degree of robustness in the economy that was not present in the past, especially in the 1980s.

The second scenario that we briefly consider also involves a change in our external assumptions – a more rapid rise in oil prices than is assumed in the *Benchmark*. Throughout the course of 2000 the world economy had to deal with the impact of a sharp rise in the price of oil. The resulting increase in energy prices had a knock-on impact on inflation and as a result, on monetary policy. While the effects of this shock have receded, the implications for the world economy, and especially Ireland, of a further oil price increase, are also considered in this chapter. While any major slowdown in world economic growth makes the possibility of a big fall in oil prices much more likely than a large increase, we still feel that it is important to consider the sensitivity of the economy to such a possibility. In this scenario we simulate the effects of a 50 per cent rise in oil prices above current levels. The results indicate that, while the effects on Ireland's prospective growth rate would obviously be negative, the consequences would be much less serious than was the case after the major oil price increases of the 1970s.

The last two scenarios considered in detail in this chapter involve variations in the medium-term potential growth rate of the economy. In the first we consider the possibility that the investment in infrastructure over the next five years is inadequate to meet the needs of the economy and that developments in the labour market result in an excessive growth in labour costs. Together these changes in assumptions would have a serious negative impact on Ireland's competitiveness. This would see the Irish economy over the next decade growing around one per cent below its long-term potential as defined in the *Benchmark* forecast.

Figure 5.1: Alternative Forecasts for Real GNP

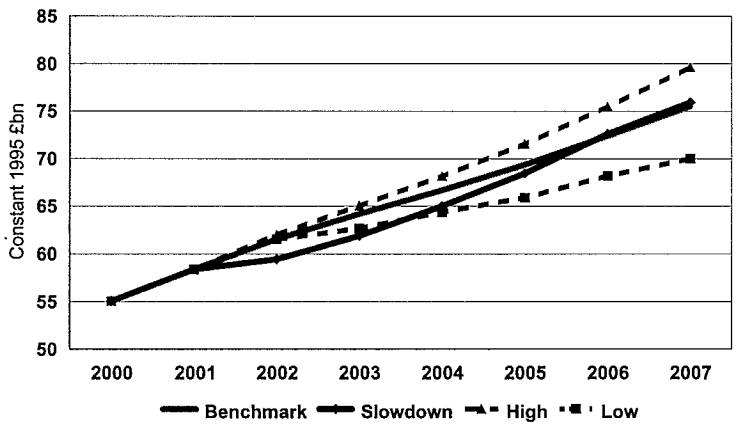
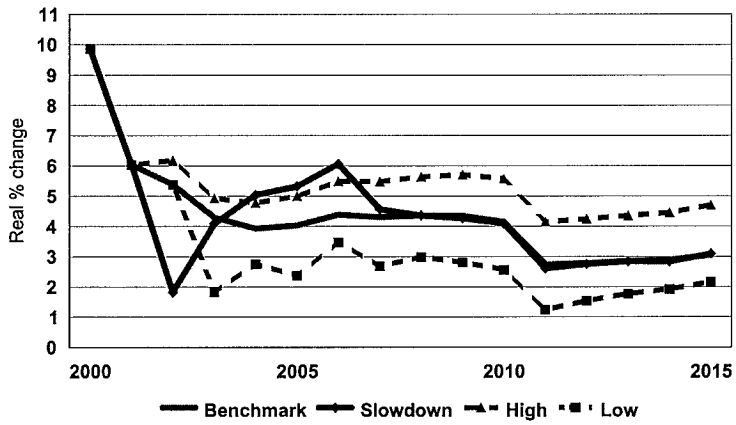


Figure 5.2: Alternative Forecasts for Growth Rate of GNP



The final scenario we consider is one where the economy's potential growth rate over the next decade is 1 per cent higher than we have estimated in the *Benchmark*. In the past 15 years the forecasts in the *Review* have, on average, proved to be unduly pessimistic, so it is not unreasonable to allow for the possibility that this is still the case with this publication. This scenario examines the case where the economy's growth potential is expanded through substantial additional immigration, so that the medium-term growth rate is one percentage point above that assumed in the *Benchmark*. Such a scenario would require substantially greater investment in infrastructure than is the case even in the *Benchmark*. Even with such additional investment, the ultimate effect on the growth in income per head would be very small, suggesting that the welfare gain from running the economy at a higher rate of growth through importing additional resources, especially labour, is likely to be small. It is only if the potential growth rate of the economy can be raised through higher productivity in such a way that the infrastructural deficit is not further aggravated, that there is likely to be a clear welfare gain from higher growth.

The range of possible trajectories for Irish GNP over the medium term is illustrated in Figures 5.1 and 5.2. Figure 5.1 shows that in the medium term there is no great difference between the *Benchmark* and the US slowdown scenarios in terms of the level of GNP. However, the US slowdown scenario involves a much "bumpier ride" for the economy in the short term. The differing assumptions about the growth in potential output, reflected in the *Low Growth* and the *High Growth* scenarios, provide realistic bounds on the likely future growth path of the economy. Figure 5.2 shows the range of forecasts for the annual growth rate of GNP that is reflected in Figure 5.1. It shows that in the short term there is very considerable uncertainty about the likely growth path for the economy.

In analysing these scenarios we are not attaching a particular probability to their outcome. Rather they provide a mechanism by which we can test the robustness of the Irish economy to different shocks, both domestically and externally generated. These scenarios are modelled using the NiGEM[1] world model and the ESRI HERMES and Demographic models for the Irish economy. The availability of these models makes it possible to test in a consistent and realistic manner the likely impact of a wide range of alternative scenarios, including the four considered in detail in this chapter.

5.2 A Sharp Slowdown

In the last *Medium-Term Review* we considered the impact on the Irish economy of a 25 per cent reduction in the value of US equities and a resulting slowdown in the US economy. In the face of a more uncertain world environment, and evidence that a US slowdown is actually under way, it is instructive to again consider the outlook for the world economy if the US economy were to continue to perform well below its long run potential into 2002. Chapter 3 contains an analysis of the imbalance in the US current account and its significance for the US economy. Given this imbalance, there is considerable uncertainty about the prospects for the US. One scenario, in an environment of unchanged exchange rates, sees a gradual improvement in the current account deficit.[2] However, it is not clear why the US current account should move back to balance without a restoration of US competitiveness through a change in the external value of the dollar.

The *Benchmark* forecast is based on the assumption that the high value of the dollar is not maintained and that there is a sharp appreciation of the euro

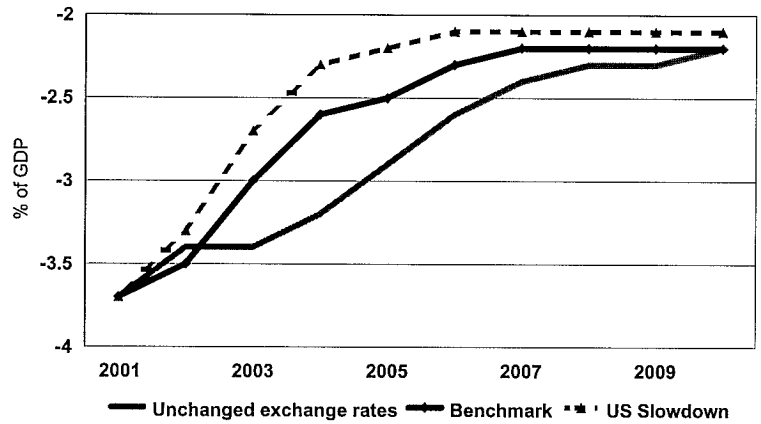
[1] We are particularly grateful to Ray Barrell, Karen Dury and Ian Hurst of NIESR for their assistance in modelling the international element of the shocks.

[2] This scenario is outlined in the National Institute *Economic Review,* No.177, 3/2001, July.

(see Table 5.1). Under these circumstance the external value of sterling would also fall in terms of the euro. Even with such an appreciation of the euro, the adjustment in the US balance of payments is still very slow, see Figure 5.3. While in the case of these two scenarios the US current account deficit returns to a medium term level of around 2 per cent of GDP, there is a difference in how rapidly this adjustment actually occurs.

In the more pessimistic scenario discussed here, we assume that the deep-rooted imbalances in the US economy are redressed in 2002 through a sharp decline in the growth of US personal consumption (implying increased personal saving) and investment. This would be accompanied by a further depreciation of the dollar compared to the lower level already assumed in the *Benchmark*. The proximate cause of this adjustment is assumed to be a further sharp fall in US equity prices compared to their current end-August levels. These changes would speed the adjustment of the US current account back towards a level that is sustainable in the long term.

Figure 5.3: US Slowdown: US Current Account Balance



The decline in US consumption, via the wealth effect,[3] is assumed to be triggered by a sharp fall in US equities of the order of 25 per cent.[4] Given that the US savings ratio has declined to such a low level (Chapter 3, Figure 3.5) the fall in personal wealth and increased uncertainty about the future could bring about a large rise in the personal savings ratio (Figure 5.4). This would contribute to the decline in US domestic demand, further affecting company profitability. The expectation of just such a decline could be the trigger for the assumed fall in equity prices. In the short term the rise in the personal savings ratio would be much more moderate in the scenario of unchanged exchange rates than in either the *Benchmark* forecast or in response to this scenario.

As a consequence of the downturn in the US economy during the first year of the shock the dollar would fall by 10 per cent compared to the benchmark (1Euro=$1.07). The result of the shock would be a reduction in US GDP growth by 1.3 percentage points in year one compared to the *Benchmark* – here assumed to be 2002. (Table 5.1 shows the revised forecast for the US and Europe and Figure 5.6 shows the change compared to the *Benchmark*.) This would see growth in the US next year of 1.1 per cent rather than the *Benchmark* forecast of 2.4 per cent. Indeed, the decline

[3] The fall in the value of households' equity portfolios reduces their perceived wealth. Many households then react to this change by cutting consumption and raising their savings to rebuild their wealth.

[4] An examination of the impact of a US and European equity market shock on the US, Europe and UK is examined in the National Institute *Economic Review*, No. 175, January 2001.

would be much more severe, of the order of 1.8 percentage points, were it not for the improved competitiveness of the US as a result of the decline in the dollar.

Figure 5.4: US Slowdown: Personal Savings Ratio

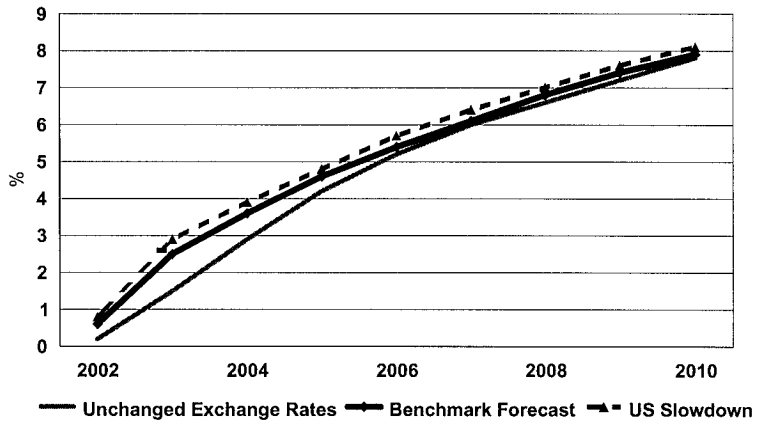


Figure 5.5: US Slowdown: Short-term Interest Rates, Change Compared to *Benchmark*

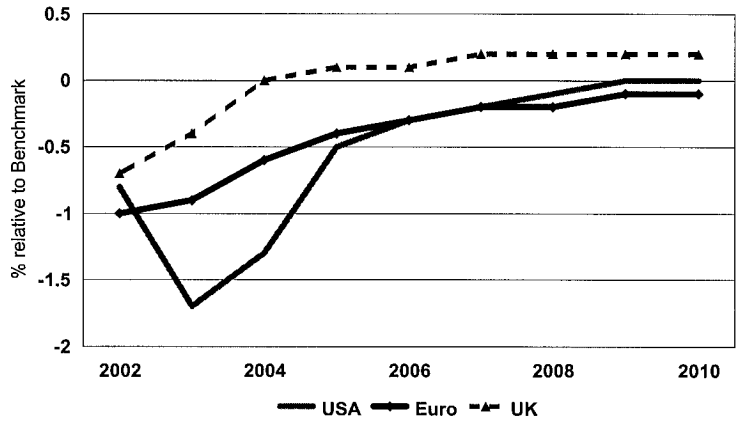


Table 5.1: US Slowdown – Forecast for the US and Europe

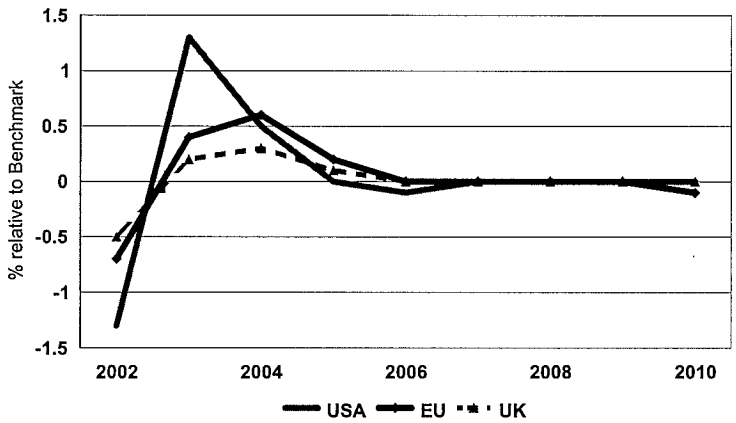
	2002	2003	2004	2005	2006	2007
			Short Interest Rate			
US	3.0	1.9	3.2	4.5	4.9	5.0
Euro	2.9	3.0	4.0	4.5	4.7	4.6
UK	4.3	4.7	5.3	5.5	5.6	5.5
			Exchange Rate – Units per Euro			
Dollar	1.07	1.07	1.06	1.06	1.06	1.06
Sterling	0.65	0.66	0.67	0.68	0.69	0.69
			GDP – Per Cent Growth			
US	1.1	3.4	3.6	3.2	3.0	3.1
EU	0.5	3.2	3.6	3.1	2.7	2.7
UK	1.9	3.0	3.2	2.8	2.6	2.7
			Inflation – Consumers' Expenditure			
Euro area	0.9	0.3	0.6	1.0	1.3	1.5

The improved competitiveness of the US economy as a result of the depreciation of the dollar would stimulate the US economy, so that in the second year after the shock (2003) growth would actually be 1.3 percentage points higher than in the *Benchmark* forecast (3.4 per cent compared to 2.1 per cent). As the effect of the shock wears off, US GDP is assumed to gradually return to the *Benchmark* level, so that by 2005 there is only a

marginal difference in levels. Because of the slower growth in US GDP and the loss of European competitiveness due to the exchange rate change, under this scenario growth in Europe would be nearly three-quarters of a percentage point below the *Benchmark* in the first year – 2002 (0.5 per cent compared to 1.2 per cent).

In the short run the overall impact on world growth of this scenario would be negative, as the US reacts more slowly to an improvement in competitiveness than Europe reacts to its loss of competitiveness. US recovery and an easing of monetary policy would aid recovery in Europe in year two (2003) and growth in the EU would be half a percentage point above *Benchmark*.

Figure 5.6: US Equity Shock: US GDP Growth, Change Compared to *Benchmark*



The impact of the US slowdown on the UK would be less severe than on the Euro area as the UK would gain in competitiveness, due to the fall in sterling against the euro.

Sharp Slowdown in the Irish Economy

The combination of the US slowdown being prolonged well into next year with a serious reduction in the prospective growth rate for Europe would provide a very unfavourable short-term environment for the Irish economy. The situation would be further aggravated in the short run as Irish firms would lose competitiveness against competitors in the UK and the US. Firms already under pressure from weak demand would see profitability further squeezed by falling output prices. As shown in Table 5.2, the result would be a big increase in labours' share of value added (reduction in the profit rate). A fuller set of Tables outlining this alternative scenario is given in the Appendix to the *Review*.

The prolongation of the US economic slowdown into next year would see a very substantial cut back in US foreign direct investment. This would have a more direct impact on Ireland than on most other EU members. A fall of a third in investment in the high-technology sector of manufacturing would have an immediate effect on employment growth in that sector. While we assume that this cut back would be compensated for by higher growth in high technology sector investment in 2004, as the US economy recovers, the short-term implications would be serious.

The loss of competitiveness and the continuation of the slowdown in demand in Ireland's key European markets would put all firms in the tradable sector under pressure. While these pressures would be somewhat alleviated by the fall in interest rates, the net result would be that, instead of output in the manufacturing sector growing in 2002 by just under 8 per cent, it would show a small fall.

Table 5.2: Sharp Slowdown, Major Aggregates

	2000	2001	2002	2003	2004	2005	2006	2007	1990-95	1995-00	2000-05	2005-10	2010-15
	Growth, Per Cent								Annual Average per cent Growth				
GNP	9.9	6.0	1.8	4.2	5.1	5.3	6.1	4.6	4.5	8.4	4.5	4.7	2.8
GNDI (incl. Capital Transfers)	6.7	4.7	1.8	2.1	4.8	4.4	5.8	4.2	3.5	7.6	3.6	4.3	2.8
Consumption Deflator	5.8	4.8	2.2	2.5	3.7	4.4	4.3	3.8	2.7	3.6	3.5	3.6	3.1
Employment, April	4.8	4.3	-0.9	0.2	2.0	2.9	3.4	2.4	1.9	4.9	1.7	2.4	0.6
Real After Tax Non-Agricultural Wage	2.1	5.2	5.8	3.8	2.7	2.3	2.5	2.8	1.6	1.8	3.9	2.6	2.4
	Per Cent of GNP								1995	2000	2005	2010	2015
Balance of Payments	-0.7	-0.9	0.0	-0.4	-0.8	-1.4	-2.1	-1.9	3.2	-0.7	-1.4	-1.2	2.3
Debt – GNP Ratio	42.1	34.5	32.0	29.6	26.8	23.6	19.8	16.2	83.5	42.1	23.6	6.9	-6.7
General Government Balance	5.4	4.2	2.5	0.1	-0.3	0.1	1.1	1.6	-2.5	5.4	0.1	1.8	2.7
	Per Cent of Labour Force (ILO Basis)								1995	2000	2005	2010	2015
Unemployment Rate	4.3	3.8	6.3	7.6	7.4	6.5	5.1	4.6	12.2	4.3	6.5	3.0	3.8
	Share of Value Added												
Labours' Share	50.4	50.3	52.4	52.8	52.3	52.3	52.1	52.8	57.4	50.4	52.3	54.4	56.4

The rapid slowdown in Irish growth that this scenario would entail would have knock-on effects on employment and the labour market. While job losses would still be small compared to the crisis years of the 1980s, the overall environment would contribute to a feeling of insecurity for many in the labour market. While interest rates would be cut by the ECB more dramatically than is assumed in the *Benchmark*, in the short term this would not be enough to compensate for the increased uncertainty.

While there is still considerable pent-up demand for housing, many potential house-buyers would be likely to react to the uncertainty by delaying the purchase of a new home. In addition, there are already signs that the very substantial market for second dwellings is being affected by the rising uncertainty in the labour market. When taken together, these different forces could see house prices falling quite rapidly. In the case of this scenario we have assumed that they fall by 25 per cent in 2002. Thereafter, as the economy is assumed to recover rapidly from the problems of 2002, house prices are also assumed to grow more rapidly than in the *Benchmark*, reaching similar levels to those assumed in the *Benchmark* by 2005.

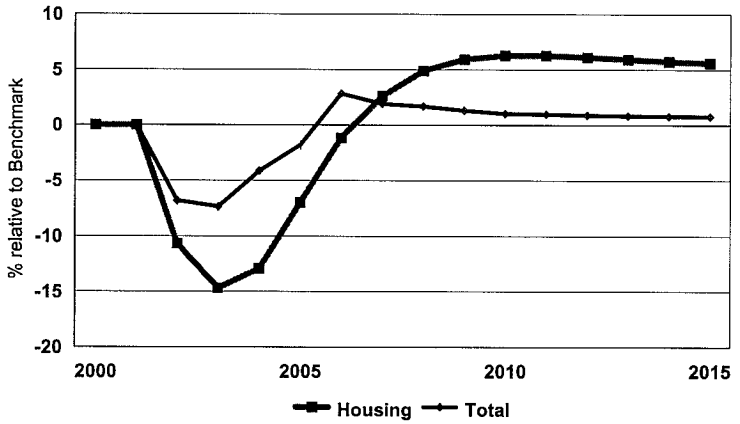
While the Irish housing market is vulnerable to a substantial downward adjustment in prices along the lines indicated, it is in a very different position than the markets in the UK and Scandinavia that suffered major dislocation at the end of the 1980s. There are a number of factors that will place a floor on how far prices would be likely to fall in Ireland.

- The expected downturn in economic activity would be likely to be less severe and of shorter duration.
- The ECB would undoubtedly cut interest rates as the underlying rate of inflation falls, whereas interest rates rose in the UK in the face of its housing crisis in the late 1980s and early 1990s. As a result, unless someone in Ireland actually found themselves unemployed, they would not be forced to sell on a falling market due to problems meeting interest payments on mortgage debt.
- The public sector needs to invest heavily in social housing and, as discussed later, provided that the public finances are managed properly, it would be in a position to benefit from a fall in prices through accelerating its programme of investment. This investment could be made at lower cost than at present, given the fall in prices.
- The knowledge that in the medium term the demand for dwellings will remain particularly strong in Ireland (as discussed in Section 4.9) will encourage potential buyers to enter the market as prices fall.

- While the indebtedness of the Irish household sector has risen in recent years (Figure 4.8), it remains low by the standards of many other countries (such as the US or the UK at the end of the 1980s).

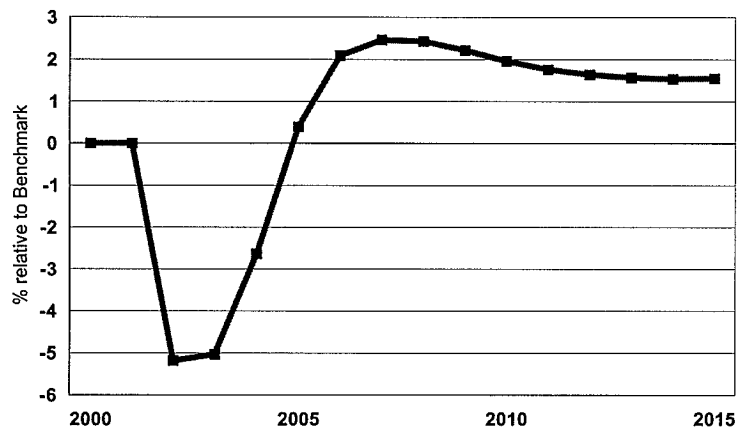
Investment in housing in 2002 would fall very significantly under this scenario. This effect of this would be increased as a result of lower immigration, as discussed below. By 2003 it would be 15 per cent below the *Benchmark* level. (The change compared to the *Benchmark* is shown in Figure 5.7 while the actual *Slowdown* forecast is shown in Table 5.2.) However, in subsequent years it would grow more rapidly so that over the course of the decade a similar number of dwellings would be built.

Figure 5.7: Housing Investment, Percentage Change Compared to *Benchmark*



The slowdown in economic activity would, in any event, greatly reduce the growth in real personal disposable income next year. This on its own would result in a substantial reduction in the growth in personal consumption. However, personal sector savings behaviour is greatly influenced by expectations about the future. The rise in uncertainty could be expected to result in a higher savings ratio than in the *Benchmark* projection. Recent research incorporated into the HERMES macro-economic model indicates that the decline in house prices under this scenario would further contribute to uncertainty and further slow the growth in consumption.

Figure 5.8: Consumption, Percentage Change Compared to *Benchmark*

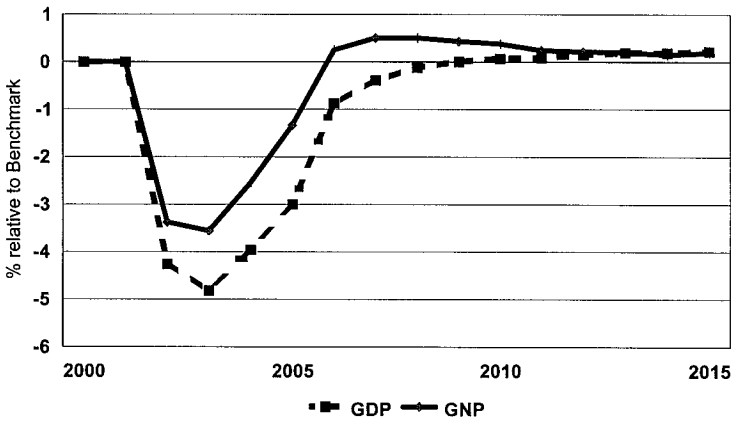


Whatever the reason, the personal sector savings rate could rise by two percentage points in 2002 and the result of all these factors would be a reduction in the rate of growth in consumption of 5 per cent compared to the *Benchmark* (Figure 5.8). This would give an annual increase in the volume of consumption of only 1.3 per cent in 2002. As the economy is forecast to

begin to recover from 2003 onwards, the increase in the savings ratio could be expected to unwind, and in subsequent years the volume growth in consumption could be higher than in the *Benchmark*.

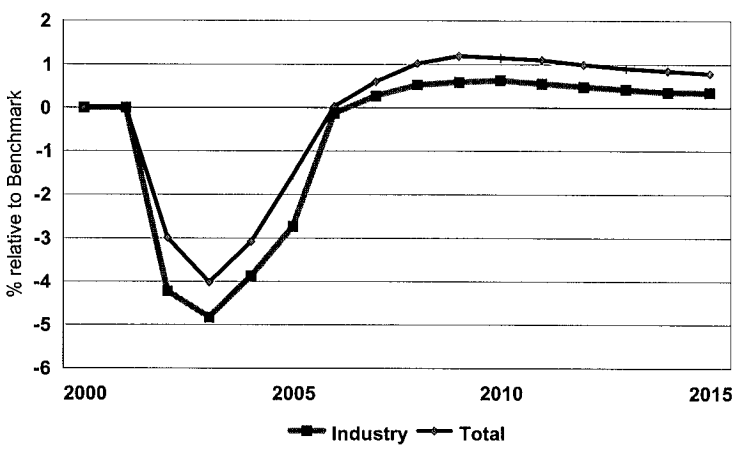
The slowdown in consumption growth, when taken together with the fall in output in the tradable sector due to lower exports, would have a major impact on the growth of GNP. Consumers' expenditure includes a substantial services element and the slowdown in consumption growth would help transfer the adverse impact of the turmoil in the world economy to the domestic services sector. As shown in Figure 5.9, in 2002 GNP would be three percentage points below the *Benchmark* level, giving a growth rate of only 1.8 per cent (Table 5.2) for the year.

Figure 5.9: GNP, Percentage Change Compared to *Benchmark*



This sudden slowdown in economic activity would have its inevitable consequence in the labour market, with employment actually falling in 2002 by just under 1 per cent (Table 5.2), compared to the *Benchmark* forecast of an increase of over 2 per cent. As shown in Figure 5.10, in 2003 the growth rate of employment would remain below that in the *Benchmark*. Compared to the *Benchmark*, 67,000 fewer people would be employed in 2003 under this scenario. Recovery through accelerated employment growth would only begin in 2004. As shown in Table 5.2, the result of this rapid deterioration in the labour market would be a significant rise in the unemployment rate. On an ILO basis it would approximately double from 3.8 per cent of the labour force this year to 7.6 per cent in 2004.

Figure 5.10: Employment, Percentage Change Compared to *Benchmark*



However, because the economy would recover rapidly from this shock, the labour market circumstances would also gradually improve. However, it could be 2007 or 2008 before the full adverse effects on the labour market would have worn off and the economy would have returned to its current "full employment" level.

The result of this deterioration in the labour market would be a temporary ending of the current net immigration, as Irish emigrants abroad delay returning and as some of those who have come to Ireland in recent years leave. This temporary ending of immigration would also have an effect in reducing the demand for accommodation in Ireland in the next three years.

The changed external environment, in particular the strengthening of the euro relative to the dollar and sterling, would have a major impact on inflation in the Euro area generally, and especially in Ireland. In 2002 the consumers' expenditure deflator would grow by just over 2 per cent compared to the *Benchmark* forecast of just under 4 per cent. While wage rates are slower to react to changes in inflation, there would still be some slowing in the rate of increase in 2002. However, it would probably be 2003 before the full impact of the slowdown in inflation and the rapid deterioration in the labour market would be reflected in the rate of increase in nominal wage rates. The result would be that real wage rates would still show a very substantial increase next year (Table 5.2) leading to a rapid increase in labours' share of value added, further aggravating the competitive pressures on the tradable sector.

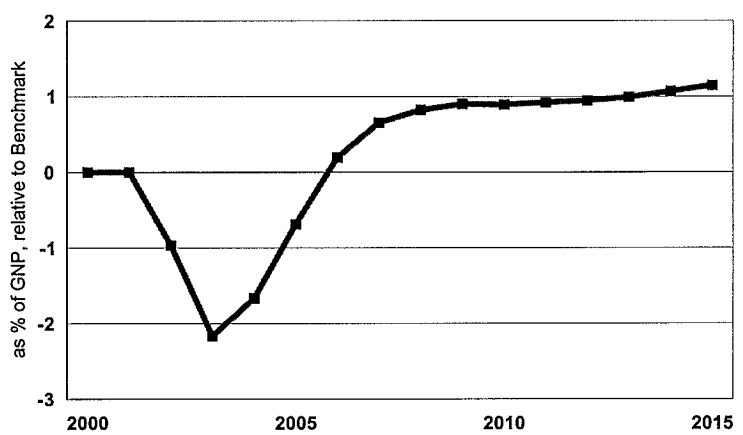
The Public Finances

In this scenario we have assumed that the downturn in economic activity would be anticipated by the government in setting the Budget for 2002. In particular, it is assumed that the fall in inflation would be expected, so that social welfare payments and tax rates and allowances would be indexed to the expected rate of inflation in wage rates rather than to the higher rate that is forecast in the *Benchmark*. The one exception is that there is a continuing exposure of the public sector to further wage increases under the "benchmarking" provision of the current pay agreement. We have assumed that these are paid, resulting in a substantially higher increase in public sector pay in 2002 than would be the case for the private sector.

This assumption that the deflationary impact of the exchange rate changes is built in to the Budget is important. Without it, the government surplus for next year would be one percentage point of GNP lower than shown in Table 5.2 and the surplus could turn into a significant deficit in 2003.

The unexpectedly large government surplus in 2000 arose from the mirror image of such a deflationary shock, in that case an inflationary shock. Last year the Budget was set in the expectation of a much lower rate of inflation than actually occurred. As discussed in Chapter 4, Box 4.1, the result was that taxes and welfare payments were under-indexed, resulting in a higher than forecast surplus.

Figure 5.11: General Government Surplus, Change Compared to *Benchmark*, Percentage Points



The assumption underlying this scenario is that the Budget for next year is planned to be broadly "neutral" in the sense that it neither seeks to stimulate nor deflate the economy. Tax rates and bands are assumed to be indexed to *ex post* inflation rates, as are welfare payments, and there is assumed to be only limited increase in the volume of current expenditure. The one exception is public investment, which is assumed to continue rising in volume terms to implement the full infrastructural provisions of the *National Development Plan*. Under these assumptions a slowdown next year would see the general government surplus being one percentage point lower than in the *Benchmark* in 2002 and two percentage points lower than the *Benchmark* in 2003 (Figure 5.11). This would see the general government surplus turning to a small deficit in 2003 and 2004. However, this would not be in breach of the *Stability and Growth Pact* as the public finances would move back to surplus in subsequent years.

However, if there were both a stimulatory Budget next year and there was also an unexpected deflationary shock, then the public finances could be pushed further into deficit, possibly of the order of two percentage points of GNP.[5] Under these circumstances a return to the necessary long-term path for the public finances would require a tightening in fiscal policy at some later date. As seen in the 1980s, such a development, where the government has to tighten fiscal policy while the economy is growing below potential, could prove quite damaging.

Long-Run Significance

This scenario, where the US economy is assumed to undergo major adjustment lasting into 2003, would clearly be very unfortunate for the Irish economy. However, the scenario, as set out here, is in some ways reassuring.

Provided that the shock of a sharp slowdown is handled appropriately, and domestic policy is targeted at the medium-term health of the economy, there should be no lasting damage. As the US economy recovers fully from its problems in 2003 and the European economy follows suit, with the necessary adjustment in exchange rates accomplished, the world should return to growth. In the case of the Irish economy, from 2003 onwards it would grow more rapidly than assumed in the *Benchmark* to "make up for lost time". While it would take a number of years to make good the damage of the sharp slowdown, by the end of the forecast period the economy should have returned to full employment at the level of income per head that would have been attained without the shock. Under these circumstances the cost of the shock would be the temporary rise in unemployment and related loss of output over the next three years.

This scenario illustrates the relative strength of the Irish economy – it is likely to prove robust in the face of external shocks. The progress of the last decade was not a mirage and it should be sustainable, even in the face of a less benign external environment, over the next few years.

Under these circumstances fiscal policy should aim at broad neutrality, that is indexation of tax rates and bands and of benefits to inflation, with very limited increases in the volume of current expenditure. The one exception should be the provision for a continuing increase in infrastructural investment to increase the long-term growth potential of the economy. Under these circumstances the public finances should be able to ride out any unforeseen unpleasant shocks. The aim should be to avoid the costly and disruptive cutbacks that proved essential in the prolonged recession of the 1980s.

[5] This assumes a fiscal stimulus of one percentage point of GNP combined with an additional one percentage point added to it through the effects of an unexpected deflationary impulse.

Over the last two years economists[6] have been reasonably relaxed about the fact that wage rates have been rising much faster than provided for under the national agreements. They saw this as appropriate where the demand for labour exceeded supply on the domestic market. However, the logic of this approach would suggest that when there is excess supply and unemployment rises rapidly, it may be necessary to see some retrenchment of wages increases over and above those provided for in the current agreement. If the economy is faced with a simultaneous shock from a world economic slowdown and a major appreciation of the euro, the consequences are likely to be particularly severe for the more traditional segments of the tradable sector. While a moderate downward adjustment in pay rates would probably do nothing to stem the job losses at present in the high-tech sector, it could make a difference elsewhere in the economy if, as this scenario assumes, the slowdown becomes more pervasive throughout all sectors.

However, while economists have argued for such an increase in the flexibility of wage rates (both upwards and downwards)[7], in this scenario we have not assumed such a change in behaviour. Instead we have assumed that wage rates react with a lag to a fall in inflation and to the rise in unemployment. This slow reaction means that unemployment doubles over the course of the slowdown. Any increase in wage flexibility would help offset the need for job losses and it could reduce the cost of the slowdown, especially in terms of unemployment, and also hasten the eventual recovery.

This simulation also highlights the importance of domestic expectations in determining how the economy reacts to such an unpleasant external shock. While the basic message of this scenario is that the Irish economy is in quite a strong position to weather a sharp slowdown, we are assuming that individual Irish households prove more cautious in their individual spending decisions. This domestic response would result in an temporary fall in house prices and private investment in housing, as well as a major slowdown in personal consumption. If individual households were to prove less pessimistic about their own future, and the future of the economy, then the slowdown in domestic activity could be more moderate than shown in Table 5.2.

Finally, the lessons of the 1980s indicate the importance of pursuing an active labour market policy response in the face of rising unemployment. When faced with an essentially temporary slowdown, the aim should be to retrain those who become unemployed for jobs that will be there in the recovery phase. It will be important to ensure that those unfortunate enough to lose their jobs should not enter the ranks of the long-term unemployed, with all that that implies in terms of demoralisation and deskilling.

5.3 Oil Price Shock

In this shock to the world economy we assume that there is a permanent 50 per cent increase in oil prices in 2002. Although this is a severe shock, it does not represent as sharp an increase as was experienced between the latter half of 1999 and 2000 when the price of crude oil rose from $10 dollars a barrel in February 1999 to over $35 dollars a barrel during quarter 4, 2000. This simulation is not meant as a forecast of things to come; rather it allows us to examine how the Irish economy might respond to an external supply side shock. Crucial to the effects on Ireland would be how the world economy

[6] For example: McCoy *et al.*, 2001, *Quarterly Economic Commentary,* ESRI, June; Blanchard, O., 2001, "Country Adjustments Within Euroland, Lessons After Two Years", *Monitoring the European Central Bank* No. 3, London: Centre for Economic Policy Research; Walsh, B, 1999, "What's in Store for the Celtic Tiger", *Irish Banking Review*, Spring; Duffy, Fitz Gerald, Kearney and Smyth, 1999 *Medium-Term Review: 1999-2005*, Dublin: ESRI, October.

[7] See Geary, P., 1996, "Managing the Exposure of Firms" in T. Baker, J. Fitz Gerald, and P. Honohan (eds.), *Economic Implications for Ireland of EMU*, Policy Research Series No. 28, Dublin: The Economic and Social Research Institute.

responded to the rise in prices. We first consider the implications for the UK, the US and the Euro area. The impact of such a shock on the UK would be different from that for the rest of the EU because of its access to domestic oil reserves.

An oil price shock would cause the euro to depreciate by about 3 per cent against the dollar in the short term. Although initially the euro would depreciate by less than 1 per cent against sterling, in the medium term this would widen to a depreciation of 3 per cent. In the face of a 50 per cent increase in oil prices, the world price level would also increase. This increase would be largest in the US, where the consumer expenditure deflator would be 1.3 percentage points higher by year 2 of the shock. Prices would return to the *Benchmark* by year 5 of the shock. Although prices would initially rise in the UK, the rise would be much smaller and briefer (see Figure 5.12). The increase in prices would peak at 0.8 percentage points in year 2 and by year 4 would be only marginally above base.

In contrast, the return to benchmark price levels would take much longer for the Euro area. The maximum impact on Euro area prices would be to add an additional percentage point to inflation in year 2. However, prices would not return to base until year 8 after the shock.

Figure 5.12: Oil Prices +50 per cent: Consumer Expenditure Deflator

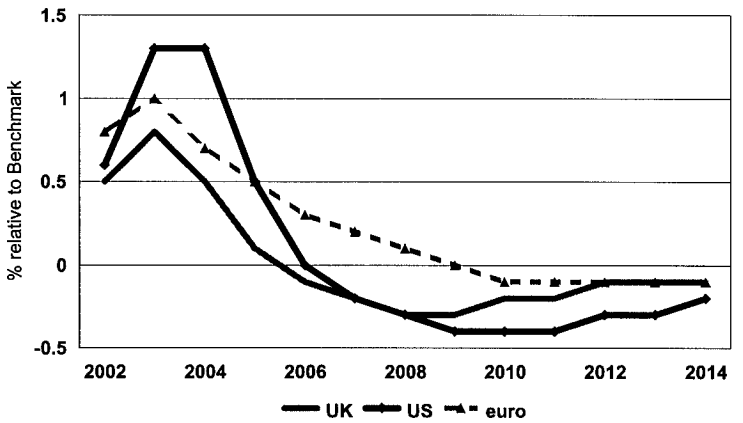
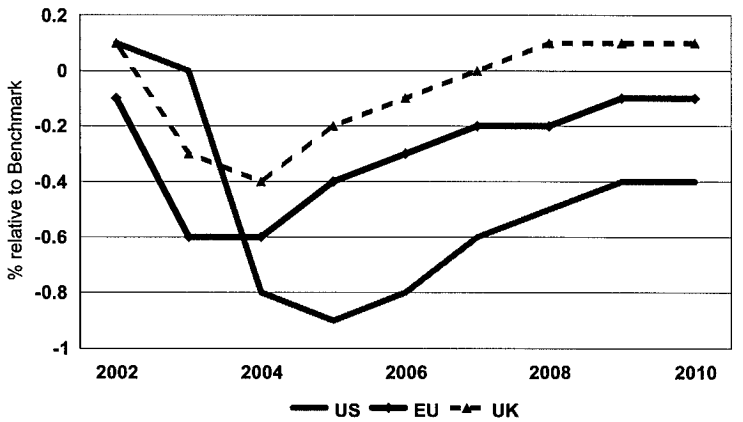


Figure 5.13: Oil Prices +50 per cent: GDP Growth



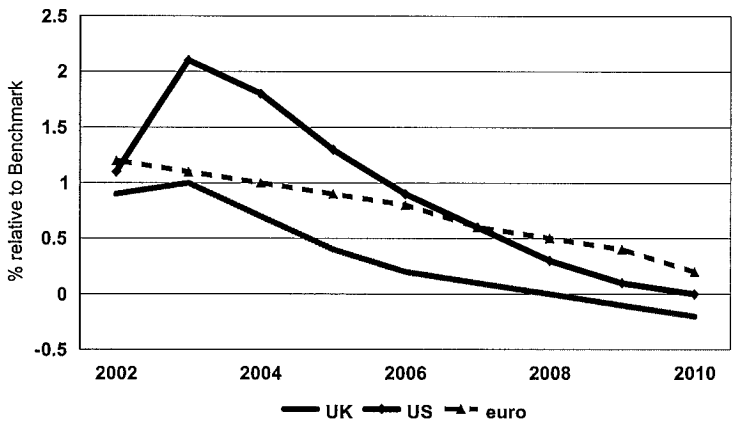
US GDP would decline by nearly one percentage point by year 4 and would remain below base until year 9 of the shock. The decline in EU GDP, at 0.6 percentage points, would be less than that in the US. Although the duration of shock would be similar to that in the US, its impact would be less severe (Figure 5.13), reflecting improved competitiveness, due to the

depreciation of the euro. Although GDP growth in the UK would be lower due to the appreciation of sterling and reduced competitiveness, the UK would return to base far quicker than the other two economies.

In reaction to the upturn in inflation, the main central banks would raise interest rates sharply (Figure 5.14). As a consequence of an oil price shock, short-term interest rates would remain higher than in the *Benchmark* scenario for most of the forecast period – until the price level returns to its target level. This higher level of interest rates would be a major factor in producing the slowdown in the economies of the OECD area. (The other factor would, of course, be the loss in income arising from the deterioration in their terms of trade.) While in the 1970s the OPEC countries (the major beneficiaries of the price increase) were slow to raise their expenditure to equal their increased income, this is unlikely to be a significant factor today.

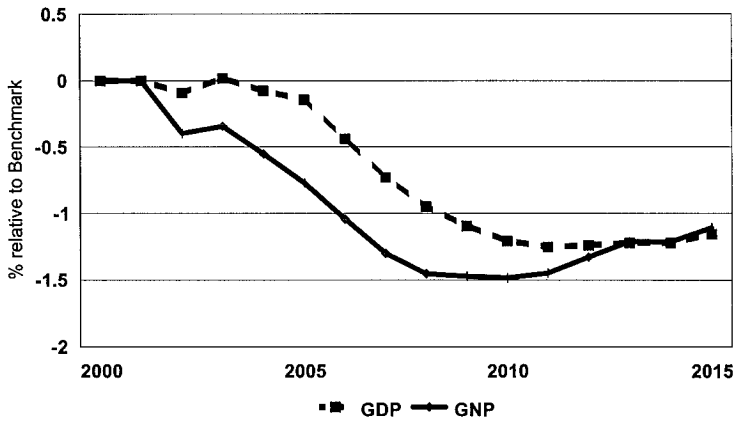
In general, it appears that the UK would be least affected over the medium term by a permanent 50 per cent increase in oil prices. This is mainly due to the appreciation of sterling against the euro. As a consequence, the negative impact on the consumer expenditure deflator is less, and short-term interest rates are not raised by as much as in the other regions.

Figure 5.14: Oil Prices +50 per cent: Short-term Interest Rates



The effects on Ireland would come from the loss of income through the adverse movement in the terms of trade, the slowdown in OECD area growth, and the direct effects of higher Euro area interest rates. As shown in Figure 5.15, there would be a gradual reduction in the level of GNP over the course of the decade. By 2008 the level would be around 1.5 percentage points below the *Benchmark*, implying a reduction in the average growth rate over the seven years of something under a quarter of a percentage point each year. While not very noticeable in any one year, this could be a significant loss over the relevant period. The loss would be somewhat greater than in the rest of the Euro area, not because the Irish economy is necessarily more exposed to oil prices, but rather because of its greater sensitivity to interest rate changes.

Figure 5.15: Oil Prices +50 per cent: Irish GNP Compared to *Benchmark*



The rise in interest rates in the Euro area would have a particularly negative impact on investment in housing in Ireland (Figure 5.16). While initially the impact would be quite small, by the end of the decade the level of investment would be well below that in the *Benchmark*. In the face of the higher interest rates potential households would delay establishing themselves and the demand for second dwellings would also be reduced. Because this sector is quite employment intensive, this lower level of activity would impact on the wider economy. This lower level of housing investment would account for the bulk of the reduction in investment in the economy. The higher oil prices would actually encourage some increase in investment in increasing energy efficiency.

The lower level of activity in the economy, with the economy growing below its long-term potential for a sustained period, would also see an increase in the unemployment rate (Figure 5.17). However, because the impact of this shock on the economy would be gradual, the increase in unemployment would remain less than one percentage point of the labour force. This would also be associated with some reduction over the forecast period in the level of net immigration.

Figure 5.16: Oil Prices +50 per cent: Irish Investment Compared to *Benchmark*

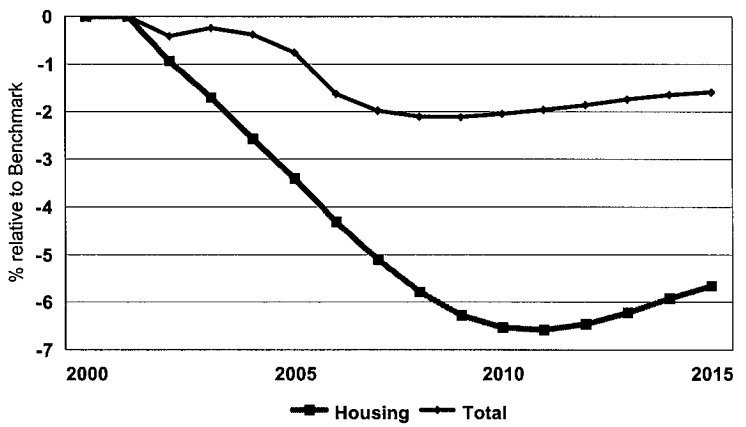
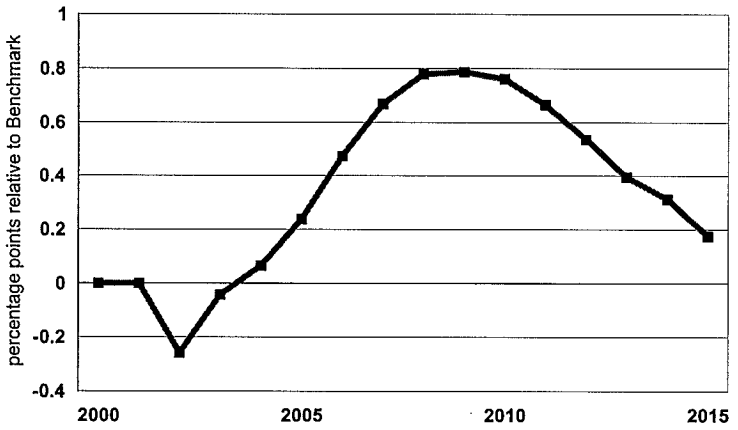


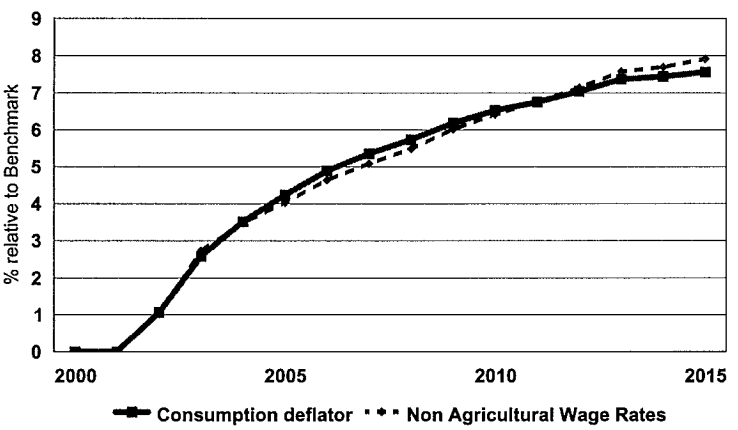
Figure 5.17: Oil Prices +50 per cent: Irish Unemployment Rate Compared to *Benchmark*



The effect of the rise in oil prices would be to directly raise consumer prices in Ireland. In the first year the rate of inflation would be 1.1 per cent above the *Benchmark* and in year 2 (here assumed to be 2003) it would be a further 1.5 percentage points higher. As shown in Figure 5.18, which shows the change in the price level, the rate of inflation in Ireland would continue above the *Benchmark* for quite a number of years. The weakening of the euro as a result of the shock would be expected to have a bigger impact on the price level in Ireland than elsewhere in the Euro area. However, there must be some doubt as to whether the gap in experience between Ireland (Figure 5.18) and the rest of the Euro area (Figure 5.12) could remain this great in the longer term.

The details of this simulation indicate that a permanent rise in oil prices would have some limited long-term impact on the potential growth rate in Ireland. This impact would arise, as much from the necessary tightening in monetary policy, as from the direct loss through the terms of trade. However, this negative impact would be much smaller than in the 1980s and the impact on inflation would also be much lower because of the assumed activist stance by the European Central Bank (ECB).

Figure 5.18: Oil Prices +50 per cent: Irish Inflation Compared to *Benchmark*



5.4 Wasted Opportunity

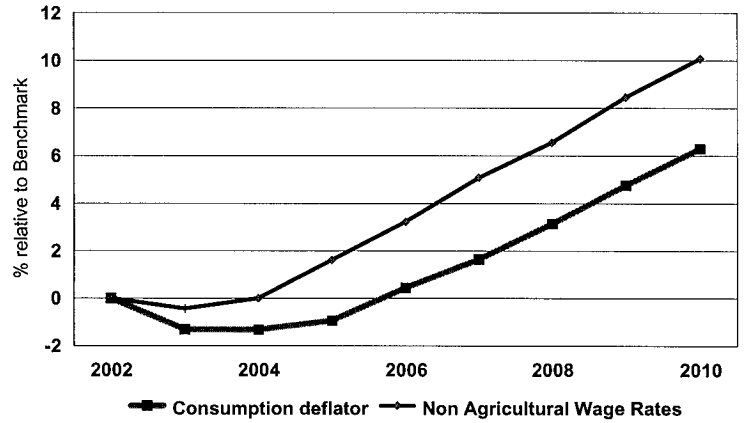
So far the scenarios we have considered have involved unfavourable developments in the external environment. In each case we have assumed that domestic policy reacts in a suitable manner to minimise the damage done to the potential long-term growth rate of the Irish economy. Under these

circumstances the Irish economy is expected to suffer little if any damage in the medium to long term.

However, there is also the possibility that domestic action could damage growth prospects in a more permanent fashion. In this scenario, which we characterise as being a scenario of "wasted opportunities" we examine the consequences of domestic policy failure simultaneously in two key areas:

- A consistent failure to implement the necessary public investment in infrastructure, constraining the economy's long-term supply potential;
- Domestic costs, especially labour costs, are assumed to rise more rapidly than in the *Benchmark* (by an additional 1 per cent a year) throughout the forecast period, resulting in a sustained loss of competitiveness.

Figure 5.19: Wasted Opportunity: Irish Inflation Compared to *Benchmark*



This scenario differs from the *slowdown* scenario in Section 5.2 in that the policy failures are sustained over the course of the decade. The result is a permanent reduction in the potential growth rate of the economy. What is important about this scenario is not the precise mechanisms through which we have characterised the underperformance of the economy. Instead it gives a useful illustration of the wider impact on living standards and the labour market of such a failure, whatever its underlying cause.

The growth in non-agricultural wage rates in the medium term at a rate well above that in the *Benchmark* projection involves a serious loss of competitiveness. The growth in labour costs is aggravated by the failure to undertake adequate investment in infrastructure. The infrastructure failures raise the domestic cost structure, putting some upward pressure on the consumer price level in the medium term. This, in turn, feeds back on wage rates. This increase in domestic inflation (both of wages and prices, Figure 5.19) is assumed to occur in Ireland alone so that it produces a cumulative loss of competitiveness.

Figure 5.20: Wasted Opportunity: Manufacturing Output Compared to *Benchmark*

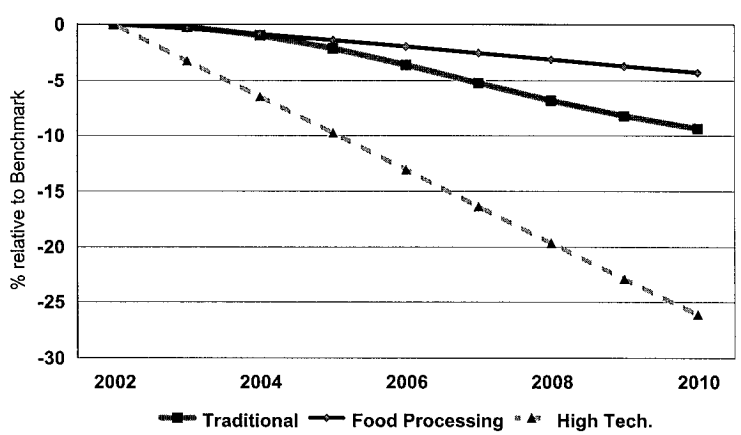
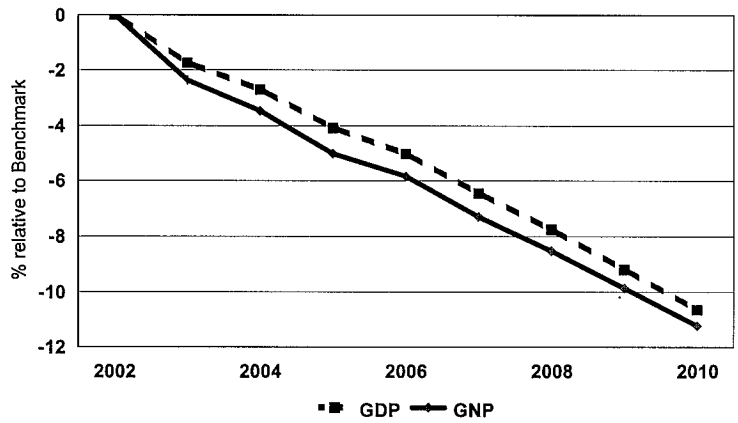


Figure 5.21: Wasted Opportunity: GNP Compared to *Benchmark*



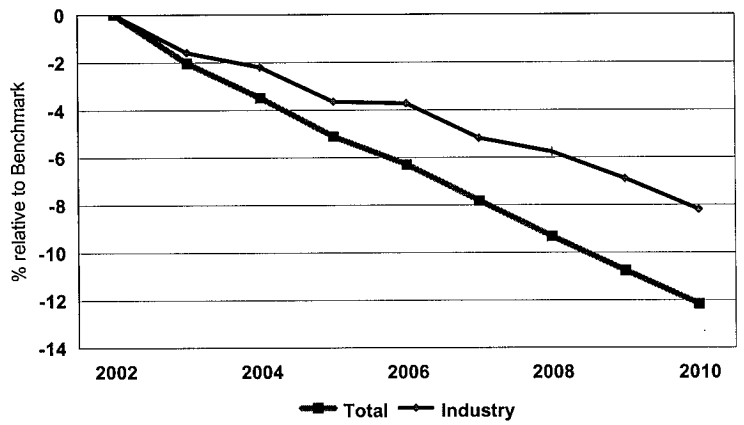
The sector most vulnerable to the loss of competitiveness is manufacturing. Figure 5.20 shows the cumulative impact of the shock on output in the three components of manufacturing. Food processing is least affected, because of its dependence on the processing of domestically produced raw materials. In the case of the traditional manufacturing sector, output by 2010 would be down 10 per cent compared to the *Benchmark*. However, the biggest impact would be on the high-technology sector, which would be gradually choked by the shortage of infrastructure and the mounting loss of competitiveness. In this illustrative scenario output would be down a quarter by the end of the decade compared to what might otherwise have been.

In this scenario we have also assumed that the government reacts to the adverse impact on the Budget of the loss of output by raising taxes to ensure that the borrowing requirement is unchanged in the longer term compared to the *Benchmark*.[8] The higher taxes would further increase pressures in the labour market and further increase the loss of competitiveness in this scenario.

In Figure 5.21 we show the impact on the level of GNP of the loss of competitiveness. On average the rate of growth between 2003 and 2010 is 1.4 percentage points below that of the *Benchmark*. While population growth is also slower, the overall impact of this shock is to reduce the growth in output per head by around three-quarters of a percentage point each year over the eight years. These figures take no account of the loss of "consumers' surplus" from the inadequate infrastructure. In other words, the loss of GNP contains no allowance for the increased congestion and reduced quality of life from under-investment. It is only in so far as the lower investment affects the competitiveness of the business sector that it is taken into account.

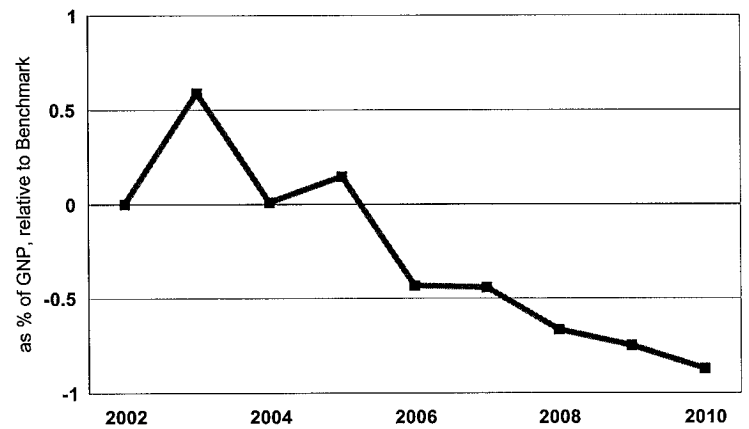
[8] An alternative assumption would be that current expenditure would be cut to balance the Budget. In the longer term a combination of both approaches would be necessary in the face of such a significant economic deterioration.

Figure 5.22: Wasted Opportunity: Employment Compared to *Benchmark*



The underperformance of the economy, especially the loss of output in the industrial sector, would seriously affect employment. By 2010 employment in industry would be 12 per cent below the *Benchmark* level, with total employment being 8 per cent down, see Figure 5.22. The result would be that the unemployment rate by 2010 would be over four percentage points above the *Benchmark*. This rise would occur in spite of a major reduction in immigration, and even an eventual return to net emigration by the end of the forecast period.

Figure 5.23: Wasted Opportunity: Balance of Payments Surplus Compared to *Benchmark*



While the government sector is assumed to react to the changed circumstances of this scenario by taking action to ensure that the public finances remain on a sustainable path, Figure 5.23 suggests that this scenario may still not be sustainable for the economy as a whole. It shows that by the end of the period the deterioration in the competitiveness of the economy would have a sustained impact on the balance of payments, reducing the surplus (or increasing the deficit) by one percentage point of GNP. While this would be quite easily financed in the medium term, the steady deterioration in the balance of payments over the forecast period could not continue indefinitely. Eventually the economy would react to halt this process through either increasing domestic savings or reducing domestic investment. In either case there would be a further negative impact on growth over and above that shown here.

This scenario shows that there is no inevitability about the success of the Irish economy. Serious domestic policy errors and a serious failure of the labour market to adjust to changing circumstances could together ensure that

the economy would fail to reach its potential over the next decade. While, as discussed in the first two scenarios, external factors are crucial in setting the framework in which the economy will operate, it will be important to manage the growth process in Ireland in an appropriate manner if the full potential is to be achieved. The underperformance illustrated in this scenario would involve significant additional costs not fully captured in terms of GNP – congestion, unemployment and a return to emigration.

5.5 Higher Potential Growth

As discussed in the Appendix to Chapter 4, previous *Medium-Term Reviews* have tended to underestimate the potential growth of the economy. With this in mind it is important to explore the possibility that the estimate of the potential growth of the economy underlying both the *Benchmark* and the *Slowdown* scenarios is too low. Here we describe the results of a simulation where the potential growth rate of the economy is assumed to be one percentage point higher each year and where the additional labour input comes from much higher immigration.

An alternative to this simulation would be one where the potential growth was realised through a more rapid increase in productivity. Such a scenario would have the major advantage that it would put less stress on domestic infrastructure as the higher output would be achieved with the same population and employment as in the *Benchmark*. It would also have significant beneficial effects in terms of a wider definition of economic welfare (lower congestion). However, productivity is not a variable directly amenable to policy. It is unclear how and why productivity, which is already growing more rapidly than in other OECD countries, could or would grow more rapidly than we have assumed. If policy measures could be identified that could raise the growth in productivity this would make such a desirable scenario seem more realistic.

In the absence of a more rapid increase in the productivity of labour, higher growth would require significantly higher net immigration than assumed in the *Benchmark*. As shown in Figure 5.24, net immigration over the rest of the decade would have to average more than 30,000 a year above that in the *Benchmark*. This would involve higher levels of net immigration than have ever been experienced before, amounting to well over 1 per cent of the population each year. In addition, this immigration would have to be predominantly skilled labour if the assumed relatively rapid increase in productivity were not to fall. While a major inflow of unskilled labour from outside the EU might be feasible, such a volume of skilled immigration would seem unrealistic.

In the *Benchmark* forecast we have assumed that, partly as a result of rising expectations and partly as a result of supply constraints, the economy will tend to slow down over the next few years. That forecast assumes that capacity growth will be of the order of 5 per cent out to 2005 and closer to 4 per cent in the following five years to 2010. However, if competitiveness deteriorates more slowly than we have envisaged and if investment to relax the infrastructural constraints is undertaken more rapidly than foreseen, then more rapid growth may be possible. It is interesting to look at some regions elsewhere, such as Seattle in the US, where rapid growth over a long period has been possible through very extensive immigration.[9]

In this scenario we assume that the investment in public infrastructure will be adequate to cope with the higher level of activity and the higher population. If this were not the case, as outlined above, the direct effects of congestion and its indirect effects working on the labour market would prevent this scenario from being realised. As discussed below, this scenario

[9] Though in the case of Seattle there have been serious infrastructural problems.

would require substantially greater investment in housing to cater for the higher population.

Figure 5.24: Higher Potential: Net Immigration Compared to *Benchmark*

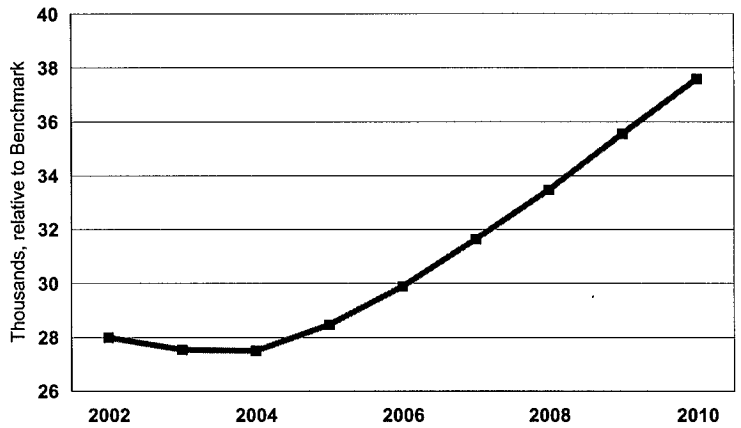


Figure 5.25: Higher Potential: GNP Compared to *Benchmark*

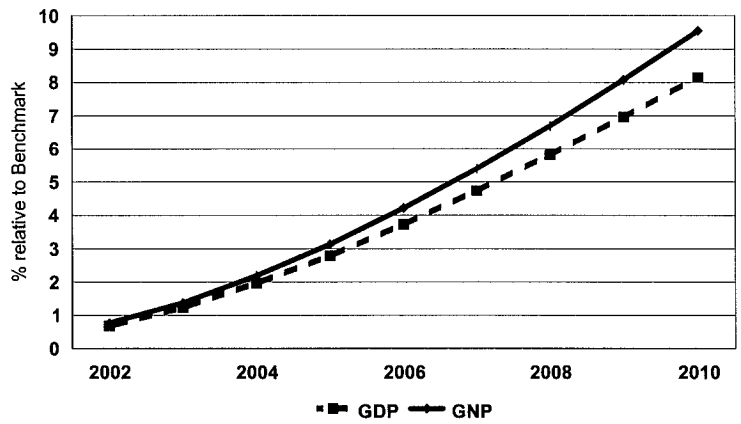
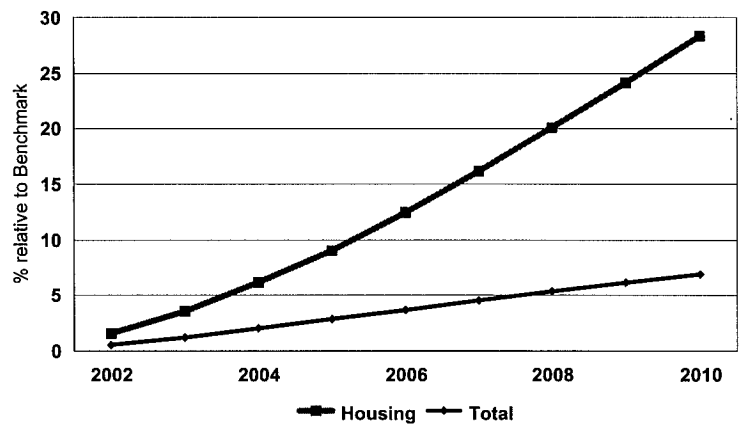


Figure 5.25 shows the level of GNP rising steadily compared to the *Benchmark* over the rest of the decade as the more rapid increase in labour supply expands potential output. The additional growth in GNP would amount to around one percentage point a year.

Figure 5.26: Higher Potential: Investment Compared to *Benchmark*



The substantially higher immigration and resulting higher population would require a much greater investment in housing, as shown in Figure 5.26. On average, over the rest of the decade an additional 11,000 dwellings a year would be required to house the new arrivals, a major increase on the already substantial investment assumed in the *Benchmark* forecast. The additional demand for dwellings would have an impact on house prices. By the end of the decade they would be 20 per cent higher than in the *Benchmark* in order to elicit the necessary supply response from the building industry. This substantially raised price level would obviously involve a welfare loss for the population already in Ireland who would need to be housed over the course of the decade.

The level of employment would also rise more rapidly over the course of the decade (Figure 5.27). By 2010 it would be around 11 per cent above the *Benchmark*. The net immigration would account for the bulk of the increase in employment but there would also be a small further fall in the unemployment rate.

Figure 5.27: Higher Potential: Employment Compared to *Benchmark*

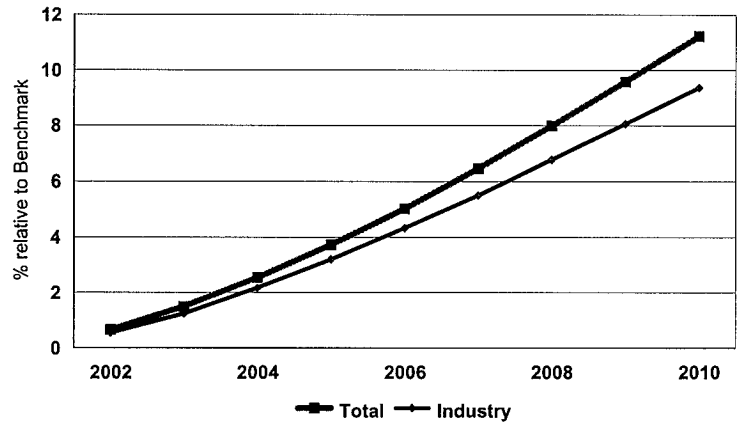
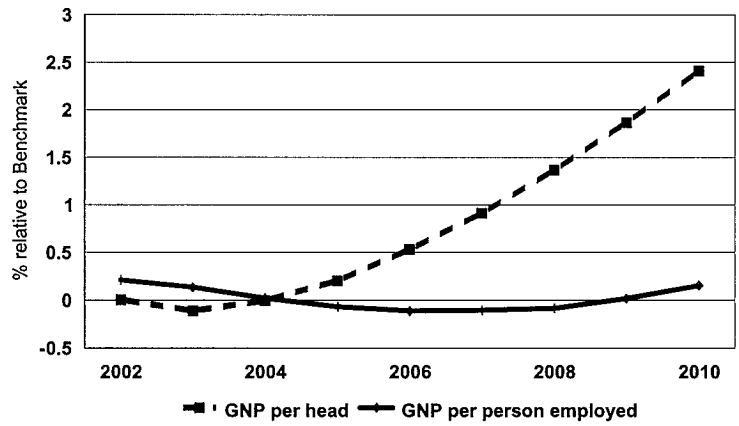


Figure 5.28: Higher Potential: Output per Head Compared to *Benchmark*



The higher level of output in the economy achieved through a more rapid expansion of the skilled labour force through immigration would leave the level of productivity roughly unchanged over the course of the decade compared to the *Benchmark*. GNP per head would be around 2.5 percentage points higher, primarily because the immigration would further reduce the dependency ratio below its already low level. However, this increase would be relatively small, and it would take no account of any additional costs through increased congestion. As discussed above, one of those costs would

be higher prices for housing. If such welfare effects, not properly captured in GNP, were taken into account, the result would suggest that the higher growth under this scenario would not greatly improve the welfare of those already living in Ireland. Presumably the welfare of the immigrants would be improved or they would not come to Ireland. However, it must be questioned whether skilled immigrants would still come to Ireland in such large numbers in the face of rising housing costs.

5.6 Conclusions

Given the uncertainty that surrounds any forecasting exercise it is always unwise to rely on a single projection for the future. In the last chapter we set out a *Benchmark* forecast that is, if anything, optimistic. In this chapter we have explored a number of different scenarios, including one where there is assumed to be a more prolonged slowdown in the world economy. This latter scenario is probably on the pessimistic side. The gap between these two forecasts for the period 2002 to 2004 is quite large, indicating the considerable uncertainty that is involved in any forecast of turning points in the economic cycle. However, these two scenarios imply very similar forecasts for the average growth over the forecast period to 2007 and beyond.

This indicates our view that the economy is relatively robust. Even if there is a bumpy ride in the short term, it has the potential to grow at 5 per cent a year over the next five years. If the economy underperforms in the next year or two this is likely to be compensated for by more robust growth in the recovery phase.

Looking further out to the end of the forecast period and beyond, we explore two scenarios that involve the medium-term growth of the economy being either 1 per cent a year above or below the *Benchmark*. In the light of past forecasting errors, these scenarios should provide a realistic range of outcomes within which the actual outturn is likely to fall.

Provided that domestic fiscal policy in the next two or three years is operated in a prudent manner, the public sector should be in a position to continue investing in necessary public infrastructure. On the assumption that a broadly neutral fiscal policy is pursued, the public finances should not move into deficit. It is only if there is an unexpected "deflationary surprise", due to an unforeseen strengthening in the value of the euro, that a temporary deficit might occur. As a result, even in the worst case scenario, there should be no need for a drastic fiscal tightening, as was necessary in the 1980s. This is a measure of the underlying robust nature of the economy.

The scenarios analysed here also highlight the importance of delivering the major increase in infrastructure. Without it the economy will not achieve its potential growth rate over the next decade. If infrastructural investment is undertaken sufficiently rapidly there is the possibility that the economy could even exceed the parameters set out in the *Benchmark* forecast.

As discussed above, there remains the possibility that the long-term growth potential of the economy could be permanently impaired through unwise domestic actions. Failure to undertake the necessary infrastructural investment, combined with a continuing loss of labour cost competitiveness, could knock 1 per cent off the medium-term growth rate.

By contrast, there remains the possibility that the potential growth rate of the economy could be increased above the *Benchmark* rate. The best way of achieving this would be if the rate of growth in labour productivity significantly exceeded our forecast. This would produce a clear welfare gain for the bulk of the population. The alternative scenario, explored in this chapter, where the higher growth is achieved through greatly increased immigration, is unlikely to greatly increase economic welfare.

6. Policy Implications

In the last *Review* we dealt in detail with the reasons behind Ireland's success in the 1990s: favourable demographics, the benefits of a belated commitment to investment in education, and an inflow of foreign direct investment. However, these factors themselves would not have worked were it not for two features of the external environment within which the economy operated. The first of these was the change in context wrought by EU membership. It was not the financial transfers from the EU that were most important; rather it was the access to the prosperous EU market that transformed Ireland from a small, closed, underdeveloped economy into a region of an open and expanding world economy. For the future, as in the recent past, domestic economic success will depend on continuing access to the successful and expanding EU market. It will be important that whatever policy changes are implemented in the medium term do not undermine this relationship.

The second key feature of the external environment was the relative immunity of the Republic's economy from the "Troubles" in Northern Ireland over the 1970s and the 1980s. However, while there were few obvious deleterious economic effects south of the border, the "Troubles" did involve many missed opportunities.

The future successful implementation of the Good Friday Agreement in the North is clearly vital for all those living on the island of Ireland. While much less important than the political implications of its success, the Agreement also has potential economic implications. The current uncertainty in the North is not good for business there, nor is it favourable to the development of the island economy as a whole. Both economies would benefit in the longer term from a clear and successful completion of the peace process and the transformation of Northern Ireland into a more normal place to live, work, and to do business.

In this chapter we discuss some of the choices that the relative success of the economy opens up for Irish society. We then consider some of the policy issues that the analysis in this *Review* suggests will be important in smoothing the path of economic growth.

6.1 The Fruits of Success

RISING LIVING STANDARDS

In the 1980s and for much of the 1990s the central problem of unemployment meant that society put a very high value on job creation. However, employment creation was not very sensitive to wage moderation so that the profit rate had to rise significantly to accelerate the necessary growth in jobs. The result was that real wage rates, while rising more rapidly than the EU average, did not keep pace with the rate of economic growth. Of course the reduction in tax rates as part of the partnership process gave further benefits to wage earners, sustaining the increase in real after-tax earnings. The result

of this wage moderation[1] was a very rapid growth in employment in the 1990s and the dramatic reduction in Ireland's unemployment problem.

Over the coming decade the slower growth in labour supply will mean that the need for employment growth is very much reduced. As a result, we anticipate a significant loss of competitiveness through wage rates rising more rapidly in Ireland than in its neighbours. The result will be a more rapid increase in real (before and after tax) earnings than in the 1990s. Whereas the bulk of the benefits of growth in the 1990s were taken in terms of employment, in this decade the bulk will be taken in terms of income per person employed.

As discussed earlier in Chapter 4, we have assumed that average rates of personal taxation remain broadly unchanged over the decade.[2] With the fruits of economic growth it should still be possible to improve significantly the quality of public services in the medium term, while still meeting the government's fiscal surplus target. Depending on the public's welfare preferences, there will be a range of discretion for future Irish governments to choose either a more rapid improvement in services with some increase in taxation, or slower growth in public services accompanied by limited cuts in the real burden of taxation.

QUALITY OF LIFE

Although conventional measures, such as GDP and GNP, provide a very useful benchmark for measuring economic progress, they have many limitations as a measure of welfare. While Ireland had a standard of living, measured in terms of GDP per head, much lower than its neighbours, it was not surprising that the population would accord priority to closing this gap in income per head. However, as Ireland is now one of the richest countries in the world the choices made by individuals about how best to improve their welfare may be rather different from those of the past.

It is well known that the standard of living in the US, measured in terms of GDP per head, is considerably higher than in the EU. However, it is less well known that there is a much smaller gap in output per hour worked.[3] The difference in "living standards" between the EU and the US is due to a preference among the population of the EU for more leisure at the expense of less money income. In the long run, such a difference in working hours (shorter working week and more holidays) must reflect the preference of the labour force rather than a requirement imposed from on high by unions or successive governments.

In Ireland to date, while we do take longer holidays than in the US, hours worked in manufacturing remain longer than the average in the EU, though less than in the US. Over the coming decade the Irish labour force will have a choice between maintaining hours worked or taking the potential rise in income as more leisure. Ultimately this should be a choice made by individuals. It argues for greater flexibility in the labour market to accommodate individuals' different preferences, where some choose a rapid increase in money income and others choose a smaller increase combined with more leisure.

[1] Elsewhere it has been argued that the wage moderation owed more to market forces than to the Partnership Process, Fitz Gerald, J., 1999, "Wage Formation and the Labour Market", in F. Barry (ed.), *Understanding Irish Economic Growth*, London: Macmillan.

[2] In terms of the Irish budgetary process this would imply indexation of tax rates and bands. In the Irish legal system, the implementation of this indexation provision requires significant "tax cuts" each year.

[3] German output per hour is similar to that in the US, while output per head is significantly lower.

A second way that GDP fails as a measure of economic welfare is that it does not include the cost to individual households of congestion. While the costs to firms are readily quantified and serve to reduce measured GDP, in the case of households their leisure has no "price". In the past this deficiency has contributed to an undervaluation of the benefits of infrastructural investment. However, there has been a growing understanding that it is an important aspect of welfare and the recent *National Development Plan* (NDP) includes significant investment that is justified because of its benefits in reducing the costs of congestion for households. More research is needed to quantify the welfare effects of congestion and to suggest how they might best be reduced.

The issue of how best to meet the needs of families in today's economy is a much broader issue than one of labour supply. Instead it concerns the quality of life for both parents and children. If it is the case that parents are currently constrained in their choices then, just as in the choice of leisure over work, Irish society may choose more family friendly policies at the expense of some reduction in measured income. This could include the provision of greatly improved childcare facilities as well as a wider acceptance that both parents should be free to take time off to care for their children. For example, in Sweden some of the parental leave after birth is only available to fathers.

A possible objection to increased support for families through flexible working arrangements, or increased provision of childcare facilities, is that they will place further burdens on business. Whether businesses directly fund the changes or whether they are funded through taxation may ultimately make little difference to who pays. Whichever route is chosen, in an open economy such as Ireland's, it is likely that the result of the wage bargaining process will see the bulk of the financial cost ultimately falling on employees who will, in turn, be the beneficiaries. This is not a reason for forgoing a change in policy, which improves the welfare of many citizens, but the fact that it is not costless must be recognised.

POVERTY AND SOCIAL EXCLUSION

In this *Review* we have assumed that social welfare payments are indexed to wage rates in the medium term. This should result in those dependent on welfare sharing in the benefits of the expected continuation of economic growth. As discussed above, it is anticipated that real wage rates will rise quite rapidly over the forecast time horizon and this would see a more rapid rise in real welfare rates than experienced in the 1990s.[4]

If an alternative assumption were made that welfare rates would be indexed to prices rather than wages this would obviously reduce the rate of increase in current government expenditure. However, it would imply that those on welfare would suffer a continuing decline in purchasing power relative to those in employment. This was not acceptable over the last decade, as manifested in the actions of successive governments, and it would seem improbable that it would be accepted by future governments.[5] Indeed, it may well be the case that future governments may wish to enhance further the position of those on welfare.

The experience of the last twenty years indicates the importance of ensuring that any such changes do not adversely impact on the labour market. Various mechanisms have been suggested, such as changes in child

[4] Generally welfare rates in the 1990s rose more rapidly than prices but less rapidly than wage rates.

[5] Layte, R., B. Maître, B. Nolan, D. Watson, C.T. Whelan, J Williams, B. Casey, 2001, *Monitoring Poverty Trends and Exploring Poverty Dynamics in Ireland*, Dublin: The Economic and Social Research Institute, Policy Research Series, No. 41

benefit, which would allow such a policy to be implemented, without adversely affecting the replacement ratio or work incentives.[6]

The very rapid increase in the cost of accommodation in recent years has created a major new social problem. Waiting lists for social housing have risen rapidly in recent years and there remains the prospect that the lists will continue to grow for quite a number of years yet. While under the *National Development Plan* substantial public resources have been allocated to increase the supply of social housing, the tightness in the building industry has proved a serious obstacle. It is hoped that with some slowdown in the building industry the government will find it easier to increase the supply of social housing.

In the meantime, it should be borne in mind that the priority of housing policy should be to maximise access to good accommodation with secure tenure. The widespread acquisition of housing assets through home purchase should be regarded as a secondary consideration and should not be a priority in the use of public funds. As discussed later in this chapter, there is a need to encourage the growth of a professional private rental sector, not just to meet the needs of those on low incomes but to meet the broader requirements of a rapidly changing society.

6.2 Managing Success

Much of Irish economic policy over the last thirty years has been predicated on the fact that there was, and would continue to be, significant unemployment in Ireland. In the 1980s, even a high level of emigration did not prevent the build-up of a large number of long-term unemployed. For policymakers this high level of long-term unemployment was the focus of much attention, particularly because it was closely linked to problems of poverty.

Until very recently it would have been inconceivable to talk of Ireland as a full-employment society. However, both the *Benchmark* and the *Slowdown* scenarios in Chapters 4 and 5 assume that, whatever the temporary problems of the next two or three years, the economy will return to full employment. Thus one of the major questions that has faced policy makers of the last twenty years, namely how to make better use of our existing resources, especially the unemployed, is replaced today by the question of how to expand the resources, including labour, available to the economy.

In the discussion on policy priorities that follows what is striking is the extent to which policies interact with one another. Investment in infrastructure will only be effective if supporting policies ensure that it is used efficiently. Tax and welfare polices interact with labour supply in a very complex fashion. Industrial policy, which was once seen as merely an issue of grants, is now driven by tax policy, the availability of efficient infrastructure and policies aimed at ensuring the supply of skilled labour.

The world for policy makers may not be much more complex than it was in the past. However, our understanding of its complexity is now much greater than it was and the co-ordination of all the instruments of policy to meet a range of objectives is seen to be very onerous.

While the scenarios in this *Review* hold out the prospect of continuing rapid growth for another decade, there is no guarantee that the pattern of growth will turn out as planned. Policy makers should take this uncertainty into account. The objective should be to formulate policy so that it is robust to unexpected changes in the economy. Here we consider four broad policy areas where suitable domestic action can increase the chances of a satisfactory outcome in terms of future economic prosperity: fiscal policy,

[6] See Callan, T., M. Keeney, B. Nolan, J. Walsh, 2001, *Reforming Tax and Welfare*, Policy Research Series, No. 42, Dublin: The Economic and Social Research Institute (forthcoming).

broadly defined; supply side policies, especially policy on infrastructure; policies affecting the environment for business, including policies on labour supply and competition; and long-term strategic issues.

FISCAL POLICY

Here we first consider the principles that should apply in determining the overall balance of public expenditure and taxation in the medium term. We then examine a number of examples at a more micro level where taxation or expenditure policies can enhance the growth potential of the economy and can contribute directly to meeting wider policy objectives.

The Balance of Fiscal Policy

In framing medium to long-term policy on the public finances the Irish authorities have adopted an innovative approach by providing in advance for the long-term costs of ageing. While the problem of the "greying" of their population is currently impacting on many EU countries, its most serious financial effects are a long way off for Ireland. As outlined earlier, Ireland can expect to reap a significant "demographic dividend" over this decade as a result of the very low dependency rate. It will not be for another twenty years that the old-age dependency rate will begin to show a marked rise and, even then, it will be less acute than in many of our EU neighbours. However, to provide for the consequences of ageing the government has established a state pension fund, part of which is to provide for future public service pension liabilities, with the rest being used to provide for future liabilities relating to the state pension.

The National Pension Reserve Fund will accumulate over the next twenty-five years with an annual contribution of at least one percentage point of GNP. How this will interact with the commitments under the *Stability and Growth Pact* has not been made clear but it is anticipated that it will mean that, on average, the public sector will run a small surplus over the course of the current decade.[7] While the principles behind the establishment of the state pension fund are based on a concept of intergenerational equity, the allocation of one percentage point of GDP to saving to pay future pension liabilities still requires further research.[8]

In determining the appropriate level of savings by the public sector for this generation to undertake one also has to take account of the stock of public capital. As discussed above, Ireland's stock of infrastructure is seriously inadequate for the current generation. Over the course of this decade much of this deficit is likely to be made good through major public investment funded out of tax revenue. This investment will be at least as important a contribution to the welfare of the next generation as will the pension fund.

Once the necessary infrastructure is in place in the next decade, the revenue currently allocated for investment could, if desired, be used to accelerate the growth in the pension fund. When the exceptionally high rate of public investment in infrastructure is taken into account, it would appear that this generation is already making major provision to increase the welfare of the next generation.[9] While further research is needed to establish a framework in which the appropriate level of long-term public savings can be determined, in this *Review* we have assumed that the government aims to

[7] Lane, P., 2001, "The National Pensions Reserve Fund: Pitfalls and Opportunities", in Geary Lecture Series No. 31, Dublin: The Economic and Social Research Institute.

[8] The Department of Finance has already looked at this issue. Also see Lane, P., 1999, "What Should we do with the Surpluses?", *Administration*, Vol. 47, No. 4, Winter.

[9] In addition to funding the investment, this generation will pay a significant price through additional disruption and congestion as the new infrastructure is put in place.

save around one percentage point of GNP on average over the cycle – the contribution to the pension fund. This would imply that it would not be appropriate to run surpluses indefinitely on the scale seen in the last two years.

As well as aiming to maintain a surplus of 1 per cent of GNP, fiscal policy has another role in a modern economy – to help stabilise domestic economic activity. While a countercyclical fiscal policy may be desirable, the uncertainties inherent in forecasting make it difficult to operationalise, especially in a very open economy. In addition, inertia can often make it difficult to change the direction of fiscal policy rapidly. As a result, it would probably be better to aim at a broadly neutral policy, where the government is neither stimulating nor deflating the economy. Such a policy would be substantially better than the policy of the last thirty years that has been frequently pro-cyclical (see Chapter 4, Box 4.1).

The neutral budget assumes no change in average tax and expenditure rates from the previous year, ensuring full indexation of the tax and welfare system. If the economy were to grow at its trend rate then, under this rule, the budget surplus (or deficit) would remain unchanged from one year to the next. To the extent that the economy grows above or below trend this surplus will rise or fall. Thus neutrality of fiscal policy is not the same as a balanced budget – rather it means that the budget surplus (or deficit) only changes because of changes in the rate of growth rather than because of discretionary action by the government. On this basis, as shown in Box 4.1, the Budget for the current year was quite stimulatory and inappropriate for an economy that was growing rapidly at the beginning of the year. It has preempted resources that could have helped sustain the economy in the event of a recession. However, the economy remains in a reasonably robust condition and it is still relatively well placed facing into a more uncertain world environment.

Our analysis suggests that a neutral budget next year would allow a "safe braking distance" should the external environment turn sour or should there be a deflationary shock (see Chapter 5, Section 5.6). If such a policy were pursued over the course of the decade it would minimise the danger of disruption to economic growth from unpleasant surprises in the public finances. There should also be no danger that the Maastricht criteria or the *Stability and Growth Pact* requirements would be breached. Indeed prudent management of the public finances from a domestic point of view should mean that the EU requirements on policy co-ordination will be easily met.

While the overall parameters for fiscal policy are set out above, within these guidelines there will be a wide range of choices available to future governments to determine the pace of development of publicly-provided goods and services. The profile on the public finances in the *Benchmark* forecast would see the size of the public sector (measured in terms of the ratio of tax and expenditure to GDP) remaining the lowest in the EU over the course of the decade. This is not, however, intended to be normative or prescriptive.

Neither EU regulations nor the laws of economics define a particular size for the government sector as being appropriate or wise. This is a matter for the democratic process to determine. Provided that the requirements on the size of the government surplus are met, within reasonable limits, future governments should be able to choose either a more generous or a less generous provision of public services than we have assumed through varying simultaneously the levels of taxation and of public expenditure.

Tax and Welfare Reform

The lessons of economics suggest that high marginal tax rates and narrow tax bases can substantially increase the economic costs involved in raising

taxation.[10] Over the course of the last twenty years there has been significant progress in applying these lessons to the Irish tax system. However, there remains considerable room for improvement. While in the personal tax system effective marginal rates have fallen, more progress could have been made if the lessons about increasing the tax base had been more fully implemented. many of the "incentives" that are so often offered for what seem like sensible reasons, serve to narrow the tax base and to raise the economic cost of collecting revenue.[11] There has also been a reluctance to further expand the tax base through the introduction of a property tax that would have allowed more progress to be made in reducing marginal effective rates of income tax and of indirect taxes. It would also have reduced the risks of a bubble developing in the housing market.

Probably the area where most progress has been made in expanding the tax base has been in the area of corporation tax. In Ireland, we have an extremely wide base compared to that in other EU countries. This means that, while the rate of tax is very low by EU standards, the average effective tax rate shows less disparity compared to many other EU countries.

The results of research by Doris[12] into the supply response of female and male labour to wage rate changes have been discussed in Chapter 4, Box 4.2. This evidence is important in deciding how the tax and welfare systems should develop to encourage the maximum possible growth in labour supply. It indicates that the likely response of male labour and of more skilled female labour to changes in the return from working will be small, whereas for unskilled female labour it still remains high. This suggests that if labour supply is the priority, then it is changes in tax rates for those on low incomes that must be targeted. Changes in the welfare system, including individualisation in the welfare system itself, could also increase unskilled labour supply. While still desirable, the move to individualisation in the tax system, which benefits those on high incomes, will have a much smaller impact on labour supply.

Extensive research by the ESRI has shown how it is possible to develop the welfare system in a way that would not reduce labour supply. For example, concentrating on increasing child benefit would allow an improvement in living standards for those on low incomes, combined with an increase in labour supply. The lessons of this research have been taken on board by the government and current policy calls for just such an increase. However, even more could be done if the increases were larger and made subject to taxation.

Industrial policy

The move to a full-employment society means that the principles underlying industrial policy need to be reviewed.[13] The policy of the past, that attached a high priority to employment growth, is not necessarily the correct policy for the future. The price that was paid to attract jobs in the past is no longer appropriate. In addition, in a modern economy the manufacturing sector generally plays a smaller role than it does in Ireland today and, as outlined in

[10] In the personal tax system the effective marginal tax rate is a function of tax bands and allowances as well as of tax rates. Thus the highest marginal rates can occur for those on lower incomes that move out of welfare and into employment. Changes in headline tax rates are less urgent than changes in these allowances and reliefs.

[11] For example, mortgage interest relief and the incentives for building in seaside towns.

[12] Doris, A., 2001. *Quarterly Economic Commentary* Special Article, Dublin: The Economic and Social Research Institute, forthcoming.

[13] See Honohan, P., 1998, *Key issues of Cost-Benefit Methodology for Irish Industrial Policy*, General Research Series, No. 172, Dublin: The Economic and Social Research Institute.

the *Benchmark* forecast, it is envisaged that most of the net employment creation in the next decade will occur in the less tradable services sector.

While industrial policy in recent years has been evolving to deal with the new circumstances, further change is needed. Many supports for the commercial sector both through direct subsidies and through tax reliefs were provided with the understanding that they would help create additional jobs. In the changed market circumstances of the current decade such supports are no longer justified. Even though there is likely to be quite a rapid turnover of firms, the problems of underdevelopment that justified direct state intervention in the past are no longer as relevant today. Instead, the business sector can best be supported by investing in relevant public infrastructure and in tackling the other problems that impact directly on competitiveness.

Over the last forty years successive Irish governments have pursued a consistent industrial policy based on low corporation taxes. This strategy has borne particular fruit in the 1990s and, while it was neither the only possible nor necessarily the best strategy to have followed, the structure of the economy is built around it. In particular over the last twenty years, the imperative of solving the problem of unemployment in the face of a rapidly rising labour force made it necessary to offer substantial rewards to new investors in Ireland.[14] While we will still need a reasonably rapid rise in employment, the "price" that it should be necessary to pay for new jobs will fall over time.

Under these circumstances some rise in the rate of corporation tax after 2010 might be desirable, with the additional revenue being used to reform the tax system elsewhere in the economy. However, it is not clear how much the rate of corporation tax should rise. Too big a rise could have a dramatic negative effect on the economy, causing existing manufacturing firms to leave. The experience of the past has suggested that the rise from zero to 10 per cent in 1990 had no obvious effect and that the impending rise to 12.5 per cent is not having any appreciable effect on firms. In this *Review* we have assumed that after 2010 the rate gradually rises to 17.5 per cent.

Experience has shown that the precommitment many years in advance to a fixed corporation tax rate produced significant benefits in reducing the risk facing potential investors. It is, therefore, appropriate that we consider what should be the rate after 2010 and that this decision should take account of what is happening in other EU countries. However, before any final decision is taken on how much the rate should rise it is important that the sensitivity of the economy to changes in this tax should be examined. This is an area where further research is urgently required as any mistake could prove very costly.

The Environment

Policies aimed at enhancing the quality of the environment in which we live are likely to add to the quality of life, broadly defined, in the coming decade. As in many other areas, the implementation of environmental policy will have significant economic effects. As a result, it is vital that policy is formulated in a way that ensures that environmental objectives are met at least cost. Generally this will be best done through use of fiscal instruments – tax charges, tradable permits. (However, there will always be cases where regulations may be a more efficient tool of policy.)

Environmental services generally will be required to operate to the high standards that have been imposed by the EU. While funding of the

[14] Technically, the elasticity of demand for Irish labour was substantially less than one. This meant that to increase employment by 1 per cent wage rates had to fall by much more than 1 per cent compared to the baseline. This meant that increased employment had to be bought through a reduction in the wage bill and increased profitability.

infrastructure is in hand, the operating and maintenance costs will be paid by Irish enterprises and households. It is important that charging be geared to promote more efficient use.

The most obvious case where efficient policy will require fiscal instruments is in implementing the Kyoto protocol in the EU and in Ireland. As discussed in Chapter 4, it seems likely that, without a major change in policy, current trends will see Ireland exceed its limit (under Kyoto) on emissions of greenhouse gases by the end of the decade. As a result, policy changes will be required in Ireland that will, either directly or indirectly, raise the cost of emitting greenhouse gases in the future.

Any policy that is adopted to implement the Kyoto protocol should aim to treat all sectors in an even-handed fashion so that they all face the same cost of emitting a tonne of greenhouse gases. This would ensure that those sectors that can reduce emissions cheaply will make bigger reductions while those for whom it poses a major problem will not have to undertake unduly expensive changes. Whether implemented by a trading regime or through taxation this will involve increasing the cost of energy usage. As an offset to this, the revenue from selling emissions permits or from taxation can be used to reduce distorting taxation elsewhere leaving many people no worse off. However, studies have shown that the incidence of implementing the Kyoto protocol could well fall disproportionately on the less well-off[15] and some of the revenue raised would thus be needed to ensure that the poor do not suffer any loss of welfare.

Even with the pursuit of an optimal policy for restraining emissions it is likely that the economic costs will be significant. This could see some slight reduction in the growth potential of the economy, as mentioned in Chapter 4. However, if an inefficient policy were preferred to the options outlined above, or if certain sectors were allowed to opt out of their responsibilities to take action, the costs in terms of lost output and employment could be significantly increased.

Public Services

Over the coming decade increasing prosperity will see a big increase in living standards. While much of this increase will go on consumption of private goods and services, the public will also demand improved provision of public services. The recent years of relative economic plenty have seen a more relaxed attitude to obtaining value for money from public expenditure. However, facing into an more uncertain environment, the importance of obtaining value for money from public expenditure, that was always there, will be very important.

A key area where improved services are being sought is health. The problems faced by policy makers in this sector are illustrative of the economic principles that remain relevant in determining appropriate expenditure levels throughout the public sector. Current government expenditure on the health services has more than doubled since 1996. However, the development that has taken place is piecemeal in nature and, as a result, has not been very effective. The returns on this very substantial increase in expenditure levels remains an open question. Given that two-thirds of health expenditure is attributable to pay costs, the fact that the numbers employed in the health services have increased by one-third over the past decade will account for some of the increased spending. Specific non-acute areas of care have also been targeted for substantially increased investment.

[15] Scott, S., and J. Eakins, 2001, "Household Income Effects and Implementation Options", in D. McCoy and S. Scott (eds.), *Green and Bear It? Implementing Market-based Policies for Ireland's Environment*, Dublin: The Economic and Social Research Institute, forthcoming.

While there has been some increase in service levels in the acute sector, waiting lists for many elective services continue to be experienced by substantial numbers of public patients. This period of unprecedented increased investment in the health services has also, unfortunately, coincided with unprecedented difficulties in ensuring an adequate supply of medical and nursing staff to support service requirements.

There are strong pressures from within the health services to increase resources. However, it is vital that the focus should be on improving services at minimum cost. Already there have been proposals for a substantial increase in the number of hospital consultants as a response to some of the difficulties encountered in the medical manpower area. These proposals would require a significant increase in investment in medical manpower on an ongoing basis. Within the current year a new Health Strategy is promised which is intended to adopt an expansionist perspective throughout the health sector. In the light of the current difficulties in supporting existing commitments to service provision, a key issue which remains to be addressed is how any proposed expansion in the health system can be staffed. No plans have been put forward to address the nursing shortage. Given the enormous increases in government expenditure on the health services in recent years and the very limited information available on the returns to this investment, concerns about efficiency and productivity also remain.

SUPPLY SIDE POLICIES

The *National Development Plan* (NDP), following on previous plans, sets out a coherent programme of investment designed to expand the productive potential of the economy. Underlying successive national plans has been the principle that investment choices should be based on explicit objectives and criteria against which the value of all projects can be measured. In particular, a rigorous evaluation procedure should be used to ensure that all the investment undertaken represents value for money. Here we consider some of the lessons to be learnt from the first eighteen months of the NDP's operation. We then discuss some of the considerations that must be taken into account if infrastructural investment is to prove an effective tool of regional policy. Finally, we consider the single most important area of infrastructural investment, housing. While this investment is largely provided by the private sector, the housing market is also affected indirectly by many aspects of public policy.

Public Physical Infrastructure

The impact of public infrastructure on economic growth varies depending on the state of economic development. Where the infrastructure in an economy is inadequate to handle the current level of economic activity then any relaxation of this constraint can produce very large benefits. It has been clear for a number of years that Ireland faces just such a constraint and the returns to public investment in appropriate infrastructure are likely to be very significant.

In the NDP the government has set out a coherent programme of investment to tackle these constraints on growth. However, the very high level of activity in the building sector over the last three years has absorbed so many resources that the NDP investment has been squeezed. The rapid increase in the cost of building has also greatly increased the funding required, adversely affecting the likely rate of return. However, with a slowdown in economic activity the pressures may ease somewhat and the opportunity should be taken to make good any delays that have occurred in public infrastructure investment.

The successful implementation of the Good Friday Agreement in Northern Ireland has changed the environment for infrastructure investment on the

island. The most obvious case where integrated planning is likely to deliver benefits to consumers, both North and South of the border, is energy. In an industry where scale economies are very important there are likely to be significant gains to be reaped from further integration.

The area where public policy has made less progress is in the necessary supporting measures that would have enhanced the efficiency with which new infrastructure is built and used. The problems in this area illustrate the wider difficulties in co-ordinating the very wide range of policies implemented by any modern government.

While the government has made significant changes in the planning process, there still seem to be huge problems in getting projects from the drawing board into final use. For example, while there is a clear commitment to regional development, it will be impossible to locate any significant new business in much of the Border-Midlands-Western (BMW) region unless urgent improvements in the electricity transmission network are implemented. In the case of waste disposal it is not just commercial activity that is at risk. Unless provision is made to dispose of our future household waste, suitably diminished through environmental management, there will be a major health hazard and our modern way of life will be put at risk.

There is also a failure of physical planning in the development and implementation of the programme of investment in urban public transport in Dublin. Dublin is currently a low-density city, which makes mass transportation unattractive from an economic point of view. However, along with all other urban areas in the state, Dublin is likely to grow rapidly over the next fifteen years. The planning system still has the opportunity to insist on high-density development along urban public transport corridors. If it does so then it can help Dublin evolve into a sustainable city based round a good public transport system. However, if this does not happen the result will be an expensive failure. In this light, the experience so far at the Northern and Southern extremities of the DART, in Kildare and in some of the planning decisions around the new LUAS, give serious cause for concern. In these cases the planning authorities have actually rejected rather than encouraged high-density development.

The ESRI report on *National Investment Priorities*[16] recommended the introduction of charges for use of infrastructure services where there is likely to be excess demand This would help ensure that the available infrastructure is used more efficiently. Dublin is currently developing in an unsustainable manner, with increasing dependence on long-distance commuting. Indeed a recent ESRI study showed that the commuter belt for Dublin extends to a radius of about 60 miles around the city.[17] The new motorways in the Dublin area are already clogged with commuter traffic to the detriment of the strategic role they were designed to accommodate. This problem will get much worse as the key final stretches in the motorway are completed, unless action is taken to ration urban road space. Rationing can be achieved in an inefficient and frustrating manner through congestion, or else through market instruments, either through charging for use of urban road space (tolls) or charging for private parking in central business districts.

Outside of the hinterland of Dublin the case for tolling motorways is much weaker. It is only if there is a danger that there will be excess demand for a

[16] See Fitz Gerald, J., I. Kearney, E. Morgenroth and D. Smyth 1999. *National Investment Priorities for the Period 2000-2006,* Policy Research Series No. 33, Dublin: The Economic and Social Research Institute.

[17] Morgenroth, E., 2001, *Analysis of the Economic, Employment and Social Profile of the Greater Dublin Region.* ESRI Books and Monographs Series, Dublin: The Economic and Social Research Institute.

road or there are problems financing its development[18] that tolls are warranted. If neither of these arguments applies, then tolls may divert traffic back onto the second tier roads causing unnecessary congestion.

Finally, there is a danger that too much reliance may be put on public-private partnerships (PPP) to provide necessary infrastructure. Unless the contracts entered into provide adequate incentives and unless all eventualities are covered in the contract the outcome could be seriously sub-optimal. Generally PPPs are likely to be more efficient at designing and building roads. However, relying on them to manage the infrastructure after it is finished can lead to serious inefficiencies. Changes in traffic needs or traffic patterns that may require changes in the underlying infrastructure could be seriously constrained because of the property interest of an incumbent management company. Where big changes in the operating environment (e.g. traffic levels) can occur over the life of a project and where they are difficult to predict with accuracy, they are very hard to provide for in the contract.

Because of the serious congestion that is being experienced as a result of the inadequacy of the existing infrastructure, there are big pressures to push ahead very rapidly with further investment. The urgency of dealing with existing bottlenecks can not be underestimated but this urgency poses its own dangers. There still is a need to ensure that all new investment projects provide value for money. It is still possible to have too much investment or alternatively investment in the wrong areas. In particular in the programme of road investment, decisions are being taken to change the priorities and standards for major projects without first checking to ensure that the additional expenditures will represent value for money.

A further area of concern is the planned major investment in additional educational infrastructure, especially at third level. As student numbers will begin to fall over the course of the decade, it does not seem appropriate to undertake a wide range of major investment in additional infrastructure. There must be concern that, even with some further rise in participation rates, the decline in numbers of young people will reduce demand for third level places. Under these circumstances, planning new institutions, when existing institutions may be under-utilised, may be a waste of money. Of course the need to provide for an increased commitment to life-long learning must be provided for, but this should generally be possible through more intensive use of existing infrastructure. At first and second level, while there is a need to upgrade some examples of poor infrastructure, and population movement will require some new building, these needs should be limited.

Regional Policy

It is an important aim of public policy to ensure that the benefits of economic growth are shared by all regions in the country. A key instrument in implementing this policy is the appropriate development of public infrastructure. In implementing this objective it is important that policy makers recognise the changes that have occurred in the economy and the wider society since the 1970s when an activist regional policy was implemented in locating new foreign investment.

The changing educational composition of the population alters individuals' aspirations and tastes; future regional success will depend as much on where people want to live as on where the jobs are. The promotion of balanced regional development should be based more on policies that enhance a region's attractiveness to young adults: for example, the provision of affordable housing, entertainment for the increasingly varied tastes of that

[18] This is clearly not an issue for Ireland today.

cohort, and satisfactory infrastructure, ranging from transport systems to child-minding facilities.

With the bulk of young labour market entrants having at least a Leaving Certificate, and around half having third level education, their expectations in terms of jobs and lifestyle are very different from the 1970s. Today, they are not interested in the type of industrial jobs that were created in the 1970s. They want, and are getting, employment that uses their skills – in the high-tech manufacturing sector or, increasingly, in the traded and non-traded services sector. In terms of lifestyle they are likely to devote a much higher proportion of their incomes to items such as leisure services, holidays, and eating out (See Box 4.3 in Chapter 4).

Mobile workers whose skills are in high demand choose to live in places with good services and amenities. Because many young people spend time away from home studying, working during student holidays, or obtaining experience abroad, they are well informed about the possibilities open to them. Today, while many people still prefer locations close to where they grew up, they also have opportunities to move to urban areas in the same region or elsewhere in the country. In choosing where to live, whether in Ireland or elsewhere, the choice often involves two people. The chosen location must be able to offer suitable opportunities for both partners. This very often requires couples to choose larger urban areas that have sufficient scale to offer both partners the jobs and facilities that they require.

In the light of this changed environment, regional policy will have to concentrate more on making chosen locations attractive to new labour market entrants than was the case in the past. It will not be sufficient just to provide attractive incentives for business if the potential work force finds the chosen location unappealing. With many new immigrants likely to come to Ireland over the next decade, most of them highly skilled, more than ever the attractiveness of different localities for individuals and households must be at the centre of regional policy.

In any event, as depicted in the *Benchmark* forecast, it seems likely that the inflow of foreign direct investment, while still substantial over the next decade, will be well below the explosive growth seen in the 1990s. Thus, reliance on foreign direct investment alone is not likely to be an effective instrument of regional policy in the future.

As well as changes in individuals' expectations, regional policy must take account of the radical change in the nature of the businesses expanding in Ireland today. The contraction of the traditional manufacturing sector, employing predominantly unskilled or semi-skilled labour drawn from the locality of the factory, is expected to continue. Many of the new businesses which are expanding today employ skilled labour and the skills they require are very varied – IT, human resources, financial, accounting, marketing, legal etc. They are unlikely to find all of these skills in any one small or medium-sized town. If they are locating outside the major cities, they will have to attract many of these skills to their chosen location. The most obvious example of this was Intel when they established operations in Leixlip. Their choice of location was predicated on the likelihood that people would relocate to work for them, many coming from outside of Ireland.

In addition to requiring a highly skilled work force high-tech businesses need a highly developed infrastructure. This is not confined to transport infrastructure but also encompasses modern telecommunications and energy infrastructure. As was outlined above a serious infrastructure deficit exists, particularly in the weaker regions. This is likely to exacerbate their position relative to the stronger region by restricting inward investment and expansion of indigenous firms. Consequently, a speedy improvement in the infrastructure of the weaker regions will be vital in achieving more balanced regional development.

In the light of these changed circumstances, the ESRI report on *National Investment Priorities*[19] recommended a nodal strategy i.e. concentrating on a few major urban centres whose facilities are accessible to the population in the surrounding hinterland. This would enhance the natural tendency of economic activity to agglomerate in a few urban centres by encouraging a few strategically chosen urban centres to increase in scale thereby creating the critical mass for independent development around these centres. Thus, in contrast to the current situation where these forces only operate in the largest centres, this policy has the potential to allow all parts of the country to benefit from economic development. The key to the success of such a nodal strategy is to keep the number of chosen nodes or gateways small so that resources are not spread too thinly.

Ultimately, the scope for regional policy will be circumscribed by the aspirations of the population as a whole. It should concentrate more on the carrot than on the stick – making locations in specified regions attractive rather than making life unpleasant in the regions that are already growing most rapidly. Whatever the outcome, it seems likely that over the next five years the living standards in all regions will significantly improve compared to those of the EU average, moving all of Ireland out of "Objective 1" status. However, further research is required in order to identify the likely differential effects on the regions of the alternative growth scenarios.

Housing

Because of the rapidly growing population in its twenties there is likely to be a continuing shortage of housing over the decade. This will remain an important constraint on economic development. Considerable effort has been given to identifying the obstacles to accelerating investment in housing. While major investment in environmental services is under way, there still remain significant obstacles to development in the major urban areas.

Taxation policy has been particularly inappropriate and inconsistent. While providing incentives that tighten an already tight market in inappropriate ways, it has also failed to provide the necessary stimulus to free up essential resources, especially building land. For example, the exceptional prices paid for building land in the vicinity of the major cities arise from the right to development conferred on owners by the state through the planning process. The changes in the capital gains tax regime have if anything reduced the incentive to release development land for building and further increased this windfall gain. What is required is a tax regime that would encourage early release of building land and that would claw back some of the windfall gains arising from the development process to fund the huge infrastructural needs associated with the development of the major cities.

The dimensions of the problem of housing shortage remain similar to when we looked at them in the last *Review*. Even if there is some slowdown in activity this year and next year, there will be a continuing need for around 45,000 dwellings a year over the decade. As discussed in Chapter 4, Section 4.8, the financing of the necessary investment is putting the household sector under increasing financial pressure. At today's prices a continuation of the current housing policy will see a further rise in household indebtedness. Under these circumstances it would seem desirable to encourage a broader private rental sector, operated and managed in a professional manner. This would tap into additional financial resources, helping fund the necessary investment. It would also increase the flexibility of the labour market, an important factor given the continuing importance of migration.

[19] Fitz Gerald, J., I. Kearney, E. Morgenroth and D. Smyth, 1999, *National Investment Priorities*, Policy Research Series No. 33, Dublin: The Economic and Social Research Institute.

As a first step it would be wise to remove the discrimination against investment in private rental property due to the treatment of interest payments in the tax code. It is not appropriate to favour through the tax system other assets over residential investment. If it were to continue it would put upward pressure on rents in the longer term and add to the illiquidity of the housing system.

It was argued in the last *Review* that many of the tax-driven incentives to building are seriously distortionary and should be removed. They have served to increase the price of building and of housing generally. They have also led to a misallocation of resources in the house building industry through favouring second dwellings and holiday homes.

The likely slow down in the next two years should result in the squeezing of margins in the business. It should also provide a breathing space for the capacity of the building industry to catch up with demand.

Promoting a Competitive Economy

In addition to influencing the path of future economic development through taxation and expenditure, public policy can also effect change through improving the regulatory environment in which the private (and some of the public) sector operates. This involves a wide range of areas such as competition policy, broadly defined, policies to promote labour supply, and the partnership process itself.

Competition and Regulation

The OECD report on *Regulatory Reform,*[20] published earlier this year noted the major progress made by the Irish economy over the last twenty years in regulatory reform. It also provided a timely checklist of the many areas where the economy could "do better". In a modern economy, if competition is sufficiently strong, consumers will be protected and there will be appropriate incentives for enhancing economic efficiency and, hence, productivity. However, there are also areas of economic activity that are natural monopolies or where it is very difficult to introduce competition. In these cases the aim of policy should be, wherever possible, first to introduce competition, and where that is not possible, to regulate the activities of the monopoly in the interests of consumers.

Over the medium term, measures need to be taken to reform certain key areas in the economy in order to allow real competition to develop – to make markets "contestable". The successful deregulation in both the telecommunications and aviation sectors has shown the gains that can be made from liberalisation. As a result of allowing competition in these areas considerable restructuring and change took place as incumbents sought to improve efficiency and as the new entrants sought to get a foothold in markets. Ultimately such competition has resulted in more choice, improved services, and lower prices for consumers. However, there are also pitfalls in the process: there is a danger that a formerly competitive industry may reintegrate reducing competitive pressures; there is an inherent difficulty in regulating monopolies because of the limited information available to regulators; the prospect of privatisation may provide inappropriate incentives for existing management and workers; the regulated market may itself be uncertain and discourage investment.

There remains the danger that in some cases markets may tend to revert towards more restrictive behaviour. In this regard the take-over battle for Eircom gives cause for concern at a time when the future development of the economy is already suffering from a decline in competition in

[20] OECD, 2001, *Regulatory Reform in Ireland,* Paris: OECD.

telecommunications, and the deployment of new broadband technology is seriously delayed.

In considering the role of the state in the economy it is generally the case that the private sector is best at producing goods and services efficiently if there is a competitive market. Under these circumstances it was appropriate for the state to privatise Greencore, Irish Life, and Telecom Eireann (Eircom). Similarly, the state is right to realise the value of its remaining assets in the banking sector.

In the case of natural monopolies, privatisation of the existing integrated firm is unlikely to prove the best route to follow. While external regulation can help to modify the damaging effects of a monopoly, regulation is often ineffective, leaving considerable power in the hands of the monopolist. Generally, if the firm is to remain integrated, it is more appropriate that such power should remain in the hands of the state rather than of a small group of private individuals.

The experience in Northern Ireland with the privatisation of electricity highlights the dangers in inappropriate privatisation of monopolists. In that case, the then government committed Northern Ireland consumers to paying the privatised generation companies a price for electricity well above that paid in most other EU countries for almost two decades.

The prospect of possible privatisation is also posing problems in the management of existing state-sponsored bodies. If they are to be privatised there is a serious temptation for the share-holder (the state) and the management to seek to build up the asset value of the company in order to achieve a good sale price. If the semi-state firms are operating in a competitive market already then there would not be a problem – "fattening up" would be impossible. However, where they are monopolies there is the danger that the overriding interest of consumers will be forgotten. It would be much better to recognise that natural monopolies will not be privatised and then concentrate on providing a regulatory regime that will ensure that consumers' interests are paramount.

The problem for regulators in regulating monopolies is that the monopolist has far more information than the regulator. This makes it difficult to determine what is the "appropriate" price to allow the monopolist to charge. A better way of dealing with this situation is to change the rules and force the monopoly to limit its role to managing the business and to buy in all inputs through a competitive tendering process. This approach is being pursued in the UK by the regulator of the water industry. In the Irish case Bord Gáis Eireann (BGE) and Bord na Mona have also pursued this strategy, gradually restricting their business to the core management of their activities, and buying in services, such as pipe-laying and maintenance. This makes the accounts of the firms much more transparent, greatly facilitating the task of the regulator. Looking to the future, this strategy should, where possible, be pursued in dealing with the existing state owned monopolies.

Short-run gains from increasing competition may be offset by long-run losses arising from under-investment in the capital stock. For example, in the case of the electricity market the current strategy is not working and it could result in a shortage of generating capacity, which would constrain growth over the coming decade. New entrants to the industry are in theory welcome, but they have to find customers for their product in a market where there is considerable inertia. They have to gamble a major investment of £100 million to £200 million in a new generation plant in the expectation that customers will be there for their product. While some customers are willing to sign up, they will never sign a contract for more than two or three years, so that the investor will always have considerable uncertainty. This makes it difficult to finance such projects. The degree of uncertainty facing investors in the Irish electricity generation market is greater than in many other such markets. This discourages investors from choosing Ireland.

The OECD report, in considering areas where reform could significantly improve the quality and cost of services, pointed to many of the services currently provided by local authorities. In areas such as housing maintenance local authorities have shown themselves to be inefficient producers of services. Many of the services that they currently provide – management of the water infrastructure; disposal of waste; housing maintenance; road repairs etc. could all be provided by private sector firms in a competitive environment. Such a contracting out of service production through a competitive tendering process would put major downward pressure on costs. However, as in the case of PPPs, writing these contracts can be very difficult. While the purchaser of services should build in suitable requirements on quality provision, this may be difficult to define. However, if the local authority were no longer the producer of the services it would have a greater incentive to ensure that the quality of provision meets specified criteria.

Labour Supply – Active Labour Market Policy

While there has been a major expansion of investment in human capital in recent years, Irish firms still invest very little in training compared to their EU counterparts. As discussed above the nature of the economy is changing rapidly and with it the need for constant retraining is growing. This remains primarily a responsibility for the business sector, with the state looking after the broader educational needs of the population and the training needs of those who are out of the labour force or temporarily out of work.

With the prospect of some limited increase in unemployment in the next few years it is desirable that the lessons of the past should be learned. Early intervention to prevent those who lose their jobs becoming the long-term unemployed of the future is required. In active labour market policies it is important that real training be provided and that schemes should not be seen as merely a way of reducing the number unemployed.[21]

Active labour market policies can be a lot more "active" when there are jobs available. While this was a problem in the past it is less likely to be the case over the coming decade In addition, the schemes that have limited value in terms of helping participants to re-enter the labour market need to be reviewed. Providing work on a scheme as an alternative to unemployment had some validity in the past but when the alternative is employment in the market economy, it is no longer worthwhile. As in the past, there will remain residual marginalised groups where competition within the market economy may still prove problematic and this segment of the population will require continuing attention from policymakers.

In this area of policy, as in so many others, it will be important to continually evaluate the relevance and value of existing schemes and to ensure that policy evolves as the economy develops over the decade.

Labour Supply – Migration

Migration has played, and continues to play, an important role in the Irish economy and the wider society. In the past, many in the Irish population sought, and were generally granted, access to the best labour markets in the world. Today the process is reversed and Ireland is transformed into a sought-after location for foreign migrants. However, Irish policy has been very slow to come to terms with this change, a change that we have signalled in the last two *Reviews*.

The bulk of the immigration into Ireland, at least until very recently, has been of skilled labour. About half of the immigrants have been returning Irish

[21] See Denny, K, C. Harmon and P. O'Connell, 2000, *Investing in People*, Policy Research Series No. 38, Dublin: The Economic and Social Research Institute.

emigrants and the majority of the other half were EU citizens. While this immigration began in the mid-1990s, it attracted very little notice. Many of those coming to Ireland were spouses or partners of Irish men and women.

As discussed in Chapter 2, this influx of skilled immigrants in the 1990s played an important role in expanding the productive capacity of the economy. The economy was potentially constrained by a shortage of skilled labour and the additional skilled labour that came from abroad allowed it to expand more rapidly. In turn, the rapid growth increased the demand for unskilled labour. The research discussed in Chapter 2 suggests that, as a result, this immigration played a significant role in reducing the unemployment rate over the last five years. Under these circumstances the immigration improved the welfare of the least skilled and most marginalised in the labour force at the expense of a slightly slower rate of wage increase for skilled labour.

In Chapter 5 we have explored the possibility that the economy expands at a higher rate through continuing very substantial immigration of skilled labour. The results of this exercise suggest that, while expanding the growth in output, such a scenario would achieve a much smaller, though significant, improvement in output per head. In the light of the results in Chapter 2, it would be likely, if anything, to benefit those Irish citizens who are less skilled, through increasing the demand for their labour. However, to add one percentage point to the annual growth rate would require an additional 30,000 skilled immigrants a year. An additional 10,000 dwellings a year would need to be built to accommodate them. This would put significant upward pressure on house prices and, until adequate infrastructure is put in place, it would add to congestion.

These research findings suggest that a relatively relaxed programme allowing skilled immigration from outside the EU would probably have benefits for the less skilled section of the labour force. However, because the benefits in terms of output per head would be small, and because there would be congestion costs, the scale of immigration should be left to market forces. The state should not subsidise such immigration, either directly or indirectly.

What is required today is an explicit policy on immigration by non-EU citizens that is seen to be both transparent and fair. There is a choice between two different approaches: a programme allowing limited immigration of unskilled labour through a transparent programme, or an open door policy that allows fairly free inward movement. In the case of the first, it could be implemented so that it would not have a major adverse impact on unskilled labour in Ireland and so that it would be consistent with the maintenance of a substantial social safety net. Alternatively, evidence from the US[22] suggests that an open door policy on unskilled immigration would probably enhance the long-term growth potential of the economy and would be good for skilled Irish citizens. However, it could also have a serious adverse impact on unskilled labour and place the current Irish welfare system under very serious pressure.[23]

From a purely economic point of view any immigration system should have a number of characteristics. First, it should be transparent: a points based system, such as that operated by Canada, could allow necessary immigration of skilled labour from outside the EU, while also allowing whatever inflow of unskilled labour that was deemed appropriate. Second, such a scheme should be administered by the state in a transparent fashion,

[22] Borjas, G., Freeman, R., and Katz, L., 1997, "How Much Do Immigration and Trade Affect Labour Market Outcomes?", *Brookings Papers on Economic Activity*, Vol. 1, pp. 1-67

[23] Sinn, H-W, and M. Werding, 2001, "Immigration Following EU Eastern Enlargement", *CESifo Forum*, summer.

along the lines of the US system: the criteria for entry should be clear. Where it is not done on a points system it should involve a lottery. Applications for entry should be made directly to the state, not through intermediate private agencies abroad.[24] Third, the visa or work-permit should not be tied to a particular employer or sector. The conditions of employment should be the same as for existing residents.

Such a policy would be a great improvement on the current provision for unskilled immigration where they are sponsored by individual companies. The current form of contract has been found elsewhere to lead to serious adverse social effects and it is economically inefficient. The economy has grown and prospered through Irish employees seeking out the most profitable places of employment. In so doing they increase production in the firms that are making the maximum contribution to growth. By tying immigrants to particular firms, whatever the firms' level of efficiency, national productivity is impaired.

The current practice also means that the danger of the immigrants civil rights being abused is enhanced. It leaves a very wide opportunity for sponsoring agencies abroad to charge substantial fees. This can give rise to serious abuse, with potential immigrants borrowing heavily to buy entry, leaving them in the position of "bonded labourers". The dangers that such debts would be enforced through illegal means could pose further dangers both economic and social.

The current provisions allow the work permits to be withdrawn should economic circumstances change. This was the policy pursued in Switzerland during the economic recession of the mid-1970s: guest workers were sent home. If implemented here it could also prove quite disruptive for firms. While such a policy might, under some circumstances, reduce the direct economic impact of a downturn on the host country, it does not take account of the reasonable expectations and rights of the immigrant.

It should be noted that we have only considered immigration from an economic point of view. The importance of providing proper treatment for those seeking asylum in Ireland from oppression in other countries is a separate human rights issue.

Social Partnership and Wage Formation

Under the current partnership there is an exceptional degree of *de facto* wage flexibility in the private sector. As a result, wage rates are rising much faster than provided for under the agreement. This is not a problem where it is driven by excess demand for labour. However, it can pose limited difficulties where, for example, differentials between employment in the public and the private sector change rapidly.

It is important that such flexibility in wage formation continues even if there is an economic downturn. Geary[25] argued that the advent of EMU would require greater flexibility in the labour market in order to offset the costs of having a fixed nominal exchange rate. If the Irish economy suffers a significant slowdown in the next few years it will be important that the flexibility of wage rates we have seen recently is symmetric, with wage cuts being accepted where it is essential to preserve employment.

The partnership process has played a key role in the orderly and successful development of the economy over the last decade and a half. Its

[24] Special provision would be needed for firms bidding for construction work in Ireland who would bring their own labour. However, the visa or work-permit should permit the holder to work anywhere in the economy.

[25] Geary, P., 1996, "Managing the Exposure of Firms" in T. Baker, J. Fitz Gerald, and P. Honohan (eds.), *Economic Implications for Ireland of EMU*, Policy Research Series No. 28, Dublin: The Economic and Social Research Institute.

continuing role in coming years must see the process developing and changing. While tax for wage-moderation deals were important in the 1990s, today other issues are increasing in relevance. In the modern economy, with many high technology firms, companies may grow and contract more frequently and employees may face more frequent changes in employment. This poses particular challenges for both parties and it will require greater attention to areas such as training and education.

LONG-TERM STRATEGY

The rapidly changing structure of Irish society has longer-term implications for policy. Very often the time scale of such changes means that policy-making evolves unconsciously to deal with the new needs. However, there are at least two areas where the changes taking place will call for a more explicit re-examination of priorities.

Ageing

Over the last twenty years we have become used to characterising the Irish population as "young". However, while valid in the past, the average age of the population is rising rapidly with the steady fall in the numbers of children. Over the last decade the average age of the population has risen by two years (from 32.5 to 34.4) and it will grow by another 1.5 years (to 36) over the coming decade. This has obvious implications for the demand for state services, as discussed in Chapter 4. However, it has broader implications for the economy.

With a very high proportion of the population in the educational system it has been relatively easy to change the skill level and orientation of the labour force. This has been achieved, more by individual students choosing courses that they perceive as leading to good jobs, than by public policy. This contrasts with the situation in the other "older" economies in the EU, where most of the labour force was already educated. While it is always possible for toolmakers or electricians to go back to college to train as, for example, software engineers, it is not an appealing process for the bulk of any labour force. This has meant that most other economies have been less flexible than Ireland in adjusting to the needs of the rapidly growing high-technology sectors over the last decade.

However, from 2001 onwards, as the number of students falls relative to the size of the labour force, the Irish economy will become steadily less flexible in this regard. If a new high technology sector comes along it will not be possible to re-orient the economy to take advantage of it in the same way as happened over the last decade. To some extent the economy has "locked in" to the skills needed for today's economy. This will gradually lead to a slowdown in the rate of growth in productivity as new areas of investment open up and as the economy is slower to adjust to these sectors' needs.

Because of the uncertainty about future skill needs, and the likelihood that today's "hot sector" will be passé tomorrow, it is important that we aim to provide students with a broad education. The educational system needs to take account of the likelihood that many future labour force members will move between different jobs and different sectors over the course of their careers. As discussed above, provision should also be made for retraining and reskilling as the changing demands of the economy require.

Finally, the ageing of the population will see a gradual change in tastes. The preponderance of young people in the population has had an important cultural impact – for example on music, patterns of entertainment etc. It has made Ireland a more attractive location for other young people in Europe, helping to increase the supply of young skilled labour. As the Irish population ages its tastes will adjust. The entertainment sector is well attuned to this gradual change. It and other sectors will automatically adjust to meet

changing patterns of demand. However, providers of public infrastructure and services should also anticipate the changes in lifestyle that family responsibilities will bring – this is not just a question of providing for additional health services to accommodate an ageing population.

EU and the World

This *Review* is not the place to consider the appropriate long-term strategy for Irish economic policy within the EU. However, the analysis in this *Review* highlights the fact that the needs and priorities of the economy are evolving quite rapidly, and there is a need to reconsider the implications of this for Irish strategy within the EU.

The process of EU integration has been extremely positive for the Irish economy and it underpins the economic coming of age that is celebrated in the term "Celtic Tiger". In joining the then EEC in 1973 Ireland joined a ready-made set of institutions that had developed, in its absence, over the previous twenty years. While Ireland has played a significant role in the further development of the integration process since joining the EU, it has at times been handicapped by its own perception of itself as a mendicant.

The price of economic success will come later in this decade when Ireland becomes a net contributor to the EU.[26] With a new self-confidence, this should provide the opportunity to refocus our attention on how we want the integration process to proceed. There have been areas in the past where Ireland has not felt able to push for a levelling of the playing field (through the integration process), because of its perceptions of its own weak position. This will no longer be the case as a net contributor, and it should be possible to play a more positive role in tackling the distortions that still exist in many areas, such as state aids to business.

The enlargement of the EU represents a major opportunity for the Irish economy. Experience has shown that, in the past, access to growing markets has been a positive factor helping fuel the rapid growth in the Irish economy. Already Irish firms have seen opportunities to expand into these markets, both through trade and direct investment. Even before full membership is achieved, once the time-scale for membership is agreed, one can expect the rate of integration of these economies into the EU to accelerate.

While there will be increased competition for mobile investment from the new entrants, the extent of this competition can be exaggerated. In quite a number of the areas that are important to Ireland the specialised skills developed and available in Ireland are not readily available on a similar scale in the accession countries. The high technology firms in Ireland have been gradually "moving up the value chain" for some time, making them less vulnerable to competition purely on grounds of labour costs. Continuing to do so will ensure success but it will also involve increased job turnover.

When Ireland joined the EEC in 1973 the major priority for economic policy was the protection of the Common Agricultural Policy (CAP). Over the following fifteen years Ireland used its diplomatic capital within the EU to ensure that the successive reforms of the CAP would favour Irish interests.

The role and importance of the agricultural sector has steadily declined since Ireland joined the EU and, as a result, Ireland's economic priorities within the EU have evolved. In the 1990s the financial support for less developed regions through the Structural Funds was accorded a high priority by Irish policy makers. More recently, the protection of our independent corporation tax regime has been put top of Irish priorities, as reflected in the Irish position at the Nice summit.

[26] If judged on the basis of output per head Ireland should already be a net contributor but the relationship between living standards and net contributions to the EU has never been too close.

However, as discussed above, the circumstances of the Irish economy are changing gradually. While there are good reasons for arguing against a broad programme of harmonisation of tax rates, and especially of corporation taxes, this will probably be less important for Ireland after 2010 than today. Some rise in rates domestically, as argued above, would still leave Ireland with low rates by EU standards. In addition, as the manufacturing sector diminishes in importance within the economy over time, new economic priorities will arise. Thus, the exceptional importance currently accorded to this issue within Irish economic policy in the EU is likely to be temporary.

Finally, relative wealth brings new responsibilities. This is already reflected in the planned growth in Ireland's foreign aid budget. However, this growth is beginning from a very low base and a further substantial increase is planned. This, will in turn, necessitate the development of a more sophisticated programme for ensuring that this aid is delivered in an effective and coherent manner.

7. CONCLUSIONS

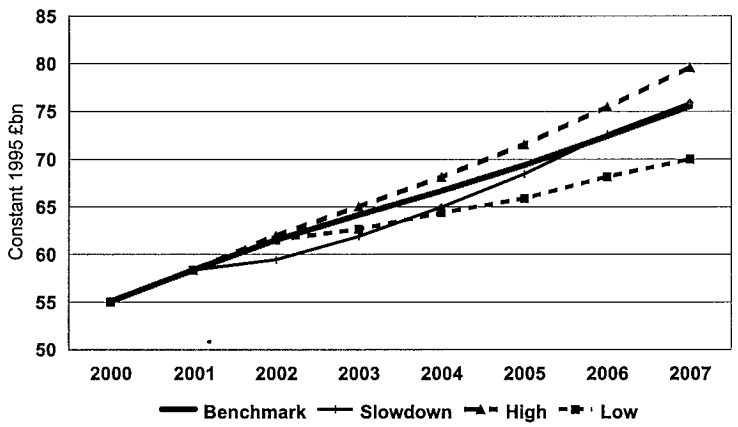
The appalling events of the 11th of September 2001 have created an exceptionally uncertain environment for short-term forecasting. However, the focus of this *Review* is on the medium term out to 2007 and our analysis suggests that whatever serious difficulties the economy may face over the next two years, it is likely that the recovery phase will see a return to rapid growth as the economy makes up any lost ground.

The detailed analysis in the *Review* was undertaken before the 11th of September, but because of the uncertainty that already existed two scenarios had been considered: a reasonably benign scenario, as in the *Benchmark* forecast, and an alternative *Slowdown* scenario. When undertaking the analysis it was anticipated that the most likely outturn would be closer to the *Benchmark* forecast. However, it now seems more likely that the *Slowdown* scenario may be closer to reality.

Whichever scenario proves correct, the medium-term growth path for output and employment is very similar, with the Irish economy continuing to outperform its neighbours until the end of the decade. This shows a reassuringly robust economy facing into a very uncertain external economic environment. Provided that prudent domestic policies are followed, the damage done by any temporary slowdown in the world economy should not be too serious and the effects should be readily reversible.

Looking out to the end of the current decade, this analysis suggests that the Irish economy has the potential to continue growing quite rapidly. However, the growth in the output potential of the economy will slow over the decade: the growth in potential output, which averaged over 7 per cent between 1995 and 2000, has probably fallen to 5 per cent for the period to 2005. Thereafter, it should slow first to around 4 per cent a year between 2005 and 2010, before falling to roughly the EU average of just under 3 per cent in the next decade.

Figure 7.1: Alternative Forecasts for GNP



This represents our best estimate, but we recognise the uncertainty that necessarily surrounds such forecasts. As a result, in this *Review* we look at a range of different scenarios to test the sensitivity of our results to changes in

assumptions. The results of this sensitivity test are shown in Figure 7.1 illustrating a range of possible outcomes for the medium-term growth path of GNP. In the case of the "high" and "low" growth scenarios the trend growth of GNP is roughly one percentage point a year higher or lower than in the *Benchmark* forecast. This gives some idea of the possible margins of error in the medium-term forecast. However, in the short run, there is even greater uncertainty, with the range between the highest and the lowest growth forecasts for next year being over four percentage points.

In undertaking our research we have begun by examining the factors underlying the rapid growth in the economy in the 1990s. The beneficial demographic situation has meant that the dependency rate (numbers not working relative to those working) has fallen continuously for 15 years and it will remain exceptionally low for the rest of the current decade. This represents a demographic dividend, reducing the burdens on those working, with a positive impact on competitiveness and productivity.

The very recent movement to a full employment economy has meant that labour supply has become a key determinant of the growth potential of the economy. In the 1990s it grew at around 3.5 per cent a year. However, in the current decade growth will fall to less than 2 per cent a year. The growth in productivity in the 1990s was also well above that experienced in our EU neighbours and this exceptional performance was due to a range of different factors, among them the belated impact of investment in education. We also find that through expanding the productive potential of the economy, immigration of skilled labour contributed to the achievement of full employment

As in the past, the very open nature of the Irish economy means that domestic economic success is predicated on the healthy development of the world economy. However, in the next three years we see a major threat to the Irish economy, and that of the EU, from the serious problems in the US economy – a growing balance of payments deficit and an exceptionally low personal savings rate. In the *Benchmark* forecast we take the optimistic view that the US economy will recover rapidly next year, with a very slow improvement in these dangerous imbalances. However, an alternative "*Slowdown*" scenario sees a more painful adjustment process, involving a much more rapid turnaround in the balance of payments and the savings rate next year, accompanied by a very low rate of growth.

Both forecasts see a major appreciation of the euro (depreciation of the dollar) as necessary to promote a recovery in the US. In the *Benchmark* forecast the dollar is expected to move to parity with the euro next year while in the more aggressive adjustment scenario it is assumed that the euro would buy $1.07 in the medium term. In either case the loss of competitiveness due to the exchange rate changes would result in a slow recovery in the Euro area. The result would be that the Irish economy would underperform, growing below its potential for the next two years.

In the *Benchmark* forecast, growth in GNP over the period 2000 to 2005 is projected at an average of 4.8 per cent a year, compared to annual growth in potential output of around 5 per cent. The result will be some rise in unemployment, peaking in 2005 at around 5.8 per cent of the labour force. In the subsequent five-year period the economy could grow more rapidly than potential, returning the labour market to full employment. However, as in the past, the labour market will be slower than output to respond both to the slowdown and the recovery.

This scenario would see the Irish standard of living, measured in terms of GNP per head, rising steadily relative to the EU. In the *Benchmark* forecast it could reach 108 per cent of the EU average in 2010. However, this figure would provide an exaggerated measure of the true relative standard of living for two reasons. First, because of its infrastructure deficit, which directly affects the quality of life, Ireland will be investing around seven percentage

points more of its income each year, with a resulting reduction in resources available for consumption. Second, because of the loss of EU transfers and changes in the price of the goods we produce relative to the price of those we buy, real national disposable income will grow more slowly than GNP. The result of these factors will be that, while income per head will exceed the EU average, the level of consumption per head in the Irish economy will be similar to that in the rest of the EU at the end of the decade.

In the medium term the growth in employment will be significantly slower than over the last decade, averaging 2 per cent a year between 2000 and 2005, compared to almost 5 per cent a year between 1995 and 2000. In the 1990s a very rapid growth in employment was needed to move the economy to full employment. Such an exceptional increase required a considerable improvement in competitiveness. This was achieved through moderate wage growth and a resulting rise in the profit rate (fall in the wage share of output). However, with the economy approaching full employment last year, this situation has changed dramatically. Wage rates are now rising much more rapidly than in competitor countries and the resulting loss of competitiveness will restrain future employment growth. There remains the danger that too much competitiveness could be lost, especially in the face of a serious downturn. However, in the *Benchmark* forecast we assume that market circumstances produce a moderation in wage inflation and that the loss of competitiveness in the medium term does not prevent the economy returning to full employment after any temporary slowdown.

The analysis in the *Review* suggests that over the course of the coming decade a number of domestic constraints may prevent the economy achieving its potential growth rate. The most obvious problem arises from the shortage of infrastructure. There are not enough dwellings to accommodate the growing population of adults, augmented by the likely continuing net immigration of skilled labour. The shortage will directly affect the standard of living of many families and will reduce the incentive for Irish emigrants (or new immigrants) to return. However, the problems in the housing market are a symptom of a wider infrastructure deficit in environmental services infrastructure, in public transport, in roads and in many other areas of public infrastructure. We explore the implications of a failure to tackle this deficit and the results suggest that it could significantly reduce the potential medium-term growth rate.

The second related constraint on the economy arises from the deceleration in labour supply growth. The fall in new labour market entrants and the expected slowdown in the rate of increase in female labour force participation will, together, reduce the potential growth rate of the economy.

In Chapter 5 we consider a number of different scenarios for the future. In the *Slowdown* scenario we assume that the US economy undergoes a somewhat more severe adjustment than in the *Benchmark* forecast and that it does not return to a satisfactory growth rate until 2003. The result would be a major reduction in foreign direct investment into Ireland. This, combined with the fall in world trade, would create an atmosphere of considerable uncertainty. With rising unemployment many would feel insecure and the result would be a rise in personal saving and a temporary fall in the demand for housing. The consequence could be a fall in house prices of 25 per cent, further aggravating the atmosphere of insecurity. While the analysis in this *Review* would suggest that this would be a temporary setback, the domestic response by firms and households fearing a more permanent reversal of economic fortunes could aggravate the slowdown.

Under this scenario growth next year would fall to just under 2 per cent. However, the economy would begin to recover in 2003 and from 2004 onwards growth would be likely to be more rapid than in the *Benchmark*. The loss of potential output would be made up by 2005. The result of such a shock would be a small fall in employment next year and a significant rise in

the unemployment rate. The unemployment rate would peak at around 7.6 per cent of the labour force in 2003, before returning to the full employment level at the end of the forecast period.

As outlined above, because of the uncertainty inherent in any forecasting exercise, we have also explored the implications if the growth in potential output were to be significantly higher or lower than we forecast. Higher growth could be achieved through higher immigration. However, this would require the number of dwellings built annually to be up to 10,000 dwellings higher than in the *Benchmark* forecast. In turn this would require even higher house prices, making such a level of immigration improbable. The conclusion reached was that, unless higher growth were achieved through more rapid growth in productivity, the increase in output per head from such a scenario would be small.

We also examine the consequences of a failure to make adequate investment in infrastructure and of an excessive rise in labour costs. Such a self-inflicted set of mistakes could see the economy underperform consistently over the forecast time horizon.

The uncertainty about the future suggests that governments should aim for policies that will be robust in the face of surprises. Attempting to fine tune the economy could result in incorrect forecasts producing inappropriate policies.

Robust policy would suggest a concentration on areas where public policy can impact on the supply potential of the economy in the medium term:

- It is important that a moderate (neutral) fiscal policy is pursued in the next few years.[1] This would involve significant restraint compared to the experience of the last five years. However, if such an approach is adopted, even in the *Slowdown* scenario the public finances would only show a small deficit before returning to surplus by 2005. This would not pose a problem, allowing the *National Development Plan* (NDP) programme of accelerated investment in infrastructure to continue. It would also be well within the Maastricht criterion and the requirements of the *Stability and Growth Pact*. In the medium term it is appropriate to aim for an average surplus of one per cent of GNP over the economic cycle – equal to the contribution to the national pension fund.
- The full implementation of the necessary infrastructural investment under the NDP will play a vital role in expanding the capacity of the economy to grow in the future.
- Immigration of skilled labour in the past has expanded the capacity of the economy, and it is likely to continue to do so in the future. However, there is a need to develop a transparent and fair policy on immigration that also covers unskilled labour. Such a policy should be administered directly by the state and it should allow immigrants the freedom to choose their own employment. The current programme for attracting unskilled labour to Ireland is inefficient, simultaneously reducing the rate of productivity growth and adversely affecting the earnings of immigrants. It also leaves the immigrants vulnerable to exploitation.
- In the new environment of EMU it is important that the flexibility of the labour market, that has resulted in wage increases well above the *Programme for Prosperity and Fairness* (PPF), will be continued in times

[1] We assume a broadly "neutral" budgetary stance where tax rates and bands are indexed so that average tax rates remain unchanged. It is assumed that welfare benefits are indexed and provision is made for increased numbers unemployed. In addition, there is assumed to be a limited improvement in public services involving an increase in public sector employment of around 3 per cent per annum. It is also assumed that the *National Development Plan* is fully implemented. Under such a policy the surplus would remain unchanged if the economy grew in line with capacity, i.e. at 5 per cent a year for the period 2000 to 2005.

of adversity. This could require downward flexibility in wage rates as well as the upward flexibility seen recently.[2]

- While significant progress has been made in advancing competition and regulatory reform, with beneficial effects on productivity growth, it will be important to make further progress in the medium term in important areas such as energy, transport and local authority services.

The exceptionally rapid rate of economic growth has meant that Ireland has not yet fully adjusted to its position as one of the wealthiest countries in the world. This new found affluence provides a range of opportunities to improve our standard of living, broadly defined.

While in the past the priority has been the maximisation of the growth in GNP to help deal with the problem of unemployment, the advent of near full employment may change national priorities. The experience elsewhere in Europe has been that citizens chose to take some of the increase in their standard of living in the form of increased leisure, rather than in increased nominal incomes. Over the coming decade Irish citizens will have the same choice. Another choice made by many of our EU neighbours was to take some of the increase in their standard of living in the form of more family friendly policies, such as flexible working arrangements. This too is an option for Ireland.

While the move to very low unemployment rates has made a significant contribution to reducing poverty, the new found wealth of the current decade will provide the opportunity to make significant further progress in coming years.

The huge change in the structure of the economy, in relative income levels, and in the demographic profile of the population make a re-evaluation of long-term strategy necessary.

The population will age quite rapidly over the coming decade. While it will not yet bring major problems for the health services, it will change the economy and society in many ways. It will tend to make the economy less flexible and it will see a change in the pattern of demand for goods and services. The rapid rise in the average level of educational attainment of the population will also change behaviour and aspirations.

Rapid economic growth will put continuing pressure on the quality of our environment. In particular, we will see a further increase in our emissions of harmful greenhouse gases. If we are to reduce these emissions to the target levels set as part of the Kyoto protocol, this will require a serious change of policy and there will be a cost, albeit limited, in terms of a reduction in the economy's growth potential.

Finally, the Irish success story of the last decade has been built on the basis of EU membership and the completion of the single market. Enlargement of the EU will provide an important opportunity for Ireland to expand into the new markets. Within the EU there will be a need to rethink our strategy and our priorities. By the end of the decade, as one of the wealthiest members of the EU, Ireland will have new responsibilities and changing needs. Where the Common Agricultural Policy and the Structural Funds were vital national interests in the past there will be a need to decide for ourselves where our long-term interests and responsibilities lie in the future.

[2] The need for greater flexibility has been discussed earlier this year in the *Quarterly Economic Commentary.*

Appendix 1: Detailed Tables

A: Benchmark Forecast

Table A.1: Expenditure on GNP

	2000 £m	Volume %	Price %	2001 £m	Cont. to Growth %	Volume %	Price %	2002 £m	Cont. to Growth %
Personal Consumption	40217	7.2	4.8	45185	4.4	6.9	3.9	50186	4.2
Public Consumption	9651	5.5	9.8	11179	0.8	5.2	4.5	12292	0.7
Fixed Investment	19706	4.8	8.3	22368	1.2	6.6	6.8	25469	1.7
Building	12378	2.7	11.1	14117	0.4	6.3	8.3	16240	0.8
Machinery	7328	7.2	5.0	8251	0.9	7.0	4.5	9228	0.9
Final Domestic Demand	69574	6.4	6.4	78732	6.4	6.6	4.8	87946	6.7
Stock Building	152			10	-0.2			145	0.1
Agricultural	-33			-140	-0.2			35	0.3
Intervention	0			0	0.0			0	0.0
Non-Agricultural	185			150	0.0			110	-0.2
Total Domestic Demand	69726	6.1	6.4	78741	6.2	6.7	4.8	88091	6.8
Total Exports	75752	11.5	4.0	87801	14.0	8.8	4.1	99373	11.3
Merchandise	62807	12.1	4.0	73207	12.3	9.0	4.1	83020	9.7
Services	12945	8.4	4.0	14594	1.7	7.8	4.0	16353	1.6
Total Demand	145478	9.1	5.0	166542	20.2	7.9	4.3	187464	18.1
Total Imports	64953	10.6	4.2	74855	10.9	9.1	3.7	84698	9.8
Gross Domestic Product	80525	7.7	5.7	91687	9.3	6.8	5.0	102766	8.2
Net Factor Income	-12197	12.5	4.0	-14270	-2.3	11.6	4.1	-16575	-2.3
Gross National Product	68267	6.0	7.1	77485	6.0	5.4	5.6	86244	5.4

	2002 £m	Volume %	Price %	2003 £m	Cont. to Growth %	Volume %	Price %	2004 £m	Cont. to Growth %
Personal Consumption	50186	2.5	3.8	53443	1.6	2.0	3.5	56432	1.2
Public Consumption	12292	2.3	8.9	13683	0.3	2.3	7.3	15017	0.3
Fixed Investment	25469	3.7	2.1	26956	0.9	3.5	1.9	28422	0.9
Building	16240	4.3	1.0	17114	0.6	3.8	1.0	17946	0.5
Machinery	9228	3.0	3.6	9843	0.4	3.2	3.2	10481	0.4
Final Domestic Demand	87946	2.8	4.1	94082	2.8	2.4	3.6	99871	2.4
Stock Building	145			38	0.3			-47	0.2
Agricultural	35			20	0.0			20	0.0
Intervention	0			0	0.0			0	0.0
Non-Agricultural	110			18	0.3			-67	0.2
Total Domestic Demand	88091	3.0	3.7	94120	3.1	2.7	3.3	99823	2.7
Total Exports	99373	6.7	1.3	107462	9.0	6.6	1.6	116298	8.9
Merchandise	83020	7.0	0.8	89546	7.8	6.8	1.2	96725	7.7
Services	16353	5.5	3.8	17915	1.2	5.6	3.5	19573	1.2
Total Demand	187464	5.1	2.3	201582	12.1	4.9	2.2	216121	11.6
Total Imports	84698	5.5	1.9	91038	6.2	5.1	1.9	97479	5.8
Gross Domestic Product	102766	4.8	2.7	110544	5.9	4.7	2.5	118642	5.8
Net Factor Income	-16575	7.4	1.3	-18028	-1.5	8.8	1.6	-19919	-1.9
Gross National Product	86244	4.4	2.5	92318	4.4	4.0	2.7	98552	4.0

Table A.1 (continued): Expenditure on GNP

	2004 £m	Volume %	Price %	2005 £m	Cont. to Growth %	Volume %	Price %	2006 £m	Cont. to Growth %
Personal Consumption	56432	1.7	3.3	59314	1.1	4.3	3.3	63873	2.5
Public Consumption	15017	2.3	5.1	16145	0.3	2.3	5.2	17378	0.3
Fixed Investment	28422	3.7	2.2	30129	0.9	4.2	2.2	32087	1.1
Building	17946	3.9	1.8	18983	0.5	4.4	1.9	20188	0.6
Machinery	10481	3.5	2.9	11158	0.4	4.0	2.6	11912	0.5
Final Domestic Demand	99871	2.3	3.3	105589	2.3	4.0	3.2	113338	3.9
Stock Building	-47			-123	0.2			-186	0.2
Agricultural	20			20	0.0			20	0.0
Intervention	0			0	0.0			0	0.0
Non-Agricultural	-67			-143	0.2			-206	0.2
Total Domestic Demand	99823	2.5	3.1	105465	2.5	4.1	3.0	113152	4.1
Total Exports	116298	6.6	1.1	125417	9.2	5.6	1.6	134497	7.9
Merchandise	96725	6.8	0.7	104037	8.0	5.6	1.3	111304	6.8
Services	19573	5.7	3.3	21380	1.3	5.1	3.3	23193	1.1
Total Demand	216121	4.9	1.8	230882	11.7	5.0	2.2	247649	12.0
Total Imports	97479	5.1	1.9	104337	5.8	5.2	1.9	111775	6.0
Gross Domestic Product	118642	4.8	1.8	126545	5.9	4.8	2.5	135874	6.0
Net Factor Income	-19919	8.6	1.1	-21881	-1.9	6.9	1.6	-23765	-1.6
Gross National Product	98552	4.0	1.9	104508	4.0	4.4	2.6	111940	4.4

	2006 £m	Volume %	Price %	2007 £m	Cont. to Growth %
Personal Consumption	63873	3.7	3.3	68409	2.2
Public Consumption	17378	2.3	5.5	18768	0.3
Fixed Investment	32087	4.4	2.2	34234	1.1
Building	20188	4.6	1.9	21537	0.6
Machinery	11912	4.2	2.5	12724	0.5
Final Domestic Demand	113338	3.7	3.3	121410	3.6
Stock Building	-186			-239	0.1
Agricultural	20			20	0.0
Intervention	0			0	0.0
Non-Agricultural	-206			-259	0.1
Total Domestic Demand	113152	3.8	3.2	121172	3.7
Total Exports	134497	5.5	1.7	144327	8.0
Merchandise	111304	5.6	1.4	119138	6.8
Services	23193	5.1	3.3	25189	1.2
Total Demand	247649	4.8	2.3	265499	11.7
Total Imports	111775	5.1	1.9	119685	5.9
Gross Domestic Product	135874	4.6	2.6	145814	5.8
Net Factor Income	-23765	6.1	1.7	-25638	-1.4
Gross National Product	111940	4.3	2.7	119943	4.3

Table A.2: Output

	2000 £m	Volume %	Price %	2001 £m	Cont. to Growth %	Volume %	Price %	2002 £m	Cont. to Growth %
Agriculture	2845	-6.9	1.0	2676	-0.4	6.9	1.0	2889	0.3
Industry	27858	8.2	5.8	31893	3.7	7.5	5.6	36196	3.4
Manufacturing	21872	8.5	5.0	24924	3.1	7.9	4.7	28160	3.0
Utilities	1190	4.5	2.0	1269	0.1	4.5	2.0	1353	0.1
Building	4795	7.0	11.0	5700	0.4	6.1	10.5	6683	0.4
Market Services	34637	7.5	7.7	40075	3.4	5.6	5.0	44436	2.6
Distribution	7679	6.8	6.7	8744	0.8	4.9	5.6	9682	0.6
Transport & Communications	4327	6.8	6.7	4929	0.5	4.9	5.6	5459	0.3
Other Market Services	22631	7.9	8.1	26402	2.1	6.1	4.6	29295	1.7
Non-Market Services	8462	3.2	11.0	9701	0.4	3.2	10.1	11030	0.4
Health & Education	5949	4.0	12.5	6962	0.3	4.0	9.8	7947	0.3
Public Administration	2513	1.5	7.4	2739	0.1	1.5	10.9	3083	0.1
Adjustment for Financial Services (-)	2462	14.8	-5.9	2658	0.6	12.4	-4.5	2854	0.6
GDP at Factor Cost	71401	7.0	6.8	81618	7.4	6.4	5.6	91645	6.8
Taxes on Expenditure	11097	5.9	4.0	12219	1.0	4.8	3.5	13254	0.8
Subsidies	2034	1.3	1.0	2082	0.0	-2.5	2.5	2080	-0.1
GDP at Market Prices	80464	7.0	6.5	91756	8.3	6.4	5.3	102819	7.6
Net Factor Income	-12197	12.5	4.0	-14270	-2.3	11.6	4.1	-16575	-2.3
GNP at Market Prices	68267	6.0	7.1	77485	6.0	5.4	5.6	86244	5.4

	2002 £m	Volume %	Price %	2003 £m	Cont. to Growth %	Volume %	Price %	2004 £m	Cont. to Growth %
Agriculture	2889	-0.7	1.2	2903	0.0	-0.6	3.9	2999	0.0
Industry	36196	6.4	-0.2	38462	3.0	6.7	0.2	41109	3.2
Manufacturing	28160	7.1	-0.6	29978	2.7	7.5	0.1	32252	3.0
Utilities	1353	3.4	7.2	1500	0.1	3.0	4.5	1615	0.0
Building	6683	3.3	1.1	6984	0.2	2.3	1.3	7242	0.1
Market Services	44436	5.5	0.6	47187	2.6	5.1	2.0	50574	2.4
Distribution	9682	4.4	8.4	10956	0.5	4.1	7.6	12270	0.5
Transport & Communications	5459	7.7	3.3	6078	0.5	6.9	0.4	6528	0.5
Other Market Services	29295	5.4	-2.4	30153	1.5	5.1	0.3	31776	1.4
Non-Market Services	11030	3.0	10.3	12542	0.3	3.0	8.3	13991	0.3
Health & Education	7947	3.0	10.5	9049	0.2	3.0	8.4	10108	0.2
Public Administration	3083	3.2	9.8	3493	0.1	3.2	7.8	3883	0.1
Adjustment for Financial Services (-)	2854	7.2	1.9	3118	0.3	7.0	2.2	3409	0.3
GDP at Factor Cost	91645	5.1	1.9	98175	5.5	5.1	2.2	105435	5.5
Taxes on Expenditure	13254	2.5	5.0	14268	0.4	2.1	4.0	15153	0.3
Subsidies	2080	0.5	0.3	2097	0.0	0.7	0.2	2116	0.0
GDP at Market Prices	102819	4.9	2.3	110345	5.9	4.8	2.4	118472	5.8
Net Factor Income	-16575	7.4	1.3	-18028	-1.5	8.8	1.6	-19919	-1.9
GNP at Market Prices	86244	4.4	2.5	92318	4.4	4.0	2.7	98552	4.0

Table A.2 (continued): Output

	2004 £m	Volume %	Price %	2005 £m	Cont. to Growth %	Volume %	Price %	2006 £m	Cont. to Growth %
Agriculture	2999	4.8	-6.3	2944	0.2	-1.7	1.5	2936	-0.1
Industry	41109	6.6	1.5	44462	3.2	6.0	1.1	47651	3.0
Manufacturing	32252	7.4	1.2	35071	3.0	6.7	0.5	37605	2.8
Utilities	1615	3.0	4.0	1731	0.0	3.1	4.4	1864	0.1
Building	7242	1.9	3.8	7661	0.1	2.2	4.5	8182	0.1
Market Services	50574	4.9	0.7	53459	2.3	5.2	2.0	57362	2.5
Distribution	12270	4.1	6.3	13580	0.5	3.8	5.3	14850	0.5
Transport & Communications	6528	6.6	0.0	6959	0.5	6.4	0.4	7432	0.5
Other Market Services	31776	4.9	-1.2	32919	1.4	5.4	1.1	35080	1.5
Non-Market Services	13991	3.0	5.4	15193	0.3	3.0	5.5	16518	0.3
Health & Education	10108	3.0	5.6	10991	0.2	3.0	5.7	11965	0.2
Public Administration	3883	3.2	4.9	4202	0.1	3.2	5.0	4552	0.1
Adjustment for Financial Services (-)	3409	7.0	1.4	3697	0.4	6.5	2.2	4023	0.3
GDP at Factor Cost	105435	5.3	1.4	112518	5.7	4.9	2.2	120613	5.4
Taxes on Expenditure	15153	1.8	3.7	16011	0.3	4.2	3.4	17256	0.7
Subsidies	2116	3.1	-2.0	2139	0.1	0.5	0.7	2165	0.0
GDP at Market Prices	118472	4.9	1.7	126389	5.9	4.9	2.4	135705	6.0
Net Factor Income	-19919	8.6	1.1	-21881	-1.9	6.9	1.6	-23765	-1.6
GNP at Market Prices	98552	4.0	1.9	104508	4.0	4.4	2.6	111940	4.4

	2006 £m	Volume %	Price %	2007 £m	Cont. to Growth
Agriculture	2936	-1.4	0.5	2909	-0.1
Industry	47651	5.7	1.3	51006	2.9
Manufacturing	37605	6.2	0.7	40226	2.7
Utilities	1864	3.2	4.9	2017	0.0
Building	8182	2.3	4.7	8763	0.1
Market Services	57362	5.0	2.0	61386	2.4
Distribution	14850	3.8	4.7	16145	0.4
Transport & Communications	7432	6.1	1.0	7962	0.5
Other Market Services	35080	5.1	1.1	37279	1.5
Non-Market Services	16518	3.0	5.9	18021	0.3
Health & Education	11965	3.0	6.1	13072	0.2
Public Administration	4552	3.2	5.4	4949	0.1
Adjustment for Financial Services (-)	4023	6.2	2.3	4369	0.3
GDP at Factor Cost	120613	4.7	2.3	129185	5.2
Taxes on Expenditure	17256	3.7	3.9	18590	0.6
Subsidies	2165	0.6	0.7	2194	0.0
GDP at Market Prices	135705	4.7	2.5	145581	5.8
Net Factor Income	-23765	6.1	1.7	-25638	-1.4
GNP at Market Prices	111940	4.3	2.7	119943	4.3

Table A.3: National Income and National Product, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Agricultural Incomes	2305	2176	2361	2376	2472	2415	2405	2375
Non-Agric. Wage Income	32031	36819	41417	45690	49323	52916	57029	61747
Non-Agric. Profits Net	31567	36377	40870	42687	45771	48815	52289	55616
Non-Agric. Profits Gross	31837	36437	40860	42677	45761	48805	52279	55606
Adjustment for Stock Appreciation	270	60	-10	-10	-10	-10	-10	-10
Adjustment for Financial Services	2462	2658	2854	3118	3409	3697	4023	4369
Domestic Income	63441	72714	81794	87635	94157	100450	107701	115369
Depreciation	7959	8905	9851	10540	11278	12067	12912	13816
GDP (Factor Cost)	71401	81618	91645	98175	105435	112518	120613	129185
Taxes on Expenditure	11097	12219	13254	14268	15153	16011	17256	18590
Domestic	10562	11632	12605	13565	14393	15188	16373	17643
EC	535	588	650	703	761	823	883	947
Subsidies (-)	2034	2082	2080	2097	2116	2139	2165	2194
Domestic	590	710	780	827	876	929	985	1044
EC	1444	1372	1300	1270	1240	1210	1180	1150
GDP (Market Prices)	80464	91756	102819	110345	118472	126389	135705	145581
Net Factor Income	-12197	-14270	-16575	-18028	-19919	-21881	-23765	-25638
Gross National Product	68267	77485	86244	92318	98552	104508	111940	119943

Table A.4: Personal Income and Personal Expenditure, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Agricultural Incomes	2305	2176	2361	2376	2472	2415	2405	2375
Non-Agric. Wage Income	32031	36819	41417	45690	49323	52916	57029	61747
Transfer Income	8059	9107	10047	11004	12035	13059	13922	14838
Domestic	7839	8947	9927	10879	11902	12917	13773	14680
Foreign	220	160	120	126	134	141	149	158
Other Personal Income	11962	13026	14281	14388	14508	14611	15044	15326
Non-Agricultural Profits	31837	36437	40860	42677	45761	48805	52279	55606
Adjustment for Financial Services (-)	2462	2658	2854	3118	3409	3697	4023	4369
National Debt Interest	1633	1550	1508	1495	1348	1182	1127	934
Net Factor Income	-12197	-14270	-16575	-18028	-19919	-21881	-23765	-25638
Government Trading & Investment Income (-)	834	1200	1320	1413	1508	1600	1713	1836
Other Private Income	17977	19858	21619	21614	22272	22809	23905	24697
Undistributed Profits (-)	6015	6832	7338	7225	7764	8199	8861	9371
Personal Income	54357	61128	68107	73458	78339	83001	88401	94286
Taxes on Personal Income	10933	12106	13359	14642	15706	16700	17823	19111
Personal Disposable Income	43424	49022	54748	58816	62633	66302	70578	75175
Personal Consumption	40217	45185	50186	53443	56432	59314	63873	68409
Personal Savings	3207	3837	4563	5373	6201	6987	6705	6766
Tax Ratio (% Personal Income)	20.1	19.8	19.6	19.9	20.0	20.1	20.2	20.3
Savings Ratio (% of Disposable Income)	7.4	7.8	8.3	9.1	9.9	10.5	9.5	9.0

Table A.5: Balance of Payments, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Exports – Total	75752	87801	99373	107462	116298	125417	134497	144327
Merchandise	62807	73207	83020	89546	96725	104037	111304	119138
Services	12945	14594	16353	17915	19573	21380	23193	25189
Imports – Total	64953	74855	84698	91038	97479	104337	111775	119685
Balance of Trade	10799	12946	14675	16423	18819	21080	22722	24642
as % of GNP	15.8	16.7	17.0	17.8	19.1	20.2	20.3	20.5
International Transfers								
EC Subsidies	1444	1372	1300	1270	1240	1210	1180	1150
EC Taxes (-)	535	588	650	703	761	823	883	947
Government Payments (-)	656	678	634	788	829	874	915	959
Government Receipts	451	330	300	300	300	300	300	60
Private Transfers	220	160	120	126	134	141	149	158
Net International Transfers	924	596	436	206	84	-45	-169	-538
Factor Income Flows	-12197	-14270	-16575	-18028	-19919	-21881	-23765	-25638
National Debt Interest (-)	1067	981	919	909	815	698	628	505
Profits etc. Outflows (-)	19041	22865	26213	27673	29434	31395	33260	35140
Other Factor income	7911	9575	10557	10554	10330	10212	10124	10007
Current Account Balance	-474	-728	-1464	-1399	-1016	-847	-1212	-1534
as % of GNP	-0.7	-0.9	-1.7	-1.5	-1.0	-0.8	-1.1	-1.3
Capital Transfers	625	530	490	300	250	200	150	100
Effective Current Balance	151	-198	-974	-1099	-766	-647	-1062	-1434
as % of GNP	0.2	-0.3	-1.1	-1.2	-0.8	-0.6	-0.9	-1.2

Table A.6: National Debt, Current prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Total Government Securities	19614	19640	19670	21371	23197	25100	26953	28717
Other Borrowing from Central Bank	-2068	-4062	-5636	-6033	-6440	-6830	-7315	-7838
Small Savings	5683	5683	5683	5683	5683	5683	5683	5683
Total Debt Held Domestically	17748	15780	14236	13564	13005	12542	11932	11197
Total IR£ Debt	23229	21261	19717	21022	22440	23954	25320	26562
Foreign Debt:								
Foreign Currency	5509	5431	5273	1407	-1906	-4867	-7804	-10752
Government Securities	5481	5481	5481	7458	9434	11411	13388	15365
Total Foreign Debt	10990	10912	10754	8865	7528	6544	5584	4613
Total National Debt	28738	26692	24991	22429	20533	19086	17516	15810
General Government Debt	30564	28518	26816	24255	22359	20912	19342	17636
Other Bank Borrowing	-2076	-2076	-2076	-2222	-2372	-2516	-2695	-2887
Debt Ratios (% of GNP)								
Total National Debt	42.1	34.4	29.0	24.3	20.8	18.3	15.6	13.2
General Government Debt	44.8	36.8	31.1	26.3	22.7	20.0	17.3	14.7
Total Domestic Debt	26.0	20.4	16.5	14.7	13.2	12.0	10.7	9.3
Total Foreign Debt	16.1	14.1	12.5	9.6	7.6	6.3	5.0	3.8
Total IR£ Debt	34.0	27.4	22.9	22.8	22.8	22.9	22.6	22.1
Total Foreign Currency Debt	8.1	7.0	6.1	1.5	-1.9	-4.7	-7.0	-9.0
Debt Ratios (% of GDP)								
Total National Debt	35.7	29.1	24.3	20.3	17.3	15.1	12.9	10.9
General Government Debt	38.0	31.1	26.1	22.0	18.9	16.5	14.3	12.1
Total Foreign Debt	19.0	17.6	16.3	12.8	10.3	8.5	6.9	5.5

Table A.7: Public Authorities Accounts, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Taxes on Income and Wealth	13952	15662	17390	18914	20167	21481	23074	25060
Company	3023	3560	4035	4276	4465	4786	5255	5954
Personal	10929	12103	13355	14638	15702	16695	17819	19106
Taxes on Expenditure	10562	11632	12605	13565	14393	15188	16373	17643
Gross	10967	12089	13124	14138	15024	15881	17126	18460
EC Budget Contribution (-)	405	458	520	573	631	693	753	818
Net Trading & Investment Income	834	1200	1320	1413	1508	1600	1713	1836
Transfers From Abroad	451	330	300	300	300	300	300	60
Total Current Receipts	25803	28827	31619	34196	36372	38573	41465	44604
Subsidies	590	710	780	827	876	929	985	1044
National Debt Interest	1633	1550	1508	1495	1348	1182	1127	934
Other Transfer Payments	8495	9625	10561	11666	12731	13791	14688	15639
Foreign	656	678	634	788	829	874	915	959
Residents	7839	8947	9927	10879	11902	12917	13773	14680
Public Consumption	9651	11179	12292	13683	15017	16145	17378	18768
Total Current Expenditure	20369	23063	25141	27671	29973	32047	34178	36385
Public Authorities Savings (net)	5434	5764	6477	6525	6400	6526	7287	8218
as % of GNP	8.0	7.4	7.5	7.1	6.5	6.2	6.5	6.9
Total Capital Receipts	1920	2450	2297	1868	1905	1950	2004	1913
Grants – Housing	59	70	77	78	78	79	81	83
Grants – Industry	53	48	50	54	59	64	69	73
Investment	3228	3830	4424	4899	5390	5917	6499	7140
Other Capital Expenditure	758	1067	728	801	881	969	1066	1129
Total Capital Expenditure	4098	5014	5278	5831	6407	7029	7714	8426
Borrowing for Capital Purposes	-2178	-2564	-2981	-3963	-4502	-5079	-5711	-6513
Total Borrowing	3256	3200	3496	2562	1897	1447	1576	1706
as % of GNP	4.8	4.1	4.1	2.8	1.9	1.4	1.4	1.4
Budgetary Definitions								
Exchequer Surplus	2487	2046	1704	770	106	-345	-215	-86
as % of GNP	3.6	2.6	2.0	0.8	0.1	-0.3	-0.2	-0.1
Current Budget Surplus	5507	6077	6405	6452	6328	6454	7215	8146
as % of GNP	8.1	7.8	7.4	7.0	6.4	6.2	6.4	6.8
EU Definitions								
General Government Balance	-3667	-3226	-2884	-1950	-1286	-835	-965	-1094
as % of GDP	-4.6	-3.5	-2.8	-1.8	-1.1	-0.7	-0.7	-0.8
as % of GNP	-5.4	-4.2	-3.3	-2.1	-1.3	-0.8	-0.9	-0.9

B: Slowdown Scenario

Table B.1: Expenditure on GNP

	2000 £m	Volume %	Price %	2001 £m	Cont. to Growth %	Volume %	Price %	2002 £m	Cont. to Growth %
Personal Consumption	12384	2.9	3.7	13205	1.9	3.0	2.7	13974	2.1
Public Consumption	3487	2.6	4.6	3741	0.6	-4.8	6.1	3776	-1.1
Fixed Investment	3642	0.5	2.0	3734	0.1	-3.0	3.1	3735	-0.6
Building	1867	-0.2	4.0	1938	0.0	-6.6	3.7	1877	-0.8
Machinery	1775	1.5	-0.3	1796	0.1	2.0	1.4	1858	0.2
Final Domestic Demand	19513	2.4	3.5	20680	2.6	0.3	3.6	21485	0.3
Stock Building	86			59	-0.1			51	-0.3
Agricultural	-24			-71	-0.3			26	0.4
Intervention	64			99	0.3			36	-0.3
Non-Agricultural	46			31	-0.1			-12	-0.4
Total Domestic Demand	19599	2.2	3.5	20739	2.4	0.0	3.8	21535	0.0
Total Exports	10857	3.1	-6.3	10492	1.4	13.7	0.5	11986	6.4
Merchandise	9527	4.1	-7.5	9181	1.6	13.7	0.1	10447	5.5
Services	1330	-2.6	1.2	1311	-0.2	14.0	3.0	1539	0.9
Total Demand	30456	2.5	0.1	31231	3.9	4.0	3.2	33522	6.4
Total Imports	10725	6.3	-10.1	10242	3.0	6.2	1.3	11018	3.1
Gross Domestic Product	19731	0.8	5.5	20990	0.9	3.0	4.1	22503	3.3
Net Factor Income	-2045	9.5	-6.3	-2098	-0.8	4.3	0.5	-2198	-0.4
Gross National Product	17462	-0.2	7.0	18645	-0.2	3.3	3.8	19989	3.3

	2002 £m	Volume %	Price %	2003 £m	Cont. to Growth %	Volume %	Price %	2004 £m	Cont. to Growth %
Personal Consumption	13974	4.4	4.0	15171	3.0	6.2	4.0	16756	4.3
Public Consumption	3776	-5.0	4.2	3739	-1.1	-1.0	5.0	3890	-0.2
Fixed Investment	3735	-2.1	5.4	3854	-0.4	13.9	6.0	4652	2.7
Building	1877	-5.0	9.6	1955	-0.6	11.1	5.1	2282	1.1
Machinery	1858	1.5	0.7	1899	0.1	17.3	6.4	2370	1.5
Final Domestic Demand	21485	1.4	4.5	22764	1.5	6.2	4.6	25298	6.8
Stock Building	51			-238	-1.2			122	1.4
Agricultural	26			82	0.3			187	0.3
Intervention	36			-421	-1.8			-140	1.1
Non-Agricultural	-12			102	0.3			75	-0.1
Total Domestic Demand	21535	0.3	4.3	22526	0.3	7.6	4.9	25420	8.2
Total Exports	11986	8.9	5.6	13784	4.6	10.3	7.3	16315	5.7
Merchandise	10447	8.9	6.1	12073	3.9	10.4	7.7	14358	4.9
Services	1539	8.6	2.4	1712	0.6	9.6	4.3	1957	0.8
Total Demand	33522	3.1	5.1	36310	4.9	8.5	5.9	41735	13.9
Total Imports	11018	4.9	6.4	12297	2.6	13.5	6.2	14813	7.2
Gross Domestic Product	22503	2.2	4.4	24013	2.4	6.1	5.7	26922	6.6
Net Factor Income	-2198	19.3	5.6	-2770	-1.8	13.2	7.3	-3364	-1.5
Gross National Product	19989	1.5	3.7	21032	1.5	5.0	5.5	23313	5.0

Table B.1 (continued): Expenditure on GNP

	2004 £m	Volume %	Price %	2005 £m	Cont. to Growth %	Volume %	Price %	2006 £m	Cont. to Growth %
Personal Consumption	16756	1.1	2.0	17293	0.8	1.8	2.7	18085	1.2
Public Consumption	3890	5.4	5.1	4308	1.0	2.8	7.1	4741	0.5
Fixed Investment	4652	10.1	3.2	5287	2.1	-6.2	2.2	5071	-1.3
Building	2282	13.6	9.4	2837	1.5	1.0	3.3	2959	0.1
Machinery	2370	6.3	-2.7	2450	0.6	-14.8	1.2	2112	-1.4
Final Domestic Demand	25298	3.6	2.6	26888	3.9	0.4	3.4	27897	0.4
Stock Building	122			727	2.3			630	-0.3
Agricultural	187			80	-0.3			36	-0.1
Intervention	-140			651	2.8			544	-0.3
Non-Agricultural	75			-4	-0.2			50	0.2
Total Domestic Demand	25420	5.6	2.9	27615	6.2	0.1	3.2	28527	0.1
Total Exports	16315	8.6	-8.1	16294	5.0	5.7	-0.3	17178	3.4
Merchandise	14358	8.4	-9.5	14091	4.2	5.0	-0.8	14675	2.5
Services	1957	9.9	2.4	2203	0.8	10.1	3.2	2503	0.9
Total Demand	41735	6.7	-1.4	43909	11.2	2.1	2.0	45705	3.5
Total Imports	14813	4.9	-3.7	14972	2.9	2.4	2.4	15701	1.4
Gross Domestic Product	26922	7.5	-0.1	28937	8.3	1.9	1.7	30004	2.1
Net Factor Income	-3364	5.4	-8.1	-3258	-0.6	-1.1	-0.3	-3215	0.1
Gross National Product	23313	6.9	1.6	25340	6.9	2.3	2.1	26458	2.3

	2006 £m	Volume %	Price %	2007 £m	Cont. to Growth %
Personal Consumption	18085	2.9	3.0	19161	1.9
Public Consumption	4741	3.0	5.6	5155	0.6
Fixed Investment	5071	-1.8	4.7	5213	-0.3
Building	2959	0.3	4.8	3109	0.0
Machinery	2112	-4.7	4.5	2104	-0.4
Final Domestic Demand	27897	2.0	3.7	29529	2.1
Stock Building	630			-87	-2.4
Agricultural	36			83	0.2
Intervention	544			-373	-3.1
Non-Agricultural	50			203	0.5
Total Domestic Demand	28527	-0.3	3.5	29442	-0.3
Total Exports	17178	13.9	-2.0	19179	8.4
Merchandise	14675	15.7	-2.8	16505	8.1
Services	2503	3.7	3.0	2674	0.3
Total Demand	45705	4.9	1.4	48621	8.2
Total Imports	15701	8.2	-1.2	16775	4.7
Gross Domestic Product	30004	3.2	2.9	31846	3.5
Net Factor Income	-3215	12.2	-2.0	-3537	-1.4
Gross National Product	26458	2.3	3.4	27993	2.3

Table B.2: Output

	2000 £m	Volume %	Price %	2001 £m	Cont. to Growth %	Volume %	Price %	2002 £m	Cont. to Growth %
Agriculture	1733	-7.8	4.6	1672	-0.8	6.0	10.1	1952	0.6
Industry	6371	1.6	1.8	6590	0.4	6.4	-1.1	6937	1.8
Manufacturing	4659	2.1	2.5	4876	0.4	11.3	-2.4	5295	2.3
Utilities	712	4.4	-12.0	654	0.1	-0.5	-13.0	566	0.0
Building	1000	-1.3	7.5	1060	-0.1	-7.2	9.3	1075	-0.4
Market Services	6974	-1.3	11.4	7672	-0.6	1.8	4.1	8133	0.8
Distribution	2058	-3.1	7.1	2135	-0.3	4.5	2.3	2282	0.5
Transport & Communications	947	3.7	9.7	1077	0.2	5.3	6.9	1212	0.2
Other Market Services	3969	-1.4	13.9	4460	-0.4	0.4	3.6	4639	0.1
Non-Market Services	3027	3.0	2.5	3196	0.6	4.7	1.1	3380	0.9
Health & Education	1972	3.4	0.6	2052	0.4	7.9	-0.8	2197	1.0
Public Administration	1054	2.4	6.0	1144	0.2	-0.9	4.4	1183	-0.1
Adjustment for Financial Services (-)	817	-7.1	5.8	803	-0.3	0.9	2.1	828	0.0
GDP at Factor Cost	17511	0.3	5.7	18571	0.3	3.8	3.2	19889	3.7
Taxes on Expenditure	3270	0.0	6.3	3475	0.0	-0.6	6.3	3672	-0.1
Subsidies	1274	-4.7	7.3	1303	-0.3	-2.2	7.9	1375	-0.1
GDP at Market Prices	19507	0.5	5.8	20744	0.6	3.4	3.5	22187	3.7
Net Factor Income	-2045	9.5	-6.3	-2098	-0.8	4.3	0.5	-2198	-0.4
GNP at Market Prices	17462	-0.2	7.0	18645	-0.2	3.3	3.8	19989	3.3

	2002 £m	Volume %	Price %	2003 £m	Cont. to Growth %	Volume %	Price %	2004 £m	Cont. to Growth %
Agriculture	1952	5.5	9.2	2249	0.5	1.3	4.3	2377	0.1
Industry	6937	8.6	1.0	7605	2.5	10.9	0.1	8444	3.4
Manufacturing	5295	12.4	-0.9	5897	2.7	11.9	0.8	6649	2.9
Utilities	566	0.4	1.9	579	0.0	5.4	1.1	617	0.1
Building	1075	-3.6	8.8	1128	-0.2	8.9	-4.2	1177	0.4
Market Services	8133	4.1	4.9	8887	1.8	5.2	4.6	9775	2.3
Distribution	2282	1.5	8.0	2503	0.2	14.5	-7.6	2647	1.5
Transport & Communications	1212	9.0	-1.5	1301	0.4	12.1	-7.3	1353	0.6
Other Market Services	4639	4.3	5.1	5082	1.2	0.8	12.7	5775	0.2
Non-Market Services	3380	-4.6	7.4	3462	-0.9	-1.0	5.4	3613	-0.2
Health & Education	2197	-5.6	9.2	2264	-0.7	-1.8	6.0	2355	-0.2
Public Administration	1183	-2.8	4.2	1198	-0.2	0.5	4.6	1259	0.0
Adjustment for Financial Services (-)	828	12.4	3.7	965	0.5	-1.2	2.4	976	-0.1
GDP at Factor Cost	19889	2.6	5.2	21449	2.5	6.0	3.3	23479	5.9
Taxes on Expenditure	3672	3.4	4.4	3965	0.6	7.8	2.4	4377	1.4
Subsidies	1375	-4.2	22.5	1612	-0.2	16.1	-36.9	1180	0.8
GDP at Market Prices	22187	3.0	4.1	23802	3.3	5.8	5.9	26676	6.5
Net Factor Income	-2198	19.3	5.6	-2770	-1.8	13.2	7.3	-3364	-1.5
GNP at Market Prices	19989	1.5	3.7	21032	1.5	5.0	5.5	23313	5.0

Table B.2 (continued): Output

	2004 £m	Volume %	Price %	2005 £m	Cont. to Growth %	Volume %	Price %	2006 £m	Cont. to Growth %
Agriculture	2377	15.3	-13.3	2376	1.4	-2.1	-3.2	2252	-0.2
Industry	8444	6.0	0.2	8974	2.0	3.0	0.8	9317	1.0
Manufacturing	6649	5.9	-0.6	7002	1.5	2.9	0.3	7230	0.7
Utilities	617	-9.9	6.5	592	-0.2	7.3	1.4	644	0.1
Building	1177	14.2	2.7	1380	0.7	1.6	2.9	1443	0.1
Market Services	9775	8.7	5.5	11215	3.9	2.9	2.5	11830	1.3
Distribution	2647	24.0	4.1	3418	2.7	-0.2	0.6	3432	0.0
Transport & Communications	1353	4.7	1.4	1437	0.2	1.6	5.7	1543	0.1
Other Market Services	5775	3.5	6.5	6360	1.0	4.6	3.0	6855	1.3
Non-Market Services	3613	6.3	1.2	3888	1.1	0.9	7.1	4199	0.1
Health & Education	2355	7.8	-2.2	2482	0.9	1.6	6.6	2689	0.2
Public Administration	1259	3.5	7.9	1406	0.2	-0.5	7.9	1510	0.0
Adjustment for Financial Services (-)	976	0.9	0.9	993	0.0	7.7	2.4	1095	0.3
GDP at Factor Cost	23479	9.2	0.6	25799	9.1	1.9	2.1	26834	1.9
Taxes on Expenditure	4377	2.5	-1.5	4418	0.5	-0.1	1.7	4488	0.0
Subsidies	1180	35.3	1.5	1619	2.0	-3.9	6.0	1649	-0.3
GDP at Market Prices	26676	6.8	0.4	28598	7.6	1.9	1.8	29673	2.2
Net Factor Income	-3364	5.4	-8.1	-3258	-0.6	-1.1	-0.3	-3215	0.1
GNP at Market Prices	23313	6.9	1.6	25340	6.9	2.3	2.1	26458	2.3

	2006 £m	Volume %	Price %	2007 £m	Cont. to Growth %
Agriculture	2252	8.2	4.1	2535	0.8
Industry	9317	6.2	1.4	10038	2.1
Manufacturing	7230	7.6	1.4	7888	2.0
Utilities	644	3.9	0.8	674	0.1
Building	1443	0.6	1.7	1476	0.0
Market Services	11830	-0.2	1.8	12021	-0.1
Distribution	3432	-13.7	-0.6	2943	-1.7
Transport & Communications	1543	3.7	-1.9	1569	0.2
Other Market Services	6855	5.1	4.2	7509	1.4
Non-Market Services	4199	3.2	5.9	4590	0.5
Health & Education	2689	4.0	6.8	2987	0.4
Public Administration	1510	1.8	4.3	1603	0.1
Adjustment for Financial Services (-)	1095	10.5	2.1	1235	0.4
GDP at Factor Cost	26834	2.6	2.6	28265	2.7
Taxes on Expenditure	4488	1.2	4.5	4747	0.2
Subsidies	1649	-12.4	2.7	1483	-0.8
GDP at Market Prices	29673	3.3	2.8	31530	3.7
Net Factor Income	-3215	12.2	-2.0	-3537	-1.4
GNP at Market Prices	26458	2.3	3.4	27993	2.3

Table B.3: National Income and National Product, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Agricultural Incomes	2305	2176	2340	2363	2448	2391	2379	2342
Non-Agric. Wage Income	32031	36819	39486	42085	45932	50843	56604	62250
Non-Agric. Profits Net	31567	36377	35908	37551	41945	46412	51939	55536
Non-Agric. Profits Gross	31837	36437	35940	37541	41935	46402	51929	55526
Adjustment for Stock Appreciation	270	60	32	-10	-10	-10	-10	-10
Adjustment for Financial Services	2462	2658	2625	2814	3143	3519	3975	4370
Domestic Income	63441	72714	75109	79184	87182	96128	106947	115758
Depreciation	7959	8905	9851	10304	10775	11485	12361	13456
GDP (Factor Cost)	71401	81618	84959	89488	97957	107613	119308	129214
Taxes on Expenditure	11097	12219	12541	13225	14360	15793	17539	19107
Domestic	10562	11632	11892	12522	13599	14970	16656	18159
EC	535	588	650	703	761	823	883	947
Subsidies (-)	2034	2082	2067	2073	2094	2126	2160	2193
Domestic	590	710	767	803	854	916	980	1043
EC	1444	1372	1300	1270	1240	1210	1180	1150
GDP (Market Prices)	80464	91756	95433	100639	110222	121280	134687	146128
Net Factor Income	-12197	-14270	-14887	-15745	-17464	-19296	-22108	-24272
Gross National Product	68267	77485	80547	84894	92758	101984	112579	121856

Table B.4: Personal Income and Personal Expenditure, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Agricultural Incomes	2305	2176	2340	2363	2448	2391	2379	2342
Non-Agric. Wage Income	32031	36819	39486	42085	45932	50843	56604	62250
Transfer Income	8059	9107	10171	10941	11856	12869	13743	14702
Domestic	7839	8947	10051	10816	11720	12722	13585	14534
Foreign	220	160	120	125	136	148	158	168
Other Personal Income	11962	13026	12977	13257	14193	15126	15993	16232
Non-Agricultural Profits	31837	36437	35940	37541	41935	46402	51929	55526
Adjustment for Financial Services (-)	2462	2658	2625	2814	3143	3519	3975	4370
National Debt Interest	1633	1550	1393	1420	1394	1332	1336	1145
Net Factor Income	-12197	-14270	-14887	-15745	-17464	-19296	-22108	-24272
Government Trading & Investment Income (-)	834	1200	1320	1391	1520	1671	1845	1997
Other Private Income	17977	19858	18501	19011	21202	23248	25337	26032
Undistributed Profits (-)	6015	6832	5525	5754	7009	8122	9344	9801
Personal Income	54357	61128	64973	68646	74430	81230	88719	95526
Taxes on Personal Income	10933	12106	12806	13424	14591	16091	17809	19420
Personal Disposable Income	43424	49022	52167	55222	59839	65139	70910	76105
Personal Consumption	40217	45185	46798	49262	53459	58569	64776	69964
Personal Savings	3207	3837	5369	5960	6380	6571	6134	6141
Tax Ratio (% Personal Income)	20.1	19.8	19.7	19.6	19.6	19.8	20.1	20.3
Savings Ratio (% of Disposable Income)	7.4	7.8	10.3	10.8	10.7	10.1	8.7	8.1

Table B.5: Balance of Payments, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Exports – Total	75752	87801	92503	99972	108741	117799	129744	140112
Merchandise	62807	73207	77052	83197	90288	97429	107068	115307
Services	12945	14594	15451	16775	18454	20370	22676	24806
Imports – Total	64953	74855	78070	84750	92110	99858	109858	117570
Balance of Trade	10799	12946	14433	15222	16632	17942	19886	22542
as % of GNP	15.82	16.71	17.92	17.93	17.93	17.59	17.66	18.50
International Transfers								
EC Subsidies	1444	1372	1300	1270	1240	1210	1180	1150
EC Taxes (-)	535	588	650	703	761	823	883	947
Government Payments (-)	656	678	634	788	829	874	915	959
Government Receipts	451	330	300	300	300	300	300	60
Private Transfers	220	160	120	125	136	148	158	168
Net International Transfers	924	596	436	205	87	-39	-160	-528
Factor Income Flows	-12197	-14270	-14887	-15745	-17464	-19296	-22108	-24272
National Debt Interest (-)	1067	981	863	880	887	856	836	716
Profits etc. Outflows (-)	19041	22865	24581	25449	27147	29036	31816	33914
Other Factor income	7911	9575	10557	10584	10570	10595	10543	10358
Current Account Balance	-474	-728	-18	-317	-745	-1394	-2383	-2258
as % of GNP	-0.7	-0.9	0.0	-0.4	-0.8	-1.4	-2.1	-1.9
Capital Transfers	625	530	490	300	250	200	150	100
Effective Current Balance	151	-198	472	-17	-495	-1194	-2233	-2158
as % of GNP	0.2	-0.3	0.6	0.0	-0.5	-1.2	-2.0	-1.8

Table B.6: National Debt, Current prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Total Government Securities	19614	19640	19845	21893	24051	26107	27905	29502
Other Borrowing from Central Bank	-2068	-4062	-5636	-5940	-6491	-7136	-7878	-8527
Small Savings	5683	5683	5683	5683	5683	5683	5683	5683
Total Debt Held Domestically	17748	15780	14411	14178	13810	13243	12323	11293
Total IR£ Debt	23229	21261	19892	21636	23244	24654	25711	26658
Foreign Debt:								
Foreign Currency	5509	5431	5893	3491	1542	-624	-3475	-6922
Government Securities	5481	5481	5481	7458	9434	11411	13388	15365
Total Foreign Debt	10990	10912	11374	10949	10976	10788	9913	8443
Total National Debt	28738	26692	25785	25127	24786	24031	22235	19736
General Government Debt	30564	28518	27610	26952	26611	25856	24061	21562
Other Bank Borrowing	-2076	-2076	-2076	-2188	-2391	-2629	-2902	-3141
Debt Ratios (% of GNP)								
Total National Debt	42.1	34.4	32.0	29.6	26.7	23.6	19.8	16.2
General Government Debt	44.8	36.8	34.3	31.7	28.7	25.4	21.4	17.7
Total Domestic Debt	26.0	20.4	17.9	16.7	14.9	13.0	10.9	9.3
Total Foreign Debt	16.1	14.1	14.1	12.9	11.8	10.6	8.8	6.9
Total IR£ Debt	34.0	27.4	24.7	25.5	25.1	24.2	22.8	21.9
Total Foreign Currency Debt	8.1	7.0	7.3	4.1	1.7	-0.6	-3.1	-5.7
Debt Ratios (% of GDP)								
Total National Debt	35.7	29.1	27.0	25.0	22.5	19.8	16.5	13.5
General Government Debt	38.0	31.1	28.9	26.8	24.1	21.3	17.9	14.8
Total Foreign Debt	19.0	17.6	18.0	16.6	15.7	14.6	12.5	10.1

Table B.7: Public Authorities Accounts, Current Prices, £ million

	2000	2001	2002	2003	2004	2005	2006	2007
Taxes on Income and Wealth	13952	15662	16838	17186	18518	20474	22802	25329
Company	3023	3560	4035	3765	3931	4388	4998	5914
Personal	10929	12103	12803	13421	14587	16086	17804	19415
Taxes on Expenditure	10562	11632	11892	12522	13599	14970	16656	18159
Gross	10967	12089	12411	13095	14230	15663	17409	18977
EC Budget Contribution (-)	405	458	520	573	631	693	753	818
Net Trading & Investment Income	834	1200	1320	1391	1520	1671	1845	1997
Transfers From Abroad	451	330	300	300	300	300	300	60
Total Current Receipts	25803	28827	30353	31402	33942	37420	41607	45551
Subsidies	590	710	767	803	854	916	980	1043
National Debt Interest	1633	1550	1393	1420	1394	1332	1336	1145
Other Transfer Payments	8495	9625	10685	11603	12549	13596	14500	15493
Foreign	656	678	634	788	829	874	915	959
Residents	7839	8947	10051	10816	11720	12722	13585	14534
Public Consumption	9651	11179	12150	13245	14534	15835	17291	18839
Total Current Expenditure	20369	23063	24995	27071	29332	31679	34108	36520
Public Authorities Savings (net)	5434	5764	5358	4331	4610	5741	7500	9031
as % of GNP	8.0	7.4	6.7	5.1	5.0	5.6	6.7	7.4
Total Capital Receipts	1920	2450	2297	1868	1905	1950	2004	1913
Grants – Housing	59	70	52	52	59	74	85	91
Grants – Industry	53	48	41	45	56	62	75	74
Investment	3228	3830	4236	4654	5195	5848	6496	7160
Other Capital Expenditure	758	1067	721	781	858	950	1052	1120
Total Capital Expenditure	4098	5014	5050	5533	6169	6934	7708	8445
Borrowing for Capital Purposes	-2178	-2564	-2753	-3664	-4264	-4984	-5704	-6532
Total Borrowing	3256	3200	2605	666	346	757	1795	2499
as % of GNP	4.8	4.1	3.2	0.8	0.4	0.7	1.6	2.1
Budgetary Definitions								
Exchequer Surplus	2487	2046	813	-1126	-1446	-1035	4	707
as % of GNP	3.6	2.6	1.0	-1.3	-1.6	-1.0	0.0	0.6
Current Budget Surplus	5507	6077	5286	4259	4538	5669	7427	8959
as % of GNP	8.1	7.8	6.6	5.0	4.9	5.6	6.6	7.4
EU Definitions								
General Government Balance	-3667	-3226	-1993	-55	266	-145	-1184	-1888
as % of GDP	-4.6	-3.5	-2.1	-0.1	0.2	-0.1	-0.9	-1.3
as % of GNP	-5.4	-4.2	-2.5	-0.1	0.3	-0.1	-1.1	-1.5

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