MEDIUM-TERM REVIEW

2005-2012

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Work on this year's *Medium-Term Review* has been a lengthy process, which involved many experts both from within and outside of The Economic and Social Research Institute. 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, the authors 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 Department of Finance, Teagasc, Forfás, the CSO, the ESB, IBEC, EIRGRID, and the other individuals who offered us useful advice.

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Finally, the authors themselves are solely responsible for the analysis, views and conclusions reached throughout the *Review*.

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EXECUTIVE SUMMARY

Introduction

After a decade of generally high growth and low unemployment there is a growing aura of invincibility about the Irish economy. Even the short slowdown of 2001-03 did not lead to an appreciable rise in unemployment. Today investment in housing is running at an unprecedented rate fuelling growth elsewhere in the economy. The unemployment rate is close to the full-employment level, the lowest in the EU, and Ireland is seen to be the most attractive labour market in Europe for many of its young mobile population.

The pattern of behaviour by households reflects a high degree of certainty about the future. The level of gross (and net) household debt is rising rapidly as households have confidence that they will be able to service this in the future. While some firms, especially in the manufacturing sector, are facing difficulties, their woes are masked by the feeling of bonhomie elsewhere in the business sector, especially in all those businesses that depend on building and construction for their success.

The fundamental factors driving the Irish economy, which are considered in Chapter 2, remain quite favourable. In particular, the economy faces a very fortunate set of demographic circumstances over the next fifteen years. However, there are considerable dangers in the current situation: in particular the very high level of dependence on the building industry. This is compounded by apparent insouciance about the future manifested by many borrowers in the household sector.

These internal risks to future prosperity must be seen against the background of the global economic imbalances that, if anything, are growing in magnitude. A key part of the story of this *Review* is the future evolution of these global imbalances.

When Odysseus undertook his long voyage home from Troy he encountered many dangers. Not least were the distractions that the Lotus-eaters provided for his crew. The lure of good times with the Lotus-eaters nearly derailed the voyage and tough measures had to be taken by Odysseus to get the crew back on board. Today, one of the key issues for policy-makers is how to tackle the dangerous imbalances that are building up in the economy at a time when euphoria in the household sector is possibly clouding the judgement of individual households. However, the nature and dimensions of the risks that the economy is likely to face over the coming decade suggest the need for public policy to take action to promote a soft landing.

Background Assumptions

While fears of a painful adjustment by the US economy to restore it to a sustainable growth path have been frequently expressed there is, as yet, no sign of it happening. In the light of this uncertainty we have developed two fully worked out scenarios for the US and the world economy: one where the US continues on its current unsustainable growth path with an ever rising balance of payments deficit and a second where the US undergoes an adjustment process bringing the external deficit under control.

In the more favourable, *High Growth* scenario, teased out in detail in Chapters 4 and 5, we assume that the US economy can go on growing at a rapid pace until 2015, with a gradual worsening in its external and government

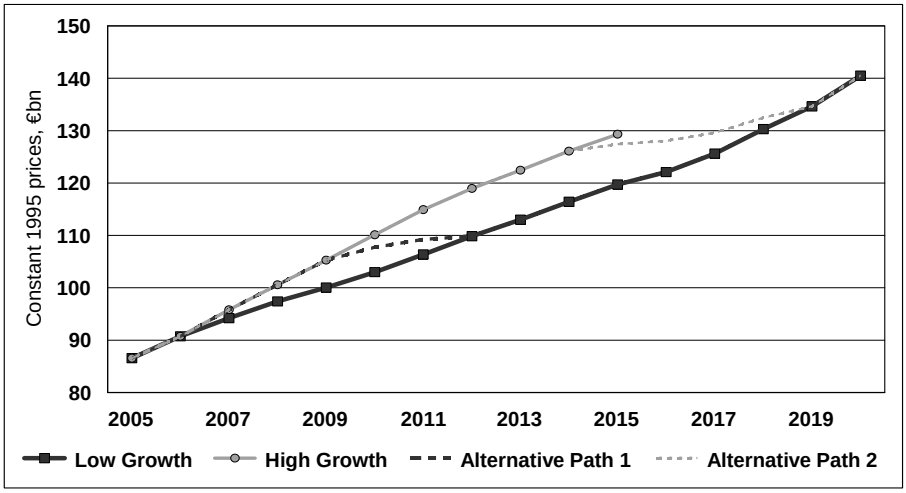
deficits. If realised, this scenario would provide a very favourable backdrop for the Irish economy for the next decade. However, it is not possible for the US to continue forever on this path and we do not pursue the details of this scenario beyond 2015.

When looking out to 2020 we feel that an alternative *Low Growth* world scenario is more realistic. This scenario, discussed in detail in Chapters 4 and 6, assumes that the US economy begins a gradual adjustment to a more sustainable growth path from 2007 onwards. The transition to the *Low Growth* trajectory could occur at any point from 2007 onwards. Initially this adjustment process would be painful for the US and for the rest of the world. With the global imbalances continually increasing the adjustment process could be more painful the longer it is delayed.

Forecast

Like a clockwork mouse that was fully wound up in the late 1990s, the Irish economy is gradually running down. Its potential to grow is less today than five years ago and it will be lower still in the next decade. The changing demographics play a key role in this slowdown. The unutilised resources available in the economy, not least the skilled labour, are being used up and, while there has been a major improvement in the quality of the infrastructure of the economy over the last decade, this development has been partially matched by the growth in pressures on that same infrastructure. As a result, the economy remains constrained by the limited stock of dwellings and infrastructure and consequent high prices and congestion. However, it still has the potential to grow at between 4 and 5 per cent a year out to the end of the decade. If realised, this would represent an unusually robust prospect compared to most of our EU neighbours.

Figure 1: Alternative Growth Paths for Real GNP



Given the uncertainty about the development of the US and other major world economies over the period to 2020 we have developed two separate scenarios for the Irish economy – a *High Growth* and a *Low Growth* scenario. Possible paths for real GNP implied by these two scenarios are shown in Figure 1. Our conclusion is that by 2020 Ireland will end up closer to the lower growth path for GNP. However, when the economy will switch from the high growth path to the lower will depend on how long the necessary adjustment is delayed in the US. Two alternative adjustment paths are illustrated in Figure 1, one starting in 2010 and the other in 2015.

High Growth Forecast

The *High Growth* scenario provides a forecast for the economy assuming that the current pattern of growth in the world economy continues. On this basis it seems likely that the economy will show quite robust growth out to the end of the decade (Table 1). This should see living standards, measured in terms of the more appropriate indicator of GNP per head, also rising quite rapidly by around 3.4 per cent a year. The growth in output per worker (productivity), which has been particularly slow over the first half of the decade, is expected to grow at 2.5 per cent a year out to 2010, more in line with the pre-1995 experience. The growth in wage rates is expected to be between 4 and 4.5 per cent a year for the rest of the decade. Given that the rate of inflation is expected to remain close to 2 per cent a year, this should see continuing significant rises in real wage rates.

The government is assumed to maintain a small surplus over the forecast horizon. As a result, the net indebtedness of the government sector will fall. The external balance should remain close to balance in spite of the continuing high level of investment in housing.

Table 1: Forecast Summary, *High Growth*

	1990-95	1995-00	2000-05	2005-10	2010-15
	Average Annual Growth, %				
GNP	4.4	8.8	4.0	4.9	3.3
GNP per head	3.9	7.7	2.2	3.4	1.6
GNP per worker	2.5	3.7	0.9	2.5	1.5
Non-Agricultural Wage Rates	4.4	6.0	5.5	4.3	6.9
Consumption Deflator	2.7	3.2	3.4	2.1	4.1
Employment, April	1.9	5.0	3.1	2.4	1.7
Labour Force, April	1.9	3.4	2.9	2.3	1.5
For end Year:	**1995**	**2000**	**2005**	**2010**	**2015**
Net Immigration, thousands	-2	26	53	31	44
Unemployment rate, ILO Basis %	12.2	4.3	4.2	3.6	2.7
Balance of Payments, % of GNP	3.2	-0.3	-1.8	0.1	2.1
General Government Balance, % of GNP	-2.3	5.1	-0.6	0.3	0.1
Debt/GNP Ratio[1]	83.6	34.3	22.4	17.2	12.5
Housing Completions	31	50	79	70	80

After the spectacular employment performance of the recent past, growth is expected to revert to a more normal rate of around 2.4 per cent a year out to 2010. This growth should be accompanied by a small fall in the unemployment rate. With the supply of labour domestically slowing this will require a substantial continuing net inflow of skilled labour from abroad. However, the fact that GNP per head is expected to rise quite rapidly would suggest that the additional growth which is made possible by the immigration of skilled labour will enhance the living standards of the population as a whole.

After 2010, under this scenario, increasing pressures build up within the economy resulting in accelerating inflation in prices and wages and a serious loss of competitiveness. The tightness of the labour market is reflected in the continuing fall in the unemployment rate. The housing market also shows pressures with a continuing very high level of output and corresponding improbably high prices. All this would suggest that even if the US growth were to continue unchecked, the Irish economy could begin to encounter serious problems early in the next decade as a result of a prolonged period of exceptional growth.

[1] The National Pension Reserve Fund has been netted off the debt.

Low Growth Forecast

The *Low Growth* scenario assumes that market forces will produce an adjustment in the US and the world economies beginning in 2007, moving the US back onto a sustainable growth path. The result of this adjustment process is that US and world growth would be significantly lower in the five years 2007-11 than in the high growth scenario. Because of the openness of the Irish economy it would result in significantly lower growth in Ireland than in the alternative scenario where the US does not adjust.

Table 2: Forecast Summary, *Low Growth*

	1990-95	1995-00	2000-05	2005-10	2010-15	2015-20
	Average Annual Growth Rates					
GNP	4.4	8.8	4.0	3.5	3.1	3.3
GNP per head	3.9	7.7	2.2	2.1	1.8	2.2
GNP per worker	2.5	3.7	0.9	2.0	1.8	1.9
Non-Agricultural Wage Rates	4.4	6.0	5.5	4.1	2.8	3.2
Consumption Deflator	2.7	3.2	3.4	2.1	2.0	1.9
Employment, April	1.9	5.0	3.1	1.5	1.2	1.4
Labour Force, April	1.9	3.4	2.9	2.1	1.1	0.7
For end Year:	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**
Net Immigration, thousands	-2	26	53	23	18	13
Unemployment rate, ILO Basis %	12.2	4.3	4.2	7.1	6.4	4.0
Balance of Payments, % of GNP	3.2	-0.3	-1.8	-0.4	3.0	6.0
General Government Balance, % of GNP	-2.3	5.1	-0.6	0.4	0.4	0.3
Debt/GNP Ratio	83.6	34.3	22.4	18.6	15.5	12.5
Housing Completions, thousands	31	50	79	62	60	56

In this scenario the Irish economy grows at less than its potential in the period to 2010 resulting in a significant rise in the unemployment rate to over 7 per cent of the labour force in 2010. However, the growth in GNP per head would be rather similar to that of the last five years. There would be a much lower level of net immigration corresponding to the disimproved labour market circumstances. After 2010 the economy should grow at something over 3 per cent a year giving rise to a growth in GNP per head averaging around 2 per cent a year – comparable to the growth in the current decade.

The rate of inflation in both consumer prices and wages would be much more moderate than in the high growth scenario reflecting the weaker labour market conditions. Also it is assumed in this scenario that there is a gradual slowdown in the building sector with house prices relatively stable in real terms.

Housing Market Risks

The Irish economy is now exceptionally dependent on the building industry for growth and employment. The continued growth in prices, well above the rate of inflation in most of the other rich EU countries, looks increasingly threatening. While a soft landing remains a possibility, one can envisage a range of shocks that could cause a dramatic turnaround in the sector. For example, a more extreme or sudden US adjustment process, through its negative effects on world growth generally and on Ireland in particular, could cause a sudden loss of confidence bringing about a rapid and substantial fall in house prices of up to a third. In Chapter 6 we consider just such an outcome.

The results of our analysis suggest that the impact could be very painful. The loss of confidence and the related fall in prices could bring about a fall in housing output of around 40 per cent. Superimposed on the low growth

scenario it could push growth in GNP down to near 1 per cent in the year that the collapse occurred and GNP per head could actually fall marginally that year. Over the first three years the unemployment rate could move temporarily above 10 per cent of the labour force.

This *Review* is not suggesting that such a serious shock is inevitable. However, as the building and construction sector continues to grow it is becoming increasingly likely that some major shock will affect it and, as a result, the whole economy. Until the shock actually occurs it remains possible for wise economic policy to steadily reduce the economy's exposure to such an unfavourable risk and to increase the chances of a genuinely soft landing over the coming decade.

Given the size of the building and construction sector anything that causes a collapse in activity would immediately transmit itself to the rest of the economy. The aim of policy should be to try and reduce this danger. This could best be done by removing all incentives that are fuelling the boom and then by consideration of measures that can reduce demand for building and construction, either directly through moderating state spending, or indirectly through appropriate fiscal instruments. At the level of the economy a tight fiscal policy would help turn down the heat and it would also provide spare capacity for the state to intervene in the event that things go wrong in the future.

Medium-Term Challenges

In spite of the dangers that exist, the Irish economy is basically robust and can look forward to an average growth rate in GNP per head of around 2 per cent a year out to the end of the next decade. If realised such a performance would be pretty remarkable.

The demographic changes that are now inevitable are going to change society as well as the economy in many different ways. With the ageing of the very numerous cohort currently in their mid-20s, by 2015 it will be the care of infants rather than the lure of nightclubs that will have them up late at night! As a result, the demand for child-care outside the home will rise further and at the same time changes in the labour market are likely to reduce the supply of child-care workers with corresponding upward pressure on wages and prices.

The continuing inflow of workers from abroad with a high level of education will add to the growth potential of the economy and will help raise GNP per head with consequential benefits for those already resident in Ireland. It should also see low skilled wage rates rising more rapidly than high skilled rates narrowing the existing wide dispersion of wage rates. Any tightness in the labour market for less skilled workers is a necessary consequence of Ireland moving up the value-added chain. It would not be appropriate to try and attract large numbers of low skilled workers from outside the EU to halt this process.

The Irish economy's future lies more in services that are produced using skilled labour rather than in the traditional manufacturing sector. Many of these services are tradable and they constitute an ever-increasing share of our exports. As with most other developed economies, it is quite possible to envisage the Irish economy continuing to grow in a sustainable manner supported by such exports, even if the manufacturing sector is no longer the motor of growth. The analysis reported in Chapter 2 examines how this process is already taking place.

This shift in the factors driving growth does not mean that the manufacturing sector is no longer important. On the contrary, it will continue to be a key sector of the economy and its future success will remain very important. More than ever it will be the high technology part of manufacturing that will continue to thrive. However, it will no longer be a key generator of new employment opportunities.

Promoting a successful services based economy will require a change in policy focus. More than ever making Ireland an attractive place for skilled workers as much as for employers will help guarantee success. Research and Development (R&D) will of course be crucial. However, the priorities for support for R&D may need rethinking if it is to contribute to the success of business in the evolving services sectors. Finally, Ireland needs to wean itself away from excessive dependence on the low corporation tax regime. With increasing competition in this field we are no longer unique. In addition, we can not be certain that our neighbours' frustration with the policy will not eventually provoke an unpleasant response. This does not mean that the regime should be abolished. Rather it means that we should cease to see it as a key policy instrument for promoting business in Ireland in the future. By 2020 we need to have evolved an economy where the vast bulk of successful business activity is in Ireland because of all the other features that can confer competitive advantage.

Finally, Ireland is ageing, albeit slowly by the standards of the rest of the EU. We have the time to prepare for the burdens that that will impose.

Conclusions

This *Review* has tried to tell a complex story, a story that reflects the reality of the Irish economy today. The next decade should see significant further progress in terms of rising living standards. However, the tone of this report is more ominous in the face of gathering clouds on the horizon. In particular, the very success of the building and construction sector holds the seeds of future potential problems. Economic policy needs to manage the exposure of the economy to any future crisis in the building sector: to reduce the possibility that a crisis may occur and to provide a buffer of resources to deal with the consequences of any future shocks.

1. INTRODUCTION

1.1 Background

After a decade of generally high growth and low unemployment there is a growing feeling among households and companies that the Irish economy is invincible. Even the short slowdown of 2001-03 did not lead to an appreciable rise in unemployment and, as a consequence, it did not significantly dent confidence in the future. Today investment in housing is running at an unprecedented rate, fuelling growth elsewhere in the economy. The unemployment rate is bouncing around close to the full-employment level, and Ireland is seen to be the most attractive labour market in Europe for many of the mobile young population.

The pattern of behaviour by households reflects a high degree of certainty about the future. The level of gross (and net) household debt is rising rapidly; households have confidence that they will be able to service this in the future. Many companies also appear to be sanguine about the future. This is reflected in very substantial increases in employment. While some firms, especially in the tradable manufacturing sector, are facing difficulties, their woes are masked by the feeling of bonhomie elsewhere in the business sector, especially in all those businesses that depend on the building sector for their success.

As discussed later in this *Review*, the fundamental factors driving the Irish economy remain favourable. The economy faces a very fortunate set of demographic circumstances over the next fifteen years. Together these circumstances will conspire to give Ireland one of the lowest rates of economic dependency in the OECD area. The benefits of past investment in education will also continue to produce a significant boost to productivity for some time to come. In addition, the economy, including the labour market, shows considerable flexibility. The limited impact of the recent economic slowdown on the unemployment rate was indicative of this flexibility. Also the very elastic labour supply through migration means that the labour market is fast to react to changes in demand.

While the underlying structure of the economy is evolving in a manner that should be favourable to future growth, there are considerable dangers in the current situation. In particular, the extremely high level of dependence on the continuing success of the building industry is a serious cause for concern. This is compounded by the certainty with which many in the household sector view the future prospects for growth.

These internal risks to future prosperity must be seen against the background of the global economic imbalances that, if anything, are growing in magnitude. A key part of the story of this *Review* is the future evolution of these global imbalances. In the more favourable, *High Growth* scenario, teased out in detail in Chapters 3 and 5, we assume that the US economy will continue growing at a rapid pace indefinitely in spite of a gradual worsening in its external and government deficits. We continue this scenario out for the next decade and, if realised, it would provide a very favourable backdrop for the Irish economy. However, it is not possible for the US to continue forever on this path and the results of this scenario suggest that other domestic factors, in particular the gradual loss of competitiveness, could in any event bring the period of high growth to an end.

When looking beyond 2010 we feel that an alternative *Low Growth* scenario is more realistic. This scenario, discussed in detail in Chapters 3 and 6, assumes that the US economy begins a gradual adjustment to a more sustainable growth path from 2007 onwards. This adjustment process would be painful for the US and for the rest of the world in the short term. We do not attempt to predict when this adjustment will actually occur. It could begin as early as 2007 or it could be postponed until well into the next decade. With the global imbalances increasing year by year the adjustment process is likely to be more painful the longer it is delayed. In addition, in the *Low Growth* scenario we assume that the adjustment process is fairly gradual and spread over a number of years. In practice, if it is to occur, the adjustment may be more of a short sharp shock. This could portend a much more unpleasant environment for the Irish economy in the year it happened, but the more rapid restoration of the world to a sustainable growth path could prove beneficial in the longer term.

In this *Review* we have only considered two alternative scenarios for the world economy in detail. Obviously there is an infinite set of possibilities, some of which might produce a less painful resolution to the problem of international imbalances. However, it is equally true that things could be more difficult than we envisage in this *Review* and in Chapter 6 we consider how problems in the building and construction sector could interact with an unfavourable external environment to produce a serious domestic slowdown.

While our forecasting record (see Appendix 1) has been acceptable, the one certainty is that the world will not turn out exactly as it is modelled in any of our scenarios. The purpose of this *Review* is primarily to provide an explanation of the factors driving the Irish economy and to explore a range of possible future economic outturns. This range of possibilities highlights the uncertain world in which policy-makers must operate. Their objective in forming economic policy should be to choose a strategy that will be robust in the face of a wide range of possibilities. It is also important to adopt policies that may reduce or eliminate the danger of some future shocks. To the extent that the range of forecasts in this *Review* helps policy-makers hone their policies to avoid future shocks, the actual economic outturn could be enhanced (and the forecasts rendered obsolete).

When Odysseus undertook his long voyage home from Troy he encountered many dangers. Not least were the distractions that the Lotus-eaters provided for his crew. The lure of good times with the Lotus-eaters nearly derailed the voyage and tough measures had to be taken by Odysseus to get the crew back on board. Today, one of the key issues for policy-makers is how to tackle the dangerous imbalances that are building up in the economy at a time when euphoria in the household sector is possibly clouding the judgement of individual households. Trying to get households and companies to focus on future dangers at a time when the economy is thriving is always difficult. However, the nature and dimensions of the risks that the economy is likely to face over the coming decade does underline the importance of commencing this task.

1.2 Outline of the *Review*

In Chapter 2, we bring together the results of recent work on the changing structure of the Irish economy, in an effort to develop our understanding of the mechanisms underpinning recent trends. As will be seen in that Chapter, services are playing an ever increasing role in the economy, both in terms of domestic consumption patterns and exports. Given the historic concentration on manufacturing in the policy arena and in discourse on the drivers of economic growth, this shift will be critical from a number of perspectives. In Chapter 2, we also return to some more traditional themes such as the role of human capital and immigration. While these themes have been discussed before, the work presented in Chapter 2 places developments in these areas in the broader context of Ireland's recent economic experience.

Turning next to the international context, a number of uncertainties exist which could have potentially large impacts on the Irish economy. Foremost among these are the on-going large imbalances in the US economy, in particular the deficit on the current account of the balance of payments. The US balance of payments deficit has been growing in recent years and has now reached over 6 per cent of GDP. This situation is unsustainable in the long run and at some stage the US economy will have to adjust to return it to a sustainable path. As the adjustment could involve a large dollar depreciation and/or a dramatic cutback in US consumption, the implications for the Irish economy could be significant.

In Chapter 3, using the *NiGEM*[1] model of the world economy, we quantify by how much US private and public consumption might have to fall in order to bring the US economy to a point where the balance of payments deficit is sustainable. The results are used in the rest of this *Review* when we quantify the possible impact on the Irish economy of a US adjustment. As will be seen, the estimated impact is large and provides one of the key findings of this *Review*. We also look at the German economy to assess the prospects for recovery based on improved consumer sentiment as this, along with investment, appears to be the missing link in the potential German (and hence euro-zone) recovery.

In Chapter 4, we provide a broad overview of our forecasts before going into greater detail in Chapters 5 and 6. Chapter 5 contains the *High Growth* forecast. In a sense, the crucial assumption that underlies this forecast is that no adjustment occurs in the US in response to its imbalances until after 2012. We have opted to present this as our detailed forecast to 2012 based on a belief that adjustment in the US is unlikely to occur in the immediate future. We are less certain as to whether or not an adjustment will occur after 2008/9. However, a working assumption is needed and so we have opted for the no-adjustment story as the baseline. In the absence of a US adjustment, the picture that emerges of the Irish economy in the medium term is one of continued economic growth averaging over 4.5 per cent per annum out to 2010.

In Chapter 6, we alter the crucial "no-adjustment" assumption and estimate the impact on Ireland of an adjustment in US private and public consumption commencing in 2007. This Chapter presents details of our *Low Growth* scenario. This adjustment could begin in any year from 2007 onwards. The later it occurs the bigger the adjustment that is likely to be necessary. In modelling the adjustment in this way we do not imply that this is when and how we necessarily see adjustment occurring. Rather our goal is to quantify the impact of an adjustment and to examine the implications for Ireland. As noted already, the impact is large and so a core conclusion of this *Review* is that the on-going US imbalances pose a substantial threat to Ireland's economy.

Chapter 6 also includes an analysis of what would happen if the world slowdown, consequent on the US adjustment scenario, triggered a major fall in domestic housing prices. This scenario shows just how vulnerable the Irish economy now is to any downturn that has a major impact on the building industry. In this scenario where housing prices and output drop very substantially, the unemployment rate rises dramatically to over 10 per cent of the labour force towards the end of the decade.

In Chapter 7, we discuss the implications of these scenarios for public policy over the coming decade. While there are dangers for future development, prudent policy could minimise these risks and help ensure that the Irish economy realises its considerable potential.

[1] The *NiGEM* world model has been developed and maintained by the National Institute of Economic and Social Research in the United Kingdom.

1.3 Methodology

In the discussion of the *High Growth* scenario in Chapters 4 and 5 we emphasise the annual average change in key variables for each five-year period. This is because we feel that much wider margins of error attach to the forecasts for individual years than to the forecast trend growth rates. While we still present year-by-year forecasts out to 2012, this could give a misleading impression of the degree of precision that can be expected from such an exercise. In addition to the detailed numbers for the years to 2012, we have also included some summary measures for average growth rates for the subsequent decade. Obviously, there can be even less precision about such numbers than for the current decade, but these numbers are useful in illustrating important structural changes that are likely to occur in the economy. We do not feel it sensible to include numbers for the period after 2015 for the *High Growth* scenario.

As discussed in Appendix 1, our forecasting record, while better than average, is still not perfect. As a result, in preparing our forecasts we have examined a number of scenarios reflecting the range of uncertainty that surrounds our forecast of the potential output growth 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 three 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. 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 forecasts are to changes in different 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 years, 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*[2] macroeconomic model has been used for fifteen years in preparing successive *Medium-Term Reviews*. The latest version of *HERMES* has been re-estimated using data from *National Income and Expenditure*, 2003. A limited calibration to *National Income and Expenditure*, 2004, has been undertaken for the purpose of this *Review*. The forecasts for 2005 and 2006 are based on the Autumn *Quarterly Economic Commentary*. Appendix 1 of the last *Review* provided a description of the key mechanisms in that model.

While any forecast involves many assumptions that rely on the authors' judgement, this model is an essential tool in ensuring the coherence of the resulting forecast. In addition, the model is an indispensable tool for undertaking the kind of sensitivity testing we have used extensively in this *Review*, and in developing a range of scenarios that are internally consistent.

[2] Homer in the *Odyssey* referred to the god *Hermes* as "the green-eyed giant-slayer".

2. WHAT DRIVES THE ECONOMY?

2.1 Introduction

In recent years much has been written on the successful convergence since 1990 of Irish living standards to those of the best performing EU member states. Previous *Reviews* have dealt with this topic, considering the driving forces behind this transition (in particular, ESRI, 1999 and ESRI, 2001). While there is a considerable degree of consensus on the factors underlying the apparent success, summarised in Honohan and Walsh (2002), there still remain significant areas of controversy. One element of this controversy is whether the story of the Irish economy over the last fifteen years is best seen as belated convergence due to the reform of policies that had previously prevented convergence (for example Ó Gráda, 2002) or, alternatively, whether the success derives from an especially efficacious policy stance adopted in Ireland (Barry, 2003). While there are elements of truth in both approaches, successive *Reviews* have leant more towards the former, "belated convergence", approach.

The purpose of this chapter is to examine three areas of the economy where rapid changes have occurred over the last decade and where research suggests that the future behaviour of the economy may be rather different from the past. Understanding this changing economic environment is an essential first step in formulating scenarios for the likely future development of the Irish economy over the coming decade. The future will not be the same as the past!

The first area of change, which we consider in Section 2.2, is the underlying sectoral structure of the economy. As the economy moved from being one of the most closed in Western Europe in 1960, to being one of the most open in 1990 there was a major shift in its underlying structure. Whereas in 1960 the bulk of the goods that were consumed in Ireland were made in Ireland, by 1990 most of the goods consumed were imported. Since 1990 that trend has slowed and even seen a small reversal. The counterpart to this increasing openness was the dramatic growth in exports as a share of output, substantially underpinned by the inflow of foreign direct investment into manufacturing.

The characteristics of the goods exported also saw major changes. In 1970 exports were dominated by agricultural products with a high share of domestic value added. By contrast, in the 1980s agricultural exports were diminishing rapidly in significance and the export of manufactured goods, which had a low share of domestic value added, had begun to grow rapidly. Since the late 1990s this pattern has begun to evolve so that today, services are the fastest growing category of exports.

Recent changes in the structure of the economy suggest that the historically low domestic multiplier may be stabilising. The rising importance of services in total exports implies a slightly higher multiplier impact from exogenous changes in domestic activity. Furthermore, the pattern of personal consumption for goods and services has witnessed a big change in recent years, with services (which have a relatively high domestic value-added content) accounting for a growing share of total expenditure. In addition investment in Ireland now accounts for a very high share of national income and expenditure. Housing, which now accounts for almost half of the very high

volume of investment, has a high domestic value added share. Thus investment in housing, with a low leakage through imported inputs, has a major impact on economic activity.

The changing sectoral structure of output also has important implications for what will drive growth in the future. The prospects for the agricultural sector, which so dominated the Irish economic history of the 20th century, are now of little significance for the future well being of the economy. Manufacturing, which played such an important role in fuelling growth in the last quarter of the 20th century, is now showing signs of "tiring". Instead, as in many of the other most developed world economies of today, the services sector is taking up the "baton" driving growth. For any one who harks back to the mercantilist world of the past such a development would seem unsustainable. However, the dramatic growth in services exports, now accounting for almost a third of all exports, shows that such a model of economic development is potentially sustainable for the future.

The second area where there have been major changes is in the labour market. Demographic change has played a key role in making Ireland a unique and exciting economic story. The legacy effects of past decisions by individuals in the fields of fertility and migration will continue to pattern demographic developments for at least the next half century. For the coming decade the demographic drivers are already fairly predictable (with the exception of migration). These drivers will be very different from what they were over the last twenty years, with a change in the age structure of the population, a further rise in female labour force participation and considerable immigration. These issues are considered in Section 2.3

The Irish labour market has always been one of the most open in Europe with major flows of labour out of it in the past and, more recently, very large net inflows. This has meant that labour supply has been very elastic – responsive to real after tax wage rates and to unemployment rates. The full implications of this for public policy were not completely understood in the past and even today research is still throwing new light on how the labour market behaves. Section 2.4 examines the changing characteristics of the labour market. It argues that the behaviour of the market is likely to be rather different to what it was in the past, not least because of the success in maintaining the economy close to full employment since the end of the 1990s.

Examining these three drivers of change in the economy provides an essential backdrop to the rest of the *Review*. Whether the changing structure of the economy will provide the basis for stable and sustainable growth will depend on how the economy adjusts to change. It will require an exceptionally flexible labour market to handle the eventual reallocation of resources away from building. Also, if the growth in the economy is to be sustainable the shift to exports of services will have to continue. The external competitiveness of the economy will be affected by new factors and a failure to adjust to this changing world could see the sustainability of growth called into question.

2.2 Living High on Services

2.2.1 BACKGROUND

There is considerable uncertainty and even disbelief that the Irish economy could continue to expand through growth in the services sector, with the manufacturing sector playing a less significant role. To some extent this view stems from a mercantilist approach to economics – a feeling that services are not "true" output. However, some of the scepticism also stems from a more sophisticated understanding of how the economy works. There is a concern that, without a continued increase in manufactured exports to leverage growth elsewhere in the economy, the improvement in domestic living standards will eventually be constrained by the balance of payments: the increased flow of

goods which consumers will demand will not be affordable unless we can produce goods that foreigners, in turn, will demand.

There are three areas where the change in the structure of the economy has altered the impact and role of manufacturing and services exports as drivers of economic growth in Ireland:

- First, the import content (including profit repatriations) of exports of goods is high relative to the import content of traditional services exports. This means that euro for euro services exports provide a bigger injection into the domestic economy than do exports of goods.
- Second, the terms of trade have moved continuously against the price of goods. This is reflected in the fact that merchandise export and import prices have risen much more slowly than the price of services trade, of domestically produced services, and also of domestic output. This means that the purchasing power of services output, measured in terms of internationally traded goods, has risen over time.
- Finally, the import content of household expenditure, in terms of both consumption and investment, has fallen. The most significant change has been the huge increase in household resources devoted to investment in housing – a product with a very low import content. Rising incomes have, through an accelerator effect (Duffy, 2002 and Murphy, 1998), generated a big increase in housing investment. To a lesser extent demographic change and rising incomes has resulted in an increase in the share of consumption going on services, as the income elasticity of demand for services tends to be higher than for goods. As both services and housing investment tend to have relatively low import contents, this has increased the domestic multiplier effects of injections to the economy from the growth in net exports.

As a result of these changes, which will be discussed further in Section 2.2.2, the effect of external stimuli on the economy, such as a growth in net exports, has been substantially enhanced in recent years.

2.2.2 THE IMPORT CONTENT OF EXPORTS

The Irish economy is very open. Following the moves to liberalise trade that began in the 1960s, the Irish economy became more reliant on foreign markets both for the sale of its products and as a source for the purchase of foreign goods and services. Underlying this change in structure was a major rise in the propensity to import out of final demand, especially out of consumption.

Table 2.1 shows how much of a unit of each component of final expenditure is derived from imports, either directly through the import of final products or indirectly through imports embodied in goods and services that are produced domestically.[3] Following the initial phase of trade liberalisation that occurred in the 1960s, the composition of total consumption changed relatively rapidly, with the proportion of the total accounted for by imports increasing significantly from 27.7 per cent in 1964 to 34.5 per cent in 1975, before edging up further to 35.7 per cent by 1985. Since then, however, there has been a reversal of this trend, so that in 1998 the import content of consumption, at 33.8 per cent was lower than in 1975.

[3] These estimates are taken from Curtis and Fitz Gerald (1993) and McCarthy (2005). They use successive input-output tables for the Irish economy to calculate the direct and indirect import content of a unit of each component of final demand. These numbers represent the average import contents for the years in question.

Table 2.1: The Import Content, Direct and Indirect, of Final Demand

	1964	1969	1975	1985	1998
Consumption	27.7	29.5	34.5	35.7	33.8
Food & Drink	NA	21.9	28.3	29.0	41.1
Clothing & Footwear	NA	45.4	59.7	65.2	57.5
Govt. Current Expenditure on Goods & Services	8.0	9.0	10.4	8.1	15.5
Building Investment	25.5	23.9	26.3	23.4	26.4
Machinery & Equipment Investment	73.2	73.6	70.9	69.0	62.6
Agricultural Exports	18.6	22.0	19.0	31.1	42.0
Industrial Exports	44.7	40.0	46.5	49.8	53.1
Services Exports	24.0	NA	NA	28.7	41.9
Final Demand	NA	NA	33.9	37.2	42.8

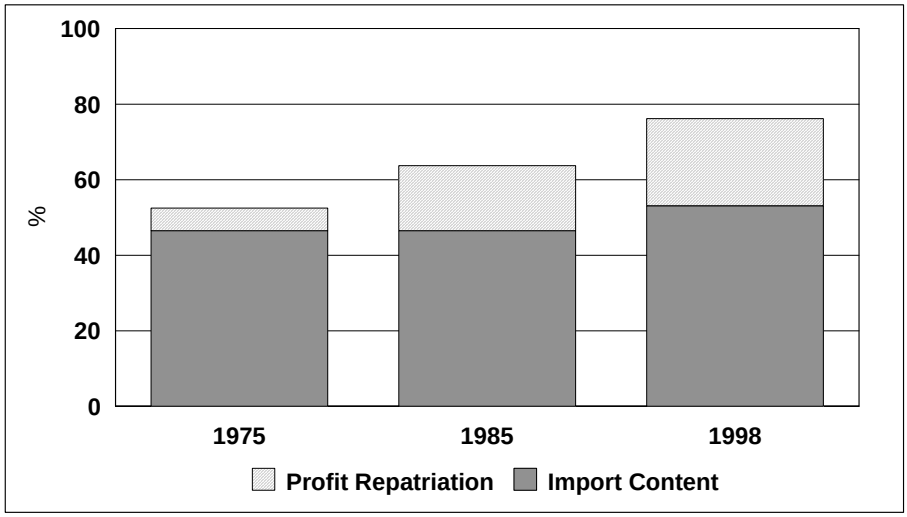
This reduction is primarily due to the change in the composition of consumption at the margin and it reflects the effects of differing income elasticities of demand for goods and services. The income elasticity of demand for services is on average higher than for goods, so that the strong growth in income in the Irish economy in recent times has led to a higher share of services in total consumption. Since goods are much more import intensive than services, this has led to a fall in the import content of a unit of consumption, as is evident in Table 2.1.

The import content of government expenditure has risen over time; in 1985 imported goods and services accounted for 8.1 per cent of government expenditure, much the same as it was in the 1960s. However, by 1998 the import content of government expenditure was 15.5 per cent, almost double the 1985 figure.

In the case of other investment, largely machinery and equipment, the import content in 1998 was 62.6 per cent, significantly lower than in 1985. While this reflects some increase in domestic sourcing of capital goods the primary reason for the decline is the increase in the share of indirect taxes in the cost of a unit of non-building investment. Investment in building and construction has shown a different pattern with the total import content of building investment still only 26.4 per cent in 1998. This was very similar to what it was in the 1960s, and it is much lower than the import content for total consumption. Thus the allocation of a very large share of household income to investment in housing has substantially reduced the average import content of the combined outlays by the household sector on consumption and investment. Given the relatively low import content and the relatively high domestic value added content in the building and construction sector, this means that a unit of investment in building and construction has a much bigger multiplier effect on the domestic economy than a unit of investment in machinery and equipment.

All components of exports have shown an increase in import content since 1969 with the most significant increase occurring in agricultural exports between 1975 and 1998, when the total import content more than doubled from 19.0 per cent to 42.0 per cent. However, this change is somewhat misleading as a significant part of the increase in agricultural exports related to food processing, including the processing of cola concentrates. In addition, the statistics on agricultural exports are affected by the extent of the distortion in the value of these exports due to EU subsidies.

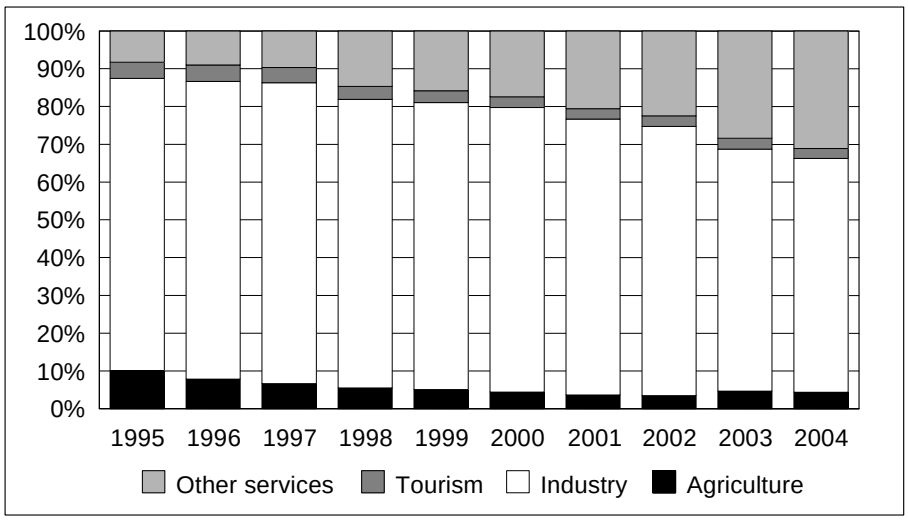
Figure 2.1: Leakage from a Unit of Industrial Exports



With regard to industrial exports, even in the 1960s over 40 per cent of a unit of industrial exports was accounted for by imports. This share rose steadily over the 1970s and the 1980s and by 1998 more than half of the value of industrial exports was sourced abroad. This figure still substantially overestimates the underlying domestic value added from a unit of industrial exports as it takes no account of profit repatriations. In 1998 profit repatriations from the manufacturing sector amounted to around 23 per cent of all exports, up from 17 per cent in 1985. When this factor is taken into account the combined leakage from a unit of industrial exports rose from 67 per cent in 1985 to 76 per cent in 1998 (Figure 2.1).

For services exports (excluding tourism) the import content has risen from 29 per cent in 1985 to 42 per cent in 1998. At the same time the share of such exports in total exports rose from 11 per cent to around 15 per cent in 1998. Since then there has been a further dramatic increase in this share to over 33 per cent by 2004 (Figure 2.2). As with industrial exports there is probably a significant share of the value added from this component of final demand which flows out of the economy as profit repatriations. Nonetheless, the domestic value added from this type of exports is significantly higher than for industrial exports.

Figure 2.2: Composition of Exports



The very rapid growth in services exports is further illustrated in Table 2.2. The three big components of total services exports in 2004 were insurance, computer services and business services. These three were also among the fastest growing categories of services exports in the period 1998 to 2004, growing at an average annual rate of over 20 per cent a year. If services exports continue to grow much more rapidly than exports of goods in the future, they will play an ever-increasing role in driving the economy. While the import content of such exports was significantly lower than for industrial exports in 1998, exports of both computer services and of insurance are likely to result in significant profit repatriations.[4]

Table 2.2: Services Exports, 1998-2004

	Share of Total, 2004	Change in Value, 1998-2004, %
Transport	4.5	7.3
Tourism and Travel	8.2	5.9
Communications	1.8	18.2
Insurance	19.4	23.3
Financial Services	9.6	23.9
Computer Services	35.5	22.0
Royalties/Licences	0.4	-6.2
Business Services	19.3	23.2
Trade Related	7.7	85.4
Operational Leasing	4.9	22.4
Miscellaneous Business Services	6.7	11.2
Other Services Not Elsewhere Stated	1.4	20.6
Total	100.0	18.9

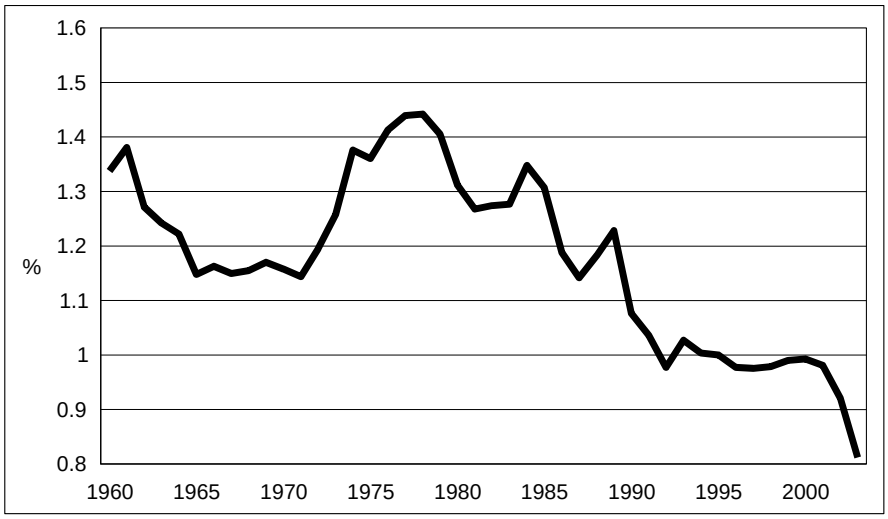
In summary, the import content of final demand has increased steadily since the 1960s to an estimated 42.8 per cent by 1998. This increase was to a large extent driven by the changing composition of final demand over the period, and in particular by the rise in the exports share of GNP. The growing importance of services in total exports and total consumption, together with the very strong growth in building investment in recent years, all point to a compositional shift towards a relatively lower import content of final demand.

TERMS OF TRADE FOR GOODS AND SERVICES

Over the last twenty years there have been very different patterns observed in the movement of prices of goods and services. In the case of domestic value added, the price deflator for the industrial sector rose by an average of 2.6 per cent a year over the twenty years to 2002, whereas for GDP as a whole, the rise in the deflator was 4.3 per cent a year. In the case of market services the rise was 6.3 per cent a year. This meant that over time those working in the industrial sector had to produce an ever-increasing quantity of goods just to buy the same volume of services. By contrast, producers in the services sector generating the same volume of services as twenty years ago could enjoy a much higher standard of living in terms of goods purchasable with their enhanced incomes.

[4] In the case of the "computer and related activities sector" 85 per cent of the value added in 2003 was accounted for by foreign owned firms while 63 per cent of value added was accounted for by profits (CSO: *Census of Services, 2003).*

Figure 2.3: Relative Price of Industrial to Service Exports



This pattern is also reflected in the case of exports. Figure 2.3 shows the movement in the deflator for industrial exports relative to that for exports of services over the last forty years. Since the late 1970s the services export deflator has risen significantly more rapidly than that for industrial exports; the services exports deflator rose by 3.6 per cent a year in the twenty years ended 2001 whereas for industrial exports it rose by only 2.3 per cent a year. The terms of trade moved against goods and in favour of services over that period.[5] This trend is replicated throughout the developed world. The production of goods generally involves a lower share of educated labour than for much of the output of the services sector. This, together with the greater tradability of goods, has seen output of goods shift continuously to less developed economies where labour with limited education is cheapest. The developed economies have specialised into services production, including tradable services, and the production of goods involving skilled labour. This has allowed the price of goods (increasingly produced in less-developed economies) to fall relative to the price of services. In turn, the differential returns have encouraged firms in developed economies to specialise into the production of increasingly valuable services.

For Ireland, the continuing fall in the real value of goods exported means that the economy has to steadily increase its sales abroad to keep purchasing power constant. Where services can be exported they are generally likely to hold their value to a much greater extent in the medium term. This means that while industrial exports continue to be much more important for the Irish economy than for many other developed economies, it would not be surprising to see a greater specialisation over time into production of services for export. Such exports will play an ever-increasing role in sustaining Irish growth.

2.2.3 HOUSEHOLD SECTOR SAVINGS, INVESTMENT AND THE MULTIPLIER

The household savings ratio is an important variable in understanding the behaviour of any economy. If aggregate domestic savings are inadequate to fund investment this will result in a balance of payments deficit. As discussed in the next chapter, the current low savings rate in the US will probably need to change if the US is to move onto a more sustainable growth path. The next Chapter also considers how a change in the savings behaviour by German

[5] Because of the difficulty in data collection the services exports deflator may not be a very reliable series. Originally it was deemed to be the deflator for consumption.

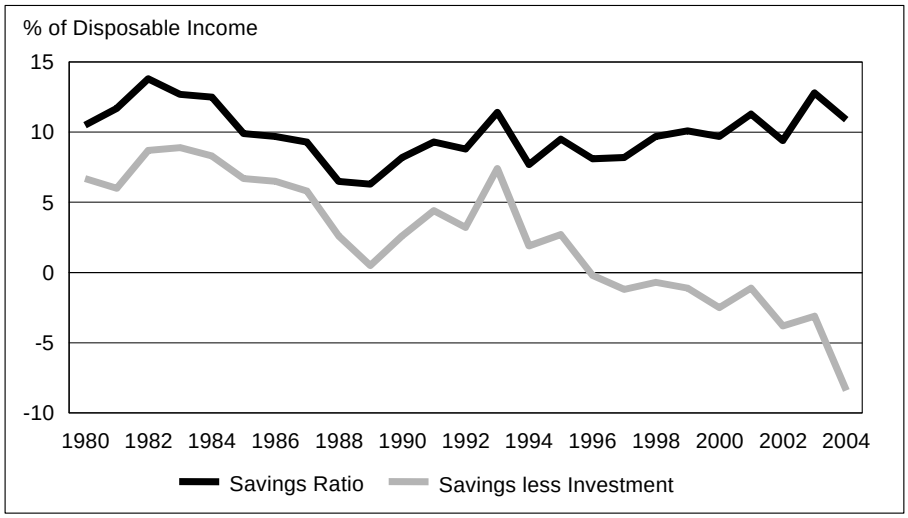
households would impact on the German economy in the short-term. In Ireland, the personal savings rate has been maintained at quite a high level over a sustained period.

The personal savings rate plays a role in determining how an economy reacts to external shocks. Where, for example, exports rise, leading to higher employment and incomes, the extent to which households spend their income will determine the indirect effects of the shock on the economy. In the short run the higher the savings ratio, the lower the multiplier effects of an injection of money into an economy.

The household savings ratio is calculated by subtracting household consumption from household disposable income and expressing the resulting savings as a percentage of disposable household income. Figure 2.4 shows the trend in household sector savings over the last twenty-five years. However, if private investment in housing (and agriculture) is treated as being an expenditure out of household personal disposable income, a rather different pattern emerges. As shown in Figure 2.4, today the household sector is spending more than it earns on consumption and housing, resulting in an increase in the sector's net indebtedness (or a fall in its net asset position).

Since 1980 the personal savings ratio has fluctuated around 10 per cent of disposable income, indicating a continuing relatively high savings rate. However, the massive growth in investment in housing since the mid-1990s has moved the household sector from a position as net saver, lending to the rest of the economy and abroad, to one where it is borrowing at a very high rate. While twenty-five years ago a unit increase in personal disposable income would have resulted in a less than unitary increase in household outlays, this is no longer the case. Today the outlays, when housing is included, may rise by more than the increase in income. While this is not sustainable indefinitely, it is clearly sustainable (if not desirable) for some time to come.

Figure 2.4: Household Savings and Investment



The models developed of the Irish housing sector suggest that a major driver of such investment in the short term is the rise in personal disposable income (see Duffy, 2002 and Murphy, 1998). Generally, the income elasticity of demand for housing is estimated at greater than unity resulting in a substantial accelerator effect. Thus when using a simple model of the multiplier response of Irish demand to an external injection, it is probably appropriate to treat housing investment as being similar to consumption – responding to any rise in disposable income.

What this means is that the leakage for savings assumed in the traditional multiplier model, which was 10 per cent or 15 per cent over much of the last thirty years is zero (or even temporarily negative) today. A unitary increase in

income will lead both to a rise in consumption of 0.8 to 0.9 units and an additional increase in investment. This has the effect of enhancing the leverage effect on output (GNP) of injections of demand into the economy from external forces, such as increasing exports.

Table 2.3 contains a set of illustrative numbers for the propensity of the economy to import and to consume at the margin both in 1980 and in 2002. As argued above, the marginal propensity to consume, when defined to include investment in housing, has risen significantly in recent years so that today it could be considered to be temporarily close to unity. The result of this is to increase the multiplier effect of a unit increase in exports. Also, the marginal propensity to import out of consumption has fallen slightly in recent years. This has also served to increase the multiplier and hence the domestic impact of any increase in exports.

Finally, the import content of services exports is lower than for merchandise exports. A crude allowance is made for profit repatriations from services output in 2002, which would have been close to zero in 1980. On the basis of these purely illustrative numbers, the impact of a unit increase in services exports on the economy may be substantially greater today than it is for a comparable increase in the export of goods, as evidenced by the multiplier.

Table 2.3: Assumptions

	1980	2002
Marginal propensity to import out of consumption[6]	0.34	0.31
Marginal propensity to import out of industrial exports	.75	.75
Marginal propensity to import out of services exports[7]	.29	.62
Marginal propensity to consume	0.9	1.0
Multiplier – industrial exports	**0.6**	**0.8**
Multiplier – services exports	**1.7**	**1.2**

On the basis of the assumptions shown in Table 2.3, a crude "multiplier" is calculated for 1980 and 2002 for injections from the two types of exports (see Appendix 2.1 for details on the calculation of the multiplier).[8] These suggest that the move towards services exports will lead to a larger domestic value added injection per unit of exports. Of course in practice, the effects of any injection are likely to be more complex. For example, the higher the multiplier, the more likely it is to result in higher wage inflation and higher prices for non-tradables. Under such circumstances the effects on real activity would be very much reduced. However, these multipliers are useful in suggesting an order of magnitude for the effects of a change in industrial exports *relative to* a change in services exports.

2.2.4 IMPLICATIONS

The Irish economy has become increasingly more open over the past forty years, with a pattern of steadily increasing import leakages from both domestic demand and exports. However, recent changes in the structure of the Irish economy mean that the multiplier effects of injections of demand from exports are now greater than they were for much of the last thirty years, while

[6] Including housing.

[7] For 2002 it is assumed that profit repatriations account for around 10 per cent of services exports. However, at the margin it is likely to be much higher. Here we assume a figure of 20 per cent. This number is used for illustrative purposes. There is, as yet, no information on the extent of such outflows.

[8] This is a very crude calculation as no attempt has been made to use the appropriate marginal variables – marginal propensities to import and to consume. These can be very different from the averages.

the changing composition of consumption towards services and the growing importance of housing investment mean that the continuous rise in the import content of domestic demand may finally have reached a plateau.

The changing pattern of relative prices and the changing comparative advantage of the Irish economy mean that there are increasing incentives to specialise into services production, including production of tradable services. The much greater domestic input content of many types of services output means that, euro for euro, they are more valuable to the economy than exports of manufactured goods. While services exports with a higher domestic input content may still account for only a third of Irish exports, they are nonetheless very valuable. The significant increase in their share in future years envisaged in the forecasts in subsequent chapters could help sustain continuing growth in the economy.

These changes in economic structure help explain why it is realistic to expect that the Irish economy has the ability to continue growing over the coming decade, facilitated by increasing dependence on the production of tradable services. The model of the last twenty years, where the economy experienced exceptionally rapid growth in manufacturing output, was the exception to the experience of most other developed economies. In that model a very rapid growth in exports of manufactured goods was needed to leverage a significant growth in the domestic economy.

This changing structure of the economy does not mean that new investment in high-tech manufacturing is not needed. In order to simply maintain employment at its current level a constant inflow of projects is needed to replace those that close. However, it does suggest a need to refocus development policy more towards the services sector.

An increasing feature of all Ireland's exports, goods and services, is the key role played in the production process by skilled labour. In addition, investment in research and development (R&D) is likely to be a feature of firms that are successful in the future in the tradable sector. It is, therefore, of importance to develop an effective policy to promote R&D that enhances the capacity of the economy to grow. This theme is taken up again in Chapter 7.

Looking forward it is likely that the Irish economy will grow to look much more like other highly developed economies in the world. It will see the manufacturing sector accounting for a falling share of domestic value added and a falling share of domestic employment. This should not be seen as a failure. Rather it is part of the normal process in a mature developed economy.

2.3 Demographic Structure

The Irish demographic profile is unique. It is characterised by a relatively young population with approximately one-fifth of the adult inhabitants in the 15-24 year age cohort. Such a favourable position means that the problems caused by ageing populations in many other EU and OECD countries are not as prevalent in Ireland today. This benign situation is the result of the interplay of a number of factors in the latter half of the 20th century, among which high birth rates and substantial migratory flows were the most important. However, the favourable structure of the population looks set to deteriorate in the long term, as the now relatively young population ages. As these structural changes occur they will have an important effect on the potential growth rate of the economy, mainly through their effect on labour supply and dependency ratios. It is thus pertinent for policy-makers to incorporate such effects into medium- and long-term plans (Barrett and Bergin, 2005). However, in the time horizon covered by this *Review* the population structure will remain broadly favourable.

Figure: 2.5: Population Structure

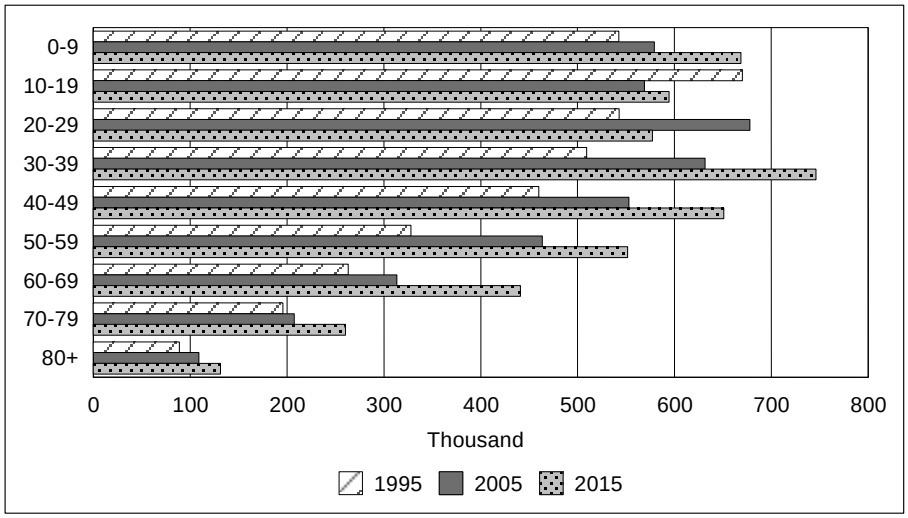
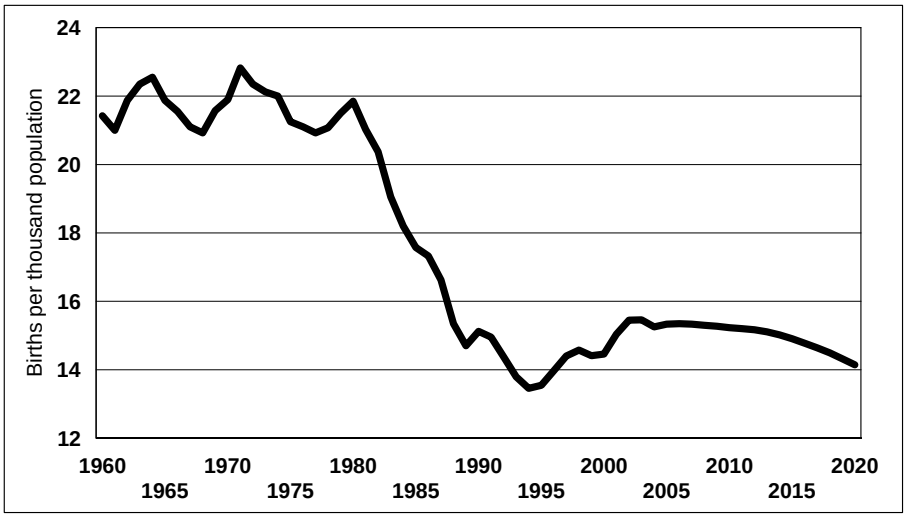


Figure 2.5 highlights the changes that have occurred and are set to occur in the population structure over the twenty year time frame, 1995 to 2015. The snapshot view of the population in 1995, 2005 and 2015 indicates the decreasing number of persons in the younger age cohorts over time. In 1995, over 40 per cent of the population were in the 0-24 year age category. In 2005 this percentage is forecast to fall to 36.2 per cent and in 2015 it will fall further to 33.1 per cent. At the same time, the numbers in older age cohorts are forecast to increase; in 1995, 11.4 per cent of the population were in the 65+ age cohort; in 2005 this percentage stabilised at 11.2 per cent but in 2015 it is forecast to rise to 13.0 per cent. While the rise in this statistic does not portend any significant increase in old-age dependency in the near future, Figure 2.5 does show that there will be a serious rise in dependency in the decades after 2020.

BIRTH RATE

The Irish birth rate has undergone significant change over the last half century, and this is one of the main factors accounting for the changing demographic profile in Ireland today. The path of change can be disaggregated into three distinct time periods, as evidenced in Figure 2.6; the first period, which was characterised by a very high rate, runs from 1960 to 1980. During this time the birth rate increased from 21 births per thousand in 1960, peaked at 23 births per thousand in 1971 and averaged 22 births per thousand over the whole period. These high birth rates account for the current large proportion of the population in the younger age cohorts. The second period ran from 1981 to 1989, during which time the birth rate experienced a marked decline, falling to a low of 15 births per thousand in 1989. The final period saw the birth rate fall to a record low of 13 per thousand in 1994 before rising slowly over the remaining years. Over the next decade, our forecasts suggest that the birth rate will level off at approximately 15 births per thousand of population. This means that in years to come, there will be relatively fewer persons in the younger age cohorts, provided there are no offsetting increases caused by migration.

Figure 2.6: The Birth Rate



The births are forecast on the basis of a fairly constant Total Fertility Rate (TFR) of around 1.9.[9] In addition to the change in the birth rate itself, there have also been changes in the ages at which women are becoming mothers; research suggests that a large proportion of the female population are now becoming mothers later in life than in the 1970s and the 1980s. Such changes have important implications for the supply of labour; when this phenomenon initially took effect, it would have resulted in a once off boost to the labour supply, as those women who traditionally would have become mothers in their twenties instead became mothers in their thirties. This pattern is reflected in the changing pattern of female labour force participation.

The limited rise in the birth rate over the rest of the decade that we forecast reflects the rising number of women in their late twenties and thirties, the age at which women now typically become mothers; the population bulge of young people born in the 1970s is mirrored 30 years later as they themselves begin to have children.

MIGRATION

Migration flows have long played a crucial role in driving changes in both the population structure and the labour force. However, there have been wide fluctuations in flows over time, with some periods characterised by net emigration and others characterised by net immigration; economic research shows that these flows are sensitive to economic circumstances not only in Ireland but also in the main destinations where migrants traditionally go. However, this research was conducted at a time when most of the flows into and out of the country were Irish people. Generally it showed that people would work in Ireland for somewhat less (or at a higher unemployment rate) than in the UK. However, while the underlying processes will remain the same for non-Irish migrants, the sensitivity and speed of response to changes in the standard of living in Ireland relative to the source or destination countries may change. Thus, there is increased uncertainty about the migration figures generated by the model and included in the forecasts in the rest of this *Review*.

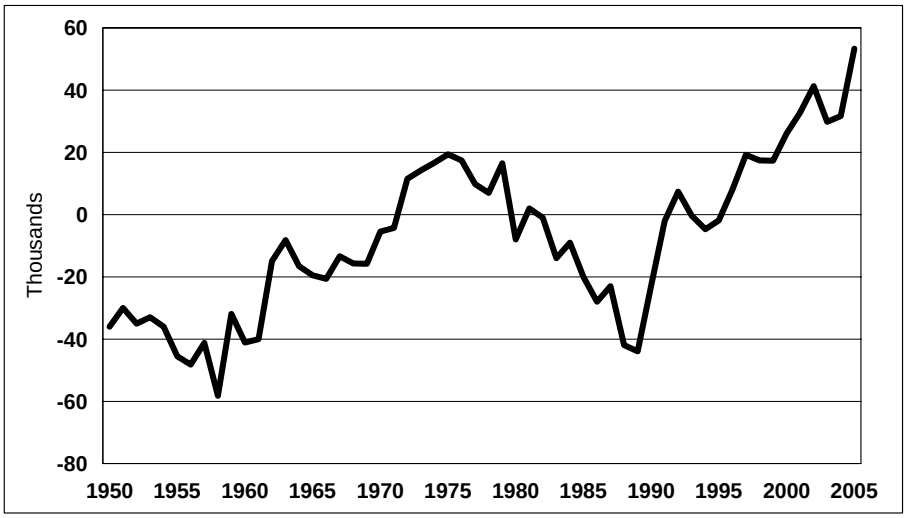
Figure 2.7 highlights the volatile nature of net migration flows in the Irish economy over the last half century. Following the high emigration rates of the 1980s, the improvement in Irish economic fortunes relative to its EU partners in the 1990s resulted in a reversal of this trend; the numbers immigrating

[9] This is an artificial measure that represents the potential number of children over her lifetime for a representative woman.

greatly outweighed the numbers leaving the country since 1996, resulting in positive net migration flows since then. Such flows have reached record highs in the year ended April 2005, when net migration was 53,000. These flows have acted to insulate the economy in a number of ways. In the 1980s the high negative migration flows meant that the rapid rise in unemployment was lower than it otherwise would have been, these flows accounted for over 3.0 per cent of the labour force in 1989.

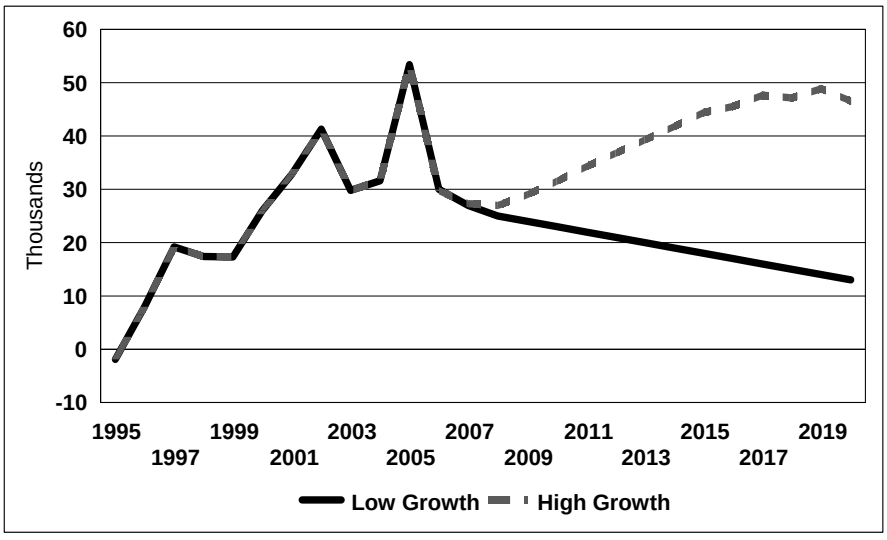
Conversely, the positive net migration flows of the latter half of the 1990s acted to insulate the economy from a constraint on labour supply at a time when the economy was growing rapidly and the unemployment rate was falling to what are effectively full employment levels. As already mentioned, these flows, coupled with high birth rates, have also acted to postpone the problem of ageing now faced by many other countries.

Figure 2.7: Net Immigration



Over the next decade, it is expected that net inward migration will continue. The magnitude of the inflows will depend on the likely growth trajectory of the economy, as discussed in subsequent chapters. The size and nature of these inflows will play an important role in the future growth of the economy and they will impact on the future demand for infrastructure, including housing.

Figure 2.8: Alternative Projections for Net Immigration



Should the economy continue to grow along the *High Growth* trajectory, described in subsequent chapters, immigration would continue at a high level as shown in Figure 2.8. However, should reality turn out to be close to the *Low Growth* scenario, consequent on a major readjustment in the US, immigration would gradually slowdown to around 10,000 a year. These two alternative scenarios would have very different implications for the economy generally and for the housing market in particular.

DEPENDENCY

A major factor in the changing fortunes of the Irish economy has been the evolution of the dependency rate. The economic dependency rate is defined here as the ratio of those who are not working in the population, including children and pensioners, to those who are working. Obviously, the lower the dependency ratio the more money that is available to individuals to spend out of their own income.

The combination of the fall in the birth rate since the 1980s and the high level of emigration in Ireland up to the 1960s, means that both young age and old age dependency has fallen over the last decade; the dependent population is set to decrease further from the currently low levels over the next decade, as shown in Figure 2.9. For decades this ratio was much higher in Ireland than in its EU partners. This placed a serious additional burden on an economy that was already under-performing in the 1950s and 1960s. With rising unemployment aggravating the situation the ratio peaked in the late 1980s. Since that date it has fallen dramatically.

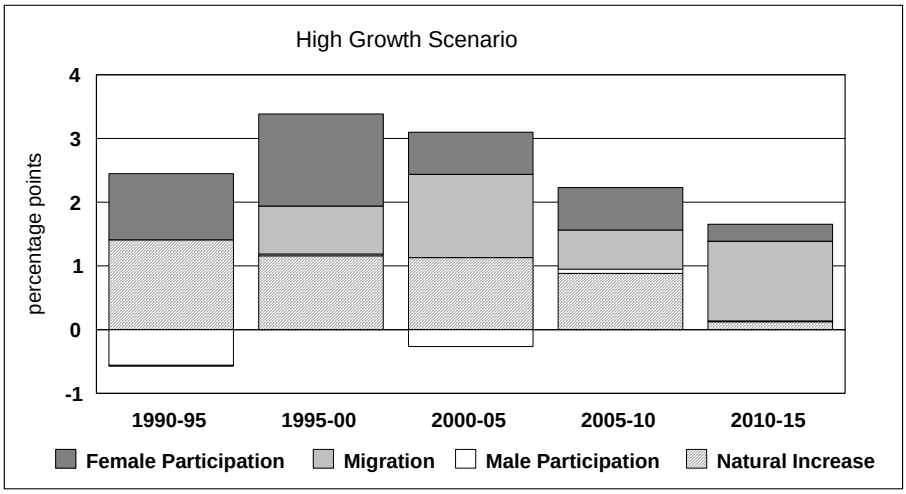
Figure 2.9: Economic Dependency Ratio

Today the economic dependency ratio is at an all time low in Ireland and, under the *High Growth* scenario, it is set to fall even further, stabilising in the next decade at a rate of between 1.0 and 1.1. This means that every individual who is working will only have to support one other individual who is not. It is only after 2020 that the economic dependency rate will begin to rise. This turning point will be postponed a few years as a result of the considerable level of immigration envisaged as part of this scenario. However, the postponement will be very short and the ratio will rise continuously from 2020 onwards. What this means is that Ireland faces an unusual demographic window of opportunity over the next fifteen years when dependency will be at an exceptionally low level. It will be important that public policy uses this demographic dividend to prepare for the long-term problems of rising old-age dependency over the following fifty years.

LABOUR SUPPLY

Labour supply is driven by three main factors: the natural increase in the population, participation rates and migration. Over the last decade, these three factors have combined to produce an expansion in the supply of labour in the economy, causing it to increase from 1044 million in 1995 to an estimated 1.96 million in 2005. Over the next decade, the rate of growth in the supply of labour is likely to decrease significantly, having important implications for the economy and for potential growth rates in particular. There is also likely to be a change in the relative weights of the different factors driving the growth in labour supply, with the role of the natural increase and rising participation rates decreasing over time and that of migration increasing.

Figure 2.10: Decomposition of the Growth in Labour Supply



The changes that have occurred in the demographic structure of the Irish economy since 1960 have had, and will continue to have important implications for labour supply.[10] The high birth rates up to 1980 have meant that there has been a rapid increase in the labour supply throughout the 1990s and into the current decade (Figure 2.10). This natural increase is estimated to have accounted for around a third of the expansion in the labour supply on average over the five year period 1995 to 2000. While the natural increase will continue to account for a significant proportion of the increase in the labour supply over the next five years, it will play a diminishing role.

The rise in female labour force participation played a very important role in the growth in labour supply in the 1990s. (About one half of the increase is attributable to the effect of the rising educational attainment of the female population.) In the second half of the decade, rising female participation contributed about 1.5 percentage points to the growth in labour supply. In the case of female participation rates, between 1995 and 2004, there were increases recorded in rates for all women between 25 and 64 years of age. Participation rates of the age cohort 15 to 24 years have decreased, reflecting a rise in participation in education. Labour force participation is high for women with high levels of education; the most substantial increases in participation over the last decade have occurred in women with a minimum education of Leaving Certificate level. The corollary is that labour force participation is low for women with low levels of education; females with only a primary level of

[10] For the last decade the large cohort of young people born in the 1970s has been replacing the much smaller cohort of people retiring who had remained in Ireland in the 1950s. However, after 2010 the smaller cohort of new entrants born in the late 1980s will be replacing the cohort that joined the labour market in the more favourable late 1960s and the 1970s when emigration had fallen from its 1957 peak.

education exhibit a particularly low participation rate and this trend has not shown much change since 1988.

Looking ahead over the next decade, the effect of increasing female participation rates on labour supply growth will be limited. This is because the increase already registered over the last ten years has meant that the pool of potential market entrants has become much smaller, with a large majority of the 25 to 64 year olds, particularly the younger members of this group, already in the labour force. Participation rates are now high by EU standards for women under 35 years, leaving little scope for further increase. It is thus likely that much of the increase will come from the older age cohorts, whose participation rates are relatively low by EU standards. In terms of the characteristics of participants who will account for the future, albeit relatively modest, expansion in the labour force, it is likely that the majority of these people will be relatively low skilled, as a good number of the skilled cohort are already working. Of course, any changes in future female participation rates will be affected by public policy; in particular, the participation rates of mothers will be affected by the availability and conditions of childcare; the participation of those with lower levels of educational attainment may depend on public policies related to up-skilling and further education as well as the interaction of the welfare system with the world of work.

The story of male participation rates is different from that of female participation rates; while increases in the numbers of females participating in the labour market added substantially to the supply of labour over the last decade, on average the participation of males subtracted from it. Over the next five years, male participation is expected to continue to make a negative contribution to the labour force, before moving to a situation where its contribution will be zero. The main cause of the negative contribution will be a fall in the participation rates of the under twenty-fives, reflecting rising participation in education in the case of the younger cohort.

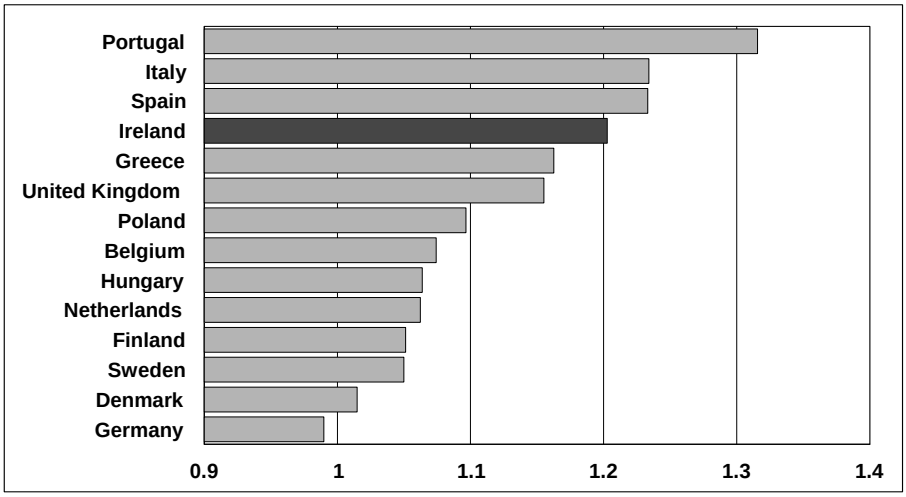
It is anticipated that immigration will contribute around one percentage point a year to the growth in the labour force over the rest of this decade. In the next decade, if the *High Growth* scenario were realised, this might have to increase further. It must be remembered that net migration is extremely sensitive to changes in economic circumstances in Ireland relative to the rest of the world. This means that forecasting this element of labour force growth with any accuracy is very difficult. However, it is likely that because of the high educational attainment of both emigrants and immigrants, the process of migration will adjust to offset much of the long-term labour market effects of future shocks to the economy.

2.4 Changing Characteristics of Labour Supply

It is instructive to distinguish between different types of labour to help our understanding of how the labour market operates and what factors will drive labour supply in the future. One way of making this distinction is to look at the skills level of the population, how it has changed and how it is likely to change over time. The rising educational attainment of the labour force, through investment in human capital, can affect the economy through a number of different channels: it can increase the productivity of the workforce; it can increase labour force participation rates especially those of women; and it can reduce the chances of unemployment. As migration is crucial in explaining how the Irish labour market functions it is also important to look at the skill distribution of migrants. Since the mid 1990s immigration of highly educated non-nationals and the return migration of well-educated Irish people, has substantially supplemented the rapidly growing domestic supply of high skilled labour. At the same time, the demand for labour in the developed world has been shifting towards high-skilled occupations and away from low-skilled occupations. The coincidence of these factors was very beneficial to Irish economic growth.

Over the last twenty years there has been major investment in education in Ireland. While free second level education was first introduced in 1967, the substantial rise in participation only really began in the 1980s, especially in the participation rate at third level. One measure of the investment in education is the ratio of the human capital index for the 55-60 year cohort of the population relative to that of the 25-29 year old cohort.[11] As can be seen from Figure 2.11 there was a 20 per cent increase in the average human capital index over the thirty year period from the 1960s to the 1990s. This represented a much bigger enhancement in educational attainment than was the case for the most developed EU member states. However, Ireland was beginning from a much lower base due to the relatively low participation rates a generation and a half ago.

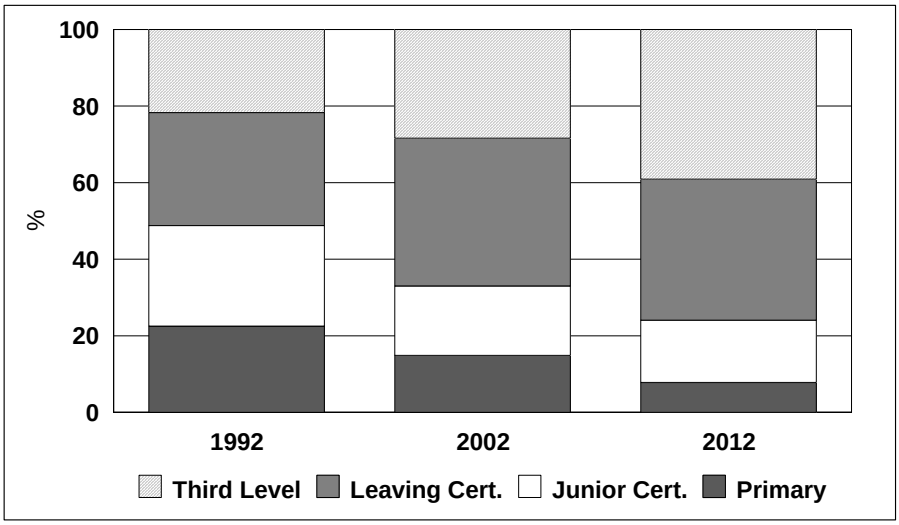
Figure 2.11: Investment in Human Capital-
Ratio of Human Capital Indices for 25-29s / 55-59s



As a result of this investment in human capital, the proportion of people in the labour force in Ireland with a minimum education of primary level only will decrease significantly over the next decade (Figure 2.12); in 1992, 22.5 per cent of the labour force had only a primary level of education, in 2002 this will have fallen to 14.9 per cent and in 2012, it is estimated that it will fall to 7.8 per cent. Similarly, in the case of those with only a Junior Certificate level of education, the numbers will fall from 26.3 per cent in 1992 to 18.1 per cent in 2002, before falling further to 16.3 per cent in 2012. The proportion of the labour force with Leaving Certificate education and third level education will increase, with the most significant upgrading in education levels over the time frame occurring in the proportion of the labour force with a third level qualification, increasing from just under 22 per cent in 1992 to almost 40 per cent in 2012.

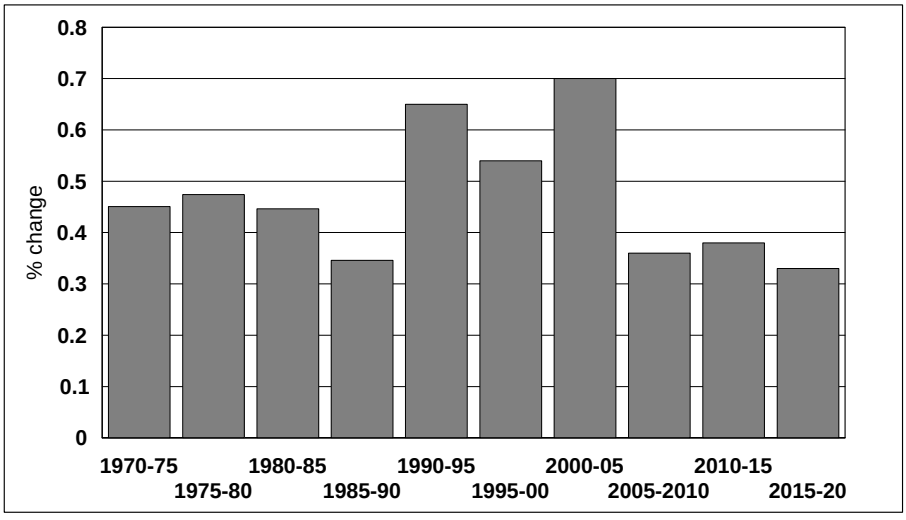
[11] For sources see Fitz Gerald, 2006, "Lessons from 20 Years of Cohesion" in S. Mundschenk, M. Stierle, U. Stierle-von Schütz and I. Traistaru (eds.), *Competitiveness and Growth in Europe: Lessons and Policy Implications for the Lisbon Strategy*, Edward Elgar. This index weights those with each of four levels of education by the estimated returns to the individual from having that level of education. Primary education has a weighting of one. The weights for Ireland are taken from Fitz Gerald, McCarthy, Morgenroth and O'Connell, 2003.

Figure 2.12: Educational Attainment of the Labour Force



In assessing the effects of each of the factors affecting labour supply, it is important to look at them in the context of education and skills since increases in human capital (increased skills and education) raise the growth potential of the economy.[12] The continuing enhancement of the educational attainment of the labour force which we forecast over the coming decade means that there will be a continuing contribution to productivity growth from this source. It will be only after 2020 that the growth in the average human capital of the labour force will fade out. As can be seen from Figure 2.13 the index of human capital grew at between 0.5 and 0.8 per cent a year over the period 1990-2005. While this does not necessarily translate into a similar increase in productivity, it does provide a useful guide to the potential long-term effects of the investment in education and training. While somewhat lower than in the last fifteen years, it is anticipated that as a result of investment already undertaken in education, the index will rise by around 0.4 per cent a year for the coming decade.

Figure 2.13: Growth in the Index of Human Capital



[12] See Romer (1986).

Recent research by Bergin and Kearney (2004) examines the impact of the increase in human capital that helped to transform Ireland in the space of two decades into a high productivity and low unemployment economy. This transformation takes place for a given profile of external demand, which changed dramatically over the period, captured in their model by an outward shift in the demand for Irish output and by skill-biased technical progress. This huge shift in demand is critical to understanding why the change in human capital actually mattered. Had demand remained unchanged then the consequences of the rise in human capital would have been a dramatic fall in the high-skilled wage, a negative effect on living standards and a rise in emigration.

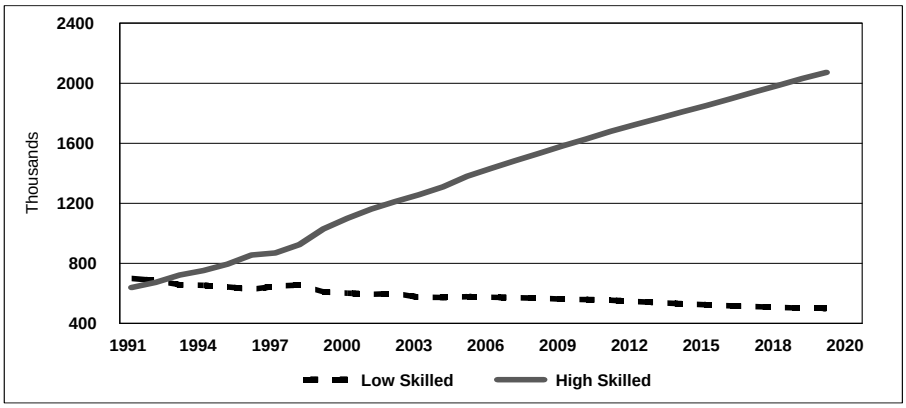
Their key findings suggest that the demand for Irish output is relatively sensitive to Ireland's international competitive position. The openness of the labour market, through migration, has accommodated this in the face of rising demand. By international standards, this open labour market gave Ireland a unique advantage and facilitated the rapid convergence to EU living standards witnessed in recent years. Within this context, the rise in human capital played a pivotal role in increasing output and productivity, slowing the growth in wage dispersion between high-skilled and low-skilled workers and in boosting employment. They find that had Ireland failed to invest in human capital over the past 20 years, GNP per capita would be over 20 percentage points lower. In their numerical simulations the growth in output per head is decomposed into the contributions from employment, participation and productivity. The results suggest that, with unemployed resources, the biggest benefit to the Irish economy in the 1990s from human capital accumulation was in terms of employment rather than productivity. With the economy now at or close to full-employment the biggest benefit in the future is likely to come from rising labour force participation.

The productivity enhancing effects of investment in education was felt much earlier in countries such as Germany and the Netherlands. For Germany the major benefit of its post-war investment in education occurred in the 1970s.[13] As shown in Figure 2.11 there has been little additional upgrading of human capital over the last thirty years in such countries. This goes some way to explain the superior growth performance of Ireland, Spain and Portugal in recent years.

The changing educational attainment of the labour force, together with its continuing rapid rise, has rather different implications for the supply of low skilled (Junior Certificate and less) and high skilled labour. As shown in Figure 2.14 the supply of skilled labour will continue to rise rapidly over the coming decade. However, in spite of the rise in labour force numbers, the numbers of people available for work with limited education will continue to fall.

[13] Koman, R. and D. Marin, 1997. "Human Capital and Macroeconomic Growth: Austria and Germany, 1960-92", London: Centre for Economic Policy Research Discussion Paper No. 1551.

Figure 2.14 Supply of High Skilled and Low Skilled Labour



In producing this projection of the supply of high skilled and low skilled labour we are implicitly assuming that the skill distribution of migrants is identical to that of natives. However, recent research by Barrett, Bergin and Duffy (2005) shows that migrants have a higher level of educational attainment than Irish nationals so assuming they have the same skills mix as Irish nationals may be inappropriate. Their findings on the characteristics of immigrants are summarised in Tables 2.4 and 2.5. Looking at immigrants who had arrived in the ten years up to 2003 and comparing them to Irish nationals (Table 2.4), it can be seen that immigrants into Ireland have notably high levels of education. While 16.7 percent of Irish nationals living in Ireland have degrees, 40 percent of immigrants have this level of educational attainment. This makes Ireland different to many other immigrant-receiving countries where immigration has been largely low skilled. Barrett *et al* do not explore the reasons underlying this "positive selection process". However, the findings on the increasing skill-intensity of labour demand in Ireland raises the possibility that the high-skill labour inflow is a response to this "pull factor".

Table 2.4: Distribution of Educational Attainment for Native and Immigrant Populations, %[14]

	Irish	UK	Rest of EU-15	American	Other	Total Immigrants
No formal/ primary education	13.7	6.7	1.3		6.8	5.5
Lower secondary	19.2	19.6	2.5	4.3	5.8	9.6
Upper secondary	27.5	18.8	24.9	14.9	23.3	22.0
Post Leaving	12.3	10.5	8.1		8.3	8.8
Third level – non-degree	10.6	15.8	14.5	6.4	12.9	14.0
Third level - degree or above	16.7	28.4	48.6	74.5	42.8	40.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	41,612	626	393	47	878	1,944

Source: Barrett *et al.* (2005).

Although immigrants into Ireland have high levels of education, these skills were not being fully employed. In Table 2.5, it can be seen that the distribution of immigrants and natives across occupations is similar, in spite of the large difference in educational attainment seen in Table 2.4.

[14] As we are now restricting the sample to labour force participants, cell sizes are getting smaller. For this reason, we need to be cautious in interpreting the figures within immigrant categories, especially the US category.

Table 2.5: Occupational Distribution of Natives and Immigrants (%)

	Irish	UK	Rest of EU-15	American	Other	Total Immigrants
Managers and administrators	17.7	16.8	9.1	22.4	6.9	10.5
Professional	10.5	14.5	15.2	22.4	10.7	12.9
Associate professional and technical	8.7	10.9	10.7	18.4	11.6	11.4
Clerical and secretarial	12.2	11.5	16.8	6.1	6.6	10.0
Craft and related	13.6	13.5	5.6	0.0	10.4	10.1
Personal and protective service	9.8	11.8	19.9	12.2	20.2	17.5
Sales	8.2	5.9	9.3	8.2	6.4	6.9
Plant and machine operatives	9.8	7.2	6.1	4.1	11.6	9.1
Other (includes not stated)	9.6	7.9	7.2	6.1	15.6	11.6
Total	100	100	100	100	100	100
N	41,831	643	428	49	1,108	2,228

Source: Barrett *et al.* (2005).

2.5 Conclusions

The economy has undergone significant transformation since the 1960s. In particular, there have been considerable changes in the sectoral drivers of growth, in the labour market and in the demographic profile of the economy. There has been a shift in the role of different sectors, with the services sector now being the main driver of growth in the economy and the manufacturing sector playing a less significant role. In the labour market, there has been a rise in participation rates and a reversal of the flow from a pattern of net emigration in the past to a period of sustained net immigration since 1996, having important implications for the supply of labour in the economy. There have also been notable changes in the skill composition of the labour force, with the number of skilled persons increasing over time and the number of low skilled falling, accompanying a rise in the stock of human capital in the economy. With regard to the demographic profile, the analysis presented here points to a deterioration after 2020, in the currently favourable demographic trends, which will have important implications for policy formulation going forwards.

Looking ahead, given the extreme openness of the Irish economy and its labour market, it is likely that further changes in structure will occur. Whether these changes will affect the potential of the economy to generate stable and sustainable growth will depend on how adaptable the economy is. The external competitiveness of the economy will be affected by new factors and a failure to adjust to these could see the sustainability of growth called into question.

The changes in demographics and the labour supply will continue to have a number of important implications for the Irish economy over the next decade. While the growth in the labour supply will be much less than it was in the 1990s, it will, nonetheless, remain quite strong well into the next decade.

The rising educational attainment of the population should increase the potential employability of the labour market participants, reducing the risk that future shocks could lead to a return to high levels of long-term unemployment. Past experience suggests that well educated labour market entrants will not remain unemployed in Ireland; they will either obtain employment in Ireland or in other parts of the EU. The increasing investment and participation in education will result in further improvements in the educational attainment of the labour force, which should positively affect productivity.

Migration has played a crucial role in labour supply growth in recent years and is likely to continue to be one of the most important factors in determining changes in labour supply in years to come. This calls into question the choice of GNP growth as a policy objective. In the context of immigration,

an increase in the size of the economy (GNP) does not necessarily imply an increase in average living standards for existing residents (GNP per head). In the rest of this *Review* we pay particular attention to changes in GNP per head. For this reason, attention needs to be paid to the question of what precisely is the policy objective for immigration.

While GNP per head is a better measure of welfare than GNP alone, there are other factors that affect the welfare of the population. One of these is the endowment of infrastructure, especially of housing. The limited endowment of infrastructure that Ireland currently possesses is affecting the standard of living in a manner that is not captured by GNP. For example, the poor endowment of public transport infrastructure leads to enhanced commuting times that impact negatively on welfare. To the extent that a higher population puts increasing pressure on the existing infrastructure this will reduce the welfare of the population in a manner not captured by the traditional measure of GNP. This additional "externality" from rapid growth must be considered in formulating policy for the future. Just because GNP rises, or even because GNP per head rises does not guarantee a welfare improvement of a similar magnitude.

Arguably the Irish economy had too big an endowment of infrastructure in 1960, reflecting a misallocation of resources over the previous decade.[15] However, today the economy shows all the signs of having "outgrown its clothes". Both private infrastructure in the form of housing, and public infrastructure in the form of public transport, roads, sewerage and water supply, and electricity transmission are all constraining growth. This constraint is reflected in very high prices for housing and high indirect costs for individuals reflected in rising commuting times. In turn, these costs are passed on to the business sector through the labour market. Indirectly, through the adverse effect on competitiveness of the cost of maintaining an acceptable life style in Ireland, an infrastructure constraint is operating to reduce Ireland's potential growth over the coming decade.

However, at some point in the future the current very high rate of investment in infrastructure will see the endowment of infrastructure catch up with the economy's needs. When this happens it will both free up major public and private resources for alternative uses, and it will also see a major shift in production within the economy, with a move away from the building sector to other sectors, especially services. Accomplishing such a transition in a limited time frame will require huge flexibility in the economy if the costs to individuals and to society generally are to be minimised.

[15] The over investment in railways over the previous century meant that Ireland had an excessive endowment of this form of infrastructure, the maintenance and operation of which was a major economic burden. This shows that merely providing such infrastructure is not necessarily an aide to future economic development.

APPENDIX 2.1: THE MULTIPLIER

The changes that have occurred in the structure of the Irish economy, as outlined in this chapter, have a number of important implications. Here we consider the issues discussed in terms of a very simplistic model of the economy, and the multiplier effects.[16]

The traditional basic economics formulation of a macro-economy can be characterised in a series of simple equations:

$$Y = C + I + G + X - M \quad (1)$$

$$C = bY \quad (2)$$

$$M = m(C+I+G) + nX \quad (3)$$

$$Y = bY + I + G + X - mbY - mI - mG - nX \quad (4)$$

$$Y(1-b+mb) = (I + G)(1-m) + X(1-n) \quad (5)$$

$$\frac{dY}{dX} = \frac{1-n}{1-b(1-m)} \quad (6)$$

Where:

Y	=	GNP
C	=	Consumption (here taken to include housing investment)
I	=	Investment (here taken to exclude housing investment)
G	=	Government consumption
X	=	Exports
M	=	Imports
b	=	propensity to consume
m	=	propensity to import out of domestic demand
n	=	propensity to import out of exports (including profit repatriations)

Equation (1) is the traditional national income identity. Equation (2) determines consumption as a function of income. Equation (3) determines imports as a function of domestic demand and exports. Equations (4) and (5) substitute Equations (2) and (3) into Equation (1). Finally, Equation (6) determines the impact of a marginal change in exports on GNP (Y). That response is referred to as the multiplier.

[16] The much more sophisticated *HERMES* model is used in our analysis in subsequent chapters.

3. THE EXTERNAL ENVIRONMENT

3.1 Introduction

As a small open economy, Ireland's expected performance is dependent on international economic events and the international economic outlook. Despite being a member of Economic and Monetary Union (EMU), the economy remains exposed to events outside the Euro Area due to the importance of Foreign Direct Investment (FDI), particularly from the US, and the links of the traditional manufacturing sector to the UK. Since the publication of the last *Medium-Term Review,* world growth accelerated to its fastest pace in almost thirty years in 2004. Although the world economy has slowed significantly this year, the short-term outlook remains buoyant. Global growth remains unbalanced, with growth in both the US and Japan rising well above trend last year, while the UK performed moderately well but activity in the Euro Area has remained sluggish.

There is substantial uncertainty about the outlook for the world economy over the medium term. The primary reason for this uncertainty is the large macroeconomic imbalances that are evident in the US economy. The magnitude of the current account balance has focused attention on its sustainability and at some point in the future the US economy will adjust and experience a slow-down in growth. However, considerable uncertainty remains as to the timing of the adjustment, whether it will occur gradually or sharply and the mechanism(s) by which it will take place. As a result, we are presenting two sets of forecasts, one in which the US economy does not adjust and continues to experience robust growth (the *High Growth* scenario), although remaining on an unsustainable growth path, and the second in which the US current account deficit declines gradually to a long-run sustainable level (the *Low Growth* scenario). Although the more benign *High Growth* scenario is more likely for the next few years, when the adjustment eventually takes place the US economy will switch to a lower growth path having negative implications for that economy and also for the global economy, including Ireland.

In this chapter we present medium-term forecasts for the three major economic blocks that impact on the Irish economy: the US, the Euro Area and the UK and then we draw out the major implications of this environment for the Irish economy.[17] In preparing the forecasts we have utilised a number of different sources (especially the National Institute *Economic Review*, July 2005). We used the National Institute of Economic Research (NIESR) July 2005 forecast as an 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. In carrying out these modifications and in constructing the forecast where the US imbalances

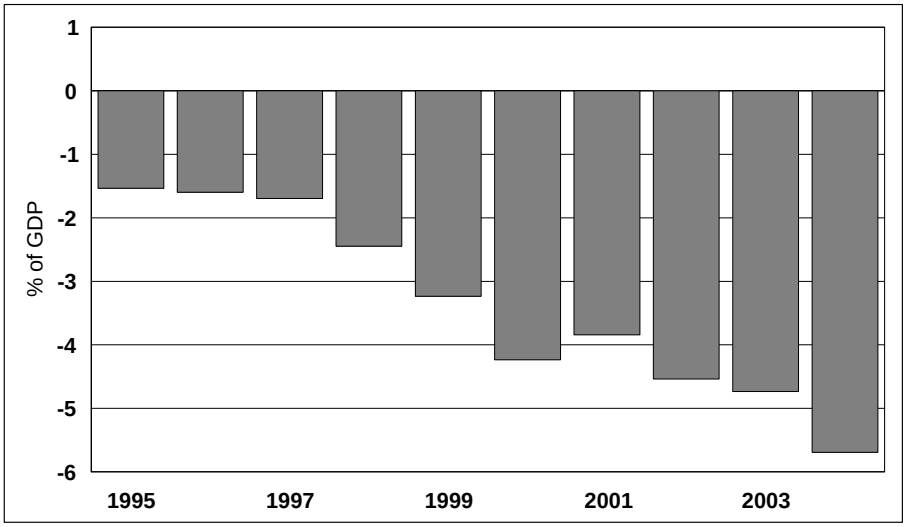
[17] In this chapter, forecasts are presented on an annual basis out to 2010 and on a 5-year annual average basis to 2015. We assume unchanged international forecasts post-2015.

are redressed we have used the NIESR Global Econometric Model (*NiGEM*) to produce our own "adjustment" scenario.[18]

3.2 The United States

Since the early 1990s the US economy has played an important role as the main driver of world economic growth and the main source of world demand. Despite a temporary slowdown following the terrorist attacks in September 2001, the US economy has experienced strong growth in recent years. However, considerable imbalances have arisen over the course of this expansion that give rise to concerns about the medium-term growth prospects for the economy. Most notably the US current account deficit has been widening and in 2004 the deficit stood at almost 6 per cent of GDP (see Figure 3.1). The size of the deficit has focused attention on its sustainability and it is becoming more widely accepted that the US economy will have to adjust at some time in the future.[19] Outgoing Federal Reserve Board Chairman Alan Greenspan recently noted "Of course, deficits that cumulate to ever-increasing net external debt, with its attendant rise in servicing costs, cannot persist indefinitely. At some point investors will balk at further financing".[20]

Figure 3.1: US Current Account Deficit



Source: OECD Statistical Compendium.

In order to understand the implications for long-run sustainability of the ever-widening external deficit in the US, it is instructive to examine the causes of the deficit. One way of characterising the current account balance is that it is the difference between national savings and national investment. During the second half of the 1990s savings sustained rising domestic investment (see Figure 3.2). However, since 2000 there has been a strong decline in the savings rate, largely attributable to a fall in public sector saving due to the growing fiscal deficit and a decline in household saving, albeit from a low base (see Figure 3.3). Two main factors explain the fall in the household savings rate. First, strongly expansionary monetary policy resulted in real interest rates falling by about 4 per cent between 2000 and 2004 making saving less attractive and facilitating borrowing for consumption purposes. Second,

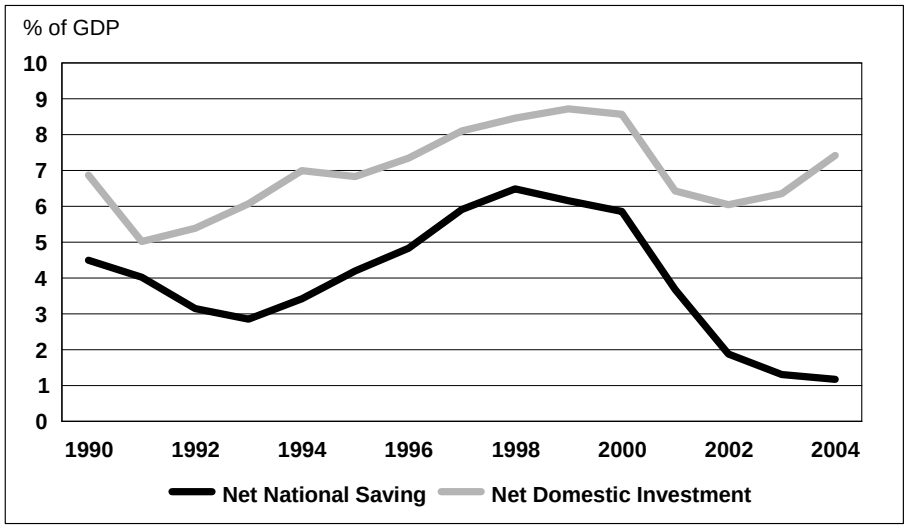
[18] We are very grateful to Ray Barrell and Ian Hurst of NIESR for their assistance in using the *NiGEM* model. The forecast remains the sole responsibility of the authors.

[19] See Mann (2003), Obstfeld and Rogoff (2005), Blanchard, Giavazzi and Sa (2005) and IMF World Economic Outlook, September 2005.

[20] Remarks by Federal Reserve Board Chairman Alan Greenspan, before the Banco de Mexico's 80th Anniversary Conference, Mexico City, November 14th, 2005.

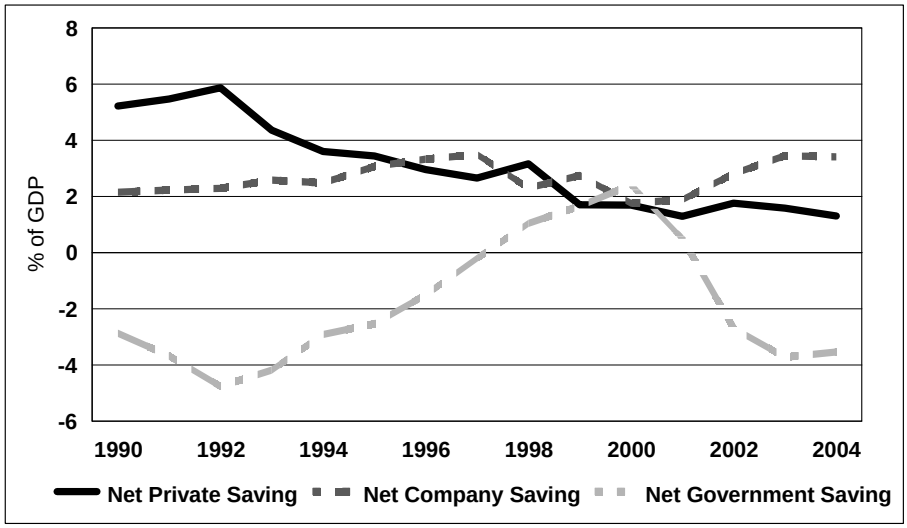
between 1997 and 2004 house prices have risen by about 7 per cent per annum and the associated wealth effect for homeowners has encouraged higher consumer spending.

Figure 3.2: US Savings and Investment as a Share of GDP



Source: Bureau of Economic Analysis.

Figure 3.3: US Saving by Sector



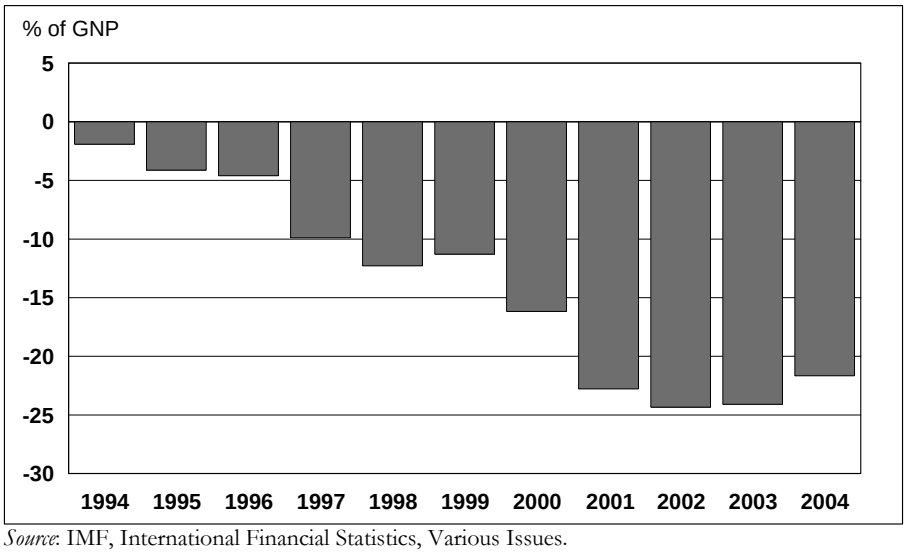
Source: Bureau of Economic Analysis.

The relative rise in US demand for imports compared to demand for its exports has been another important factor contributing to the current account deficit. This is partly explained by faster growth in the US than the Euro Area and Japan in the late 1990s and also by an earlier recovery following the slowdown in 2001. Between 1995 and 2001, the real effective exchange rate appreciated by about 16 per cent supporting the increasing demand for imports by the US. However, between 2002 and 2004 the real effective exchange rate depreciated by around 13 per cent, so one would expect this to negate, at least to some extent, import demand. Blanchard, Giavazzi and Sa (2005) argue that a change in preferences on the part of the US consumer towards foreign goods helps explain the persistent trade deficit.

A further driving force of the current account deficit has been the increase in the foreign demand for US assets.[21] Capital inflows to the US continue as long as foreign investors are willing to purchase US assets at the prevailing price and expected returns. Prior to the stock market correction in 2000, the massive rise in US stock prices increased the foreign demand for US equities. More recently central banks' demand for bonds, particularly from Asian central banks pursuing quasi-fixed exchange rate regimes, have maintained capital inflows into the US. The readiness of foreigners to invest in the US has helped to keep long-term interest rates low fuelling consumption in the US.

Foreign demand for US assets has led to a massive increase in the net external liabilities of the US. The Net National Investment Position (NNIP) of a country is the difference between the value of its external assets and liabilities. Figure 3.4 shows the deterioration of this balance over time. The US currently stands as the world's largest debtor nation and had a negative NNIP of around 22 per cent of GDP in 2004. Tille (2004) notes that only 35 per cent of US assets are denominated in dollars as compared to 95 per cent of its liabilities. This means that a depreciation in the US effective exchange rate increases the value of assets, while leaving the value of liabilities relatively unchanged. Gourinchas and Rey (2005) find that historically a depreciation in the dollar contributes about 30 per cent of the adjustment through the advantageous valuation effects on US assets. A substantial fall in the dollar is seen as one mechanism that will help restore balance to this situation.

Figure 3.4: Net International Investment Position



Source: IMF, International Financial Statistics, Various Issues.

The US cannot live beyond its means forever and at some point, either the negative NNIP and the costs of servicing that debt will become too great a burden on the US or else foreign investors may decide that they hold adequate US assets in their portfolios and stop purchasing them. A fall in the value of the dollar would temporarily improve the trade balance but may be insufficient to put the US current account back on a sustainable path. Obstfeld and Rogoff (2004) and others have argued that structural reform needs to take place in the US to counteract the causes of the deficit. Several leading academics have attempted to estimate the scale of the adjustment necessary to bring the US back on to a sustainable path. Obstfeld and Rogoff (2005) suggest that the real effective exchange rate needs to depreciate by about 30 per cent to bring the current account deficit back onto a sustainable path. They also argue that a change in domestic absorption is necessary for adjustment, not just a fall in the

[21] Blanchard, Giovazzi and Sa (2005).

dollar. Blanchard, Giavazzi and Sa (2005) also find that a substantial dollar depreciation is likely to occur over the medium term.

There are a variety of possible mechanisms that, separately or through some combination of them, could lead to an unwinding in the US imbalances:[22]

- An increase in the household savings rate. This could be triggered by a slowdown in the housing market in the US.
- A fall in US asset prices.
- A substantial tightening of US fiscal policy which would increase domestic savings.
- A major depreciation in the value of the dollar.
- Strong growth in the rest of the world which would increase the demand for US exports.

As there is no consensus about when the adjustment is likely to take place, the mechanism(s) by which it will take place and whether the adjustment will be gradual or rapid, it is difficult to take account of it in medium-term forecasts; yet it very much colours our view about the future prospects of the US economy. Due to this uncertainty, we present two alternative scenarios for the US going forward. In the *High Growth* forecast we assume that there is no adjustment to the US current account deficit.

The key forecasts for the US economy are presented in Table 3.1. Following the slowdown in 2000-2001, growth in the US has gained momentum and short-term prospects remain favourable. Our baseline forecast is for annual average real GDP growth of 3.1 per cent between 2005 and 2010. In the short-term, consumption is expected to remain a significant driver of growth; with much of the consumption growth itself generated by wealth effects from sizeable house price rises, as well as robust equity prices. This leaves the household sector very exposed to house price changes or sharp interest rate increases.

Our forecast for the dollar/euro exchange rate in the *High Growth* forecast incorporates a slight depreciation of the dollar; it is expected to average $1.29 over second half of this decade. A depreciation of the dollar should lead to higher inflation but as the depreciation is quite moderate it will put limited upwards pressure on the rate of price growth. The inflation rate, as measured by the consumer expenditure deflator, is expected to average 3 per cent growth between 2005 and 2010. The main focus of Federal Reserve policy in recent years has been to foster price stability while maintaining sustainable growth in output. The Federal Reserve reacted aggressively in response to the slowdown in 2000-2001 by cutting interest rates to fifty-year historical lows. By 2004 inflationary pressures started to build so the monetary authorities have responded by gradually increasing interest rates. Short-term interest rates are expected to gradually increase over the course of the decade and are expected to average 4.4 per cent over the 2005 to 2010 period.

Underlying this benign growth forecast is a continued deterioration in the current account balance, which as mentioned above, is unsustainable. Using the *NiGEM* model we simulated the impact of a gradual correction in the US. The scenario we examined is one in which the US government reduces its fiscal deficit and in which the household savings rate rises. The increase in personal savings could be triggered by a fall in asset prices, in particular house

[22] There has been much speculation that a major realignment of the Chinese renminbi, which is quasi-pegged to the dollar, could help redress the problems in the US. However, recent research shows that while an appreciation of the renminbi will lead to a fall in Chinese exports, Chinese domestic prices react very quickly and the real exchange rate moves back almost to where it was before such a change (EUROFRAME-EFN, Autumn 2005 Report). As a result, even if the Chinese authorities responded favourably to calls for them to aid the international adjustment process by adjusting their currency it would do little to solve the problem of the US balance of payments deficit.

prices. This is one of the many possible adjustments that could happen in the US. The effect of these changes is to produce a reallocation of resources within the US economy as envisaged by Obstfeld and Rogoff (2005). There is considerable uncertainty as to when this adjustment is likely to happen. For the sake of simplicity we have started our simulation in 2007, though this should not in any way be seen as being a forecast of the timing of such an event; if adjustment starts later it is likely to have more severe consequences. It is also possible that the correction could happen quickly, meaning that the impact on the US and the wider world economy would be more concentrated in the immediate two to three years after the adjustment.

Table 3.1: Forecasts for the US Economy

	2003	2004	2005	2006	2007	2008	2009	2010	2000-2005	2005-2010	2010-2015
					***High Growth* Forecast**						
					Per Cent				**Annual Average % Change**		
Real GDP Growth	3.2	4.4	3.9	3.9	3.3	2.9	2.8	2.7	2.8	3.1	2.5
									Annual Average		
Inflation*	1.9	2.2	2.7	3.9	3.1	2.7	2.7	2.8	2.1	3.0	2.8
Short-term interest rate	1.2	1.6	3.4	4.2	4.5	4.7	4.9	5.0	3.0	4.4	5.0
Exchange Rate ($ per €)	1.13	1.24	1.26	1.26	1.27	1.30	1.32	1.34	1.06	1.29	1.39
Fiscal Deficit (as a % of GDP)	-4.6	-4.3	-3.5	-3.7	-3.4	-3.2	-3.2	-3.2	-2.5	-3.4	-3.3
Current Account Balance (as % of GDP)	-4.7	-5.7	-6.6	-5.8	-5.4	-5.3	-5.4	-5.6	-5.1	-5.7	-6.3
					US Current Account Adjusts – *Low Growth* Forecast						
					Per Cent				**Annual Average % Change**		
Real GDP Growth					1.6	1.2	1.4	1.7			2.1
									Annual Average		
Inflation*					4.2	3.0	2.1	1.4			0.7
Short-term interest rate					6.2	5.7	5.2	4.6			3.9
Exchange Rate ($ per €)					1.37	1.42	1.46	1.50			1.55
Fiscal Deficit (as a % of GDP)					-2.6	-1.9	-1.3	-0.7			0.2
Current Account Balance (as % of GDP)					-5.0	-4.5	-4.3	-4.1			-3.9

*Consumer Expenditure Deflator.

The fall in the value of households' assets reduces their perceived wealth. Many households will react to this change by reducing consumption and raising their savings to rebuild their wealth. This would have a negative impact on domestic demand. There is an element of circularity here because the expectation of such a decline could actually be the trigger for, say a fall in asset prices. In addition, we have assumed that part of the US imbalances will be corrected with a fiscal tightening over the medium term. This means that taxes will slowly rise and/or expenditure will grow at a lower rate over the medium term. This heightens the negative impact on households because we assume the government does not intervene to try and kick-start the economy by adopting expansionary fiscal policies. Overall, this shock would have a serious negative impact on US growth, knocking around 2 percentage points off the growth rate in the short term.

As a consequence of the downturn in the US economy the dollar would fall by about 10 per cent compared to the *High Growth* forecast in the first four years after the shock leaving the exchange rate at $1.50 by 2010, $0.16 higher than in the *High Growth* forecast. The fall in the value of the dollar would lead to an upturn in US inflation in the short term. Measured by the consumer expenditure deflator, consumer prices could be around 1 percentage point higher in the first year of the shock as compared to the *High Growth* forecast. As a consequence of higher inflation the Federal Reserve would tighten

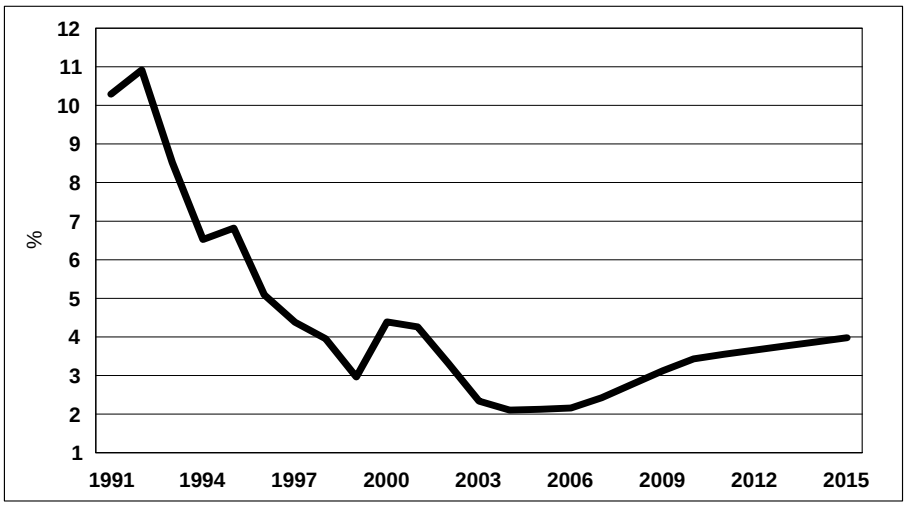
monetary policy in the short term providing a further negative impulse to growth. This helps explain why the impact on growth is more negative in the short term. The rise in US inflation would be temporary so in the medium term the Federal Reserve would cut interest rates again. In the medium term the improved competitiveness of the US economy, as a result of the depreciation of the dollar, coupled with the easing in monetary policy would stimulate the US economy so that it could grow by an average of 2 per cent per annum between 2010 and 2015, half a percentage point lower than in the *High Growth* Forecast. Underlying this scenario is a gradual improvement in the current account balance.

3.3 The Euro Area

Economic activity in the Euro Area has lagged behind the other major economies in the past number of years. Although growth is expected to remain subdued in the short term, the outlook for activity in the medium term is more positive, although we anticipate growth to remain slightly below potential. Real GDP growth is expected to average 1.8 per cent between 2005 and 2010 as compared to annual average growth of 1.3 per cent between 2000 and 2005. As a member of EMU, the outlook of the Euro Area economy is important to Ireland because monetary policy is determined at the Euro Area level.

Since the launch of EMU, monetary policy has been conducted by the European Central Bank (ECB). The primary role of the ECB is to maintain price stability. Without endangering price stability, the ECB is required to support the general economic policies in the EU, including sustainable and non-inflationary growth. The ECB maintained a relatively tight monetary stance in its early years, although rates have come down from their peak of 4.75 per cent in October 2001 in response to the sluggish pace of activity in the Euro Area. Official Euro Area interest rates are forecast to rise gradually over the remainder of this decade, although remaining relatively low, and are expected to average 2.7 per cent between 2005 and 2010.

Figure 3.5: Short Term Interest Rates for the EU Area

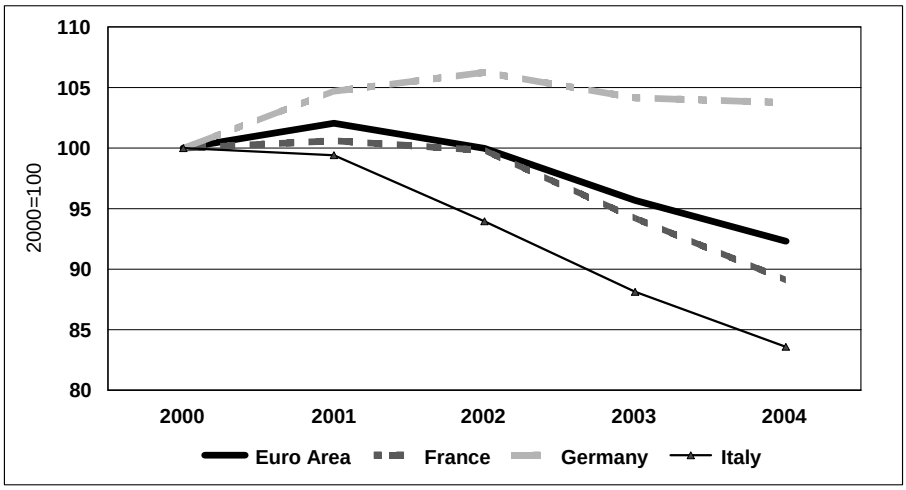


Despite its current depreciation, which we anticipate to be short-lived, the strength of the euro since 2002 has hampered growth in the Euro Area with the real effective exchange rate rising by over 15 per cent in the past three years. While the appreciation of the currency has helped to contain price pressures in the Euro Area, it has restrained export growth, resulting in net trade making a negative contribution to Euro Area growth in 2003 and no contribution to growth in 2004. Within the four largest Euro Area countries, only Germany has been supported by the external sector in recent years. Figure 3.6 shows how the Euro Area as a whole has been losing market share since

2001 yet Germany has managed to retain its external competitiveness despite the strong euro. However, the German economy has failed to translate robust growth in exports into growth led by domestic demand (see Box A.).

Our *High Growth* forecast is based on the assumption that there is a gradual appreciation of the euro over the forecast period, with the dollar/euro exchange rate averaging $1.29 between 2005 and 2010. As a consequence of the appreciation of the euro and relatively modest growth, inflationary pressures will be very subdued in the Euro Area over the forecast period. The Euro Area consumer expenditure deflator is expected to average 1.6 per cent between 2005 and 2010.

Figure 3.6: Export Market Shares



Source: EUROFRAME-EFN Report, Autumn 2005.
Report available at http://www.euroframe.org

Fiscal policy remains a contentious issue in the Euro Area. The aggregate fiscal deficit stood at 2.7 per cent of GDP in 2004, a slight improvement on the 3 per cent deficit in the previous year. Looking at the average deficit masks the differing performance of various member states. Of particular concern for the Euro Area outlook are the fiscal balances of the larger member states with France, Germany, Italy, Portugal and Greece all exceeding the 3 per cent deficit ceiling of the *Stability and Growth Pact* (*SGP*) in 2004. This calls into account the credibility of the *SGP* and also if member states are to abide by its rules it effectively removes the option of using fiscal policy to tackle weak growth. On the basis of stronger growth our forecasts show some progress towards fiscal consolidation in the medium term and we anticipate the Euro Area fiscal deficit to average 2.4 per cent of GDP between 2005 and 2010.

As mentioned previously in this chapter, a correction in the US current account deficit will have a negative impact on growth in the US. It is important to consider the results of the scenario on growth prospects for the Euro Area. The fall in the external value of the dollar would have a negative impact on European competitiveness. This would knock approximately 0.2 percentage points off the Euro Area growth rate in the short run. The impact of the shock would be to put downwards pressure on prices so inflation in the Euro Area would be slightly lower. The ECB would respond to this shock by cutting interest rates in an attempt to raise output growth. The prevailing low level of interest rates means that the scope for expansionary monetary policy is somewhat limited.

Table 3.2: Forecasts for the Euro Area Economy

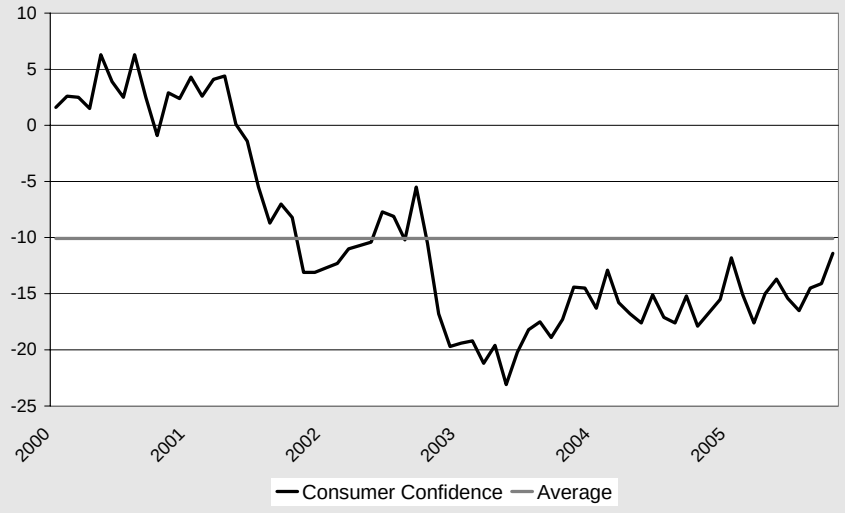
	2003	2004	2005	2006	2007	2008	2009	2010	2000-2005	2005-2010	2010-2015
					***High Growth* Forecast**						
					Per Cent				**Annual Average % Change**		
Real GDP Growth	0.7	1.7	1.4	1.7	1.8	1.8	1.8	1.9	1.3	1.8	2.2
									Annual Average		
Inflation*	1.9	1.9	1.7	1.5	1.6	1.7	1.7	1.7	2.0	1.6	1.8
Short-term interest rate	2.3	2.1	2.1	2.2	2.4	2.8	3.1	3.4	3.1	2.7	3.7
Exchange Rate ($ per €)	1.13	1.24	1.26	1.26	1.27	1.30	1.32	1.34	1.06	1.29	1.39
Fiscal Deficit (as a % of GDP)	-3.0	-2.7	-2.8	-2.8	-2.6	-2.4	-2.1	-1.8	-2.0	-2.4	-1.4
Unemployment Rate	8.7	8.8	8.9	8.8	8.8	8.7	8.6	8.6	8.4	8.7	8.4
					US Current Account Adjusts – *Low Growth* Forecast						
					Per Cent				**Annual Average % Change**		
Real GDP Growth					1.6	1.6	1.7	1.8			2.0
									Annual Average		
Inflation*					1.4	1.6	1.6	1.5			1.6
Short-term interest rate					2.1	2.3	2.5	2.6			2.7
Exchange Rate ($ per €)					1.37	1.42	1.46	1.50			1.55
Fiscal Deficit (as a % of GDP)					-2.4	-2.2	-2.0	-1.7			-1.5
Unemployment Rate					8.6	8.6	8.6	8.6			8.6

*Consumer Expenditure Deflator.

Box A: Happy Germans

The German economy, which accounts for approximately one-third of Euro Area GDP, has been the weakest performer in the Euro Area in recent years. Annual growth in Germany averaged 1.2 per cent for the five-period 1999 to 2004, as compared to the Euro Area average of 2.1 per cent. The majority of the poor economic performance is attributable to slow growth in domestic demand growth. Wage moderation, the bleak outlook for the public finances and the pensions system have all weighed on private consumption. Consequently, the savings rate has been rising since 2001 and the German economy is now running a large current account surplus. This weakness in consumer demand is reflected in the deterioration in German consumer confidence (see Figure below).

Figure: German Consumer Confidence



Source: German Consumer Confidence Indicator, from the EC Business and Consumer Survey, available at: http://europa.eu.int/comm/dgs/economy_finance/index_en.htm

Using the *NiGEM* model, we simulate the impact of the German consumer deciding to shift more of their resources to consumption away from saving, say as a result of a rise in consumer confidence. Specifically, we modelled the impact of a 3-percentage point rise in the level of consumption for the years 2006 to 2008.

Table: Impact of a Rise in German Consumption

	2006	2007	2008
	Percentage Difference from Base		
German GDP	0.8	0.8	0.8
Euro Area GDP	0.3	0.3	0.3
	Absolute Difference from Base		
German GGB (as % of GDP)	0.5	0.2	0.0
German Current Account (% of GDP)	-1.1	-1.1	-1.1

The effect of such a shock on the German economy and the wider Euro Area economy are substantial (see Table above). The level of German GDP would increase by around 0.8 percentage points for each year of the shock compared to what it otherwise would have been and this would add 0.3 percentage points onto Euro Area output. The increase in consumption would have positive knock-on effects for employment and the unemployment rate could come down by 0.4 percentage points in the short term. The German General Government balance would also be improved and the deficit could fall by a half a percentage point of GDP in the first year of the shock. This could further enhance any boost to consumer confidence. The lower level of savings would see the current account surplus being reduced by just over 1 percentage point.

3.4 The United Kingdom

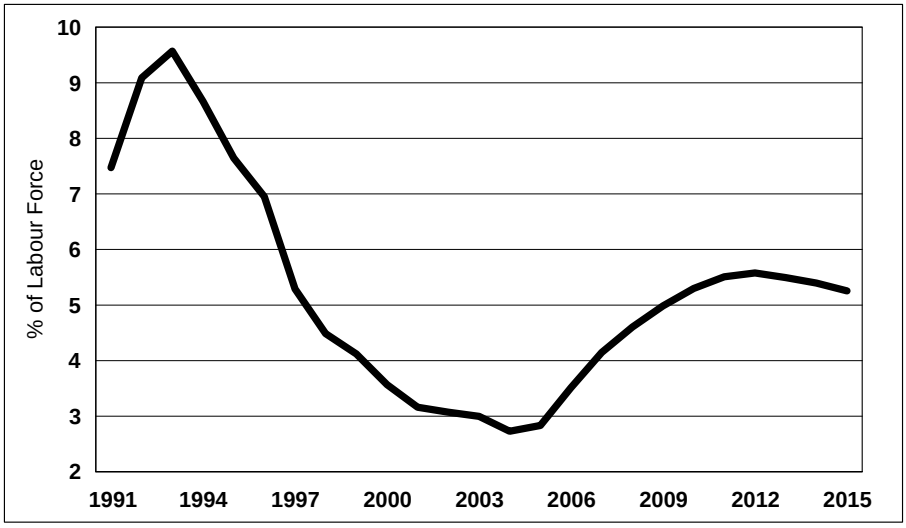
The UK economy continues to be an important trading partner for Ireland despite its relative decline as a destination for exports. In 2004 Irish exports to the UK accounted for approximately 18 per cent of the value of total exports so Ireland is exposed to changes in the bilateral euro/sterling exchange rate and also to future growth prospects in the UK.[23] Despite the slowdown in the international economy since 2000/2001 the UK economy has experienced robust growth, although growth has slowed this year. We anticipate that this slowdown is temporary and prospects for the medium term remain favourable. Real GDP growth is forecast to average 2.1 per cent on an annual basis between 2005 and 2010. Underlying our forecast for the UK economy is a gradual depreciation of sterling against the euro; which will enhance competitiveness in the UK and bolster growth.

UK inflation, as measured by the consumer expenditure deflator, is expected to remain low over the forecast horizon with annual average inflation of 1.5 per cent forecast between 2005 and 2010. While the *Monetary Policy Committee* (MPC) of the Bank of England may cut interest rates in the short run, we expect that short-term rates will gradually rise towards the end of the decade.

A feature of the UK economy in recent years has been the strong performance of the labour market. From an annual average of 10.3 per cent in 1993, the number of unemployed as a percentage of the labour force declined to an annual average of 2.7 per cent in 2004 (see Figure 3.7) or 4.8 per cent on an ILO basis. We expect to see some increase in the unemployment rate over the forecast horizon, with the unemployment rate set to average 4.2 per cent between 2005 and 2010, half of the Euro Area average for the same period.

[23] A continuing issue facing the UK economy, and one that is of importance to Ireland, is the issue of EMU membership. It is assumed, for the purposes of this *Review*, that the UK does not join EMU.

Figure 3.7: UK Unemployment Rate



Source: NIESR Database.

The *High Growth* forecast for the UK economy, together with the implied forecast under the *Low Growth* scenario are presented in Table 3.3. The impact on sterling is more moderate than on the euro and would result in some further depreciation of sterling against the euro. This has a positive impact on UK competitiveness *vis-à-vis* the Euro Area, although the slowdown in the international environment would have a negative impact on growth. The depreciation of sterling against the euro would put upwards pressure on prices yet inflation would remain moderate; leaving scope for the MPC to react by cutting rates to help boost growth.

Table 3.3: Forecasts for the UK Economy

	2003	2004	2005	2006	2007	2008	2009	2010	2000-2005	2005-2010	2010-2015
					***High Growth* Forecast**						
					Per Cent				**Annual Average % Change**		
Real GDP Growth	2.5	3.2	2.0	1.9	2.0	2.2	2.1	2.2	2.4	2.1	2.7
									Annual Average		
Inflation*	2.0	1.3	1.7	1.9	1.5	1.3	1.3	1.2	1.9	1.5	1.0
Short-term interest rate	3.7	4.6	4.7	4.2	4.1	4.3	4.4	4.6	4.7	4.4	4.9
Exchange Rate (£ per €)	0.69	0.68	0.68	0.68	0.69	0.70	0.71	0.72	0.65	0.70	0.74
Fiscal Deficit (as a % of GDP)	-3.2	-3.1	-2.8	-2.4	-2.5	-2.6	-2.5	-2.4	-1.4	-2.5	-2.3
Unemployment Rate	3.0	2.7	2.8	3.5	4.1	4.6	5.0	5.3	3.1	4.2	5.4
					US Current Account Adjusts – *Low Growth* Forecast						
					Per Cent				**Annual Average % Change**		
Real GDP Growth					2.0	2.1	2.1	2.1			2.3
									Annual Average		
Inflation*					2.0	1.8	1.7	1.6			1.5
Short-term interest rate					3.5	3.3	3.1	3.0			3.3
Exchange Rate (£ per €)					0.70	0.71	0.71	0.72			0.73
Fiscal Deficit (as a % of GDP)					-3.0	-3.0	-2.6	-2.4			-2.3
Unemployment Rate					3.7	4.2	4.5	4.8			5.2

*Consumer Expenditure Deflator.

3.5 Context for Ireland

We have not outlined in any detail our forecast for developments in the rest of the world, most notably China and India. However, these economies are likely to continue growing rapidly, contributing an ever increasing share of the momentum in foreign trade. This represents an opportunity rather than a threat for the Irish economy. As argued in Chapter 7, these economies have limited supplies of skilled labour and their very success is raising demand for this scarce resource, and its cost, at an ever-increasing rate. The available skills are needed to manage their rapidly growing economies and it will be many years before their comparative advantage could come to lie in producing on a large scale products and services for export involving a high skilled input. As a result they represent very important markets for Irish firms in the future.

Since the last *Medium-Term Review* Ireland has continued to enjoy strong growth rates compared to other international economies. The bulk of this growth has been domestically driven, especially from the building and construction sector which is not self-sustaining. Although the structure of the economy is changing to a greater importance of services, this does not mean that Ireland is immune to events in the international economy. For example, services exports accounted for a third of the value of total exports in 2004 and total exports accounted for over 60 per cent of GDP in value terms. The relatively sluggish growth forecast for the international economy will have negative implications for the trading environment in which Ireland operates.

The forecast continued appreciation of the euro will adversely affect Ireland's already eroded competitiveness base and reduce the scope of the possible contribution the external sector can make to growth. Ireland has a greater than average exposure to non-Euro Area trade and so is more likely to incur greater competitiveness pressures.

The outlook for interest rates is externally determined by the ECB, and will therefore reflect conditions in the Euro Area rather than domestic conditions. This removes interest rate policy as a mechanism to stabilise the domestic economy, say in the area of housing, if the Irish business cycle is different from that of the larger Euro Area economies. To date, the Irish economy has benefited from lower interest rates than might otherwise have been the case as a result of EMU membership. The forecast modest recovery in the Euro Area will see interest rates rise gradually over the course of the decade although remaining at relatively moderate levels.

Overall, the international environment is more uncertain, with a less positive outlook than at the time of the last *Medium-Term Review*. The biggest risk to the international environment is that, at some point in the future, the imbalances present in the US economy will unwind. In the scenario described in this chapter, this would result in the US economy shifting to a lower growth path and output would grow below potential for several years after the shock. The likely realignment of the dollar would serve to further erode the competitiveness of the Euro Area. A sharp downturn in US economic performance would reduce Irish growth. There are a wide range of channels through which this would happen. Firstly, Ireland has a higher share of exports going to the US than is the case for many of its EU partners. Secondly, because the Euro would appreciate in the *Low Growth* scenario, the EU and Ireland would lose competitiveness. The resulting lower growth in the EU would also affect Ireland. Finally, the likely slowdown in FDI flows from the US and the slower growth in world trade would impact on Ireland. Therefore, such a scenario is likely to have a more negative impact on a country like Ireland. As mentioned previously, we have described one possible scenario in which the imbalances in the US economy are redressed. There is considerable uncertainty about the timing and speed of such an adjustment and it remains the biggest external risk to the medium-term growth prospects of the Irish economy.

4. OVERVIEW OF ECONOMIC OUTLOOK

4.1 Introduction

In this chapter we present an overview of our forecast for the Irish economy out to 2020. A major theme underlying this *Medium-Term Review* revolves around the fact that we expect that the growing external imbalances, that characterise the current growth performance of the US economy cannot continue indefinitely.

As outlined in Chapter 1, we present two different scenarios in this *Review*. The external assumptions underpinning these two macro-economic scenarios have been described in detail in the previous chapter. We assume that the *High Growth* scenario is a reasonable basis for predicting the likely outturn in Ireland over the medium term out to around 2012. This scenario is outlined in detail in Chapter 5.

However this scenario is not a reasonable basis for forecasting Irish growth over the longer term. Because of this we have developed a second *Low Growth* scenario which assumes that market forces will produce an adjustment in the US and the world economies. For illustrative purposes we have assumed that this *Low Growth* scenario begins in 2007. However, it is likely that if such an adjustment occurs, it will happen more suddenly than in the scenario considered here. Furthermore, the earlier an adjustment takes place the lower the likely cost of adjustment. Even though there is considerable doubt as to when this adjustment process will commence we consider that over the longer term this scenario best captures the external environment likely to face the Irish economy out to 2020. This scenario is discussed in detail in Chapter 6.

The *High Growth* and the *Low Growth* scenarios prescribe two paths for the growth of GNP over the next fifteen years.[24] Within the limits described by these two scenarios a range of possible adjustment paths exist. At some point, when and if the adjustment begins, the path of Irish GNP could switch from the *High Growth* to the *Low Growth* scenario. In Section 4.3 we present an overview of these alternative growth paths and their implications for the changing structure of the economy, the labour market, the housing market, the public finances and competitiveness.

The detailed forecasts of the Irish economy, which we produce, are based on simulations of the ESRI *HERMES* medium-term macroeconomic model. In running these simulations we use the demographic assumptions discussed in Chapter 2, and assumptions on world economic conditions discussed in Chapter 3. To simplify the presentation we assume that the government sector runs a small surplus on the General Government Balance (GGB) over the course of both scenarios. This is achieved by varying the volume increase in public consumption and varying the average direct tax rate. The net effects is that the share of GNP accounted for by the public sector changes only slowly over time. Full details of the assumptions on the public finances are given in the next chapter.

[24] These two paths for GNP do not represent "confidence limits". It is quite possible that GNP could perform better than in the *High Growth* scenario or worse than in the *Low Growth* scenario.

We begin however in Section 4.2 with our estimates of the potential growth rate of the Irish economy out to 2020. Assuming also a benign external environment moving forward, these growth rates should be achievable given accommodative domestic policies. However, while we believe that the external environment is currently the major source of uncertainty it is not the only one. The second major uncertainty we identify is the future performance of the housing market in particular, and the provision of sufficient infrastructure to tackle congestion problems in general, in the face of the immigration flows which would be necessary to achieve this potential growth rate over the next fifteen years.

4.2 Potential Growth

The "potential output" of the economy attempts to measure what rate of growth the economy could achieve under favourable circumstances, given its endowment of labour and capital, and without causing inflationary pressures. The measure of potential output is important as it prescribes, in a sense, an upper limit on growth. Growth above potential is possible for a period. However, because it involves very high utilisation rates for the endowment of resources available to an economy, it results in an ever increasing rate of inflation. As such it is not possible to keep growing more rapidly than potential for too long.

Measuring the potential output of an economy is obviously not a simple exercise and there is a range of methods frequently used for the purpose. In addition, because the supply of factors of production is itself endogenous, it is not an easy concept to operationalise over a long time horizon. For example, while the labour force may be fixed in the short term, it can vary through migration in the longer term. Similarly, the capital stock can be increased through investment.

In this *Review* we build up our estimate of the potential growth rate from estimates of the long-term rate of growth in productivity and the growth in the population who are available to work. We begin by assuming a growth path for productivity net of the effects of rising education or skill levels, where education levels are proxied by an index of human capital.[25] This estimated rate of productivity growth should be a function of the capital stock. However, here we simply examine the long-term trend in this key item and use it to project forward. Table 4.1 shows both the actual growth rate of productivity, averaged over five year periods, and what we have assumed to be the long-term trend growth. Assumed productivity growth net of human capital beyond 2005 falls to 1.5 per cent from an average of 2 per cent per annum. This reflects the declining role of high-productivity manufacturing and the increasing role of lower productivity services in total output. To this we add the expected growth in the human capital index – a measure of the additional growth in productivity arising from the increasing average educational attainment of the population. As can be seen from Table 4.1, this factor is still significant but its effect falls gradually out to the end of the next decade.

The labour force is clearly endogenous – it adjusts depending on labour market conditions in Ireland relative to other countries in the EU. This contributes a certain "elasticity" to our measure of potential output.[26] In practise we have estimated what labour force would be consistent with a given scenario.

[25] See Chapter 2, Section 2.4 for a fuller description of this human capital index.

[26] In reality, with a fixed capital stock, more labour (through immigration) would see a fall in productivity measured as output per person employed. While we have not been able to take this into account directly, as discussed in the next chapter we do see the limitations of the endowment of infrastructure as constraining the potential growth rate of the economy.

Table 4.1: Potential Growth Rate, *Low Growth* Scenario, Average Annual Growth, %

	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-1900	2000-2005	2005-2010	2010-2015	2015-2020
Actual output (GNP)*	4.0	4.1	0.3	3.2	4.4	8.8	4.0	3.5	3.1	3.3
Actual Productivity net of human capital*	3.0	2.1	1.2	1.9	1.8	3.1	0.2	1.7	1.5	1.6
Potential Output (GNP)	3.6	4.8	5.2	4.7	6.8	7.9	5.2	4.4	3.5	2.6
composed of:										
Assumed Productivity net of Human Capital	2.0	2.0	2.0	2.0	2.0	3.0	1.5	1.5	1.5	1.5
Human Capital	0.5	0.5	0.4	0.3	0.7	0.5	0.7	0.3	0.3	0.2
Labour Force*	0.9	1.5	0.9	0.1	1.9	3.4	2.9	2.1	1.1	0.7
Unemployment rate at 4%*	0.2	0.7	1.8	2.2	2.0	0.8	0.0	0.4	0.6	0.2

* *Low Growth* scenario.

In Table 4.1 we also show what would have been the effect on output if the unemployment rate at the beginning of a five year period fell to the assumed full-employment rate of 4 per cent by the end of the period.[27] This treats the unemployed as a potential resource, adding to the labour supply. These numbers suggest that while the economy grew well ahead of potential in the 1995 to 2000 period (by 8.8 per cent a year compared to 7.9 per cent), its performance in the 2000-2005 period is below potential, mainly because the actual growth in measured productivity net of human capital was very low. However, the fact that the unemployment rate still hovers close to *de facto* full employment level suggests that our figure for potential output has overestimated the growth potential for the current period.

The estimates in Table 4.1 suggest that the economy has the potential to grow by about 4.5 per cent a year out to 2010, falling to 3.5 per cent a year to 2015 and to around 2.5 per cent a year to 2020. Under the *Low Growth* scenario we anticipate that the economy will grow well below potential for the next ten years, mainly driven by lower levels of employment than those necessary to clear the labour market with rates of productivity growth mirroring potential. If the *High Growth* scenario proves correct beyond 2010, the economy would be growing above its long-term potential as measured here. However, these estimates are, necessarily, crude and a significant margin of error around the central estimate is possible.

4.3 Overview of Alternative Growth Paths

MEDIUM-TERM FORECASTS

Table 4.2 shows the key economic aggregates under both scenarios over the medium term out to 2012. Under the *High Growth* scenario the economy performs significantly better in terms of growth, productivity and employment. This leads to a lower unemployment rate by 2010 that, despite substantially higher immigration, leads to much higher wage growth under this scenario. Coupled with the very high rate of house completions necessary to sustain the implied labour force growth, this leads to incipient inflationary pressures beyond 2010. In this *Medium-Term Review* we have opted to present the results of this *High Growth* scenario out to 2012 as achievable if the US economy does not adjust until after that time. However, domestic constraints on growth make it likely that even without any US adjustment, this *High Growth* trajectory would not be sustainable over the longer term.

[27] Here we are ignoring differences in the skills of the unemployed relative to the rest of the labour force.

Table 4.2: Forecast of Major Aggregates Under *High Growth* and *Low Growth* Scenarios

***Low Growth* Forecast**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
GNP, %	4.0	5.6	4.8	3.8	3.4	2.7	3.0	3.3	3.3
GNP per worker, %	0.4	1.0	2.5	2.5	2.0	1.6	1.4	2.0	2.0
Investment, %	6.9	7.3	4.3	1.8	1.8	1.0	2.8	2.6	2.6
Consumption deflator, %	1.2	2.1	2.7	1.9	1.9	1.9	2.2	2.1	2.0
Non ag wage rates, %	5.7	4.8	4.6	4.3	4.3	3.7	3.6	3.1	2.8
Employment (PES), %	3.5	4.5	2.3	1.3	1.3	1.1	1.6	1.2	1.3
Labour Force (PES), %	2.9	4.0	2.4	2.5	2.2	2.0	1.8	1.7	1.1
Unemployment rate – ILO	4.4	4.2	4.2	5.3	6.1	6.9	7.1	7.5	7.3
Net Immigration, 000s	31.7	53.3	29.7	27.3	25.0	24.1	23.1	22.1	21.1
Balance of payments, % of GNP	-1.2	-1.8	-2.1	-1.6	-1.1	-0.6	-0.4	0.3	1.0
Exchequer saving, % of GNP	0.1	-1.5	-1.4	-1.2	-1.1	-1.1	-1.0	-0.9	-0.9
Debt/GNP ratio	24.4	22.4	20.9	20.3	19.7	19.2	18.6	17.9	17.3
Housing Completions, 000s	77.7	78.9	78.1	73.0	67.9	62.8	62.3	61.8	61.4
***High Growth* Forecast**									
GNP, %	4.0	5.6	4.8	5.6	5.0	4.7	4.6	4.4	3.5
GNP per worker, %	0.4	1.0	2.5	3.6	2.6	2.1	1.6	1.8	1.2
Investment, %	6.9	7.3	4.3	2.5	3.1	2.9	4.9	4.3	3.8
Consumption deflator, %	1.2	2.1	2.7	1.8	1.7	1.9	2.6	3.1	3.6
Non ag wage rates, %	5.7	4.8	4.6	4.1	4.0	4.0	4.7	5.4	6.3
Employment (PES), %	3.5	4.5	2.3	1.9	2.4	2.5	3.0	2.5	2.3
Labour Force (PES), %	2.9	4.0	2.4	2.5	2.3	2.2	2.1	2.1	1.6
Unemployment rate - ILO	4.4	4.2	4.2	4.8	4.7	4.4	3.6	3.2	2.6
Net Immigration, 000s	31.7	53.3	29.7	27.3	27.0	29.0	31.5	34.2	36.7
Balance of payments, % of GNP	-1.2	-1.8	-2.1	-0.8	-0.3	0.2	0.1	0.5	0.6
Exchequer saving, % of GNP	0.1	-1.5	-1.4	-1.2	-1.1	-1.0	-1.0	-0.9	-0.9
Debt/GNP ratio	24.4	22.4	20.9	19.9	19.1	18.2	17.2	16.1	15.2
Housing Completions, 000s	77.7	78.9	78.1	73.5	70.1	67.5	70.5	73.5	76.2

To understand more fully the productive capacity of the economy it is useful to decompose GNP per capita into a number of individual components, namely productivity, the employment rate, participation and dependency.[28] Figures 4.1 and 4.2 plot the growth in each of the components of GNP per capita under the *Low Growth* and *High Growth* scenarios respectively.

As shown in the figures, productivity growth is much greater and the unemployment rate is much lower under the *High Growth* scenario than under the *Low Growth* scenario between 2007 and 2011. As a result, by 2012, GNP per head is 6.9 percentage points higher under the *High Growth* scenario. Between 2011 and 2012, the growth rate in GNP per capita under both scenarios is similar, given that under the *Low Growth* scenario, the effects of the US adjustment are more or less completed during the period 2007 to 2011.

[28] In equation below *LTOT* is total employment, *LF* is the labour force, *N1564* is the population of working age (15-64) and *N* is the total population. The first term on the right hand side of the equation measures productivity (output per employee), the second term measures employment as a proportion of the labour force (equal to one minus the unemployment rate), the third term measures the participation rate and the fourth term is the inverse of the dependency rate.

$$\underbrace{\frac{GNP}{N}}_{\text{GNP per capita}} = \underbrace{\frac{GNP}{LTOT}}_{\text{Productivity}} \cdot \underbrace{\frac{LTOT}{LF}}_{\text{Employment Rate}} \cdot \underbrace{\frac{LF}{N1564}}_{\text{Participation Rate}} \cdot \underbrace{\frac{N1564}{N}}_{\text{Dependency Ratio (inverse)}}$$

Figure 4.1: Decomposition of GNP Per Capita Growth Rate, *Low Growth* Scenario

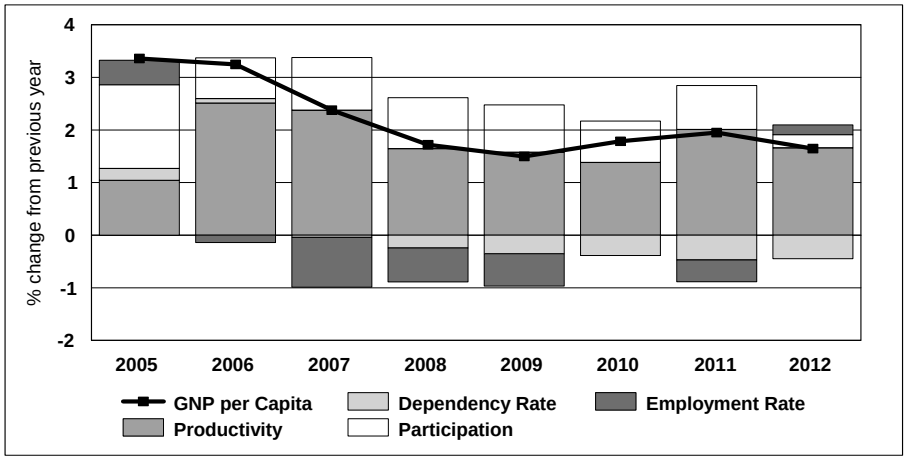
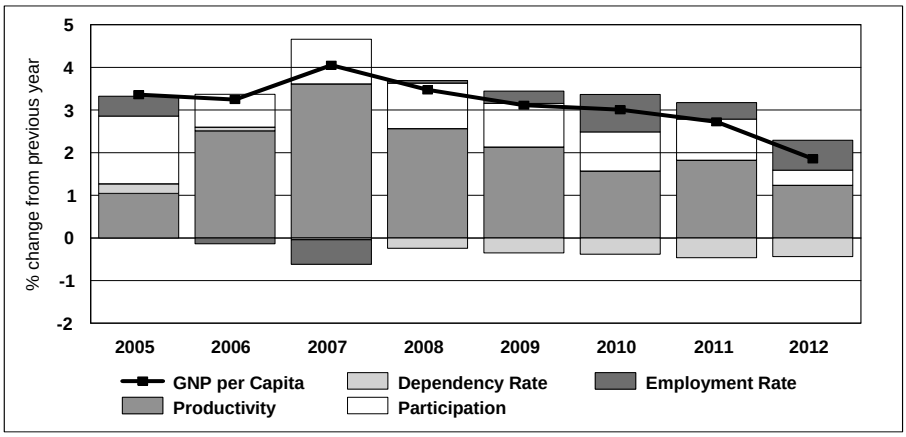


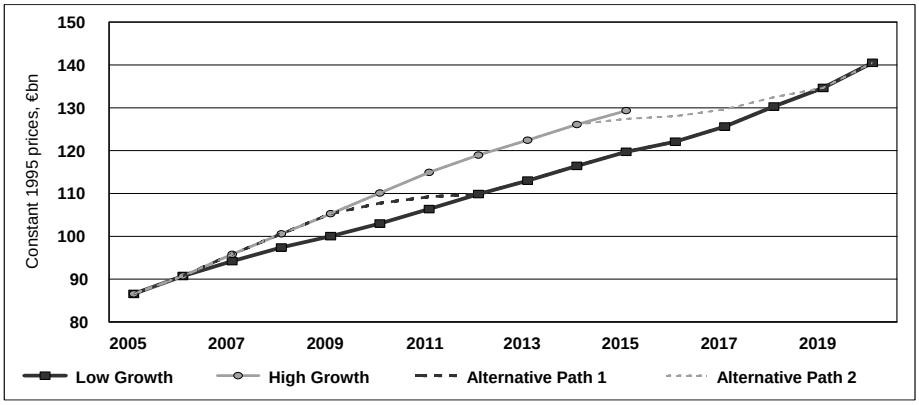
Figure 4.2: Decomposition of GNP Per Capital Growth Rate, *High Growth* Scenario



4.4 Longer Term Growth Prospects out to 2020

As already mentioned in the Introduction, in this *Medium-Term Review* we have opted to present our baseline forecast under two scenarios. These scenarios are stylised as "high" and "low" within which there are a whole host of different adjustment paths for the US and consequently for the Irish economy. We consider that if there were no adjustment in the US until 2012 then the Irish economy could follow the *High Growth* path as shown in Figure 4.3. However beyond that point we argue that the Irish economy must adjust to the *Lower Growth* path, and that this path traces the ultimate end point which the economy is likely to arrive at by 2020. In addition Figure 4.3 illustrates a couple of possible adjustment paths between these two trajectories.

Figure 4.3: Alternative Adjustment Paths for GNP, Constant Prices



CHANGING STRUCTURE OF ECONOMY

The Irish economy has for many years relied on industry as the main engine of growth. Structural change is currently underway in the economy and it is expected that manufacturing, while still very important, will make a declining contribution to growth in the long term. The counterpart to this is that market services will become more important in driving growth in the economy, as discussed in Chapter 2. There has been a dramatic increase in the share of services exports in total exports and this trend is forecast to continue in the coming years.

This move to a greater share of services in total exports means that terms of trade movements are likely to be more favourable than in the past. The huge technical progress (and productivity) in the high technology sector means that prices have fallen pretty continuously. Output prices today for the high technology sector are below the level they were twenty years ago. Table 4.3 shows the average growth rate of GNP before and after adjustment for the terms of trade. The shift to production of services for export, where the price is expected to rise slowly rather than fall, means that a smaller volume increase in exports will be needed to sustain the same rate of growth in living standards, while also maintaining external balance. In the case of the *High Growth* scenario the positive terms of trade effect post-2010 looks unrealistically large. It arises from a high rate of increase in domestic wage rates, discussed later, consequent on a tight labour market. It seems improbable that the tradable services sector would be able to pass through such an increase and it suggests that the competitiveness problems in this scenario could force adjustment to a lower growth path, even if there were no adjustment in the US economy.

Table 4.3: Effects of Terms of Trade on Average Growth in GNP, Percentage Points

	GNP	GNP Adjusted for Terms of Trade	Difference
1970-75	4.0	3.7	-0.3
1975-80	4.1	3.8	-0.3
1980-85	0.3	0.7	0.4
1985-90	3.2	3.3	0.1
1990-95	4.4	3.8	-0.6
1995-00	8.8	8.6	-0.2
2000-05	4.0	3.7	-0.3
Low Growth:			
2005-10	3.5	3.2	-0.3
2010-15	3.1	3.0	-0.1
2015-20	3.3	3.5	0.2
High Growth:			
2005-10	4.9	4.7	-0.2
2010-15	3.3	4.5	1.2

Table 4.4 shows the sectoral shares in GDP out to 2020. In both scenarios the market services sector accounts for around 55 per cent of output by 2020. The counterpart to this is a steady decline in the share of industry, although this decline is halted temporarily in the *High Growth* scenario out to 2010 due to strong growth in the high-tech sector. The non-market services sector is likely to increase its share in the total economy under both scenarios, reflecting increased demands for public services.

Table 4.4: Value-Added Shares in GDP at Factor Cost, Per Cent

	2000	2005	2010	2015	2020
Low Growth					
Agriculture	3.9	2.7	2.4	2.4	2.2
Industry	42.1	37.4	35.5	33.4	28.0
Market Services	47.6	47.6	48.5	50.8	56.5
Non-Market Services	11.2	13.3	14.2	14.0	13.8
High Growth					
Agriculture	3.9	2.7	2.2	1.8	1.4
Industry	42.1	37.4	38.7	35.6	29.2
Market Services	47.6	47.6	45.8	48.4	54.9
Non-Market Services	11.2	13.3	13.9	14.6	14.8

LABOUR MARKET

Under the *High Growth* scenario investment continues to grow strongly from a very high base in 2006. Ireland is currently devoting a dramatically larger share of national resources to investment than its EU neighbours, much of it in public and private infrastructure where the latter is primarily housing. For the EU 15, investment as a share of GDP averaged around 20 per cent over the last decade whereas for Ireland it averaged close to 30 per cent of GNP since 2000. The strong growth in housing leads to continued strong demand for labour in the building sector. Figure 4.4 shows that by 2015 there are 40,000 extra workers employed in the industrial sector, of whom the bulk are in the building and construction sector. The difference in manufacturing employment is more modest since under both scenarios manufacturing employment falls over the medium term.

Figure 4.4: Industrial Employment Levels, in Thousands

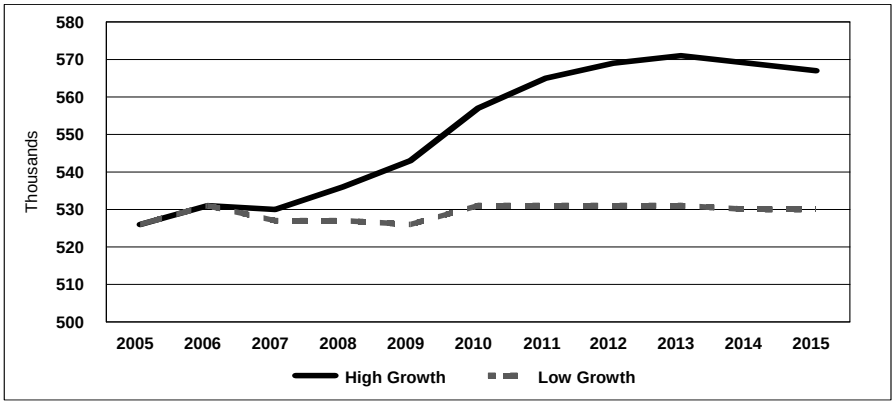


Figure 4.5 plots the total employment in levels under both scenarios. Under the *Low Growth* scenario employment is 150,000 lower by 2015 as a result of the slower growth in output. In addition the *Low Growth* scenario sees lower immigration, the difference in the growth in labour supply is more modest as labour supply is also driven by rising participation rates under both scenarios. This means that under the *Low Growth* scenario the unemployment rate is 4.6 percentage points higher by 2012 (Figure 4.6).

Figure 4.5: Total Employment, Thousands

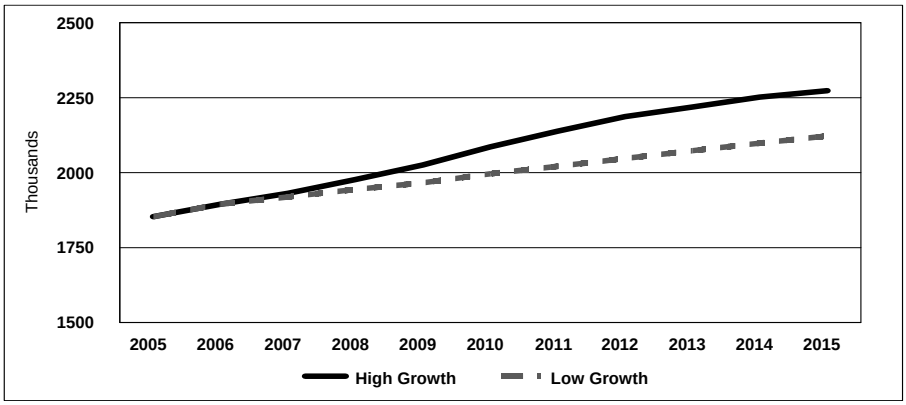


Figure 4.6: Unemployment Rate, PES, Per Cent of Labour Force

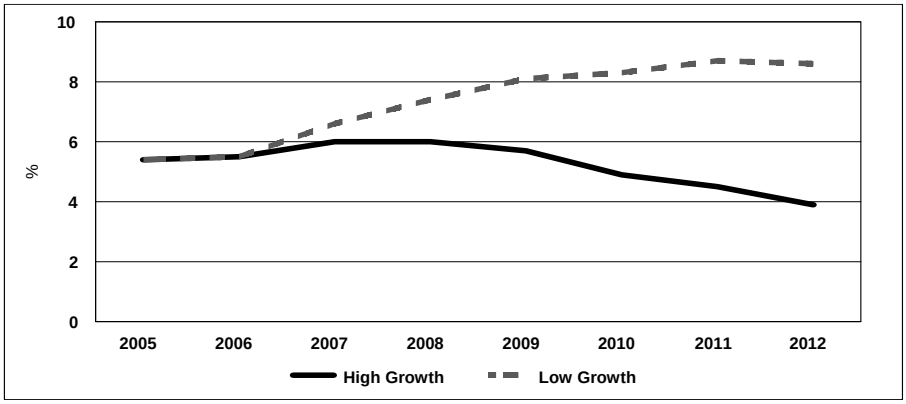
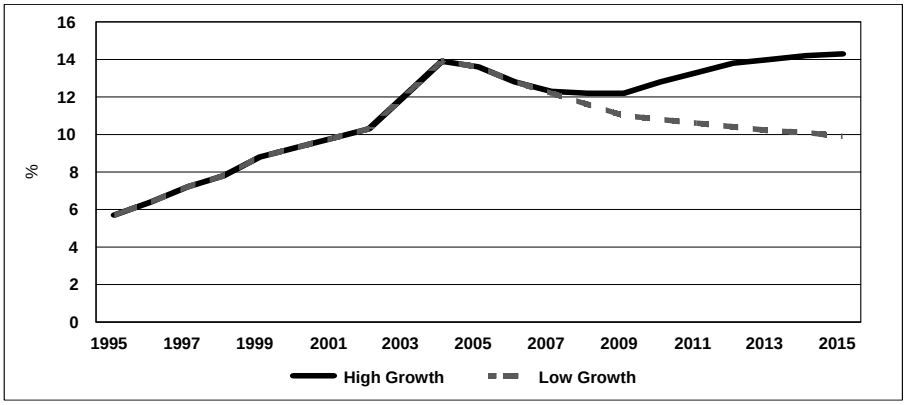


Figure 4.7: Housing Investment as Share of GNP, Per Cent



HOUSING MARKET

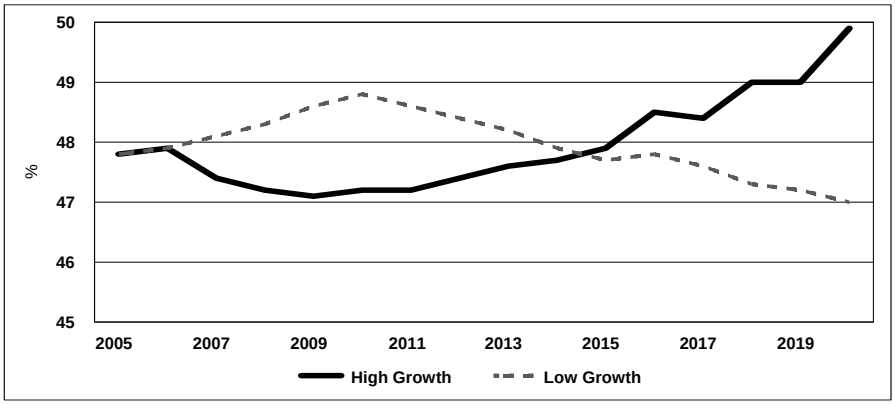
We consider that the housing sector is vulnerable to any shock. Housing investment in 2004 peaked at 14 per cent of the value of GNP, a truly exceptional share. This measure does not take account of the additional role of manufacturing and distribution sector business in supplying materials and services to housing. This is a much higher share than in any other EU economy. Because this sector sources so much of its material inputs in the domestic economy the multiplier effects of this injection are high. Figure 4.7 plots the forecast path of housing investment's share of GNP under the *High* and *Low Growth* scenarios. Under the *Low Growth* scenario the share of housing investment in GNP adjusts gradually downwards to a more sustainable long-

term path. These numbers imply a rate of housing completions of around 62,000 per annum in the *Low Growth* scenario. Under the *High Growth* scenario the very strong inflows of migrants pushes this share back to its 2004 peak by the end of the period.

MEASURES OF COMPETITIVENESS

Previous sub-sections have illustrated the loss to the economy in terms of employment, investment and public services from the *Low Growth* scenario relative to the *High Growth* scenario. However, Figure 4.8 highlights the longer term problems which would ensue if the economy followed such a *High Growth* trajectory for more than five years, in other words beyond our medium-term horizon as presented in Chapter 5. Figure 4.8 plots labour's share of value added in the economy under the *High Growth* and *Low Growth* scenarios. Out to 2009 under the *High Growth* scenario, the labour share falls as strong growth boosts profitability and employment. However, beyond that point wage

Figure 4.8: Labour Share of Value Added, Excluding Agriculture, Per Cent



demands lead to a slow but inexorable elimination of this competitive advantage so that by 2020 the economy is much less competitive under the *High Growth* scenario than the *Low Growth* scenario. This highlights the fact that the *High Growth* scenario is unlikely to be sustainable for more than a decade whether or not the US undergoes a significant adjustment. Because of the continuing tightness of the labour market in the *High Growth* scenario, from early in the next decade the growth in nominal wage rates would rise above 6 per cent a year, more than double the rate envisaged for our EU competitors. By contrast, in the *Low Growth* scenario wage rates in the next decade grow by around 3 per cent a year, maintaining competitiveness roughly unchanged relative to the rest of the EU 15.

4.5 Conclusions

In this chapter we present an overview of the future prospects for the Irish economy over two horizons. In the first horizon, the five years 2007 to 2012, which we dub the "medium term", we project that, if the US economy does not adjust over this period, the Irish economy could grow at a rate slightly above its long-term potential growth rate, averaging 4.6 per cent per annum. However, such a strong rate of growth, and the attendant high immigration flows it would require to maintain sufficient labour supply, would put strong pressure on the capacity of the economy to accommodate such growth, particularly in the housing market and the delivery of infrastructure more generally. In addition, the Irish labour market has been operating at or around full employment for a number of years now so that a further six years of strong growth and low unemployment, coupled with rising congestion costs, could see the emergence of a wage-price spiral which would eventually

challenge the competitiveness of the economy. Therefore, we do not envisage the path of the Irish economy following this *High Growth* path beyond 2012.

The choice of this end date is essentially arbitrary. This uncertainty centres around when the US economy is likely to adjust to correct imbalances. We have prepared a *Low Growth* scenario based on the assumption that the US economy begins to adjust in 2007. We believe that this scenario traces the future growth trajectory of the Irish economy over what we dub the "longer term", and that at some point the economy will shift from the *High Growth* to the *Low Growth* path outlined in this chapter. If the US were to begin to adjust in 2007 then the *Low Growth* path would see the economy growing out to 2011 below potential; beyond that point the economy gradually begins to recover and by 2020 it would have regained competitiveness. This scenario is ultimately more benign for the long-term prospects of the Irish economy, with migration flows and housing demands which can more easily be absorbed.

5. THE *HIGH GROWTH* FORECAST

5.1 Introduction

This chapter presents the *High Growth* forecast for the Irish economy to 2012. It is based on the *High Growth* scenario in Chapter 3 where there is no adjustment in the US current account deficit in the short to medium term. While we do expect that the US will over the medium term adjust to correct its external imbalances, we feel that this is unlikely to begin in 2007 and is more likely to commence towards the end of the decade. For that reason we have chosen to forecast the medium term growth prospects for the Irish economy on the assumption that there are no sharp adjustments to the US economy within that time horizon.

In this *High Growth* forecast the economy performs well out to the end of the decade with GNP growth averaging just under 5 per cent per annum. This rate of growth is above an estimated potential growth rate of 4.5 per cent per annum in this period,[29] driven by strong growth in the manufacturing sector. The attendant growth in employment leads to strong net immigration flows and a fall in the unemployment rate. Beyond 2009 this tightening of the labour market leads to the emergence of incipient inflationary pressures with rising wage and price inflation and a gradual slowing in the growth rate. Detailed forecast tables are given in Appendix 2.

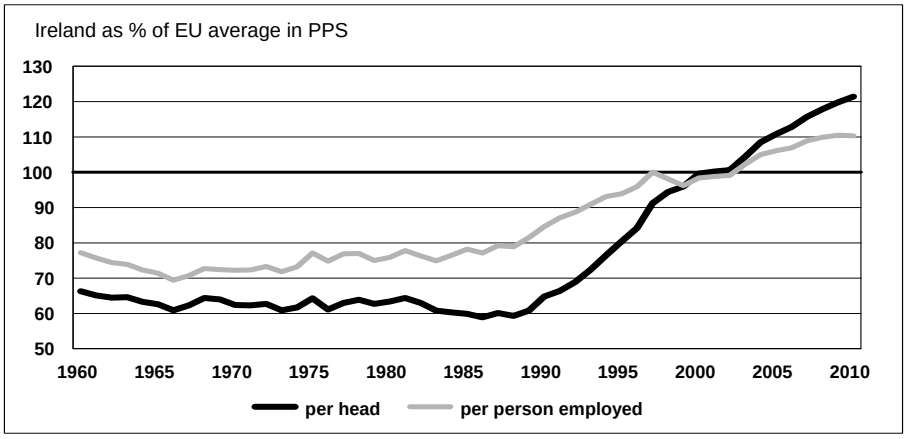
Table 5.1: *High Growth* Forecast, Growth in Major Aggregates

	2004	2005	2006	2007	2008	2009	2010	2011	2012	1995-2000	2000-2005	2005-2010	2010-2015
	Per Cent									Average Annual % Growth			
GDP	4.5	5.7	4.9	6.2	6.0	5.5	5.6	4.7	4.1	9.8	5.4	5.7	3.9
GNP	4.0	5.6	4.8	5.6	5.0	4.7	4.6	4.4	3.5	8.8	4.0	4.9	3.3
GNDI	3.3	4.5	4.6	5.2	4.4	4.0	4.5	4.7	4.2	8.2	3.5	4.5	4.4
Investment/ GNP ratio	29.6	29.9	29.7	28.9	28.7	28.6	29.0	29.2	29.4	25.6	28.6	29.0	29.2
Consumption Deflator	1.2	2.1	2.7	1.8	1.7	1.9	2.6	3.1	3.6	3.2	3.4	2.1	4.1
Employment(PES) - % change	3.5	4.5	2.3	1.9	2.4	2.5	3.0	2.5	2.3	5.0	3.1	2.4	1.7
Real after tax non ag. wages, % change	2.7	2.9	1.5	2.4	2.3	2.0	3.4	2.5	2.5	2.8	2.3	2.3	2.7
	Per Cent of GNP									For End Year			
										2000	2005	2010	2015
Balance of payments surplus	-1.2	-1.8	-2.1	-0.8	-0.3	0.2	0.1	0.5	0.6	-0.3	-1.8	0.1	2.1
Debt/GNP ratio	24.4	22.4	20.9	19.9	19.1	18.2	17.2	16.1	15.2	34.3	22.4	17.2	12.5
General government balance as % of GNP	1.7	-0.6	0.3	0.4	0.4	0.3	0.3	0.3	0.2	5.1	-0.6	0.3	0.1
	Per Cent of Labour Force (ILO Basis)												
Unemployment rate - ILO	4.4	4.2	4.2	4.8	4.7	4.4	3.6	3.2	2.6	4.3	4.2	3.6	2.7
	In Thousands												
Net Immigration, Thousands	32	53	30	27	27	29	31	34	37	26	53	31	44

[29] See Chapter 4 for an outline of how potential growth is estimated for a given scenario.

Beyond 2010 the strong growth performance of the manufacturing sector begins to slow, with a greater contribution to growth coming from the services sector. This is reflected in a continuation of the gradual move to a higher share of services exports in total exports and an improvement in the terms of trade. The gap between GNP and GNDI, which is driven by changes in the terms of trade and transfer income, finally closes by 2010. The exceptionally strong growth in the Irish economy in the 1990s led to full convergence with the EU average in terms of GNP per head by the end of that decade. In our *High Growth* forecast the growth in GNP per head continues to outperform the EU-15 average so that by 2010 Irish GNP per head is an astonishing 11 percentage points higher than the EU-15 average (see Figure 5.1).

Figure 5.1: GNP Per Head Relative to EU-15 Average



Beyond 2010 the performance of the economy begins to slow. The gradual shift to lower productivity services output coupled with a very tight labour market, rising wage demands and very substantial immigration flows fuelling congestion costs, means that the economy is no longer on a sustainable growth path and at some time in the next decade an adjustment to a lower growth path must occur no matter what happens in the external environment. We discuss the longer-term growth prospects in Chapter 6.

In this Chapter, we present detailed annual forecasts out to 2012, together with indicative forecasts out to 2015. Our forecasts are based on the *National Income and Expenditure (NIE) 2004*[30] accounts together with the Autumn 2005 *Quarterly Economic Commentary*[31] forecasts for 2005 and 2006. The ESRI's medium-term macroeconomic model, *HERMES*, was used to produce the majority of the forecasts.

Section 5.2 looks at the crucially important 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 5.3, clearly of much importance in terms of likely future implications of growth in living standards. Within this section our forecasts for income levels, consumption, and prices are discussed. Section 5.4 then looks at the labour market with forecasts for employment and unemployment presented out to 2012. Section 5.5 discusses the balance of payments, savings and sets out our assumptions for the public

[30] The databank we used for estimation of the HERMES model was based on the *NIE* 2003 accounts since the full NIE 2004 accounts have yet to become available. This means that reported growth rates in some aggregates may differ slightly from the official NIE 2004 numbers.

[31] Barrett, A. *et al*., 2005. *Quarterly Economic Commentary*, Autumn, Dublin: The Economic and Social Research Institute.

finances. The implications of the overall economic forecasts for the housing market and for the environment are analysed in Sections 5.6 and 5.7.

5.2 The Supply Side

The supply side of the economy determines the long-term potential to generate output and employment growth and thus improvements in living standards in the country. It comprises both the tradable and non-tradable sectors. Output in the tradable sector is driven by world demand, which in turn is determined by two main factors, the rate of growth in the world economy and the international cost competitiveness of the traded sector's output. Output in the non-tradable sector is driven by domestic demand. The non-tradable sector is closely linked to the overall competitiveness of the economy, as prices and wages in that sector affect the costs of production of output in the traded sector.

The structure of the supply side of the economy has changed over time with a shift from a largely agrarian driven economy to an industrial and manufacturing driven one having occurred. A shift towards a services driven economy is now underway, as the role of the services sector has increased consistently over time; for example, in 1980 the services sector accounted for around 50 per cent of employment in the economy and by 2004 its contribution had increased to over 65 per cent. Not only is the services sector accounting for larger proportions of employment, but also of value added.

The economy witnessed record levels of output growth throughout the 1990s, before a sharp slowdown at the beginning of this decade in 2001 and 2002. Since then growth rates have gradually recovered and we are forecasting that this recovery will continue to accelerate out to the end of the decade, with output growing above potential. We predict that real GNP will increase by an average of 4.9 per cent per annum over the latter half of the current decade.

INDUSTRY

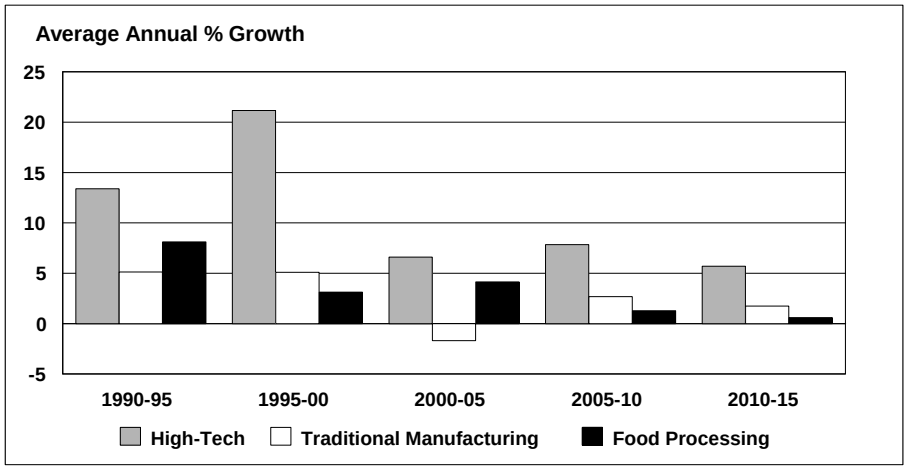
The ESRI *HERMES* macroeconomic model makes a distinction between that part of the industrial sector which is tradable and that part which is generally non-tradable. The tradable sector includes the manufacturing industries while the non-tradable sector includes industries in the building and utilities sectors. Within the tradable sector, manufacturing is further disaggregated into three components; the high-technology sector, the traditional manufacturing sector and the food processing sector.[32]

MANUFACTURING

The manufacturing sector performed extremely well throughout the 1990s, with average annual growth rates of almost 11.0 per cent recorded in the volume of output in the sector over the decade. In the early years of the current decade, the sector has witnessed a significantly slower rate of growth, averaging an estimated 5.4 per cent per annum to 2005 on average. Looking ahead to the end of the decade, it is expected that growth in the sector will accelerate to an average of around 7.0 per cent per annum. The contribution of the sector to economy wide growth is gradually falling over time, however under this *High Growth* scenario its contribution remains strong out to 2010, mainly driven by strong growth in the high-tech sector. Within manufacturing, the role of the traditional and food processing sectors is expected to decline, given the increasing competitiveness pressures these sectors will face.

[32] The high-technology sector includes industries involved in chemical, metal and engineering activities. The traditional manufacturing group of industries includes mining and quarrying, drink and tobacco, textiles, leather, wood products, clothing and footwear, paper and printing, and other miscellaneous industries.

Figure 5.2: Output in Manufacturing



Throughout the 1990s growth in the high-technology industries significantly outpaced growth in the rest of the manufacturing sector; gross output in the high-technology sectors expanded by an average 15.7 per cent between 1990 and 1999 while gross output in traditional manufacturing expanded by 4.9 per cent and that of the food processing industries grew by 5.9 per cent over the same period. The phenomenal growth in the high-technology sector was driven largely by significant productivity gains in the sector as well as substantial investment in the form of FDI. This pattern came to an abrupt halt in the global recession period for the high-technology sector during 2001-2002; since then growth rates have recovered and this sector is expected to grow at an annual average of 7.8 per cent per annum out to the end of the decade.

The traditional manufacturing industries while lagging behind the high-technology industries in terms of output growth, nonetheless performed well over the 1990s. These industries have come under increasing competitiveness pressures in recent times given the emergence of lower cost manufacturing sources throughout Asia and the new EU member states, the sustained appreciation of the euro *vis-à-vis* the dollar, as well as increasing domestic cost bases. We thus expect lower growth rates in the sector out to 2012 averaging 2.7 per cent per annum between 2005 and 2010, and approximately 1.7 per cent thereafter.

The performance of the food processing industry is closely linked to the performance of the agricultural sector, primarily because the industry draws most of its inputs from the agricultural sector, though this dependence has decreased somewhat in recent years. The food-processing sector performed well between 1980 and 1995, deteriorating significantly thereafter, owing in large part to the loss of competitiveness *vis-à-vis* the UK as well as exogenous shocks in the agricultural sector such as the BSE scare; gross output in the sector expanded by around 5.5 per cent per annum between 1980 and 1995. Performance in the sector decelerated between 1995 and 2000, as gross output expanded by 3.1 per cent per annum, mirroring the slowdown in the agricultural sector. Between 2000 and 2005, gross output is estimated to have recovered slightly to an annual growth rate of 4.1 per cent per year. Moving out over the next decade, we forecast that growth in the sector will decelerate, with an average annual growth rate in gross output of 1.3 per cent forecast for 2005 to 2010, and a further slowdown to 0.4 per cent in 2012.

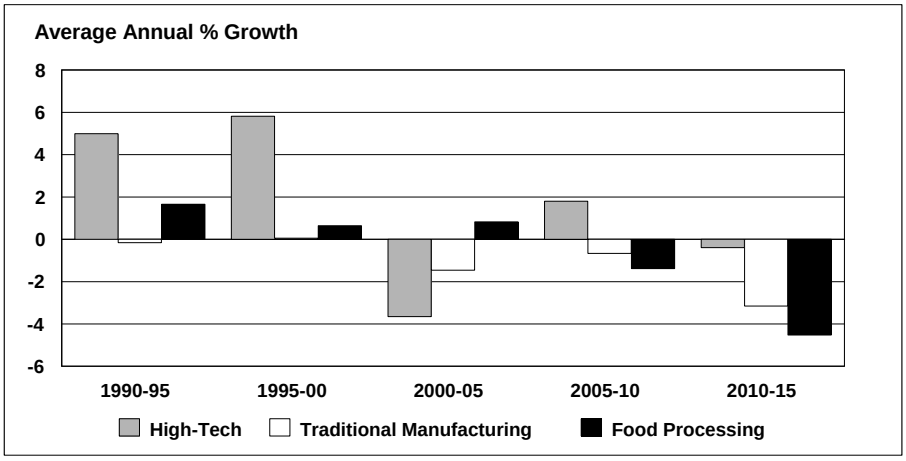
Table 5.2: Percentage Change in Output, GDP at Factor Cost at Constant 1995 Prices

	2004	2005	2006	2007	2008	2009	2010	2011	2012	1995-2000	2000-2005	2005-2010	2010-2015
	Per Cent									Annual Average % Growth			
Agriculture	1.8	-0.5	-0.6	1.8	2.3	1.3	1.8	1.1	1.1	1.1	0.6	1.3	1.0
Industry	3.9	5.6	4.0	8.4	7.8	6.9	6.3	4.7	4.3	13.5	5.4	6.7	3.8
Manufacturing	2.9	5.4	3.9	8.5	8.0	7.6	7.3	5.5	4.7	14.4	5.4	7.0	4.6
Utilities	8.0	8.0	6.8	5.9	7.3	5.2	1.8	0.8	9.6	5.3	5.8	5.4	3.4
Building	9.5	6.1	3.5	8.3	6.1	2.7	0.8	-0.5	-1.4	10.8	5.4	4.3	-3.1
Market Services	4.8	7.5	5.2	5.3	5.2	5.1	5.6	5.1	4.3	8.4	5.8	5.3	4.3
Distribution	2.8	6.4	4.8	4.2	4.4	4.3	5.6	5.0	4.6	10.4	4.9	4.7	4.3
Transport & Communications	2.8	6.5	4.8	5.0	5.2	5.3	6.0	5.5	5.0	12.8	4.8	5.3	4.9
Other Market Services	6.2	8.3	5.5	5.8	5.5	5.4	5.5	5.1	4.0	6.7	6.5	5.6	4.1
Non-Market Services	3.0	3.3	3.6	4.2	4.1	4.1	4.1	3.6	3.6	3.2	4.2	4.0	2.7
Health & Education	4.0	3.4	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.8	5.2	3.8	2.8
Public Administration	0.6	3.0	5.0	4.6	4.4	4.3	4.2	2.6	2.5	1.7	1.9	4.5	2.5
Adjustment for Fin. Services (-)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	2.4	0.0	0.0
GDP at Factor Cost	4.1	5.3	4.4	6.5	6.2	5.8	5.7	4.7	4.2	9.6	5.5	5.7	3.8
Taxes on Expenditure	6.1	8.7	7.9	3.8	3.6	3.4	4.6	4.0	3.7	8.9	4.0	4.6	3.6
Subsidies	-5.2	7.2	-0.6	1.9	2.1	1.5	2.2	1.4	1.3	1.3	1.8	1.4	1.1
GDP at Market Prices	4.5	5.7	4.9	6.2	6.0	5.5	5.6	4.7	4.1	9.8	5.4	5.7	3.9
Net Factor Income	6.9	6.1	5.4	8.6	9.6	8.7	9.2	5.7	6.2	16.4	11.9	8.3	5.7
GNP at Market Prices	4.0	5.6	4.8	5.6	5.0	4.7	4.6	4.4	3.5	8.8	4.0	4.9	3.3

Accompanying the robust expansion in output in the manufacturing sector throughout the 1990s was respectable employment growth which increased Ireland's share of total manufacturing employment in the EU[33] (See Figure 5.3), employment grew by an average 2.6 per cent per annum up to 1999 and continued up to 2001 when strong growth of 3.5 per cent was registered. Thereafter, employment fell in the sector, with a contraction in the numbers engaged in the high-technology industries being the main cause. Given the expected upturn in output growth in total manufacturing to the end of this decade, it is also forecast that employment growth in the sector will pick up slightly. Accordingly, we predict that employment will increase by an average of 0.4 per cent per annum between 2005 and 2010, before contracting in the years thereafter. This reversal in the trend of falling employment numbers occurs solely in the high- technology sector post 2006, such that these industries will drive the small rise in the numbers employed in total manufacturing over the forecast period. We predict that employment in the high-technology sector will increase by an average of 1.8 per cent per annum while employment in the traditional and food processing sectors are expected to contract by 0.7 and 1.4 per cent respectively.

[33] O'Malley, E., 2004. "Competitive Performance in Irish Industry" in D. McCoy *et al.*, *Quarterly Economic Commentary*, Winter 2004, Dublin: The Economic and Social Research Institute.

Figure 5.3: Employment in Manufacturing



The divergence in the growth rates of output and employment in manufacturing throughout the latter half of the 1990s means that productivity was high in that decade, averaging around 11.1 per cent per annum in value-added terms between 1995 and 2000 and driven in large part by significant productivity growth in the high-technology sector. Since then, productivity growth has fallen, though estimated to have remained significant at around 6.5 per cent per annum in value added terms between 2000 and 2005. Average annual productivity growth in manufacturing is expected to be around 7 per cent out to 2010.

BUILDING

The robust growth in the economy and incomes throughout the period of high growth was accompanied by an accelerator effect in the housing sector, contributing to significant growth in investment in building over these years. In addition, the expansion in the industrial and services sectors resulted in increased demand for commercial and industrial properties, while the government objective of increasing the stock of infrastructure also meant increased investment in this area. As a result, real output in building grew by an annual average of 10.8 per cent between 1995 and 2000 (Table 5.2). The pace of growth tapered off in the following years, though still remaining strong; the average annual growth in output between 2000 and 2005 is estimated at 5.4 per cent. Over the next five years, it is anticipated that the demand for housing output will remain strong (as discussed in Section 5.6) as well as robust demand for commercial building output and continued investment in infrastructure. Accordingly, we forecast that output will expand by an average of 4.3 per cent per annum between 2005 and 2010.

Trends in employment in building closely follow output trends in the sector; by its nature, the building sector is highly employment intensive and thus strong employment growth coincided with strong output growth throughout the 1990s. There was phenomenal employment growth during the 1995 to 2000 period, with annual averages of 14.6 per cent growth registered, while in the years 2000 to 2005, it is estimated that annual growth in employment will average 7.4 per cent. By 2005 it is estimated that the building sector accounted for 13 per cent of total employment. Given the continued strong growth in the sector out to 2010 we forecast that this share will remain stable, with an average 2 per cent growth per year expected, equating to an increase of 25,000 jobs in the sector between these years.

Productivity in the building sector has traditionally been low and this trend looks set to continue in the medium term with a minor increase in productivity levels of approximately 2 per cent in value-added terms expected per annum over the 2005 to 2010 period.

UTILITIES

Growth in the utilities sector (which includes electricity, gas and water) has been fairly stable since 1990, with average increases of over 5.0 per cent recorded in real output per annum. Growth in the sector is driven by demand for energy in the rest of the economy (see Section 5.7), particularly in the commercial sector. Given the sustained expansion expected out to 2010 in the economy and the commercial sector, we forecast that real output will grow by around 5.4 per cent per annum on average. Beyond this, growth is expected to slow.

The performance of the sector in terms of employment growth has varied over time. The numbers engaged in the sector increased by 1.6 per cent per annum between 1990 and 1995. Despite the output expansion between 1995 and 2000, employment actually fell by 2.5 per cent, due primarily to restructuring in the electricity sector. It is anticipated that employment growth will average 3.2 per cent per annum over the 2000 to 2005 period, before falling to 0.8 per cent per annum between 2005 and 2010.

AGRICULTURE

The agricultural sector (including forestry and fishing) performed poorly relative to its sectoral counterparts during the 1990s; real output growth averaged a mere 0.1 per cent per annum over the period 1990 to 1995 and 1.1 per cent per annum over the period 1995 to 2000. Prospects for the sector remain poor with a 0.6 per cent average yearly growth rate expected for the 2000 to 2005 period. We expect growth to remain weak over the remainder of the decade and envisage that output growth will remain low in the medium term.

Employment in the sector has been declining steadily for the past three decades and we expect this trend to continue over the forecast horizon. In particular we expect the numbers employed in the sector to fall by an average of over 2.5 per cent per annum between 2005 and 2010. This rate of decline is expected to continue in the medium term.

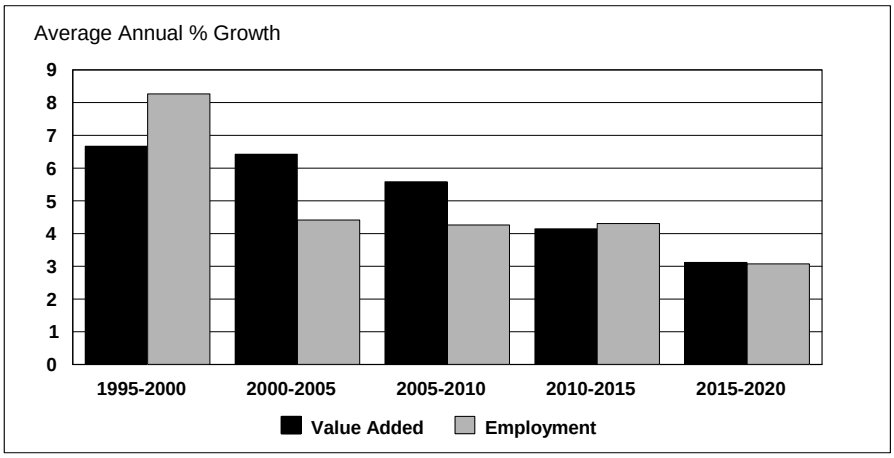
MARKET SERVICES

The market services sector is modelled under three separate headings: distribution, transport and communications, and other market services. In the past, output in market services was driven solely by domestic demand, as these sectors comprised mainly non-tradables. The rapid economic growth in the latter half of the 1990s was accompanied by significant growth in personal disposable incomes. There has been a marked expansion in the sector during these years; over the period 1995 to 2000, real output in market services grew by an average 8.4 per cent per annum, as compared to an average annual 3.1 per cent expansion over the 1990 to 1995 period. In recent years, the external market has become an important driver of growth in the sector, as technological advancements and the move towards trade liberalisation in services markets have contributed to an expansion in invisible exports. The role played by the external market is likely to increase further in the future. Accompanying this will be an increasing exposure to competitiveness pressures in the sector. Our forecasts are for growth in real output to average 5.8 per cent per annum over the 2000 to 2005 period and 5.3 per cent per annum over the 2005 to 2010 period.

Given the labour intensity of market services, output trends have important implications for employment in the sector. Throughout the 1990s, employment growth in market services was higher than for any other sector in the economy, with an average of almost 5.0 per cent increases recorded per annum. Over the current decade, 2000 to 2009, we forecast that the market services sector will continue to account for the largest proportion of

employment growth, with around 3.6 per cent per annum projected. Looking beyond the current decade, the role of the market services sector will increase further, as it continues to account for ever increasing proportions of output and employment growth, as the economy shifts more towards a services driven economy.

Figure 5.4: Output and Employment in Market Services



DISTRIBUTION

The performance of the distribution sector (which includes wholesale and retail services) is highly dependent on domestic demand and in particular on the volume of consumption in the domestic economy. Consumption in turn is driven by a wide variety of factors, changes in personal disposable incomes being key. The demographic profile of a country also tends to be important for the distribution sector, as for example, a relatively young and employed population leads to a demand for specific types of goods and services, many of which tend to have relatively high margins. The changes that have occurred in the Irish economy over the last two decades have thus had important implications for consumption patterns and the distribution sector. There have been changes in the supply of output from the sector; with the advent of technological advances (such as internet shopping), efficiency in the sector has increased on a number of levels (for example, there has been a fall in the use of wholesalers as one can often purchase directly from the manufacturer), and this is set to continue in the future. The Irish wholesale and retail sectors have also become increasingly internationalised. Given these changes, real output in the sector expanded substantially over the 1995 to 2000 period, when average annual growth rates of 10.4 per cent were recorded. Output growth over the current decade is expected to stabilise at a much lower average of 4.8 per cent per annum. Beyond the current decade, growth in the sector is likely to remain strong at around this level.

Between 1995 and 2000, the numbers employed in the sector rose by an average 4.4 per cent per annum, as compared to a 1.8 per cent expansion in the previous five year period. However, given the rapid pace of change in technology used in the sector, and in particular the move towards increased computerisation, there has been a fall off in employment growth in recent times. Over the period 2000 to 2005, it is expected that employment growth will average 3.6 per cent per annum, before slowing to 1.8 per cent over the 2005 to 2010 period. Employment growth is expected to slow further over the next decade.

TRANSPORT AND COMMUNICATIONS

The composition of the transport and communications sector is different from the other market services sectors in a number of respects because of government involvement and intervention in semi-state bodies. The structure of the sector has changed over time with deregulation leading to increased competition in the sector, particularly in the aviation and telecommunications industries. However, like the other market services sectors, domestic demand is the main driver of output in the sector. In addition, given the changes in regulation in the sector, and the increased competition and efficiency, the role of output from the transport and communications sector has become increasingly important for other productive sectors in the economy, as the degree of contracting out to this sector appears to be increasing over time. Given these facts, the sector expanded significantly throughout the 1990s, with growth in the latter years proving most substantial. The 1995 to 2000 period saw average growth in real output of 12.8 per cent per annum. This exceptional growth was driven in large part by significant investment in expanding the stock of capital in the sector. Following this period, a slowdown in growth was recorded, though still remaining high with 4.8 per cent average annual growth over the 2000 to 2005 period. In light of forecasts for the economy as a whole, continued strong output growth is expected over the next five years, with 5.3 per cent increases forecast per year over the 2005 to 2010 period. We anticipate that growth will remain strong early into the next decade.

Trends in employment growth have followed trends in output growth throughout the 1990s, with the exceptionally high output growth of the 1995 to 2000 period accompanied by significant employment growth of 5.6 per cent. With the fall in the pace of output growth from 2001, the rate of employment growth also fell, with an average annual expansion in the numbers employed over the 2000 to 2005 expected at 2.3 per cent, before falling slightly to 1.7 per cent over the 2005 to 2010 period, with continued restructuring in the sector responsible for some of the slowdown. Employment growth in the next decade is likely to remain low.

OTHER MARKET SERVICES

The other market services sector comprises a broad range of diverse service activities, including both personal services (for example, hairdressing, motor repairs, hotels) and professional services (for example, banking, insurance and legal services). Like the other market services sectors, a key driver of output in this sector is domestic demand, though external demand now also plays an important role, and given technological advances and continued liberalisation of international services markets, it is likely to play an increasingly important role in the future.

In line with the phenomenal growth in the Irish economy throughout the latter half of the 1990s, output in the other market services sector grew substantially, with average annual growth in real output of 6.7 per cent registered over the 1995 to 2000 period. The sector continued to perform well into the early 21st century as growth averaged 6.5 per cent over the 2000 to 2005 period and is expected to average 5.6 per cent per annum over the 2005 to 2010 period, driven in large part by strong predicted growth in private consumption and production. As such, growth in the other market services sector is expected to outpace growth in any of the other components of total market services out to the end of the current decade.

The importance of the sector for employment growth in the economy has increased over time, and this trend is expected to continue out to 2010 and into the next decade. In 1990, 177,000 people were employed in the other market services sector, accounting for around 40.0 per cent of total market services employment. In 2000, 333,000 people were employed in the sector,

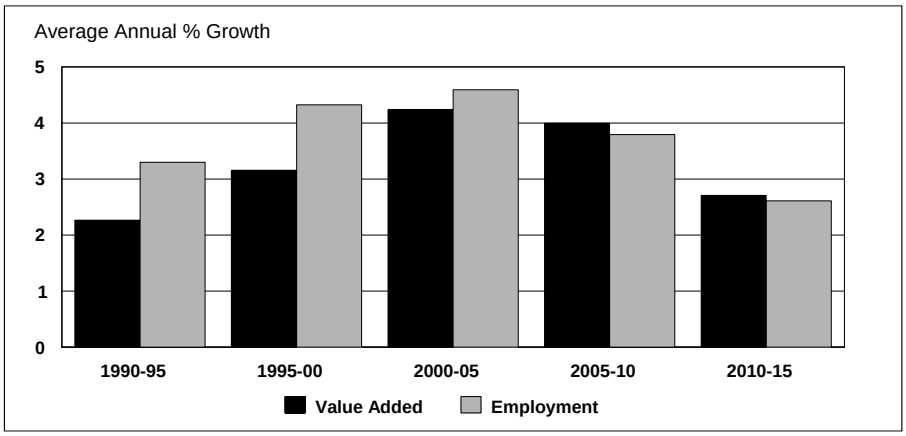
representing over 50.0 per cent of the total. We anticipate that the importance of this sector for employment will remain high throughout the current decade, with average annual growth of 4.4 per cent expected for the period 2000 to 2005 and average growth of 4.2 per cent forecast for 2005 to 2010. Based on these forecasts other market services will account for 55.0 per cent of total market services employment in 2010.

NON-MARKET SERVICES

The non-market services sector is identified under two separate headings in the ESRI *HERMES* macroeconomic model; health and education, and public administration and defence. These services are mainly funded by the government and many of them have "public good" characteristics. While the government will always have to provide a certain level of these services, the actual output of the sector will depend on demographic and budgetary considerations (see Section 5.5 for our assumptions regarding public expenditure).

Growth in real output in the sector averaged approximately 3.0 per cent over the 1990s, and is expected to average around 4.1 per cent over the current decade. The health and education sector is expected to witness higher output growth rates than the public administration sector over the current decade, with around 4.5 per cent expansions in real output forecast on average for each year in the health sector and approximately 3.2 per cent for the public administration sector.

Figure 5.5: Output and Employment in Non-Market Services



Productivity in the non-market services sector has been consistently low over time. However, this is partly due to the fact that it is difficult to measure output in the sector with precision because of the nature of the service involved.

Employment growth is expected to remain close to 4.0 per cent per annum over the current decade, having been just below this in the previous decade. Stronger employment growth took place in the health and education sector between 2000 and 2005 than in the public administration sector. However, we anticipate similar growth rates over the next five years. The share of total employment accounted for by non-market services is expected to remain constant at around 22.0 per cent out to 2010 before increasing slightly to approximately 24.0 per cent in the next decade.

5.3 Income, Expenditure and Prices

Non-agricultural incomes have continued to grow rapidly in the period 2000 to 2005, at an average of 9.2 per cent per annum, following double-digit growth rate of 12.1 per cent in the period 1995 to 2000. We expect this to remain strong to the end of the decade underpinned by strong employment growth. The growth in transfer income is expected to be more modest, while the continued decline in the national debt burden is expected to lead to a fall in national debt interest payments over the forecast period.[34] The pace of growth in personal disposable income and personal consumption are expected to be very similar between 2005 to 2010, which means the savings ratio should remain stable.

Table 5.3: Personal Income, Percentage Change

	2004	2005	2006	2007	2008	2009	2010	2011	2012	1995-2000	2000-2005	2005-2010	2010-2015
					%					Average Annual % Growth			
Agricultural Incomes	3.3	1.2	2.0	3.0	6.2	5.0	4.8	4.7	4.4	-0.7	0.5	4.2	4.2
Non-Ag. Wage Income	9.4	10.0	7.3	6.4	6.8	6.9	8.2	8.3	9.0	12.1	9.2	7.1	9.0
Transfer Income	7.1	16.4	4.0	6.0	5.7	5.8	6.2	7.7	8.6	7.0	12.5	5.5	9.9
Other Personal Income	-5.3	-1.5	7.1	2.0	-0.3	0.3	0.9	5.3	3.5	15.3	2.3	2.0	4.5
Non-Ag. Profits etc.	2.8	6.3	7.1	9.1	7.7	7.4	7.9	8.7	8.3	17.6	6.4	7.8	8.7
National Debt Interest	6.4	2.5	2.1	-8.1	1.4	1.2	1.1	0.2	0.3	-6.2	-2.7	-0.5	-1.1
Net Factor Income	7.2	3.0	7.8	10.6	11.4	10.4	11.3	8.0	8.7	20.2	10.3	10.3	8.6
Other Private Income	-0.4	8.4	5.4	7.1	4.4	4.5	4.4	9.1	7.5	13.8	6.2	5.2	8.4
Personal Income	6.0	8.8	6.5	5.6	5.5	5.7	6.8	7.7	8.1	11.1	8.1	6.0	8.5
Taxes on Personal Income	14.5	7.2	8.2	5.2	5.3	6.1	0.6	5.9	8.5	10.8	6.8	5.1	8.6
Personal Disposable Income	4.2	9.2	6.1	5.7	5.6	5.6	8.2	8.1	8.0	11.1	8.4	6.2	8.5
Personal Consumption	6.5	7.5	7.8	5.6	5.3	5.3	7.4	7.4	7.5	11.1	7.8	6.3	8.0
Personal Savings	-11.1	23.4	-6.1	6.3	8.0	8.5	14.3	13.3	11.7	11.5	13.8	6.0	11.9
					% of Disposable Income								
Tax Ratio (% Pers. Income)	19.0	18.7	19.0	18.9	18.9	19.0	17.9	17.6	17.6				
Savings Ratio (% Disposable Income	10.9	12.3	10.9	11.0	11.2	11.5	12.2	12.8	13.2				

CONSUMPTION

Between 1995 and 2000, growth in the volume of consumption averaged 7.7 per year, and it rose by 4.3 per cent per year between 2000 and 2005. The drivers have included record job creation contributing to a significant increase in real income. Real non-agricultural wage growth averaged 2.3 per cent each year between 2000 and 2005. In the context of a rapidly expanding labour force, the annual increase in personal income was 8.1 per cent over the same period. Positive wealth effects deriving from buoyant property price trends were a further support to consumption. New house prices rose dramatically in the latter half of the 1990s and this trend underpinned consumer confidence. The cost of borrowing also fell dramatically with Ireland's entry to EMU.

[34] The returns on the national pension reserve fund are netted off.

Table 5.4: Expenditure on GNP, Constant Prices, Percentage Change

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2000-05	2005-10	2010-15
					%					Average Annual % Change		
Personal Consumption	5.2	5.2	5.0	3.7	3.5	3.3	4.7	4.1	3.7	4.3	4.0	3.7
Public Consumption	2.3	3.4	3.6	3.9	3.9	3.9	3.8	3.5	3.5	5.5	3.8	2.6
Fixed Investment	6.9	7.3	4.3	2.5	3.1	2.9	4.9	4.3	3.8	3.8	3.5	3.4
Building	8.3	5.2	2.2	1.5	2.0	2.1	4.9	4.5	4.0	6.0	2.6	3.5
Machinery	4.9	10.4	7.2	3.8	4.5	3.8	4.7	4.0	3.6	1.2	4.8	3.3
Total Exports	6.7	4.6	4.3	7.8	6.9	6.9	6.4	5.8	5.2	5.4	6.4	5.0
Total Imports	7.1	5.0	4.1	5.6	5.0	5.3	5.7	5.6	5.1	4.4	5.1	5.0
Gross Domestic Product	4.5	5.7	4.9	6.2	6.0	5.5	5.6	4.7	4.1	5.4	5.7	3.9
Net Factor Income	6.9	6.1	5.4	8.6	9.6	8.7	9.2	5.7	6.2	11.9	8.3	5.7
Gross National Product	4.0	5.6	4.8	5.6	5.0	4.7	4.6	4.4	3.5	4.0	4.9	3.3

The maturing of Special Savings Incentive Accounts (SSIAs) from mid-2006 to mid-2007 will provide some boost to consumer expenditure. Continued strong employment growth averaging 2.4 per cent per year between 2005 and 2010 will accompany personal disposable income growth of 6.2 per cent over the same period. This will be particularly conducive to consumption growth because of the fall in the personal taxation rate anticipated to occur over the forecast period. Interest rates are anticipated to rise by about one and a half percentage points between 2005 and 2012, and this is one factor which will temper consumption trends. Solid house price growth in excess of inflation will continue, and this factor will be supportive of consumption spending increases. Looking to the future, solid consumption growth is expected to continue throughout the forecast period. The volume of personal consumption will rise by an average of 4 per cent per year until 2010, and by 3.7 per cent over the following five years.

The volume of public consumption rose by 5.9 per cent per year from 1995 to 2000, and by 5.5 per cent annually between 2000 and 2005. It is forecast that growth will be 3.8 per cent per annum from 2005 to 2010, and 2.2 per cent annually over the following five year period. The assumptions underlying this level of public service provision are discussed later in the section on the public finances.

INVESTMENT

Between 1995 and 2000, the volume of annual investment growth averaged 14.8 per cent, slowing dramatically to 3.8 per cent between 2000 and 2005. In the last number of years, much of the investment growth in the Irish economy has been driven by house-building with house completions totalling a record 77,000 in 2004. The volume of housing investment grew by 8.0 per cent per year between 2000 and 2005, and activity is forecast to stabilise over the coming five years. The strong performance of the house-building sector thus far has been supported by strong population and employment increases, as well as an accommodative interest rate environment characterised by low or even negative real interest rates. Strong demand for housing has also resulted from disposable income growth. Further robust employment growth until 2010 and more sizeable increases in disposable income will ensure that house-building remains at a high level, although its contribution to investment growth will be lower than in the past.

Other types of investment have grown strongly over the last number of years. This is largely due to a high level of activity in the corporate sector in terms of equipment and machinery acquisitions, as well as plant construction.

Interest rate developments will not impinge on investment growth in a significant way, with the cost of borrowing rising only gradually over the *Review* period. Between 2005 and 2010, investment growth will be strongest in the market services sector, with growth of 5.2 per cent annually. Investment in the agricultural sector is forecast to fall by 2.2 per cent per year over the same timescale, with sturdy investment growth in industry of 4.7 per cent. Public infrastructural projects will ensure that growth in transport investment is significant.

EXPORTS

Between 1995 and 2000, the volume of exports grew by 17.4 per cent annually, slowing to growth of 5.4 per cent per year over the period between 2000 and 2005. Since 2000 this growth was heavily concentrated in services exports, and was a relatively healthy outturn given the weak international environment over this period, as well as a strong euro appreciation relative to the dollar and a sizeable positive inflation differential between Ireland and its trading partners.

Our *High Growth* assumes that no significant adjustment will take place in terms of the US external imbalances. Therefore, the exchange rate *vis-à-vis* the dollar will only change gradually between now and 2012. This, taken together with the fact that Ireland's rate of inflation will remain low out to at least 2009 and close to that of its trading partners, ensures that no significant loss of price competitiveness is likely until the end of the decade. Furthermore, economic growth in the US economy is assumed to average 3.1 per cent annually between 2005 and 2010, providing some stimulus to Irish export demand. Growth in the UK economy and the Euro Area is likely to be more muted. Total export growth of 6.4 per cent per annum is forecast for the 2005 to 2010 period, before slowing to 5.0 per cent annually over the subsequent five year period.

Services exports growth will be somewhat stronger than the corresponding merchandise figure. In particular, growth in the other services category of exports will be sizeable. Its forecast annual growth rate is 8.2 per cent from 2005 to 2010, and 6.9 per cent after 2010. Tourism exports, on the other hand, will show modest growth averaging 3.2 per cent annually between 2005 and 2010, slowing to 1.0 per cent per annum after 2010. This deceleration is due to the tourism sector's particular vulnerability to the accumulation of price competitiveness losses in the past.

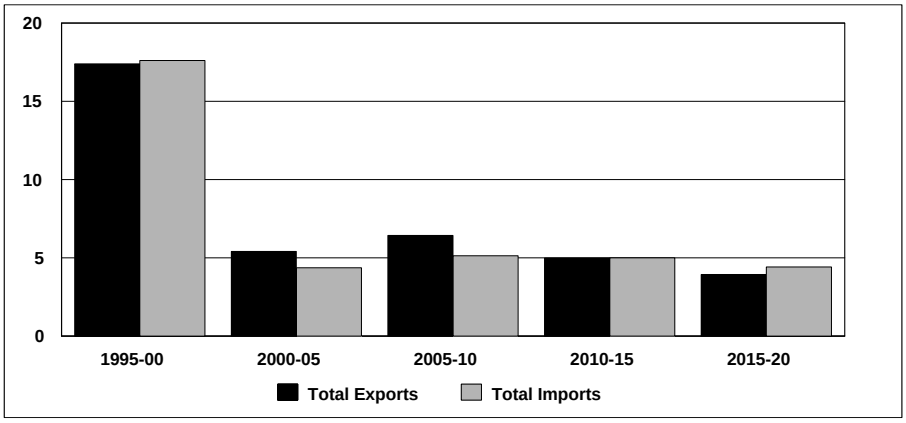
The volume of merchandise exports will rise by 5.8 per cent annually from 2005 to 2010, and slow to a 4.3 per cent annual growth rate from 2010 to 2015. This growth will be driven exclusively by the industrial sector, whose exports will show 6.3 per cent growth from 2005 to 2010, and 4.5 per cent growth from 2010 to 2015. Continued strong external demand for products from the information and communications technology and pharmaceutical sectors is the main driver of this growth. In contrast, the volume of agricultural exports will slump in coming years, falling by 3.9 per cent per year between 2005 and 2010, and contracting at an annual average rate of 4.8 per cent from 2010 to 2015. This outturn reflects the increasing market share of low cost agricultural produce from Eastern European economies.

Growth in the volume of imports is projected at 5.1 per cent annually between 2005 and 2010. This actually represents a slight acceleration on the 4.4 per cent growth rate between 2000 and 2005, but is a sharp slowdown from the 17.6 per cent a year growth achieved in the latter half of the 1990s. Strong domestic demand growth was an important source of import stimulus in the past.

Table 5.5: Exports by Sector, Constant Prices, Percentage Changes

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2000-2005	2005-2010	2010-2015
					%					Annual Average % Growth		
Agriculture	1.7	-3.8	-10.5	1.2	-3.0	-3.3	-3.3	-4.3	-4.5	3.3	-3.9	-4.8
Industry	5.4	4.4	5.2	7.4	6.6	6.5	6.0	5.4	4.7	3.0	6.3	4.5
Merchandise	5.2	3.8	4.2	7.1	6.1	6.1	5.6	5.0	4.4	3.0	5.8	4.3
Tourism	-5.8	4.1	2.9	3.3	3.7	3.5	2.8	2.1	1.5	0.6	3.2	1.0
Other Services	12.4	6.6	4.6	10.0	9.0	9.1	8.5	7.8	7.1	15.0	8.2	6.9
Services	10.7	6.4	4.5	9.5	8.7	8.7	8.1	7.4	6.7	13.4	7.9	6.6
Goods and Services	6.7	4.6	4.3	7.8	6.9	6.9	6.4	5.8	5.2	5.4	6.4	5..0

Figure 5.6: Import and Export Growth



NET FACTOR INCOMES

Net factor incomes is the difference between the earnings of Irish-owned assets located abroad and the return from foreign-owned assets located in Ireland. The predominance of multi-national corporations in Ireland's manufacturing sector ensures that the latter component of this equation is very large and that Ireland's net factor incomes balance is significantly negative. The total output of multi-national corporations, therefore, is included in Ireland's GDP figure but only the relatively small wage component shows up in GNP, the remainder being accounted for by profit repatriations. The net factor incomes deficit rose from €14.9 billion in 2000 to €23.6 billion in 2004. It is forecast to rise to €40 billion in value in 2010.

This large shortfall is arithmetically responsible for the large and growing wedge between the GDP and GNP measures of economic activity, with the former considerably exceeding the latter. In 2000, the ratio of GNP to GDP was 85.5 per cent, this gap widened further to 83.8 per cent in 2004, and will slip to 83 per cent by 2010.

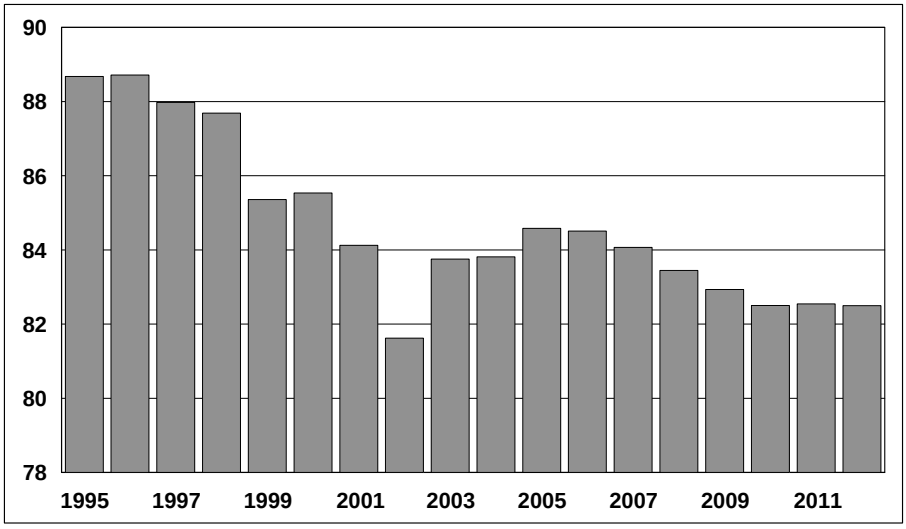
Table 5.6: Contribution of Net Factor Flows to GNP Growth, Percentage Points of GNP

	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-15
National Debt Interest	-0.4	-0.2	0.0	0.2	-0.1	0.0	0.0
Profits etc. Outflows	-0.8	-1.1	-1.5	-3.4	-2.5	-1.8	-1.0
Other Factor Income	0.0	0.2	0.7	0.8	0.1	-0.5	-0.8
Net Factor Income	-1.2	-1.0	-0.7	-2.4	-2.6	-2.2	-1.8

GROSS NATIONAL PRODUCT

The medium term is likely to witness a continuation of the deceleration of GDP growth from the record 9.8 per cent rate recorded annually during the late 1990s to the more sustainable 5.4 per cent rate between 2000 and 2005. The 2005 to 2010 period will see annual GDP growth picking up slightly, averaging 5.7 per cent, with a slower 3.9 per cent rate likely between 2010 and 2015. The strong growth which we forecast in the net factor incomes deficit will result in weaker GNP growth. Between 2005 and 2010, GNP will increase by 4.9 per cent per year, and rise at a rate of 3.3 per cent annually from 2010 to 2015.

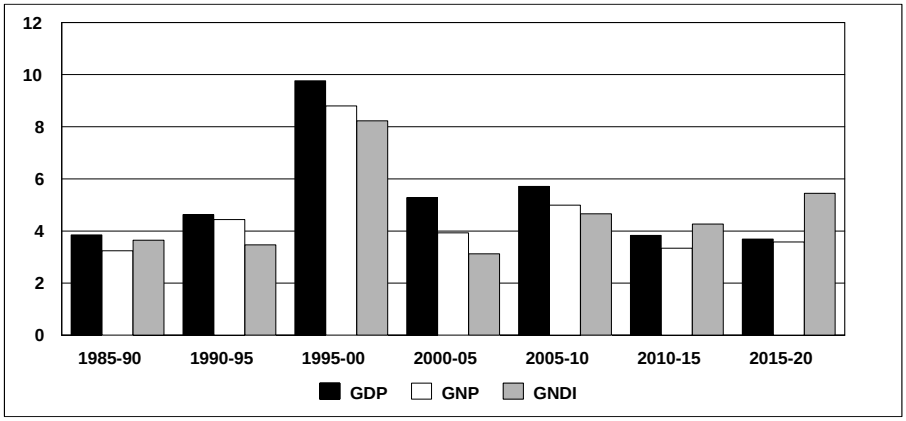
Figure 5.7: GNP as a Proportion of GDP



GROSS NATIONAL DISPOSABLE INCOME

Gross National Disposable Income (GNDI) is a measure which adjusts GNP to take account of net current transfers from abroad and changes in the terms of trade. In the past, the development of GNDI and GNP has been similar in terms of growth. GNDI rose strongly between 1995 and 2000, by 8.2 per cent annually. It slowed to a 3.5 per cent growth rate between 2000 and 2005. Our forecast is for GNDI growth of 4.5 per cent annually between 2005 and 2010. The reduction in net transfers from the EU exerted a small negative effect on growth between 2000 and 2005. However, the move to become a net contributor to the EU between 2005 and 2010 will not have a significant effect on the growth of GNDI. Despite high fuel prices, terms of trade developments are likely to be more positive in the future, as services constitute a larger share of total exports and the unit value of services tends to grow over time relative to that for goods.

Figure 5.8: GDP, GNP and GNDI Growth



PRICES AND WAGES

Developments in Irish prices represent the outcome of an interplay between a host of domestic and external stimuli. It must be stressed that this report does not forecast changes in the Consumer Price Index (CPI), the most conventionally invoked measure of the inflation rate. Instead, forecast changes in the personal consumption deflator are published. For the purpose of analysis, the price level can be divided into two categories, namely goods prices and services prices, based on the fact that different factors drive price changes in each category. Goods prices tend to reflect external factors. In the latter half on the 1990s when the consumption deflator grew by 3.2 per cent yearly, international economic developments served to increase Ireland's rate of inflation. These included the depreciation of the euro, especially relative to the dollar, which increased import prices. Relatively low rates of inflation in countries from which Ireland imports was a factor which partly offset the effects of exchange rate changes.

Services inflation, on the other hand, is primarily domestically generated. Wage and labour productivity trends are key component drivers of services sector inflation because of its labour intensive nature. Wage growth has been quite rapid due to the tightness of the Irish labour market. Productivity growth has decelerated in recent years, with the overall effect being to boost unit labour costs, and heighten services inflation. Developments in goods prices have also served to induce inflationary forces in the services sector by causing wage demands to rise.

The future is likely to witness a continued divergence in goods and services inflation. External forces are likely to ensure that goods inflation is moderate. The euro is forecast to appreciate gradually against both the dollar and sterling over the medium term, and the Euro Area and UK economies will experience low rates of inflation. The increased availability of goods from low-cost, manufacturing based economies like China will further dampen goods price inflation. Though oil prices are unlikely to retreat from the high level touched this year, future price increases will be modest and their effect on inflation rates will be small. The overall context indicates that subdued goods price inflation will be experienced.

Services price inflation is likely to be more significant. The move to a permanently higher oil price will ultimately trigger some second round effects in the form of higher wage demands, something to which the services sector is especially vulnerable. A falling unemployment rate and robust employment growth will place added upward pressure on wage rates. Labour productivity in value added terms increased by 1.9 per cent annually between 2000 and 2005. Between 2005 and 2010 this will accelerate slightly to 2.2 per cent per annum. Productivity increases which accompany wage rises will help in some way towards keeping unit labour costs in check.

The tightness of the labour market which is predicted for the medium term will ensure that wage increases across the economy overall are significant. However, the aggregate figure masks the divergence which will occur in wage developments across the economy. The supply of skilled labour will rise significantly in coming years. This is due to increased numbers of third level graduates, as well as a high proportion of skilled workers amongst the large immigrant cohort. The increasing share of skilled labour in the workforce implies a reduction in the supply of unskilled labour. The implications of this in terms of wages are that growth in unskilled wages will be stronger than skilled wage growth.

Table 5.7: Prices and Wages, Percentage Change

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2000-2005	2005-2010	2010-2015
	Prices, % Change									Annual Average % Change		
Personal Consumption	1.2	2.1	2.7	1.8	1.7	1.9	2.6	3.1	3.6	3.4	2.1	4.1
Public Consumption	6.9	4.7	5.0	2.5	2.5	2.7	3.5	4.2	5.4	5.7	3.2	5.9
Building	8.0	3.7	2.1	1.9	3.4	4.1	5.6	5.7	5.9	6.9	3.4	5.9
Machinery	-0.1	3.4	4.3	2.1	1.4	1.2	1.3	1.5	1.9	0.6	2.1	2.1
Total Exports	-0.8	-0.1	1.7	1.8	1.6	1.6	1.9	2.2	2.4	-0.5	1.7	2.7
Imports - Energy	17.4	42.0	4.8	-0.6	1.5	1.4	1.3	1.3	1.3	7.8	1.7	1.4
Imports - Non-Energy	-0.8	0.2	1.8	1.9	1.9	1.9	1.9	1.9	19	-0.4	1.9	1.9
Agricultural Output - Gross	1.0	0.4	0.1	-0.9	0.3	0.6	0.3	1.0	1.0	0.2	0.1	1.0
Manufacturing Output - Gross	-2.6	0.4	1.2	0.9	0.2	0.3	0.6	0.6	0.8	-4.2	0.6	0.9
	Average Annual Earnings, % Change											
Industry	5.7	4.8	4.7	4.0	3.8	3.8	4.6	5.2	6.0	5.2	4.2	6.8
Non Market - Public Admin.	7.8	4.0	2.9	4.4	4.2	4.2	5.0	5.6	6.5	5.4	4.1	7.0
Non Agricultural	5.7	4.8	4.6	4.1	4.0	4.0	4.7	5.4	6.3	5.5	4.3	6.9

5.4 The Labour Market

Employment grew on average by 5 per cent per annum in the period 1995 to 2000, an unprecedented rate of growth over the last forty years. Over the same period the labour force grew by an average of 3.4 per cent per annum so that the unemployment rate[35] fell continuously by 6 percentage points from 12.2 in 1995 to 4.3 in 2000, a rate which many commentators agree represents a full employment labour market.

Since 2000 the growth in employment has moderated to average what is still a high growth rate of 3.1 per cent over the 2000 to 2005 period. Underlying these growth rates is a significant shift in the composition of employment. In 1995 building accounted for 6.7 per cent of total employment, by 2005 it is estimated that this share has risen to 12.6 per cent. Over the same period the share of manufacturing in total employment has fallen from 20.3 per cent to 15 per cent. This very rapid growth in the importance of construction in the labour market raises concerns about the sustainability of such a level of employment over the medium term.

The details of our forecast for the labour market in the medium term under the *High Growth* scenario are shown in Table 5.8. Around 56 per cent of the increase in employment between now and 2010 will be in the market services sector. A further 36 per cent of this growth is forecast to come from the non-market services sector while the numbers employed in manufacturing are forecast to show only a small increase. Employment in the building sector is forecast to continue to rise further by 25,000 or just over 10 per cent of the total between now and 2010.

[35] Throughout the *Review* we use the PES definition of employment rather than the ILO definition, as only consistent series of the former are available back to the 1970s. When referring to the unemployment rate we use ILO definitions.

Table 5.8: Employment and the Labour Force, Percentage Change, Mid-April

	2004	2005	2006	2007	2008	2009	2010	2011	2012	1995-00	2000-05	2005-10	2010-15
Agriculture	3.5	-3.1	-1.5	-2.9	-2.8	-2.8	-2.8	-2.7	-2.7	-2.7	-2.4	-2.6	-2.7
Industry	2.2	4.3	0.9	-0.2	1.1	1.4	2.7	1.4	0.7	6.0	2.3	1.2	0.3
Manufacturing:													
Traditional	-2.4	0.0	0.0	-0.8	-0.7	-0.9	-1.0	-2.2	-2.7	0.0	-0.9	-0.7	-3.2
Food Processing	-1.8	0.1	-0.1	-1.7	-1.7	-1.4	-2.0	-3.6	-4.3	1.1	0.8	-1.4	-4.5
High-technology	-1.6	-5.9	-2.1	1.5	2.6	3.4	3.8	1.2	0.2	6.1	-1.7	1.8	-0.4
Manufacturing	-1.9	-2.9	-1.1	0.1	0.7	1.1	1.2	-0.7	-1.4	2.9	-1.0	0.4	-1.9
Utilities	6.6	0.1	0.7	1.1	0.1	0.6	1.5	-0.7	-6.9	-2.5	3.2	0.8	-2.4
Building	8.2	14.7	3.3	-0.7	1.6	1.7	4.4	3.9	3.3	14.6	7.4	2.0	2.7
Market Services	4.7	6.3	3.0	2.9	3.0	3.0	3.3	3.1	3.0	6.4	3.8	3.1	2.5
Distribution	4.6	6.5	3.6	1.2	1.2	1.1	1.6	1.1	0.5	4.4	3.6	1.8	0.3
Transport & Comm	1.3	0.1	-0.3	1.7	2.2	2.4	2.4	1.3	-0.1	5.6	2.3	1.7	-0.8
Other Market Services	5.8	8.0	3.5	4.3	4.4	4.5	4.6	4.8	5.1	8.3	4.4	4.2	4.3
Non-Market Services	3.0	3.2	3.4	3.9	3.9	3.9	3.9	3.5	3.5	4.3	4.6	3.8	2.6
Health & Education	4.0	3.4	3.0	4.0	4.0	4.0	4.0	4.0	4.0	5.1	4.8	3.8	2.8
Public Administration	0.0	2.9	4.8	3.5	3.5	3.5	3.5	2.0	2.0	2.1	3.9	3.8	2.0
Total Employment	3.5	4.5	2.3	1.9	2.4	2.5	3.0	2.5	2.3	5.0	3.1	2.4	1.7
Unemployment	-6.6	-3.9	4.9	12.7	1.3	-2.4	-12.7	-5.6	-13.5	-10.6	-0.7	0.4	-2.2
Labour Force	2.9	4.0	2.4	2.5	2.3	2.2	2.1	2.1	1.6	3.4	2.9	2.3	1.5
											For end year		
										2000	2005	2010	2015
Unemployment Rate (ILO)	4.4	4.2	4.2	4.8	4.7	4.4	3.6	3.2	2.6	4.3	4.2	3.6	2.7
Net Immigration, Thousands	32	53	30	27	27	29	31	34	37	26	53	31	44

Within manufacturing there will be some further growth in employment in the high-technology sector. Employment in both the traditional and food sectors is in secular decline as these sectors face strong competitive pressures. Beyond 2010 employment in manufacturing is expected to decline gradually. By contrast employment in the building sector under this scenario continues to grow over the forecast horizon.

The main engine of growth in the labour market is the services sector, in particular in other market services, health and education and public administration. Employment growth in market services has consistently remained above the average for the economy as a whole and this trend is expected to continue over the forecast horizon. Within this sector employment growth in other market services is expected to dominate. Employment growth in non-market services is expected to exceed that of market services in percentage terms out to 2010. Annual average employment growth in non-market services is estimated to be 4.6 per cent between 2000 and 2005 before slowing to a still very high 3.8 per cent rate out to 2010. Beyond 2010 the growth in employment in non-market services is forecast to slow to 2.6 per cent per annum.

Sluggish employment growth is forecast for the remaining sectors of the economy with numbers employed in agriculture, traditional manufacturing, food processing and utilities expected to fall over the forecast horizon. The fall is most marked in the agricultural sector. This is the continuation of a trend that has long been evident in the sector. Numbers employed in agriculture are expected to decline by 17,000, from 109,000 in 2006 to 97,000 in 2010.

The majority of the forecast increase in employment will be in "high skilled" areas such as the other market services sector (which includes professional services such as banking, insurance as well as internationally traded services) and also in the non-market services sector. These activities, being human capital intensive, require a skilled labour force. These two sectors alone will account for 50 per cent of total employment in 2012. The decline in the numbers employed in agriculture, food processing and traditional

manufacturing will have a disproportionate effect on unskilled labour, although some of this will be offset by continued employment growth in the building sector.

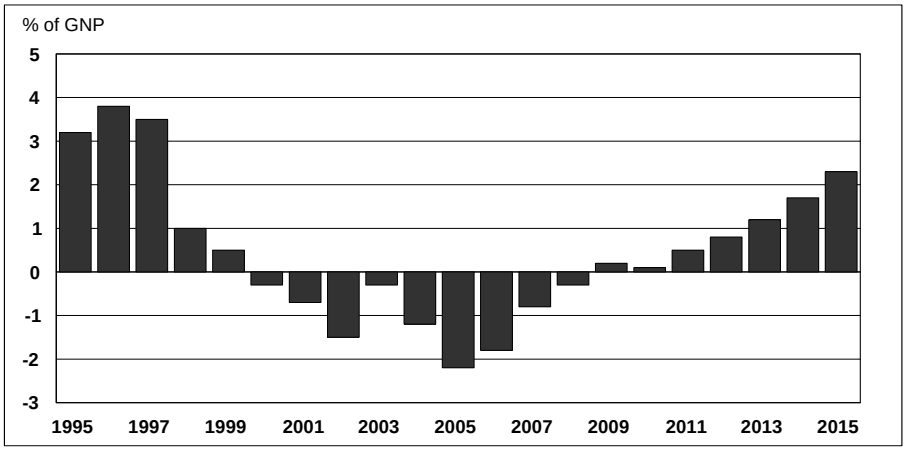
This profile of the labour market is based on a continuation of modest wage increases out to 2009, beyond that point wage inflation begins to rise (see Table 5.3). The continuation of strong employment growth with modest wage demands will be enabled by continued growth in the labour force. Over the period 2005 to 2010 labour force growth can be attributed in almost equal measure to the natural increase in the population, rising female participation rates and immigration. Beyond that date there is limited scope for further contributions from female participation or the natural increase (see Chapter 2) so that net inward migration flows have to provide all the additional workers necessary to clear the market. Beyond 2010 the migration inflows rise steadily from an average of just under 29,000 per annum in the period 2006-2010 to reach 44,000 by 2015. These very high and rising rates of immigration inflows are driven by the strong growth in employment.

5.5 The Balance of Payments, Public Finances

THE BALANCE OF PAYMENTS

The dramatic change in the fortunes of the Irish economy was accompanied by a substantial change in the current account of the balance of payments which moved into surplus at the beginning of the 1990s, averaging 3 per cent of GNP between 1990 and 1999. This positive performance is a reflection of the growth in exports over the period, see Section 5.3. Since 2000 the current account has moved back into deficit, and is expected to remain in deficit until 2008. This deficit is much smaller than those experienced throughout the 1970s and 1980s. Between 2005 and 2010 we forecast an average current account deficit of 0.6 per cent of GNP. This partly reflects the fact that we anticipate a narrower difference between export and import growth. Furthermore, net factor income flows abroad will continue to grow and Ireland is expected to become a net contributor to the EU. The current account is expected to move back into small surplus from 2009 onwards.

Figure 5.9: Balance of Payments Surplus as a Percentage of GNP



PUBLIC FINANCES

Our projections for the public finances over the next decade remain positive. In particular we have assumed that there will be a small surplus on the General Government Balance of between 0.2 and 0.4 per cent a year each year between 2007 and 2012. Corresponding to this surplus there is assumed to be a small deficit each year in the Exchequer Borrowing Requirement. On the basis of this scenario the continuing relatively high growth of the economy will see significant revenue buoyancy.

This scenario will see a continuing improvement in the state's net liability/asset position (here taken to be the difference between the General Government Debt and the market valuation of the assets of the National Pension Reserve Fund). From a net liability of around 22.4 per cent of GNP today this should fall to around 15.2 per cent of GNP in 2012. In turn, this improvement in the state's net liability/asset position will see a further decline in the net payment of interest on the state's liabilities.[36]

The favourable economic circumstances will also tend to reduce pressures on current public expenditure below what they might otherwise be. We assume that the growth in the volume of net current expenditure on goods and services will remain relatively high at around 3.8 per cent per year, compared to around 5.5 per cent a year between 2000 and 2005. With a significant rise in the deflator this would translate into a value increase of around 7.2 per cent a year. Thereafter, we forecast growth in volume of 3.5 per cent per annum in this item out to 2012. It is possible that pressures for improved public services could see a higher volume growth.

Rates of transfer payments are assumed to rise roughly in line with nominal wage rates over the forecast period. In addition, there will be a volume increase of between 1 and 2 per cent each year reflecting the gradual increase in the number of people in the retired age groups and some rise in the number of young children.

In the last *Review* we assumed that the bulk of the infrastructural investment would have been completed by 2015, resulting in a fall in public authorities' capital expenditures after 2015. However, it now seems likely that it will be some time between 2015 and 2020 when this target will be achieved. In the meantime in the period out to 2012 we assume that government capital expenditure remains around its current very high share of GNP.

Some of the cost of the increased provision of public services will be recovered by increased user charges. We assume that from 2007 to 2012 there will be a gradual increase in charges for parking as well as the introduction of charges for the use of urban road space, disposal of waste, and water distribution. We assume that these charges will rise to 1.0 per cent of GNP by 2012. For national accounting reasons this increased revenue is netted off government current expenditure on goods and services. Thus, while the scenario described here would produce a fall in government expenditure as a share of GNP of two percentage points by 2012, the reality would be a fall of around 1 percentage point.

On the revenue side it is assumed that there is no major change in policy, with the SSIA scheme not being renewed in the period to 2012. However, in order to achieve the assumed profile on the GGB (General Government Balance) of a small surplus the model automatically adjusts the average direct tax rate. Given the relatively benign nature of the underlying economic scenario this results in the model generating a small fall in the average personal tax rate by 2012 of around 1 percentage point. Even with a somewhat faster growth in current expenditure and a small increase in the rate, the relatively benign demographic outlook, combined with an assumed favourable external economic climate, would see Ireland continuing to have one of the lowest shares of output accounted for by public expenditure within the EU.

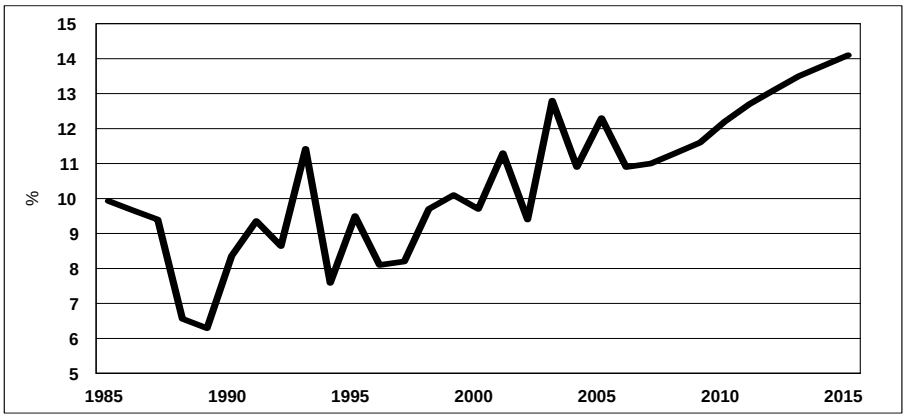
SAVINGS

Since the introduction of the Special Savings Incentive Accounts (SSIAs) in Budget 2001 the topic of savings in the Irish economy has received much attention. As is evident from Figure 5.10 the personal savings ratio has risen in

[36] Where the returns on the state's financial assets is netted off debt interest payments made in respect of liabilities.

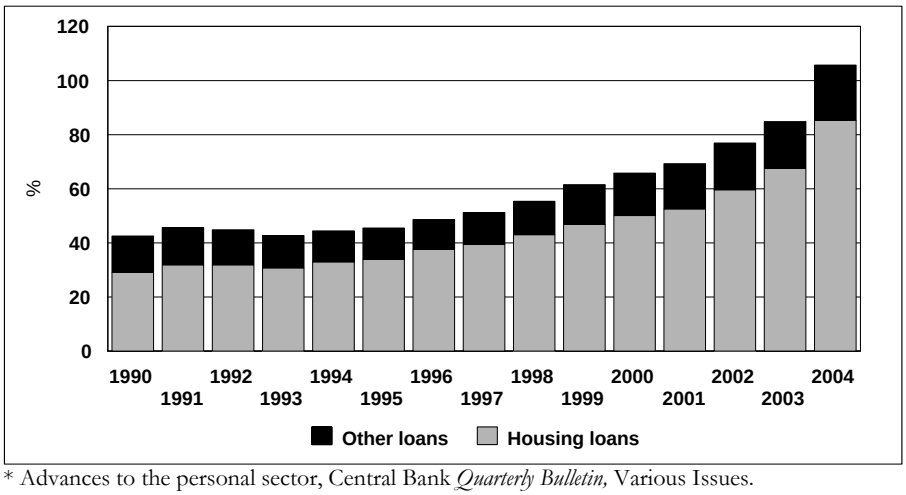
recent years, peaking at 12.8 per cent in 2003, the highest rate since 1993. Having averaged 9.1 per cent between 1995 and 2000 the annual average savings rate is expected to have increased to 10.8 per cent between 2000 and 2005. Continued income growth and rising interest rates are expected to underpin a similar savings rate between 2005 and 2010.

Figure 5.10: Personal Savings Ratio Per Cent of Personal Disposable Income



An increasing concern about the economy is the rapid growth in personal borrowing and the exposure of consumers to high personal debt levels. Figure 5.11 shows the level of gross personal debt as a percentage of personal disposable income. Increases in the indebtedness of the personal sector were relatively marginal between 1990 and 1996. However, since 1996 there has been a dramatic increase, rising from a proportion of personal disposable income equivalent to 48.6 per cent in 1996 to 105.7 per cent in 2004. The extent of the increase indicates that growth in debt has greatly outpaced income growth over the period. It is evident from Figure 5.11 that the growth in personal sector indebtedness has been primarily due to increased borrowing for housing purposes. Household debt for housing purposes rose to the equivalent of 85.3 per cent of personal disposable income in 2004, compared with 37.6 per cent in 1996.

Figure 5.11: Household Debt* as a Per Cent of Personal Disposable Income



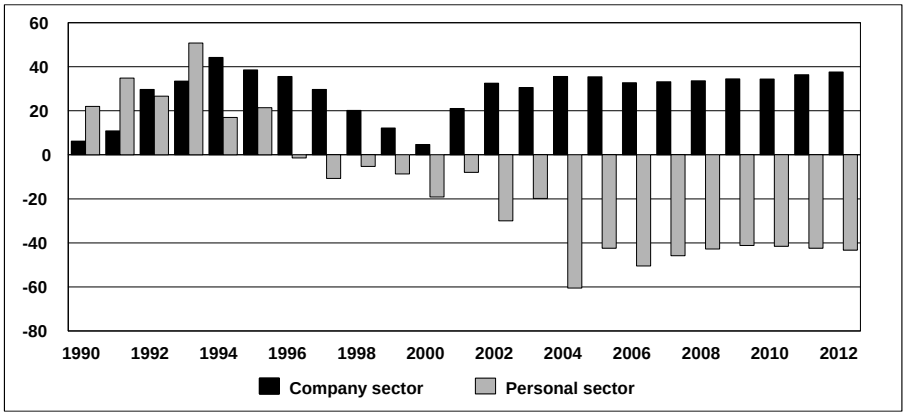
* Advances to the personal sector, Central Bank *Quarterly Bulletin,* Various Issues.

The above figures represent gross debt and so do not adjust for savings by the household sector. Figure 5.12 shows the proportions of gross savings by the personal and the company sectors that have been used to acquire financial assets. Rising investment in housing by the personal sector has resulted in this sector becoming a net borrower, in contrast to the past when the household

sector was a net saver. Forecasts to 2012 suggest that household sector will remain a net borrower over the medium term due to the need to finance investment in housing. Although there will be some decline from the trough reached in 2004, the level of net indebtedness of the household sector is thus expected to increase every year over the rest of the decade. This will increase the household sector's exposure to the housing market.

In contrast the forecasts indicate the company sector continues to benefit from the strength of the Irish economy and will remain a net saver over the medium term, allowing this sectors own resources to play a role in financing investment.

Figure 5.12: Ratio of Net Acquisitions of Financial Assets to Gross Savings by Sector, 1990-2012



5.6 The Housing Market

The importance of the housing market for the Irish economy has increased in recent years as both house prices and housing completions have continued to grow. Between 1995 and 2000 new house prices rose by an annual average of 16.8 per cent before slowing to an estimated annual average increase of 8.8 per cent between 2000 and 2005. At the same time each year between 1994 and 2004 has seen the number of housing completions exceed the peak of the previous year.

This *High Growth* forecast suggests that the factors underpinning the housing market are expected to remain positive in the medium term. Economic growth is expected to continue, along with employment and income growth. Demographic trends will also support the housing market. For example, net immigration is forecast to average around 34,000 per annum between 2002 and 2012. To date a significant proportion of immigrants are aged between 25 and 44 years, the key household formation age groups. Furthermore, a large proportion of the Irish population, nearly 31 per cent, is aged between 25 and 44 years. Although there is evidence from *Census 2002* of a marginal decline in the home-ownership rate, probably due to the recent period of high price growth, Ireland has one of the highest home-ownership rates at around 80 per cent, substantially above the EU average of approximately 60 per cent.

The demand for housing units consists of the growth in the number of households, driven by population change as a result of the natural increase, migration flows and changing headship,[37] the growth in the demand for second dwellings and the building of replacement dwellings.

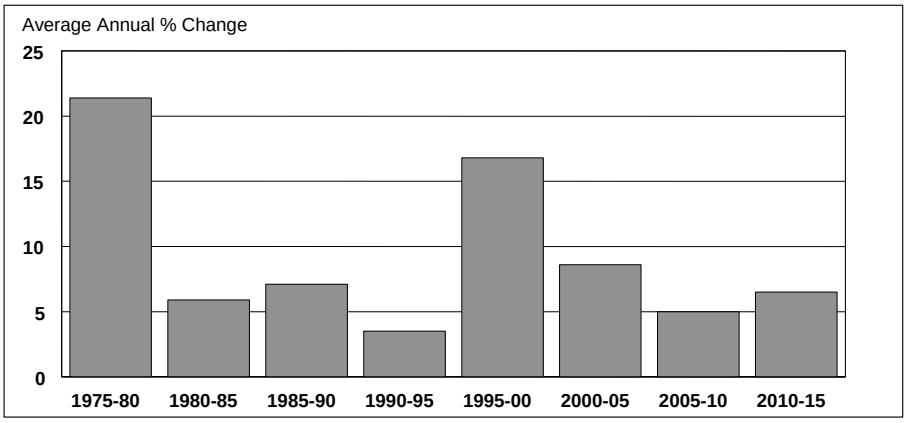
The demographic forecasts underpinning this *Medium-Term Review* have assumed that Irish headship rates rise from current levels to reach UK levels

[37] The headship rate is the proportion of a people in a particular age group who are heads of households.

by 2021. This implies that the average number of adults (persons aged 20 years or over) per household in Ireland will fall from 2.2 in 2000 to 2.0 by 2010 and eventually to 1.8 by 2020.

The housing sector of the economy is modelled as a separate sub-component of the *HERMES* macromodel with equations for house prices and completions. The forecasts for the high growth scenario suggest that price growth in the period 2005 to 2010 will be more moderate than in the late 1990s, with average annual growth in house prices of 4.9 per cent between 2005 and 2010.

Figure 5.13: House Price Inflation, Average Annual Change



Despite the rapid house price inflation of recent years demand has remained strong in the housing market. The user cost approach has developed to reflect the opportunity cost of investing in the housing market. Thus, rising prices provide capital gains, making owner-occupancy attractive and so demand for housing can remain strong even in a period of rapid price growth if people expect it to continue.

The rate of return, or the user cost of housing provides a measure of the cost of owning a house and aims to take account of capital appreciation. This can be crudely calculated as the mortgage interest rate minus the change in new house prices. More elaborate measures take account of tax, loan-to-value ratio and house price expectations. The user cost of new housing has been negative since 1996. This helps explain why demand for new dwellings continued to rise, even at a time of rapid price growth. New houses, although highly priced, were relatively cheap to live in because of low real interest rates and expected capital gains.

Figure 5.14: User Cost of New Houses, 1972-2012

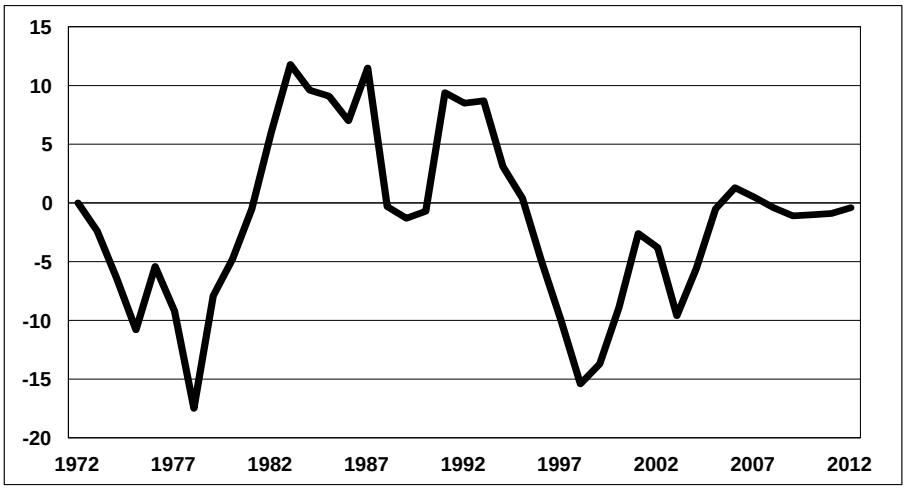


Figure 5.15 shows a breakdown of housing needs into five main categories – the change in demand due to population change, the change due to rising headship (the proportion of people in each age group who are heads of households); dwellings needed to house the inflow of returning emigrants and immigrants into the Irish economy; the change due to the demand for second dwellings; and the change due to the replacement of obsolescent stock. Demographic factors are a key driver of the housing market, accounting for an annual average of 26,800 units to housing demand between 1997 and 2002. The main component of this, the natural increase in population, is estimated to have contributed an average of 20,000 units per annum over the period. This component is expected to continue to make a positive contribution to housing demand over the forecast period, estimated at an annual average of 22,500 between 2003 and 2006, before moderating slightly to an annual average of 17,800 between 2007 and 2011.

Possibly reflecting the rapid rate of house price inflation the change in headship between 1997 and 2002 made a very low contribution to housing demand. Indeed, the continuing low headship rates by international standards, at a time when incomes in the Irish economy increased substantially, suggests that there may be "pent-up" demand for housing from aspiring homeowners. On the basis of our assumption the Irish headship rates will move towards current UK headship rates by 2012. Changing headship is estimated to have accounted for almost 12,000 units per annum between 2003 and 2006. A further increase to an annual average of 13,500 units between 2007 and 2011 is also forecast.

Previous ESRI analysis suggests that one of the key drivers of the demand for housing in recent years has been the demand for second dwellings.[38] Higher wealth, a result of the economic boom, has increased the demand for second dwellings or holiday homes, which now account for a significant proportion of new dwellings. The analysis shows that the share of the total stock of habitable dwellings accounted for by second or vacant dwellings showed a small rise between 1996 and 2002, from 10.8 to 11.7 per cent. However, this is in the context of a very rapid rise in the number of households. Indeed, the Census data suggests that the number of second or vacant dwelling reached over 170,000 by 2002. The period 1997-2002 saw second dwellings contribute an annual average of 6,400 units to the overall demand for dwellings. With incomes and living standards continuing to rise this component is expected to make a major contribution to the demand for housing over the period, estimated at an annual average of 18,800 units between 2003 and 2006, before declining marginally to an annual average of 17,200 between 2007 and 2011. Fitz Gerald (2005) also derives an estimate of the depreciation rate for housing. This estimate is used to forecast the number of dwellings demanded to account for obsolescent stock, averaging 13,400 units per annum between 2003 and 2006, and 11,100 units per annum between 2007 and 2011.

One reflection of the strength of the Irish economy has been the sustained change in direction of migration flows. Having had for many years a net outflow of people from the country the economy now faces a substantial net inflow. A large proportion of immigrants are in the key household formation age groups between 25 and 44 years old. Having made no contribution to housing demand between 1991 and 1996 migration contributed an annual average of 6,000 units between 1997 and 2002. The estimated impact on the housing demand in the current period is slightly higher at an annual average of 8,300 units and the strength of the continued net inflow over the remainder of

[38] Fitz Gerald, J., 2005. "The Irish Housing Stock: Growth in the Number of Vacant Dwellings", ESRI, *Quarterly Economic Commentary*, Spring, Dublin: The Economic and Social Research Institute.

the forecast period is expected to account for an annual average of 12,300 housing units between 2007 and 2011. However, the forecast continued rise in house prices may have negative impacts on migration. Duffy, Fitz Gerald and Kearney (2005)[39] show that one consequence of high house prices has been to increase the slope of the labour supply curve, see Box A.

On the basis of these figures it is estimated that the demand for housing units averaged 44,800 units per annum between 1997 and 2002. The current period has seen much higher demand, averaging 74,800 dwellings on an annual basis. With economic growth expected to continue, as well as income and employment growth and a net inflow of people into the country the demand for housing is forecast at an average of 71,900 units between 2007 and 2011, see Figure 5.15 and Table 5.9.

Figure 5.15: Decomposition of Housing Demand, Thousands, Annual Averages

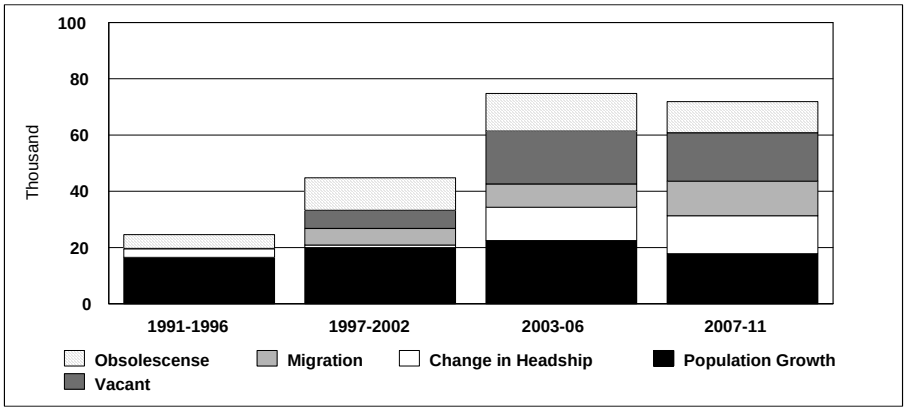


Table 5.9: Decomposition of Housing Demand, Thousands, Annual Averages

	1991-1996	1997-2002	2003-2006	2007-2011
Population Growth	16.5	20.0	22.5	17.8
Change in Headship	3.1	0.9	11.8	13.5
Migration	0.0	5.9	8.3	12.3
Vacant	0.1	6.4	18.8	17.2
Obsolescence	4.9	11.6	13.4	11.1
Total	24.7	44.8	74.8	71.9

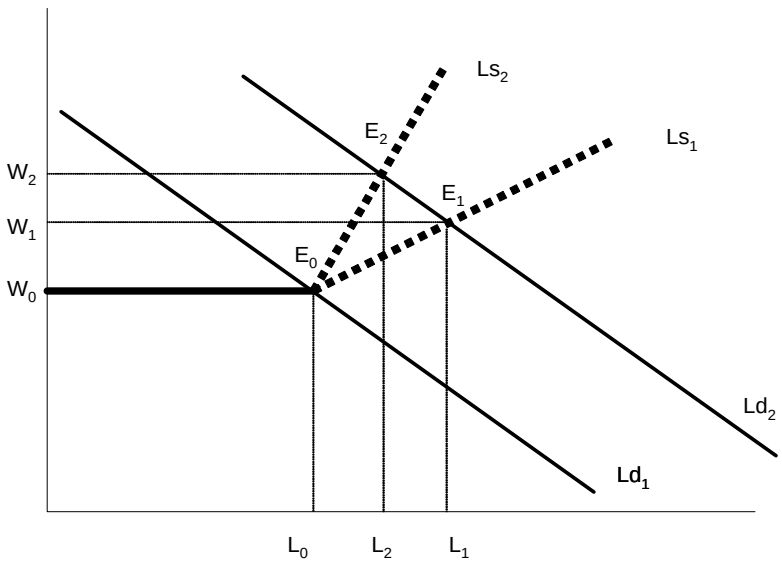
Box B: House Prices and Migration

Traditionally Ireland has had an infinitely elastic labour supply curve due to an extremely open labour market, with migration ensuring an elastic labour supply and a weak Phillips Curve effect (Honohan, 1992 and Curtis and Fitz Gerald, 1994). The limiting case of this, an infinitely elastic labour supply curve, is shown as the flat segment of the labour supply curve, Ls, in Figure below. One of the results of the boom in the late 1990s was that the Irish economy effectively reached full employment and a significant trade-off between wages and unemployment emerged. In the diagram this is shown as an upward sloping labour supply curve, Ls_1 beyond the full employment level L_0. Full employment also saw the emergence of infrastructural constraints as growth in output outpaced capacity. House prices rose sharply, so the decision to migrate to Ireland was now influenced, not only by relative employment opportunities and relative wages, but also by the rapid rise in house prices. This resulted in labour supply becoming even more inelastic, represented in Figure below by the more steeply upward sloping labour supply curve Ls_2. Since many

[39] Duffy, D., J. Fitz Gerald and I.Kearney, (forthcoming 2005). "Rising House Prices in an Open Labour Market", *The Economic and Social Review*, Vol. 36, No. 3, Winter.

immigrants are in the household formation age group, and tend to be highly skilled, the boom in house prices in Ireland could reduce the attractiveness of Ireland for potential immigrants. This would, in turn, reduce potential labour supply in the medium term and act as a brake on medium-term growth in output and employment. Thus, housing emerges as an important infrastructural constraint in the labour market.

Figure: The "Pure" Housing Constraint Effect (E_2-E_1)



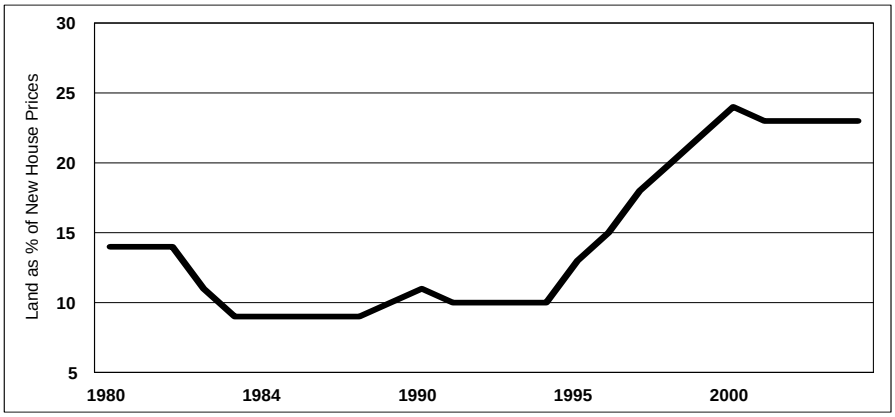
Now if we assume a positive external shock to the demand for Irish output, this would increase the demand for labour, a derived demand, so that the labour demand curve would shift outwards from Ld_1 to Ld_2. If there were no housing constraint labour market equilibrium would move from E_0 to E_1, with higher wages ($W_1>W_0$) and higher employment ($L_1>L_0$). With a housing constraint, however, the equilibrium point is E_2 with wages higher ($W_2>W_1$) and employment lower ($L_2<L_1$) than at point E_1.

Simulation results indicate that the housing constraint significantly reduces the medium-term growth potential of the economy and shifts the balance of labour market growth from employment to wages, with a consequent deterioration in competitiveness. The welfare effects differ for different groups, with unambiguous gains for current homeowners while immigrants, first time buyers and those with lower labour market skills are the net losers.

The housing component of the ESRI *HERMES* macro model includes an equation, derived from Murphy (1998), to estimate the number of house completions. One of the main drivers of new housing supply is new house prices. In the short run changes in house prices have a significant effect in boosting housing completions. In the long run completions are particularly influenced by real new house prices and the mark-up of house prices over costs. This mark-up or profitability measure indicates that if house prices increase relative to the cost of building then profitability rises and this increases the rate of house completions. However, the equation does not take account of changes in some of the other costs of building, such as the price of land. Figures indicate that this has risen substantially in recent years and now accounts for approximately 23 per cent of new house prices. Given the continued growth in house prices and the strength of demand as outlined above it is expected that the level of house completions will remain high over

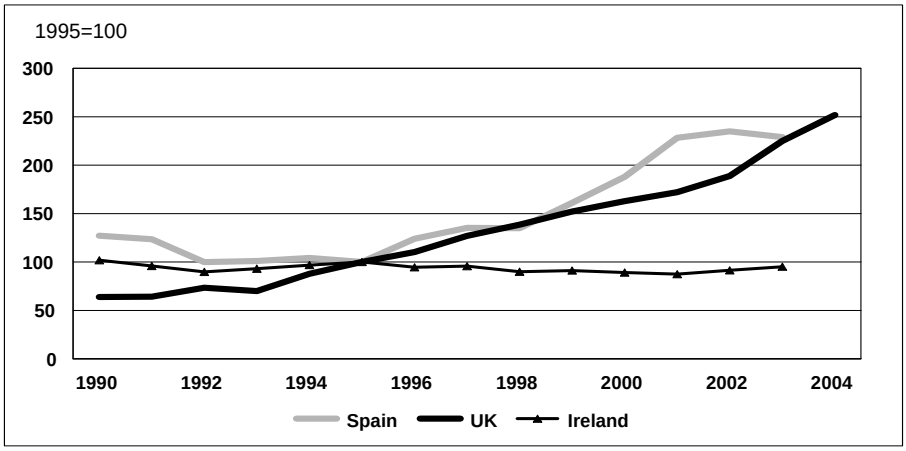
the medium-term, averaging 74,800 units per annum between 2003 and 2006, before moderating to 71,900 per annum out to 2011.

Figure 5.16: Cost of Land as a Proportion of New House Price



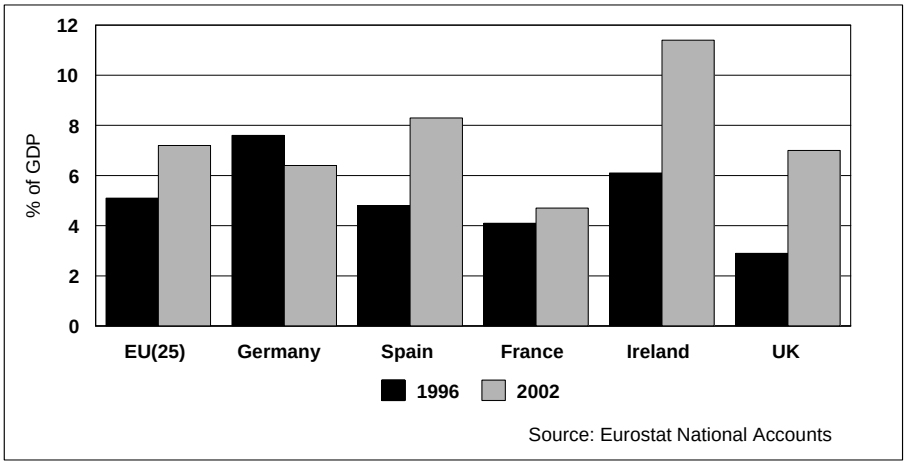
Ireland is not the only economy with a strong housing market. The very different real interest rates facing the household sector across the Euro Area in recent years have provided rather different incentives for housing investment. Not surprisingly in Spain and Ireland the low (and even negative) real interest rates for households that have resulted from EMU membership have provided a very strong stimulus to the housing market. As shown in Figure 5.17, housing completions in Ireland and Spain have more than doubled in number since the mid-1990s. This compares to the situation in the UK where the number of dwellings completed has remained relatively stable

Figure 5.17: Housing Completions, 1995=100



The result of this boom in house building is that the construction of dwellings accounts for a substantially larger share of GDP in Ireland and Spain than is the case for the rest of the EU. As shown in Figure 5.18, while housing activity has increased its share of GDP in the EU between 1996 and 2004, the increase has been particularly large in the Euro Area economies of Spain and Ireland. A marked increase is also evident in the UK. In both Ireland and Spain the housing sector accounts for a significant share of economic activity. In the case of Ireland it is now approaching an eighth of all economic activity.

Figure 5.18: Investment in Dwellings as a Percentage of GDP



With the housing sector accounting for such a large share of overall economic activity in these two economies they are vulnerable to any price or output shock to the sector. Experience in Scandinavia and the United Kingdom in the late 1980s indicates that this sector of the economy can suffer from sudden and dramatic reversals in fortune. Any such reversal in fortune in Spain and Ireland would have a very significant direct impact on economic activity in those countries. While the exposure of Spain and Ireland to shocks to the housing market is of some concern, there is clearly no danger to the wider Euro Area economy. As shown in Figure 5.18, the housing sector in France and Germany, for example, accounts for a significantly smaller share of economic activity than in Ireland and Spain, a share that is not very different from the long-term average for these economies. The impact of a housing shock on the Irish economy is explored in Chapter 6.

5.7 Energy and the Environment

The serious problem of how Ireland is going to reduce its greenhouse gas emissions to meet its target, as agreed under the Kyoto protocol, remains a crucial issue in energy policy. The *HERMES* model incorporates a model of the energy sector that allows the generation of consistent forecasts of energy demand and greenhouse gas (GHG) emissions.[40] A separate electricity sub-model is used that takes account of the economics of different types of types of generators (using different fuels) and of the varying load on the system over the average day.[41] The modelling framework used allows the incorporation of the impact of various policies used to reduce GHG emissions. Under the Kyoto protocol, the EU needs to reduce its GHG emissions by 8 per cent of the level they were at in 1990 by the years 2008-2012. Because of Ireland's relatively low level of development in 1990, it was agreed that for the 2008-2012 period Ireland's emissions could exceed their 1990 level by 13 per cent. In 2004 GHG emissions were around 26 per cent above the Kyoto base year level highlighting the magnitude of the task ahead.

One of the key instruments being used to achieve the required reduction in GHG emissions is a scheme of tradable emissions permits, which apply to a range of energy-intensive sectors such as electricity generation, cement, steel and certain chemical plants. The scheme came into effect this year. The impact of such a regime should be to raise the cost of burning fossil fuels and so encourage more moderate use. However, the decision of the EU governments

[40] A complete description of the energy model is available in ESRI Working Paper 146.

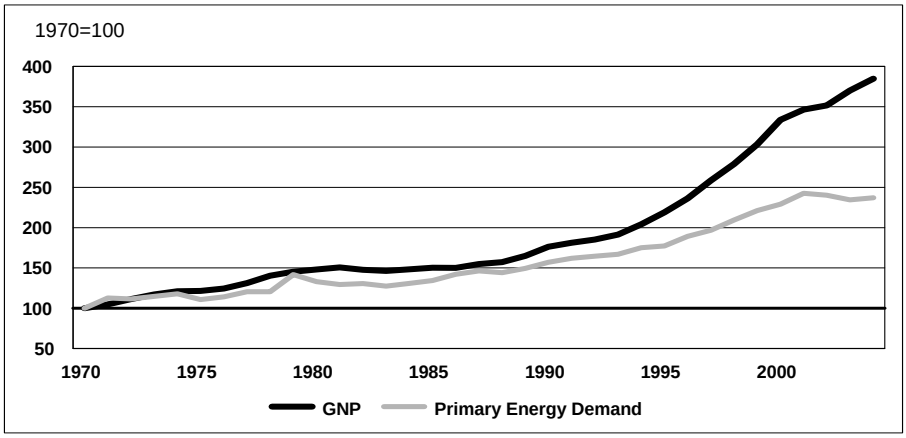
[41] A complete description of the electricity model is available in ESRI Working Paper 168.

to allocate at least 95 per cent of the quotas for free for firms involved in trading is seriously flawed. FitzGerald (2004) argues that giving the permits for free (referred to as "grand parenting" them) rather than auctioning them will mean there is no revenue available to the government to offset the negative competitiveness effects of the rise in energy prices as a result of the trading regime.[42] In addition, when there are multiple rounds where permits are allocated for free, as is the case with the EU scheme, this seriously distorts the market greatly reducing the likelihood of any significant environmental change coming about. This will raise the economic cost of reducing emissions by any given amount.

TRENDS IN ENERGY CONSUMPTION

Energy demand is a derived demand driven by economic growth. It is moderated by changes in relative energy prices and technological progress which cause a substitution away from energy products or result in more efficient use of fuels. Figure 5.19 plots primary energy demand and GNP from 1970 to 2004. Excluding the periods of the oil price shocks of 1973-74 and 1979-80, energy demand rises as GNP rises and there is little or no growth when GNP is stagnant (as in the early 1980s). Since 1990, there has been a decoupling of energy demand from growth, which is more marked in recent years. Several factors help explain this pattern. Economic growth in recent years has taken place in less energy-intensive sectors. There has been a rapid decline in the use of solid fuels (coal and peat) as consumers switch towards fuels with higher end-use efficiencies, such as gas. In the household sector, as consumption reaches saturation, the rate of growth begins to slow. Finally, the oil price hikes in the 1970s triggered the development of more energy-efficient equipment and practices.

Figure 5.19: Total Primary Energy Demand and GNP, 1970 to 2004

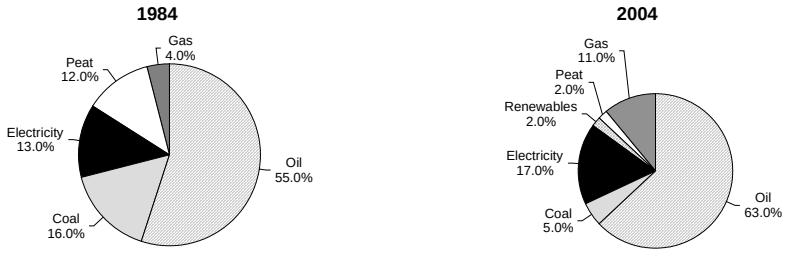


Total final consumption (TFC) of energy is the sum of the consumption of each fuel by sector, excluding the energy transformation sector. Figure 5.20 illustrates the breakdown of TFC by fuel in 1984 and 2004 so the change in the fuel mix over the past twenty years is evident. Oil continues to be the dominant fuel consumed with its share in TFC rising from 55 per cent in 1984 to 63 per cent in 2004. Electricity is the second most important and its share has risen modestly from 13 per cent to 17 per cent over the twenty-year period. The consumption of coal and peat, as a share of the total has fallen

[42] See Fitz Gerald, 2004, for further details and a critique of the emissions trading regime, available in "An Expensive Way to Combat Global Warming: Reform Needed in the EU Emissions Trading Regime", *Quarterly Economic Commentary*, Spring, Dublin: The Economic and Social Research Institute.

over the period, as households and firms switch to more efficient fuels such as gas.

Figure 5.20: Total Final Consumption of Energy by Fuel



ENERGY DEMAND FORECASTS[43]

On the basis of the *High Growth* Forecast for economic growth over the next decade, consumption of energy is expected to rise considerably, albeit at more moderate rates than in the past decade (see Table 5.10).[44] These forecasts are based on the assumption that from 2010 a carbon tax is imposed on those sectors not covered by emissions trading. In the *High Growth* forecast Total Final Consumption (TFC) is expected to increase to 15.7 million Tonnes of Oil Equivalent (TOE) by 2015, representing a 25 per cent increase from 2005. The impact of higher energy prices will partially offset the effects of continuing economic growth. The rising number of households over the coming decade will see a rise in energy demand from that sector. Over the next decade the most significant increase in energy demand will be from the transport sector, where demand is expected to be 33 per cent greater than in 2005, at over 6.7 million TOE. The services and industrial sector will also witness strong growth between 2005 and 2010, and more moderate growth thereafter, in line with the economic forecasts for these sectors, outlined earlier in this chapter.

Table 5.10: Final Energy Consumption by Sector, Thousand TOE

								Average Annual Growth Rates				
	1990	1995	2000	2005	2010	2015	2020	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
						High Growth						
Household	2,190	2,177	2,571	2,999	3,095	3,325		3.4	3.1	0.6	1.4	
Industry	1,722	1,749	2,253	2,111	2,492	2,766		5.2	-1.3	3.4	2.1	
Services	1,007	1,228	1,569	2,034	2,382	2,597		5.0	5.3	3.2	1.7	
Agriculture	252	288	334	310	296	283		3.0	-1.5	-1.0	-0.9	
Transport	2,026	2,461	3,902	5,117	6,227	6,746		9.7	5.6	4.0	1.6	
Total	7,197	7,903	10,629	12,571	14,491	15,717		6.1	3.4	2.9	1.6	
						Low Growth						
Household					3,027	3,028	3,185				0.0	1.0
Industry					2,439	2,682	2,980				1.9	2.1
Services					2,343	2,460	2,620				1.0	1.3
Agriculture					296	289	289				-0.5	0.0
Transport					6,184	6,570	7,013				1.2	1.3
Total					14,289	15,029	16,087				1.0	1.4

[43] Our forecast is based on the following assumptions about energy prices: there will be a real increase in the price of oil and gas of 5.4 per cent per year between 2004 and 2010; the real price of coal and peat will remain unchanged to 2010; the real price of carbon dioxide for the energy transformation sector is €20/tonne in 2010.

[44] Underlying our forecast is the assumption that the government introduces a carbon tax in 2010 affecting sectors not covered by emissions trading. It is assumed that it would be levied at a rate of €20 a tonne of carbon dioxide and that it would be indexed to consumer price growth thereafter. This would encourage energy saving and fuel switching to less polluting fuels.

Table 5.10 also presents the energy demand forecasts under the *Low Growth* scenario which is discussed in more detail in the next chapter. If and when the economy switches to a lower growth path at some point in the future, as in the *Low Growth* scenario, this will have a substantial impact on our forecasts for energy demand. As outlined in the previous chapter, we feel that at some point in the next decade the economy will shift to a lower growth path. Total Final Consumption (TFC) of energy would rise by an annual average 1.0 per cent between 2010 and 2015, compared to 1.6 per cent under the *High Growth* Forecast. Under the *Low Growth* scenario, TFC of energy is forecast to be 16 million TOE by 2020 or 12 per cent higher than 2010 levels.

The demand for different kinds of energy is shown in Table 5.11. Under the *High Growth* scenario oil is expected to remain the dominant fuel, with demand estimated to increase by 28 per cent over the ten year period 2005 to 2015. The decline in the consumption of solid fuel is expected to continue, and by 2015 coal and peat will account for 1.7 per cent and 0.7 per cent respectively of TFC. The demand for electricity is expected to remain constant as a share of the total at 17 per cent over the period 2005 to 2015. The share of gas is expected to increase from 12 per cent in 2005 to 15 per cent in 2015, enhanced by the expansion of its availability in urban areas. Our forecasts for the *Low Growth* scenario indicate a faster decline in coal and peat and more moderate growth for the remaining fuels.

Table 5.11: Final Energy Consumption by Fuel, Thousand TOE

								Average Annual Growth Rates				
	1990	1995	2000	2005	2010	2015	2020	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
						High Growth						
Coal	848	380	528	563	344	269		6.8	1.3	-9.4	-4.8	
Oil	3,875	4,756	6,713	7,978	9,340	10,210		7.1	3.5	3.2	1.8	
Gas	576	738	1,203	1,466	1,916	2,283		10.3	4.0	5.5	3.6	
Peat	757	615	303	260	168	112		-13.2	-3.0	-8.3	-7.9	
Renewables	109	130	140	190	187	184		1.5	6.3	-0.3	-0.3	
Electricity	1,032	1,284	1,742	2,114	2,536	2,658		6.3	3.9	3.7	0.9	
Total	7,197	7,903	10,629	12,571	14,491	15,717		6.1	3.4	2.9	1.6	
						Low Growth						
Coal					338	253	200				-5.6	-4.6
Oil					9222	9827	10552				1.3	1.4
Gas					1870	2122	2280				2.6	1.4
Peat					164	101	65				-9.2	-8.4
Renewables					187	184	181				-0.3	-0.3
Electricity					2507	2542	2808				0.3	2.0
Total					14,289	15,029	16,087				1.0	1.4

Electricity demand will see significant growth out to the end of this decade. Although growth will be more moderate than in the period up to 2000, it will still require major investment to ensure that demand is satisfied. We have assumed that electricity generation plant commissioning and decommissioning has been implemented according to the announced timetables. In order to meet the growing demand, we have assumed that there will be adequate additional generating capacity. More specifically, we assume that: Total wind capacity grows to 1100MW in 2010. The electricity model suggests that 1,100MW of new Combined Cycle Gas-fired Turbines (CCGT) are needed. This will result in an increase in the share of gas in electricity generation.

By 2020, we expect that the Irish economy will have shifted to a lower growth path as described in the *Low Growth* scenario and the direct effect of the slowdown on the electricity market would be lower growth in electricity demand. The forecast depreciation of the dollar against the euro under this

scenario would dampen the expected increase of worldwide oil and gas prices in euro terms.

The following assumptions are instrumental in deriving the 2020 forecast for electricity generation:

We expect the real price of CO_2 emissions to grow to €30/tonne by 2020. All other things being equal, this will lower the proportion of electricity generation fuelled by coal and peat, which produce high levels of CO_2 emissions during generation. The capacity of wind generation is assumed to grow from 1100MW in 2010 to 1800MW in 2020. There is assumed to be an increase in gas CCGT capacity. This is necessary in order for electricity generation to be able to meet demand. In particular, the model suggests that there will be an additional 500MW of new Combined Cycle Gas-fired Turbines (CCGT) and an additional 800MW of Open Cycle Gas-fired Turbines (OCGT) with respect to 2010. About 30 per cent of the energy produced by peat plants will come from burning biomass. This is based on research by SEI and Coford (National Council for Forest Research and Development) which suggests that at current prices it would be economic to substitute some biomass for peat.

The emissions trading scheme will push up the cost of plants that use solid fuel in 2020. Moneypoint is likely to be still generating in 2020, but coal powered plants produce a gradually smaller amount of electricity after 2010. The decrease in the use of coal is compensated in part by an increase in the use of renewable energy, which accounts for more than 20.0 per cent of total generation by 2020. Renewables include hydro-electric (excluding pumped storage), wind, landfill gas, and biomass powered plants.

Due to the new CCGT and OCGT plants needed to meet demand, gas powered plants gradually increase in importance and by 2020 they are responsible for 68 per cent of total electricity generation. The decision about which plants generate electricity each period is based solely on the goal of optimally dispatching plants. However, it should be noted that policy considerations might recommend against relying so heavily on a single fuel type.

The forecast final demand for energy and the forecast development of the electricity sector are combined to give a forecast for primary energy demand in Table 5.12. The combination of slower growth in the economy and the fact that the economy is maturing in terms of energy use will result in slower growth in primary energy demand over time.[45]

FORECAST GREENHOUSE GAS EMISSIONS

The forecasts described here for energy demand have significant implications for the environment. The burning of fossil fuels releases carbon dioxide (CO_2), which is the largest contributor to GHG emissions in to the environment. To estimate CO_2 emissions, total final consumption by fuel type is multiplied by an appropriate 'emissions factor', since each fuel will release a different amount of CO_2 when burned.[46] Despite the decline in consumption of the dirtier fuels, such as coal and peat, over the forecast period, CO_2 emissions are set to increase significantly in the next five years. Total emissions of CO_2 were over 31 million tonnes in 1990 and by 2010 this is likely to have increased to over

[45] Note that the losses in conversion of biomass into electricity have not been taken into account in these numbers. To this extent the demand for primary energy in 2020 would be very slightly higher than shown in Table 5.12.

[46] An adjustment has to be made for emissions from electricity as they depend on the fuel mix and the efficiency of generation. By breaking down the final consumption of electricity into a primary energy requirement for each fuel, the CO_2 emissions for electricity. Emissions from electricity generation tend to be disproportionately high, as much of the energy of the individual fuels is lost in generation.

53 million tonnes under the high growth scenario, representing a 72 per cent increase on 1990. Post-2010, we anticipate some fall in CO_2 emissions on the back of slower growth in the economy.

Table 5.12: Demand for Primary Energy by Fuel, Thousand TOE

								Average Annual Growth Rates				
	1990	1995	2000	2005	2010	2015	2020	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
						High Growth						
Coal	2,163	1,917	1,989	1,995	2,168	1,488		0.7	0.1	1.7	-7.2	
Oil	4,285	5,454	7,868	8,784	9,471	10,341		7.6	2.2	1.5	1.8	
Gas	1,447	1,916	3,059	3,918	5,320	6,123		9.8	5.1	6.3	2.9	
Peat	1,358	1,214	804	925	834	687		-7.9	2.9	-2.1	-3.8	
Renewables	110	132	187	294	411	489		7.2	9.4	7.0	3.5	
Electricity	59	60	73	71	153	209		4.0	-0.7	16.8	6.4	
Feedstock	430	423	384	0	0	0		-1.9	-100.0			
Total	9,852	11,116	14,364	15,987	18,358	19,338		5.3	2.2	2.8	1.0	
						Low Growth						
Coal					2,163	1,472	814				-7.4	-11.2
Oil					9,354	9,958	10,683				1.3	1.4
Gas					5,211	5,709	6,605				1.8	3.0
Peat					829	677	551				-4.0	-4.0
Renewables					411	489	568				3.5	3.0
Electricity					153	209	264				6.4	4.8
Feedstock					0	0	0					
Total					18,121	18,514	19,485				0.4	1.0

Table 5.13 shows the forecast for CO_2 emissions by sector. The major contributor to the increase in CO_2 emissions is the transport sector, which will account for approximately 38 per cent of CO_2 emissions by 2010 in the *High Growth* forecast.

The Kyoto Protocol allows a 13 per cent increase in total emissions from the 1990 base year. To forecast future greenhouse gas emissions information on the country's emissions of other GHGs, namely methane and nitrous oxide as well as the extent of sequestration as a result of carbon sinks is needed (Table 5.13). Ireland currently stands about 30 per cent above the Kyoto limit of 13 per cent above 1990 levels. Given our forecasts for energy demand, GHG emissions are expected to continue rising out to 2015. It is more realistic to use the low growth scenario for emissions in 2020. Under this scenario emissions of GHGs would stand at around 32 per cent above the 1990 level, not much different from today. Significant policy changes over and above the assumed carbon tax will be required in order to restrict GHG emissions; otherwise Ireland will fail to meet its Kyoto target. Whether these policies use fiscal instruments or other approaches there is significant scope to improve the energy efficiency of the economy without significantly impacting on the prospects for growth.

Table 5.13: Forecast CO_2 Emissions from Energy, by Sector ('000 Tonnes)

								Average Annual Growth Rates			
	1990	1995	2000	2005	2010	2015	2020	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
						High Growth						
Household	10,429	10,262	11,198	12,120	12,172	12,037		1.8	1.6	0.1	-0.2	
Industry	7,956	8,611	10,353	8,692	9,593	9,615		3.8	-3.4	2.0	0.0	
Services	4,816	5,839	7,359	9,560	10,810	10,636		4.7	5.4	2.5	-0.3	
Agriculture	1,048	1,193	1,300	1,174	1,107	999		1.7	-2.0	-1.2	-2.0	
Transport	6,200	7,534	11,941	15,697	19,087	20,660		9.7	5.6	4.0	1.6	
Feedstock	989	973	883	0	0	0		-1.9	-100.0			
Transmission Losses etc.	304	442	369	566	600	616		-3.5	8.9	1.2	0.5	
Total	31,742	34,853	43,403	47,809	53,368	54,561		4.5	2.0	2.2	0.4	
% Change on 1990	0	10.1	36.3	48.2	65.4	68.5						
						Low Growth						
Household					11,970	11,047	10,751				-1.6	-0.5
Industry					9,424	9,382	9,775				-0.1	0.8
Services					10,660	10,151	9,852				-1.0	-0.6
Agriculture					1,109	1,010	996				-1.8	-0.3
Transport					18,954	20,124	21,466				1.2	1.3
Feedstock					0	0	0					
Transmission Losses etc.					599	615	626				0.5	0.4
Total					52,716	52,330	53,465				-0.1	0.4
% Change on 1990					63.2	61.6	64.7					

6. THE OUTLOOK TO 2020

6.1 Background

In this *Review* we have chosen to present our view on the future growth prospects for the Irish economy using two different scenarios. The first *High Growth* scenario discussed in Chapter 5 assumes that there is no adjustment in the US economy over the medium term; we argue that this scenario is only realistic at most over the next five to seven years. As discussed in Chapter 3, over the longer term, we feel that adjustment in the US economy is inevitable, albeit that the timing and scale of any such adjustment is uncertain. To capture the likely effects of such an adjustment on the longer-term prospects for the Irish economy we have developed an alternative *Low Growth* scenario which assumes that the US economy begins a gradual adjustment to a more sustainable growth path from 2007 onwards. In this chapter we present the results of this scenario over the period out to 2020.

In this *Low Growth* scenario we assume that the adjustment process is gradually spread over a number of years. In practice, if it is to occur, the adjustment may be more of a short sharp shock. This could portend a much more unpleasant environment for the Irish economy in the year it happened, but provided that the sharper adjustment did not provoke a collapse in the domestic housing market the more rapid restoration of the world to a sustainable growth path could prove beneficial. Furthermore, the timing of such an adjustment is uncertain; it may begin in 2007 or may not occur until well into the next decade. However, if the assumption that such a correction must happen within the forecast horizon out to 2020 is correct, then the results of this *Low Growth* scenario presents a picture of the likely path the Irish economy will follow out to 2020.

There are several domestic factors which could also see the economy growing below potential over the medium term, which if compounded with a sharp US adjustment could lead to significantly lower employment and living standards. In previous *Reviews* we have presented such a "wasted opportunity" scenario where excessive domestic cost increases combined with a failure to fully implement the necessary infrastructural investment over the coming decade could create a wage-price spiral. In turn, this could lead to much lower growth in GNP and income and possibly even a resumption of emigration.

We do not to present such a scenario in this *Review,* the results are well rehearsed in previous *Reviews*; instead we have chosen to focus on one domestic shock originating in the housing market. The boom in housing demand and house prices over the past number of years has led to an unprecedented rate of house building, with the building sector's share of total employment swelling from 6.5 per cent in 1995 to over 12 per cent by 2005. The importance of this sector for employment, coupled with the wealth effects of the sharp rise in house prices on the household sector, mean that any adverse movements in house prices could have strongly negative effects on employment and consumption over the medium term. In Section 6.4 we present this shock to the housing sector as a "consequence" of the adverse external environment portrayed in the *Low Growth* scenario. However, such a housing shock could be caused by other independent factors. This scenario gives an indication of what would be the impact of any such sudden change in the conditions facing the building and construction sector.

6.2 *Low Growth* - Summary

Table 6.1[47] summarises the major aggregates under this *Low Growth* scenario out to 2020. The cost of an immediate US adjustment beginning in 2007 is reflected in a fall in the average growth rate of Irish GNP to 3.5 per cent per annum between 2005-10, well below the estimated potential growth rate of 4.4 (Table 4.1 in Chapter 4). This underperformance would continue in the opening years of the following decade with GNP growing at 3.1 per cent per annum out to 2015 against a potential growth rate of 3.5. Beyond 2015, as the US economy returned to a sustainable growth path and began to grow again at near its long-term potential, the Irish economy would also start to pick up. By the end of the next decade the Irish growth rate would exceed its potential, catching up on some of the lost potential output of the years of adjustment.

Table 6.1: *Low Growth* Forecast, Growth in Major Aggregates

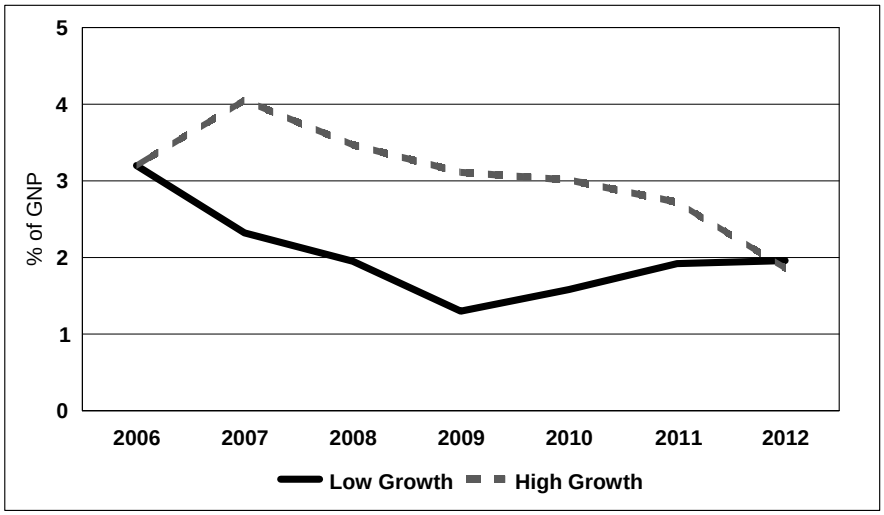
	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
GDP	9.8	5.4	4.2	3.1	3.2
GNP	8.8	4.0	3.5	3.1	3.3
GNDI	8.2	3.5	3.1	2.9	3.4
GNP per head	7.7	2.2	2.1	1.8	2.2
Investment/ GNP ratio	25.6	28.6	28.6	27.4	26.5
Personal Consumption	7.7	4.3	2.6	1.7	2.6
Employment(PES) - % change	5.0	3.1	1.5	1.2	1.4
Real after tax non-ag wage rates, %	2.8	2.3	1.5	0.5	1.3
Non ag wage rates %	6.0	5.5	4.1	2.8	3.2
Per Cent of GNP	**2000**	**2005**	**2010**	**2015**	**2020**
Balance of payments surplus	-0.3	-1.8	-0.4	3.0	6.0
Debt/GNP ratio	34.3	22.4	18.6	15.5	12.5
General Government Balance as % of GNP	5.1	-0.6	0.4	0.4	0.3
Per Cent of Labour Force (ILO Basis)					
Unemployment rate - ILO	4.3	4.2	7.1	6.4	4.1
In Thousands					
Net Immigration, Thousands	26	53	23	18	13

The sluggish growth performance in the period after 2007 would lead to a rise in unemployment while the adjustment process was under way, and a gradual easing of wage inflation. The deterioration in employment prospects and the reduced rate of growth in incomes would together feed into a low rate of personal consumption growth. Such a dampening of employment prospects relative to the past ten years would lead to an easing of net inward migration flows relative to those recorded in recent years. While some net immigration would be expected to continue, the inflow in 2010 would be less than half that recorded in 2005 and by 2020 net immigration flows could fall to around 13,000.

This scenario presents a more sombre picture of the prospects for the Irish economy over the medium term than in the case of the *High Growth* scenario of Chapter 5. As shown in Figure 6.1 during the adjustment process, for five years the growth in GNP per would be significantly lower than in the *High Growth* case. However, after 2012 growth would be somewhat higher than in the scenario presented in Chapter 5, although the lost ground of the 2007-2012 period would never be fully made up. Under this *Low Growth* scenario by 2010 the level of GNP would be almost 7 per cent lower than in the *High*

[47] We have chosen to present all tabulated results in this chapter using five year averages since our focus is on the longer term.

Figure 6.1: *Low Growth* - Comparison of Growth Rates of GNP



Growth scenario with 90,000 fewer jobs. This sluggishness would be entirely attributable to external factors throwing the Irish economy off its current growth path. Nonetheless, the results of the *High Growth* simulation presented in Chapter 5 point to emerging pressures in the labour market by the end of the current decade and suggest that even with a continued benign external environment internal pressures could lead to a gradual unwinding of Ireland's competitive position over the longer term.

6.3 *Low Growth* - Details

Here we outline the alternative *Low Growth* scenario out to 2020. Detailed tables for this scenario are shown in Appendix 3 to this *Review*. This scenario is based on a return of the US to a sustainable growth path with that process beginning in 2007. The consequence of this alternative set of external assumptions is a much slower growth rate of the economy in the period to 2012 than that portrayed in the previous chapter. When looking out to 2020 we feel that this more conservative forecast is likely to prove closer to reality.

Following exceptional growth in the manufacturing sector over the course of the past decade, growth was much lower in the period 2000-2005, with zero growth recorded in 2003. Since then the growth rate has begun to pick up to a more respectable 5.4 per cent estimated for 2005. However, the consequence of an adjustment of the US economy beginning in 2007 would be to further hasten the decline of the manufacturing sector, with average growth rates falling further out to 2010. The consequences of lower US demand would be to reduce the growth performance of the key high-tech manufacturing sector. The traditional and food processing sectors are currently facing competitive difficulties internationally but it would be the reduced performance of the high-tech sector that would drive the lower output performance in this scenario. The reduction in employment possibilities and lower immigration flows would mean that the current very high levels of investment in housing would unwind more rapidly over the coming five years and output in the building sector would begin to fall in the next decade.

Table 6.2: Percentage Change in Output, GDP at Factor Cost at Constant 1995 Prices

	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
Agriculture	1.1	0.6	1.3	0.8	0.3
Industry	13.5	5.4	4.7	3.3	3.3
Manufacturing	14.4	5.4	4.6	3.9	3.9
Utilities	5.3	5.8	5.3	3.1	4.7
Building	10.8	5.4	4.8	-0.8	-3.2
Market Services	8.4	5.8	4.3	3.5	3.5
Distribution	10.4	4.9	3.4	3.2	3.8
Transport & Communications	12.8	4.8	4.0	3.8	4.0
Other Market Services	6.7	6.5	4.7	3.5	3.3
Non-Market Services	3.2	4.2	2.9	1.6	1.6
Health & Education	3.8	5.2	2.6	1.5	1.5
Public Administration	1.7	1.9	3.7	2.0	1.8
GDP at Market Prices	9.8	5.4	4.2	3.1	3.2
Net Factor Income	16.4	11.9	6.6	3.1	2.9
GNP at Market Prices	8.8	4.0	3.5	3.1	3.3

Over the next decade the manufacturing sector would continue to grow somewhat more rapidly than GNP. Because market services are still strongly dependent on domestic demand its performance would also suffer as a result of lower growth in manufacturing output and the slump in the building sector. Even by the end of the next decade the performance of the market services sector would be significantly below the heady days of 1995-2000. In Table 6.3 it is clear why this occurs. The growth in personal income in 2000-2005 was 8.1 per cent per annum, and under this *Low Growth* scenario the growth rate would fall to 4.8 per cent in the period 2005-2010, and 4.1 per cent in 2010-2015, before gradually recovering by the end of the decade.

Table 6.3: Personal Income, Percentage Change

	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
Agricultural Incomes	-0.7	0.5	4.3	4.4	3.7
Non-Ag. Wage Income	12.1	9.2	5.9	4.3	4.8
Transfer Income	7.0	12.5	5.8	5.3	6.2
Personal Income	11.1	8.1	4.8	4.1	4.8
Personal Disposable Income	11.1	8.4	4.4	3.9	4.7
Personal Consumption	11.1	7.8	4.8	3.8	4.6
% of disposable income	**2000**	**2005**	**2010**	**2015**	**2020**
Tax Rate	19.9	18.7	20.4	21.3	21.4
Savings Ratio (% Disposable Income	9.7	12.3	10.5	10.8	11.6

The component of expenditure that would take the most severe hit from a US adjustment would be the growth rate in personal consumption, which would record an average growth of just 2.6 per cent per annum in the period 2005-2010 (Table 6.4), falling even further to 1.7 per cent in 2010-2015. This would reflect the rise in unemployment and the slower growth in wages under this scenario. The rate of investment would also be lower, due to the much slower growth in the housing sector. This slower growth would be the consequence of a number of factors. Lower growth in the economy as a whole and a lower growth in employment would result in much lower net immigration than in the *High Growth* scenario. In turn this would result in slower growth in the number of households. Also, the much slower growth in

real personal disposable income than in the *High Growth* scenario would reduce demand for houses below that shown in Chapter 5. In turn, house prices would rise much more slowly, roughly keeping pace with the underlying rate of inflation.

Table: 6.4 Expenditure on GNP, Constant Prices, Percentage Change

	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
Personal Consumption	7.7	4.3	2.6	1.7	2.6
Public Consumption	5.9	5.5	3.0	1.9	1.7
Fixed Investment	14.8	3.8	2.3	2.4	2.5
Building	13.0	6.0	1.1	1.8	1.9
Machinery	17.0	1.2	4.0	3.0	3.1
Total Exports	17.4	5.4	4.7	4.3	3.8
Total Imports	17.6	4.4	3.4	3.8	3.4
Gross Domestic Product	9.8	5.4	4.2	3.1	3.2
Net Factor Income	16.4	11.9	6.6	3.1	2.9
Gross National Product	8.8	4.0	3.5	3.1	3.3

With rising unemployment and growth rates below potential, the rate of increase of prices and wages in the economy in the years up to 2010 would slow from current levels. The growth in non-agricultural wage rates (Table 6.5) in particular slows from 5.5 per cent per annum in 2000-2005 to 4.1 in the five-year period out to 2010, before slowing further to 2.8 per cent in 2010-2015. This slowdown would be brought about by the higher level of unemployment under this scenario. If we contrast this rate of growth in wage rates number with the equivalent 6.9 per cent under the *High Growth* scenario we can begin to uncover the reasons for the recovery in output under the *Low Growth* scenario (improved competitiveness) and the dangers that have built up in the *High Growth* scenario. The gradual improvement in competitiveness in this scenario after 2010 would begin to price the Irish economy back into markets it had lost. Thus the growth rate in the latter part of the period would be higher than in the scenario in Chapter 5.

Table 6.5: Prices and Wages, Percentage Change

	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
Personal Consumption	3.2	3.4	2.1	2.0	1.9
Average Annual Earnings, % change					
Non Agricultural	6.0	5.5	4.1	2.8	3.2

This lower rate of wage growth is directly attributable to sluggish labour demand. Table 6.6 shows the five year average sectoral employment growth rates. This represents a dramatic slowdown compared to the 2000-2005 period. As a consequence, there would be a substantial rise in the unemployment rate from 2007 to 2010. Thereafter, as the economy would begin to adjust through a reduction in wage rates and an improvement in competitiveness, the unemployment rate would begin to fall. By the end of the next decade it could be expected that in spite of the lower growth rate in output, full employment would have been restored, albeit at a lower level of GNP and with a lower population.

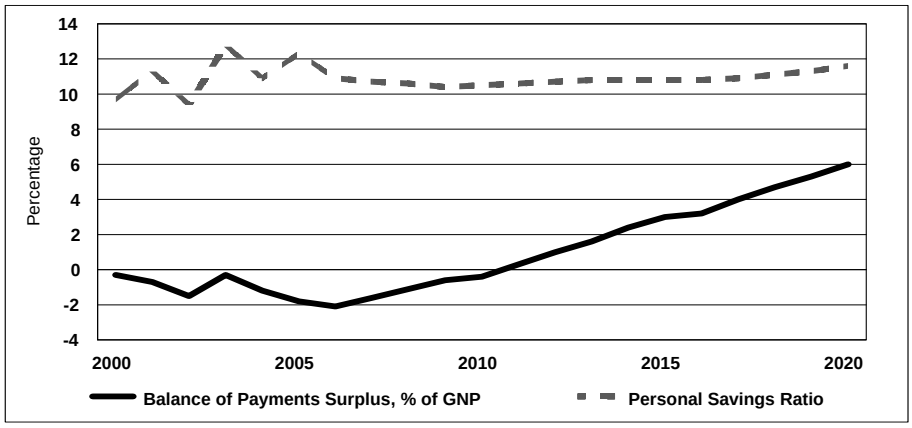
Table 6.6: Employment and the Labour Force, Percentage Change, Mid-April

	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Average Annual % Growth					
Agriculture	-2.7	-2.4	-2.6	-2.7	-2.7
Industry	6.0	2.3	0.2	0.0	-0.1
Manufacturing	2.9	-1.0	-0.2	-1.6	-1.7
Utilities	-2.5	3.2	0.6	-1.8	-8.0
Building	14.6	7.4	0.7	1.7	1.8
Distribution	4.4	3.6	0.8	0.6	0.7
Transport & Communications	5.6	2.3	0.7	2.1	1.8
Other	8.3	4.4	3.5	3.1	3.3
Non-Market Services	4.3	4.6	2.7	1.5	1.5
Health & Education	5.1	4.8	2.6	1.5	1.5
Public Administration	2.1	3.9	3.0	1.5	1.5
Total Employment	5.0	3.1	1.5	1.2	1.4
Labour Force	3.4	2.9	2.1	1.1	0.7
	2000	**2005**	**2010**	**2015**	**2020**
Unemployment Rate (ILO)	4.3	4.2	7.1	6.4	4.0
Net Immigration, Thousands	26	53	23	18	13

This scenario is prepared on the basis that the government runs a small general government surplus over the full fifteen-year period to 2020. This is achieved by adjusting the rate of growth in current public expenditure downwards and using the personal tax rate to balance the budget from year to year. In addition, it is assumed that the government would react to the much slower growth in the economy by slowing the growth of current expenditure; the result would be that the ratio of current expenditure to GNP would remain fairly stable over the forecast period. Figure 6.2 plots the balance of payments surplus and the personal savings ratio. The personal savings ratio remains stable throughout the period. It is the balance of payments surplus that, following an initial negative balance, begins to rise strongly in the second half of the next decade. The low growth in consumption, which affects the demand for imports, means that the balance of trade rises strongly over the longer term with exports of other services driving the growth in total exports.

The rise in the surplus after 2015 in this scenario is not realistic. If such a scenario were to be played out in real life what would be likely to happen is either the company sector would raise investment or the private sector would react to the increasing net external asset position through increasing consumption. In either case the rate of growth would be slightly stronger after 2015 resulting in more of the "lost ground" being made up.

Figure 6.2: Personal Savings Ratio and Balance of Payments Surplus



6.4 A Shock to the Housing Sector

The long-term scenario discussed above considers how the Irish economy would be affected by a gradual process of adjustment by the US economy which returned it to a sustainable growth path in the next decade. In that stylised scenario it is assumed that the adjustment begins in 2007, although it is quite possible that it could be postponed well into the next decade. The adjustment process portrayed above is a smooth one: the US does not suddenly jump to a position of external and internal balance. In turn, there is a gradual adjustment in the rest of the world including Ireland. However, reality is often different from this stylised pattern of gradual adjustment. Smooth transitions are not that common when asset markets are involved. There is a tendency for assets prices to suddenly jump from one state to another. For example, when expectations change the value of the exchange rate may show a very substantial change over a short period of time reflecting the new information available to the market.

In the case of the Irish economy, as discussed earlier in this *Review*, there is a considerable exposure to any disturbance affecting the building sector. In the US Adjustment or *Low Growth* scenario described in Section 6.2 there would in any event be a rise in unemployment consequent on the economic slowdown in 2007. While in the case of a smooth adjustment the unemployment rate would peak at under 8 per cent of the labour force, such a rise could unsettle the confidence of the household sector. The demand for housing is particularly sensitive to changes in personal disposable income and the rise in unemployment could give rise to significant fears among many of those still employed about their job security. Given the high level of indebtedness of the household sector many households are not in a good position to sustain a prolonged loss of employment. Such a loss of confidence could precipitate a much more dramatic internal adjustment process affecting the building and construction sector. Some of those who lost their jobs could be forced to sell on a market where many potential buyers were holding off buying until their own personal position was clarified. Even if the number of forced sales were limited, the consequence could be a major fall in house prices over a short period of time.

Table 6.7: International Experience of Real House Price Falls

	Maximum Fall in Price
Denmark	-37
Finland	-50
France	-18
Germany	-15
Ireland [48]	-27
Netherlands	-50
Sweden	-38
United Kingdom	-34
United States	-14

Source: OECD, 2005 Economic Outlook, No. 78, November.

It is not possible to model the possible magnitude of the fall in house prices that might occur in the face of a sudden deterioration in the expectations of the household sector. To gauge what might occur under very unfavourable circumstances it is useful to look at the magnitude of the falls in house prices that have occurred in other countries in the face of shocks affecting expectations. Table 6.7 shows the maximum fall in house prices that has occurred in any cyclical downturn in the relevant economies. Larger economies tend to experience smaller falls because of the regional diversity in their housing markets. Also, home ownership is lower in countries such as Germany and France, which reduces their exposure to changes in sentiment by the

[48] In Ireland the fall in real house prices was experienced between the third quarter of 1981 and the second quarter of 1987.

household sector. For the smaller countries shown in the table and for the United Kingdom the biggest falls in house prices experienced in the past range from -27 for Ireland up to -50 for the Netherlands and Finland.

Here we examine what would happen if just such a sudden loss of confidence did occur in Ireland. We have calibrated a housing price shock with an illustrative fall in house prices of approximately a third in 2007 – within the range shown above. Obviously, this does not represent a forecast as to whether a fall in house prices will actually occur or if it should occur as to what its magnitude and timing would be. However, it allows us to examine what would be the consequences of what would in any terms be a fairly severe recession. This illustrative fall in house prices would contrast with the steady small rise in prices of 2 per cent a year envisaged in the *Low Growth* scenario. In this case we assume that house prices do not begin to recover till after 2010 and we analyse the potential impact of these major changes on the economy as a whole over the period 2007 to 2010.

Figure 6.3: Housing Shock – Housing Completions

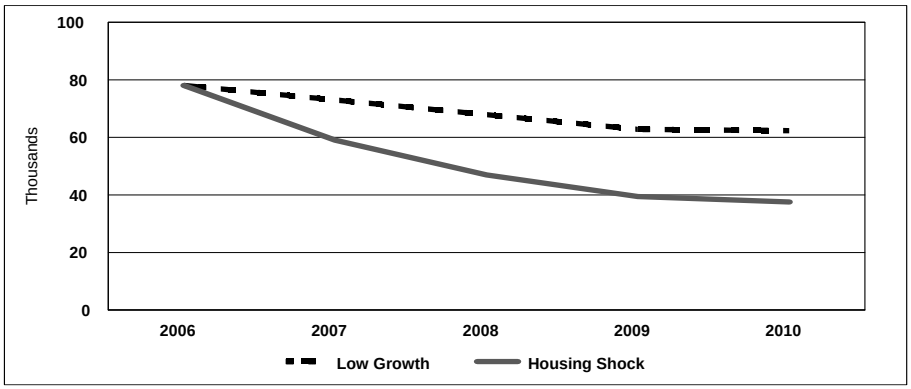


Figure 6.4: Housing Shock – GNP, % Change

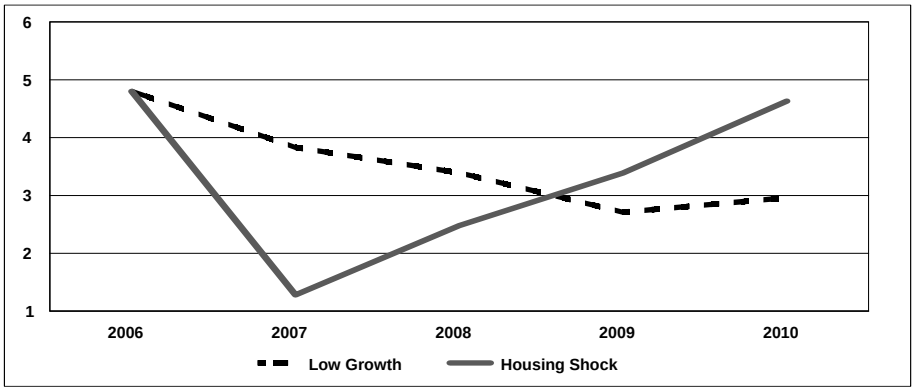
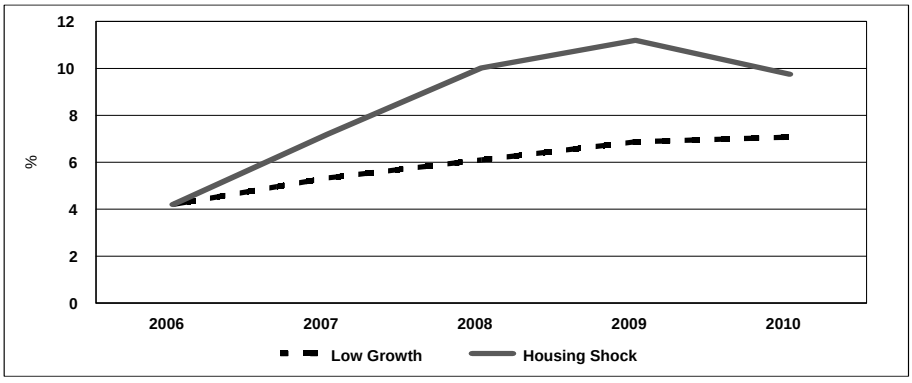


Figure 6.5: Housing Shock – Unemployment Rate

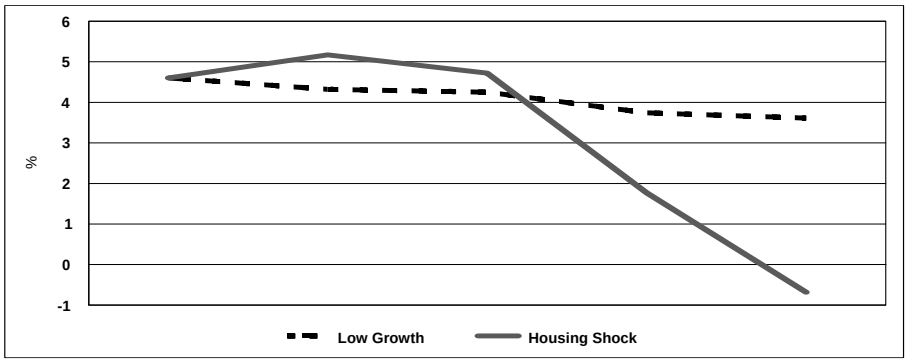


Such a sudden large decline in house prices would precipitate a rapid adjustment in the output of the building industry. Builders would see their profits turning to losses and they would rapidly adjust their activity rate. Instead of housing completions falling from their peak of between 70,000 and 80,000 next year to around 62,000 in 2010 as in the US Adjustment *Low Growth* scenario, they would fall to under 40,000 in 2009 in the housing shock scenario (Figure 6.3). This would represent a near halving of output over a three year period. Such a fall in output would, in turn, trigger a very large cumulative fall in employment in the building and construction sector of 15 per cent spread over 2007-09.

As discussed in Chapter 2, the building sector represents a very large share of the economy today so such a large shock to that sector would have major consequences for the economy as a whole. As shown in Figure 6.4 GNP would grow by only just over 1 per cent in 2007 as a result of the collapse of the housing market and it would still grow at less than 3 per cent in the second year of the shock, 2008. It is only from 2009 onwards that the economy would begin to recover with the growth in GNP per head rising more rapidly than in the *Low Growth* case. The consequence of this would be that unemployment would rise very rapidly to 10 per cent or more from 2008 to 2010 (Figure 6.5). Such a large rise in the unemployment rate would further aggravate uncertainty about the future.

Many of those who would lose their jobs as a result of such a downturn would seek employment elsewhere provided that the rest of Europe did not suffer as serious a decline in output. The consequence would be that by 2010 net immigration would almost cease, further reducing the potential demand for dwellings. This reduction in immigration would see a reduction in the population below the *Low Growth* case.

Figure 6.6: Housing Shock – Wage Rates



These simulations suggest that the worst effects of the downturn in the housing market would be felt in 2007 and 2008. By 2010 the economy would be beginning to recover. An important part of the recovery would be a very much lower growth in wage rates than is assumed in the *Low Growth* scenario (see Figure 6.6). The reduction in the rate of increase in nominal wage rates, with a small fall in nominal wages in 2010, would be a consequence of the very high rate of unemployment. By contrast with the 1970s and the 1980s, today we see a significant Philips curve effect, with wage rates responding to unemployment and growing at a slower rate. This would help improve the competitiveness of the economy in the period after 2010. However, even with an improvement in competitiveness it would be some considerable time before employment growth in other sectors of the economy would come to replace the jobs lost in the building sector. It would probably take about five to seven years for the economy to recover fully from this very substantial shock, returning employment to near the level it would have attained without the collapse in housing prices.

In this scenario we have assumed that the government would react to the severe loss of revenue and the growth in expenditure on transfers to the unemployed by raising taxes or cutting other forms of expenditure. The result would be that the government's borrowing would not rise, in spite of the fall in revenue from taxes such as stamp duty. If all the adjustment were concentrated on income tax the share of such tax in personal income might have to rise dramatically out to 2009, falling back thereafter as the economy recovered. This would be a very procyclical response to the shock.

If, instead, the government allowed the deficit to rise without responding, the impact on the public finances would be quite large. By 2009 the deficit would be almost 3.5 percentage points of GNP higher than in the *Low Growth* scenario. Such a neutral fiscal policy would provide some insulation to the economy from the shock, and GNP might recover to the level it would otherwise have been at by 2010 rather than 2011. Given the low levels of debt, such a neutral fiscal policy stance might well be appropriate. However, the feasibility of adopting such a course of action would depend on the public finances being in a strong position prior to the shock occurring. This highlights the importance of governments maintaining a significant surplus while the economy is growing rapidly and while there remains this major exposure to a shock to the building industry.

This scenario, where the economy would recover from the housing price shock by 2010 or 2011 (though it would take longer for full employment to be achieved), would represent a satisfactory outcome to a very serious shock. If the labour market were to prove less flexible than we expect, the consequence could be a much more prolonged period of adjustment, with higher costs for all those who would be unemployed. In addition, this scenario assumes that the financial sector would prove to be robust in the face of the major shock to the housing sector and the very rapid doubling in the unemployment rate. Should significant problems arise due to the high level of household indebtedness this could greatly complicate the recovery process.

6.5 Conclusions

Given the uncertainty that surrounds any forecasting exercise it is always unwise to rely on a single projection for the future. In this *Review* we view the *High Growth* forecast shown in Chapter 5 as being unsustainable in the long term. While it represents the more likely outturn for the next few years, the *Low Growth* scenario presented in this chapter seems more likely to describe the progress of the economy over the longer term to 2020.

However, even this *Low Growth* scenario could prove too optimistic in the medium term. If, for example, the rise in unemployment in the *Low Growth* scenario were to trigger a loss of confidence in the housing market, the consequences could be a severe downturn resulting in unemployment rising above 10 per cent of the labour force. The simulation described in this chapter point to the importance of adopting policy measures which would minimise the risk of such a serious shock occurring in the foreseeable future.

There are a range of other possible shocks or surprises which could occur over the coming decade, some of which were considered in the last *Review*. There we examined the likely consequences of a deterioration in Ireland's competitiveness through a combination of wage demands above productivity and a failure to address the current infrastructural deficit. The additional wage inflation under such a scenario would translate into significantly higher price increases in the non-traded goods and services sectors of the economy. The results suggested that there are significant downside risks over the medium term if policy does not focus on promoting competitiveness on world markets; growth and employment could fall significantly and living standards could be 10 per cent lower in the medium term than would otherwise be the case.

Successive *Medium-Term Reviews* have been too pessimistic about Ireland's future growth prospects. In the last *Review* a second scenario was considered

where it was assumed that Ireland became more competitive over the medium term than was assumed in the standard *Benchmark*. This simulation suggested that GNP could grow at 0.7 per cent per year above the *Benchmark* growth rate under these circumstances. However, because of the current congestion problems facing the economy this was felt to represent a likely upward bound on the possible growth rate of the economy over the medium term. Everything that has happened over the last two and a half years would tend to reinforce this view that the future growth of the economy is limited by the pressures accumulating as a result of past successes.

7. CONCLUSIONS

7.1 Introduction

Before looking to the future it is important to acknowledge the huge economic achievements of the last decade. While even five years ago there were still some observers outside Ireland who believed that the rapid growth of the Irish economy was a mirage, it is now clear to all that remarkable growth in living standards has taken place. It is also true that the new Irish economy is reasonably robust in the face of economic shocks. The downturn in 2001-2002 did no lasting damage and the flexibility of the labour market ensured that there was no major rise in unemployment. By any standards this must be classified as a very robust performance.

Since the last *Medium-Term Review* was published two and a half years ago, the Irish economy has seen a period of sustained growth in output, accompanied by a very rapid increase in the labour force and in the numbers employed. As a result, unemployment remains low, especially by comparison with our EU neighbours. A better measure of welfare is the rate of growth in GNP per head. This takes account of the fact that a significant part of the additional output was only made possible by the high rate of net immigration and that the fruits of this output, i.e., higher incomes, is shared with all those living in Ireland. On this basis the improvement in living standards over the last five years has also been significant though, much slower than in the late 1990s: a growth rate of 2.2 per cent a year between 2000 and 2005 rather than the 7.7 per cent a year between 1995 and 2000.

The analysis in this *Review* suggests that the economy has the potential to continue growing at between 4 and 5 per cent a year out to the end of the decade. While this is a significantly slower rate of growth in potential output than was experienced in the late 1990s, it is still substantially greater than for the EU as a whole.

The potential for the Irish economy to grow is declining over this decade as the unutilised resources available in the economy, not least the skilled labour, are used up. Also, while there has been a major improvement in the quality of the infrastructure of the economy over the last decade, this development has been partially matched by growth in pressures on that same infrastructure. As a result, the economy remains constrained by the limited stock of dwellings, and consequent high price, and the problems of congestion. For the next five years our analysis suggests that income per head could grow at something under 3.5 per cent a year, before slowing to a rate of increase of around 1.5 to 2 per cent a year over the following decade.

While the growth in GNP per head is a very important measure of welfare, it does not take account of a number of other important features of our society. The increased congestion costs and the growing pressures on the environment as a result of the rapid economic growth must both be taken into account when assessing the welfare implications of economic development over the current decade.

This chapter considers some of the risks that the economy faces over the coming five or ten years. It then considers the medium-term policy implications of the demographic and economic changes under way. Finally, consideration is given to a number of longer term issues which merit attention by policy-makers today.

7.2 Managing Risk

The major purpose in undertaking the analysis in this *Review* is not just to provide forecasts, forecasts that will inevitably be overtaken by events, but instead to help understand the processes driving the Irish economy. For it is only with such an understanding that it is possible for policy to effectively influence future events. One important feature of this *Review*, as with previous *Reviews*, is that we pay special attention to what might go wrong. It is not that we are natural pessimists, but rather that pleasant surprises can be easily handled by a flexible economy, whereas unpleasant surprises may pose lasting problems. Thus we focus in particular on how policy can be made robust in the face of major uncertainty about the future, to help avoid future problems or to prepare the economy to face them from a position of strength.

In particular we are concerned about the exposure of this economy to the necessary international adjustment process that will take place at some time in the future to reverse the current growing international imbalances. Because of its openness the Irish economy is probably more exposed to international shocks emanating from the US than are our EU partners.[49] However, our concerns are greatly heightened by Ireland's current exceptional dependence on the building and construction industry to fuel economic growth. No other economy in the EU is anywhere near as exposed as is Ireland in this regard.

While there is always the possibility that the building and construction industry will achieve a soft landing over the next decade and a half, such a desirable scenario is looking increasingly unlikely as the building and construction sector continues to increase its share of national output. With the potential output of the economy constrained by a limited capital stock and a labour supply that is adversely affected by domestic congestion costs, the building and construction industry has to bid scarce resources from other sectors of the economy to maintain its momentum. This process happens indirectly as the cost of the output of the building industry rises in relative terms. While the Irish labour market is very flexible, with Irish and foreign workers coming from abroad, they can only come at the cost of higher wage rates and further pressure on the market for accommodation. In turn the rising cost of accommodation and increasing pressures on infrastructure are adversely affecting the competitiveness of the tradable sector of the economy.[50]

The result of the higher labour costs and higher cost for the output of the building industry is that the rest of the economy is being squeezed. This is particularly true for the tradable sector, especially manufacturing. The rapid rise in labour costs has forced many firms in the manufacturing sector to close, thus releasing the resources that the building industry needs. While in a successful economy such a process of change goes on all the time, it has dangers if the need for the shift in resources is unlikely to be permanent. For example, if there is a rapid slowdown in the building and construction industry in the future releasing resources, both capital and labour, for use elsewhere in the economy, it seems very unlikely that the manufacturing firms that have closed will rapidly reappear to use these resources. The consequence is that the sectoral shift in favour of building cannot be rapidly reversed without considerable pain.

As discussed in Chapter 6, in the long run the building and construction industry is likely to account for a much smaller share of the economy. In particular, the extent of the resources being devoted to building new dwellings is truly exceptional. This sector is very vulnerable to a shock, in particular any

[49] Duffy, D. and J. Fitzgerald, 2000, "Has Ireland's Exposure to a Sterling Shock Changed?", *Irish Banking Review* Winter 2000.

[50] The importance of housing costs in determining Irish competitiveness is modelled directly in Duffy, Fitz Gerald and Kearney, 2005., "Rising House Prices in an Open Labour Market", *Economic and Social Review*, forthcoming.

change in external circumstances which would cause unemployment to rise and expectations about future incomes to fall. Such a change could bring about a collapse in the housing market, including in housing prices. As illustrated in the scenario examined in Chapter 6, this could have very serious consequences for the domestic economy. It could take a number of years to recover from such a downturn and the intervening years could be extremely unpleasant no matter how wise the policies pursued.

Under these circumstances what would be a prudent policy to follow? Because of the very considerable risks inherent in reallocating so much of our national resources to the building sector it would seem desirable to stop using public policy to boost the growth of the building and construction sector. It would also be prudent to manage the public finances to leave scope for government action to offset, albeit to a limited extent, the consequences of a sudden and unexpected collapse in the building and construction sector.

The policy levers needed to slow the building industry are well understood. They involve taking money out of the sector, thereby reducing demand. This can be done both through raising taxes that directly affect demand for the output of the building and construction sector and also through changing the pattern and timing of government capital expenditure.

There are a range of tax changes that would differentially affect investment in building and construction, including housing. In particular, the ending of all tax write-offs for such investment would be a key first step. If that proved insufficient, consideration could be given to a range of additional measures As suggested in Fitz Gerald (2001),[51] the ending of tax relief on mortgages, would help reduce demand for dwellings. Further measures, such as a property tax,[52] as suggested recently by the *Competitiveness Council* could also be considered.

Obviously, it would not be appropriate to implement all such changes. Much will depend on the political economy of such policies. In practice the most feasible instrument would probably be the ending of tax reliefs that encourage investment.

At present Irish public investment is absorbing an exceptionally high share of national output relative to our neighbours. While the rising cost and slow delivery of public investment has been a major problem in recent years, very significant progress has been made in developing the physical infrastructure of the economy. Nonetheless, a large infrastructural deficit still remains to be made up. The ability of the state to close the deficit in physical infrastructure is not constrained by lack of financial resources. Rather it is the ability of the economy to produce the necessary infrastructure at a reasonable price that is the key constraint.

At this stage it is not clear when this deficit will be made good. However, in the short term, the other possible prong for government action designed to reduce the economy's exposure to shocks would be to limit government demand for the output of the building and construction sector. The disadvantage of such a course of action would be that some major infrastructure projects which could relieve constraints in the economy could be delayed. To avoid such a danger it would be important to reprioritise within the Public Capital Programme.The issue of the appropriate strategy for public investment in infrastructure and the appropriate prioritisation of different types of public investment will be further addressed in future research being undertaken by the ESRI for the Department of Finance.

Finally, it is appropriate for fiscal policy to run significant surpluses so long as the economy is continuing to grow rapidly. Any accumulated surpluses

[51] Fitz Gerald, J., 2001. "Fiscal Policy in a Monetary Union: The Case of Ireland" in McCoy *et al., Quarterly Economic Commentary*, March, Dublin: The Economic and Social Research Institute.

[52] Callan, T., 1991. "Property Tax: Principles and Policy Options". Policy Research Series, No.12, July, Dublin: The Economic and Social Research Institute.

could then be used to fund continuing public investment in the event of a sudden downturn in the economy.

The cost of prudent policy is likely to be only a temporary slowdown in the growth in incomes. If it also reduced inflationary pressures the cost could be further minimised. Any lost growth would be recovered when the economy eventually slows. Thus caution only delays the gratification of our national needs. The benefit of such a policy would be a reduction in the risk of a future very disruptive recession and an enhancement of the ability of the public sector to tackle such a recession should it occur.

7.3 Implications of Change

The scenarios for the next decade painted in earlier chapters suggest a major change in the economic and social structure of the country over the coming decade. Among the different forms that these changes will take will be:

- The growth in the importance of the cohort of those in their 30s and the effects of this on the market for childcare.
- The growth of a multicultural economy.

THE RISING IMPORTANCE OF THE COHORT IN THEIR THIRTIES

While today the biggest cohort in the population is those in their twenties, this cohort will be a decade older by 2015. This will have a noticeable effect on the pattern of expenditure. While today the bulk of the very large number of those in their twenties have no dependants, the bulk of them are likely to be parents of small children by 2015. This will change their life-style and consumption patterns. Because of the very large size of this cohort, the traditional process of family formation will have a wider significance for the economy and society.

For example, while today a significant share of their disposable income may go on entertainment and travel, the advent of children will change their pattern of consumption. It may well be that investment in night clubs serving the needs of this cohort may today be a profitable occupation, but by 2015 it will be services for families, such as childcare facilities, which will be in greater demand!

Even with unchanging fertility, the rise in the numbers in their thirties will see a rise in births of around a sixth over the coming decade. As parents increasingly choose to remain on in the labour market the demand for childcare outside the home will tend to rise. At the same time the analysis in earlier chapters points to a reduction in the supply of women with education of less than a Leaving Certificate – the traditional suppliers of such childcare. The result is likely to be a relative rise in the cost of childcare outside the home. This will pose difficult choices for parents, for employers and for government.

In the United States, where there is a very wide dispersion in earnings, there is a very wide use of paid childcare. With many parents on high incomes they can afford to pay the low wages that those at the bottom of the income distribution can earn looking after their children. This arrangement is profitable for both parties. However, in Europe, with typically a much narrower dispersion of earnings, the margin between what those on high incomes earn after tax and what potential carers need to earn to make it worth their while looking after children is much narrower. Thus, European families tend to spend a greater amount of time caring for their own children through time out of the work force than is the case in the US (Freeman *et al.*, 2004). They may also prefer this arrangement, even if the costs were identical.

Whether any increase in childcare provision is paid for by the state or by individual parents it is likely to be increasingly costly for all those involved. The effect of the rising cost will be to reduce the incentive for those who would otherwise wish to remain in the labour force to do so. In turn, faced with the loss of an important supply of potentially skilled labour, wise employers will

react through the adaptation of the work place to better meet the needs of young parents.

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.

Research has shown that while there was significant discrimination in earnings against women in the late 1980s, the discrimination against women *qua* women had largely disappeared by the end of the 1990s (Russell, H., in Fitz Gerald, McCarthy, Morgenroth and O'Connell, 2003). However, the research also shows that there was a very heavy penalty paid in lost earnings for anyone who spent significant time out of the labour force. As it is nearly always women who are in this position it means that women, on average, still earn significantly less than men if they take time off to look after children. The cost of having children is now very high when this opportunity cost of parents' time is taken into account.

The outcome of these different pressures will be some increase in childcare provision by the state, probably some increase in private provision, and a move to a more flexible workplace. However, if flexible working arrangements are to play a significant role in helping families and employers to find a mutually satisfactory outcome, the existing penalty for women availing of such flexibility will have to change. If this is to happen, it is more likely to be driven by market forces than by legislation: employers will discover that with more women than men having the qualifications that they require, to hold this key source of skilled labour they will have to adjust the wages paid. Also it is likely that where both parents share the childcare burden the labour market penalty for adopting such an approach will fall.

DEVELOPING A MULTICULTURAL ECONOMY

For a century and a half, many in the Irish population sought, and were granted, access to the best labour markets in the world. Over the 1990s this process was reversed and Ireland was transformed into a sought-after location for foreign migrants. The bulk of the immigration into Ireland over the 1990s was skilled labour, with about half being returning Irish emigrants. The majority of the rest were EU citizens with a high level of education. Many of those coming to Ireland were spouses or partners of Irish citizens.

This influx of skilled labour played an important role in expanding the productive capacity of the economy, allowing the economy to grow more rapidly and helping to solve the problem of long-term unemployment (Barrett, Fitz Gerald and Nolan, 2002; Barrett, Bergin and Duffy, 2005). In addition, it has been shown that returned emigrants have higher productivity and higher earnings because of their experience abroad. (Barrett and O'Connell, 2001.) With almost a third of the younger cohorts being returned emigrants, this effect on individual productivity is affecting the economy as a whole. This improved the welfare of the least skilled in the labour force at the expense of lower wages for skilled labour. The immigration had wider benefits, making the economy more cosmopolitan and increasing productivity.

The substantial influx of immigrants over the last four years into less skilled employment potentially has rather different effects. While also enhancing the cosmopolitan nature of the economy and relieving unskilled wage pressures, if continued indefinitely it could push unskilled wage rates down and raise the

rate of unemployment. However, the fact that the individuals have a high level of education means that either they get jobs more commensurate with their skills as their command of English improves or else they are likely to return home. This situation is rather different from that in many other countries where most immigrants have limited education and are destined to remain in low paid employment.

Any discussion of policy on immigration must take place in the context of the fact that citizens of the ten EU accession states have had full access to the Irish labour market since May 2004. As a result, Ireland has one of the most open labour markets in the world and so discussions about policy on admission are not relevant for a large proportion of potential immigrants into Ireland. For this group policy in respect of integration is the main component of "immigration policy". Nonetheless, policy on admission for non-EEA nationals is still important so we will set out here our views on the desirable features of an immigration system. A framework to allow for some of the elements we propose are contained in the Employment Permits Bill 2005[53] so our hope would be to see this bill enacted and built upon.

What is required is an explicit policy on immigration that is seen to be both transparent and fair. There is a choice between two different approaches: allowing limited immigration of unskilled labour through a transparent programme or, alternatively, an open door policy that allows fairly free inward movement. A policy of limited immigration of unskilled labour would be consistent with the maintenance of a substantial domestic social safety net. Evidence from the US suggests that an open door policy on unskilled immigration would probably enhance the growth potential of the economy and would be good for skilled Irish citizens, but it would have an adverse impact on unskilled labour and place the welfare system under very serious pressure. On the basis of past experience, skilled immigration is likely to enhance both the output potential of the economy and the labour market prospects of unskilled labour. As such, it should be left to be determined by market forces.

From an 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 free immigration of skilled labour, 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, along the lines of the Canadian or US systems. 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. Third, the visa (work-permit) should not be tied to a particular employer or sector; conditions of employment should be the same as for existing residents.

Such a policy would be an improvement on the current economically inefficient approach to unskilled immigration where individuals are sponsored by companies. 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 carries the danger that the rights of immigrants may be abused. It leaves a wide opportunity for sponsoring agencies abroad to charge substantial fees. This can give rise to abuse, with potential immigrants borrowing heavily to buy entry, leaving them in the position of "bonded labourers". It introduces the danger that such debts would be enforced through illegal means.

[53] Department of Enterprise, Trade and Employment (2005), "Minister Martin Outlines Details of New Employment Permits Policy for Migrant Workers", Press Release 12 October.

If Ireland fails to embrace and build on the benefits of becoming a multicultural economy, through allowing appropriate migration, it will rapidly fall behind its competitors. Those cities and surrounding regions that have gone this route are among the most successful in the world. By accident rather than design we have turned what was the curse of emigration in the past into a major asset. The experience gained abroad by up to a third of our labour force has helped transform the economy. This expertise has been supplemented by the influx of skilled non-Irish workers, especially in the late 1990s.

The attraction of such skilled individuals depends on making it attractive to live and work in a city or country. Ireland, especially Dublin, has become somewhat less attractive in recent years because of the high cost of accommodation and the very poor urban public transport infrastructure compared to that available elsewhere in competing locations in the EU. If we are to grow as a centre for successful business activity we will have to address these factors that make us unattractive both to outsiders and to our own children who are still residing abroad.

7.4 Planning for 2020 and Beyond

In the longer term Ireland must deal with the following:

- The growing importance of China and India.
- The shift to a service based economy.
- Weaning itself of dependence on the low corporation tax regime.
- Preparing for the greying of Ireland.

HARNESSING THE BENEFITS OF GLOBAL TRADE

Ireland has been exceptionally successful in exploiting the benefits of the rapid growth in international trade over the last half century. However, today fears are frequently expressed about the dangers emanating from competition from emerging economies such as China and India. However, such fears are based on a misunderstanding of the process of trade.

It is true that both India and China have far more skilled people working in their economies than in Ireland or possibly in the EU. However, such skilled labour represents a very small share of the total population in those economies. We have learned how important the supply of skilled labour is in building a prosperous economy. For China and India they have an ever increasing demand for skilled labour to work in administration, in providing essential business services, and to provide key supervisory staff for the newly developing manufacturing sector. The more rapidly these economies develop the more rapidly will the demand for skilled labour rise and with it the greater the pressure on skilled wage rates.

China and India have a very large supply of unskilled labour which is underemployed in agriculture. It will be a long time before they face pressures on unskilled wage rates. Thus they have the potential to continue growing very rapidly. The effect of this growth will be to raise skilled wage rates. Thus these economies have a limited scope to deploy skilled labour to provide services for developed economies, such as Ireland. By contrast they have very considerable scope to increase the supply of goods that are produced by unskilled or semi-skilled labour.

As a result, while the far East will provide increasing competition to supply goods produced using unskilled labour they will continue for the foreseeable future to be a buyer of goods and services that require a high skilled input. Thus, their growth should be seen as an opportunity to develop profitable markets rather than as a serious threat to the services and goods in which the Irish economy is gradually specialising.

[54] PPPs are likely to be an expensive way to fund infrastructural investment. Their value lies in their ability to incentivise the private sector to produce the infrastructure at minimum cost.

Over the past fifty years Irish trade policy has been transformed. Until the early 1980s the safeguarding and development of Irish agricultural exports was still a key priority for policy-makers. However, since joining the EU in 1973 agricultural exports have fallen continuously in importance. Today they represent a very small fraction of total trade. While it remains important for Irish farmers to safeguard transfers under the Common Agricultural Policy, the fostering of agricultural exports is no longer a priority.

The importance of free trade was long ago identified as crucial in the development of industrial exports and Ireland's manufacturing sector. Membership of the EU in 1973 cemented this policy in place and the Single European Market of 1992 brought substantial additional benefits to Ireland. As discussed below, increasingly the focus of attention will switch to services exports. In this regard it is important to Ireland to pursue policies that will open up and keep open markets for Ireland's tradable services throughout the world. While this will also see increasing imports of services, past experience has shown that such a policy will provide more of an opportunity than a threat.

PLANNING FOR A SERVICES BASED ECONOMY

The policies that have served Ireland well in the past in promoting industrial development may need adaptation to a world where success will increasingly come from the services sector.

The most obvious factor that differentiates Ireland from many competitors is the supply of skilled labour. As outlined in Chapter 2, the average educational attainment of the work force will continue to rise quite rapidly for the next fifteen years. This should contribute significantly to the growth in the productivity of the economy. In addition, the continued growth in skilled labour supply will help maintain the competitiveness of the economy. The *Enterprise Strategy Report* made recommendations on how this asset can be further developed.

A second focus of policy in recent years has been the promotion of investment in research and development. Public policy has moved to foster R&D in the third level sector. In addition, incentives have been provided to persuade the private sector to raise the level of its investment in R&D. However, while considerable funds are available to foster this investment in the private sector, there remains the danger that such investment could prove ineffective and funds could be wasted. It is important that this key area of expenditure is subject to continued monitoring to ensure that policy-making evolves to produce significant economic benefits. In the case of the funding of basic research, mechanisms have been put in place to ensure a competitive environment, which should ensure quality output.

What is not clear is whether the current exclusive science, technology and engineering based focus of the research should be maintained. In so far as this research can be expected to have commercial spin-offs it is most likely to occur in the manufacturing sector. With the change in emphasis to developing the services sector some broadening in the focus of such research might be appropriate. While the establishment of a reputation for excellence in biomedical research might help in developing a pharmaceutical industry it may not be as valuable in promoting the growth of businesses providing accountancy services or selling television programming abroad. It is possible that excellence as a centre for research in international law or even, say, history could also contribute to the long-term growth of the economy.

An important reason for the success of the Irish economy over the last decade has been its ability to attract back as homing pigeons the Irish emigrants of the past and, increasingly, skilled individuals from all over the world. For firms that plan to export tradable services it will be essential to be able to attract the relevant skilled labour from all over the world. However,

such skilled labour will only come and work in Ireland if it is attractive for them to do so.

We have seen that even states that are very unattractive to live in can attract skilled labour by paying extremely high wage rates. However, in the kind of business that is likely to develop in Ireland competitiveness will depend on attracting skilled labour at a reasonable price. By making Ireland an appealing place to live in the cost of attracting and holding skilled labour will be reduced, making the economy more attractive as a destination for investment.

There is no simple prescription for making and keeping Ireland attractive to live in. For different individuals different features will be important. However, it is clear that the high cost of accommodation and the ever-rising commuting times are a negative feature of Ireland today. To the extent that they are offset by wider cultural and environmental attractions, the economy can continue to prosper. Generally, in seeking to build a successful economy based on tradable services policy must focus on a wider range of issues than in the past. However, success in making Ireland an attractive place to do business is likely to have the additional benefit that it will enhance the quality of life for all those resident in the country.

When Ireland first introduced the policy of low corporation tax in the late 1950s it was unique. Within the EU, and even within the wider context of the OECD, the Irish rate of corporation tax was and remains far below that of most other countries. However, the external environment is gradually changing. While it was a key factor in growing the manufacturing sector over the last half century, it is becoming less effective as an instrument due to enhanced competition from countries such as Estonia. In addition, the shifting focus of the economy towards the services sector will require a rather different range of instruments for promoting development.

There are potential strategic dangers for the Irish economy in becoming too dependent on the low tax rate. The changing external environment leaves Ireland exposed to an asymmetric shock of an unusual kind, where changes in legislation in other jurisdictions (or in the EU) could have a sudden and large impact on the Irish economy. In addition, the continuing preservation of the current *status quo* may involve increasing costs in terms of Irish political capital within the EU, and falling returns in terms of economic benefits for a rapidly changing domestic economy.

The implication of these arguments is not that Ireland should do away with its current system of low corporation tax but rather that it needs to wean the economy away from excessive dependence on it. This means that the focus of public policy should be on attracting and developing firms that are not crucially dependent on low corporation tax for their success. Such a policy fits in with the need to develop the services sector of the economy, especially tradable services. The objective should be to have a very much smaller proportion of the economy dependent on the low corporation tax for its survival by 2020.

THE GREYING OF IRELAND

The gradual increase in the average age of the population and of the proportion of the population which is retired will put increasing pressures on the economy in the years after 2020. These potential pressures have been considered in detail in Barrett and Bergin (2005).

When looking at the greying of Ireland there are a number of strategies that can be adopted to postpone, reduce, or to manage the increased dependency burden that this may entail in the distant future. First, the state can promote a

[55] Gunnligle, P. and D. McGuire, 2001. "Why Ireland? A Qualitative Review of the Factors Influencing the Location of U.S. Multinationals in Ireland with Particular Reference to the Impact of Labour Issues", *The Economic and Social Review,* Vol. 32, January 2001, pp 43-68.

higher birth rate to produce a more balanced population structure. Second, it is possible to increase the average retirement age and change the proportion of the population actually working. Third, migration can help restore a more balanced population structure. Finally, the state and individuals can save to provide for their financial needs in retirement. The outcome is likely to be (and should be) a mixture of all of these strategies.

While the birth rate has fallen dramatically compared to the 1970s, fertility is still high by EU standards. The population is currently almost replacing itself, with a total fertility rate of around 2. If maintained, in the long run this would lead to a stable population. However, even with stability, there will inevitably be a major deterioration from the current unsustainably favourable demographic structure.

The option of postponing retirement has already been adopted in Germany and Italy (where retirement was at a very young age). With life expectancy rising rapidly, there is also a rise in the ability of individuals to continue working to a later age than was the case before. This is especially true where the nature of work itself has changed away from manual labour. Any sudden changes in policy in this area could cause major problems as people plan for retirement well in advance. However, with life expectancy rising rapidly, there is a strong case for looking at the pattern of retirement in Ireland and what retirement actually means. The first priority should be to develop policies that encourage people to at least remain in the labour force up to retirement age.

It is also possible to replace a policy of encouraging people to have more children by a policy where a society imports its "children" fully-grown as immigrants. On paper this may sound like a good idea. Immigration is an important factor in why the US is keeping itself "young". It avoids the costs of bringing up children, including the necessary investment by the state in education. However, this does not look to be sustainable in the long run. Unless a high proportion of the immigrants are skilled it may not add sufficiently to the productive potential of the economy to offset the rising dependency rates. A country that is greying rapidly may also not be very attractive to skilled immigrants; selling a "retirement home" as a good place to live to skilled foreigners in their twenties could be a difficult task!

However, migration has in the past played a very important role in stabilising economies and in promoting economic adjustment. In the 1990s it played a significant role in enhancing the growth potential of the Irish economy and it will continue to play a role, albeit a subsidiary one, in developing the Irish economy in coming decades.

As part of the preparation for the rising burden in the second quarter of this century, the government has established the National Pensions Reserve Fund. Current policy is to save 1 per cent a year of GNP out of the public finances and put it into the fund. The fund also includes privatisation receipts. The fund is being invested so that the proceeds will part-fund the state's pension liabilities after 2030. At a time when the economy is enjoying what amounts to a "demographic dividend" it is certainly appropriate that prudent provision be made for adverse changes in demographic structure in future decades. However, there is a wider issue of intergenerational equity that is only beginning to be considered.

While a range of potential approaches exist to deal with the economic challenges posed by population ageing, there appears to be no simple answer that is both without cost and easy to implement. In the case of longer working lives, the government has only a limited influence on the actual time of retirement. Even if it alters the age at which the state pension is granted, people with private pensions can retire earlier. As societies get wealthier, there appears to be an increasing move towards earlier retirement and so it may become more difficult to generate later retirement. In the case of immigration, and as noted above, the level of inflows needed to make a significant contribution to

slowing the process of population ageing would be so large as to create an alternative set of policy challenges.

Given these difficulties, it is important that the long-run cost implications of new policy initiatives are considered before they are implemented. It is also important that the public finances continue to be managed with a view to their long-run sustainability. By incorporating long-run thinking into the management of the public finances in advance of the onset of population ageing, Ireland can avoid the problems currently experienced by other EU countries.

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APPENDIX 1: FORECASTING RECORD OF THE *MEDIUM-TERM REVIEW*

Introduction

The exercise of preparing medium-term forecasts is in many ways more important than the numbers themselves. The exercise of producing a *Review* firstly involves detailed ground work in developing a set of assumptions about crucial external variables, especially about the external environment and the likely stance of domestic policy, including fiscal policy. Secondly, a model or models are developed which translate the assumptions concerning the external drivers of the economy into a profile for key variables in the domestic economy. Finally, these scenarios can serve to highlight future constraints or problems in the domestic economy.

This exercise develops an understanding of the underlying behaviour of the Irish economy. Without such a framework for analysis it is not possible to think about the complex web of economic relationships that underpin the workings of the economy in a coherent manner.

The *Medium-Term Review (MTR)* was first published in 1986 and this *Review* represents the tenth in a series of publications that have appeared every two or three years since 1986.While the forecasting accuracy of the *Review* may not be the only or even the primary reason for undertaking such a research, it is a relevant criterion for assessing the value of such work. In this Appendix we examine the track record of successive *Reviews* in forecasting key aggregates – GNP, the unemployment rate and the rate of inflation in consumer prices. The growth rate of Gross National Product (GNP) volume is first examined. Unemployment, as measured by the Present Employment Status (PES) measure in April of the year under review is also looked at. Inflation forecasts are evaluated by comparing the forecast growth in the Personal Consumption Deflator (PCD) against its outturn as measured in National Accounts data.

In each case the forecasts contained in the relevant *Medium-Term Review* are compared to the latest published CSO figures for that year. In the case of the *MTR's* published up to 1999 historical CSO data are available for the bulk of the forecast period. For the more recent *MTRs* the CSO data up to 2004 are used for comparison purposes and the forecasts after that year are not included in this comparison. It should be noted that the CSO final figures for a year only appear quite a number of years after the first publication. Thus the latest CSO release has included significant changes in the growth rate back to 2002. It will be some time before the final figures for 2004 are available to provide a definitive benchmark against which the forecasting record can be measured.

In successive *MTR's* emphasis has been put on the forecast for the average growth rate in GNP or inflation over the forecast period rather than on the forecasts for individual years. The experience in Ireland and elsewhere is that economic forecasters are generally poor at predicting turning points in the economy. The same is true of the Medium-Term Review. However, the performance in forecasting the average growth rate over a medium-term horizon, which tends to smooth out turning points, is somewhat better.

Growth in GNP

Table A1.1 shows a number of measures of the error in successive *MTR* forecasts for GNP. Full details of the forecasts and the historical figures are given in Table A1.4.

Table A1.1: Medium-Term Forecasts of GNP Growth Rates, Percentage Points

	Average Over Forecast Period				Annual Forecast
	Average Annual Growth		Average Error	Average Absolute Error	Average Absolute Error
	MTR	CSO			
MTR 1986	2.8	3.2	0.4	0.4	1.9
MTR 1987	2.6	3.7	1.0	1.0	1.9
MTR 1989	4.9	4.4	-0.4	0.4	2.1
MTR 1991	3.4	5.0	1.6	1.6	2.7
MTR 1994	5.1	8.1	3.1	3.1	3.2
MTR 1997	5.0	6.7	1.7	1.7	2.1
MTR 1999	5.4	5.6	0.2	0.2	1.8
MTR 2001	4.9	3.9	-1.0	1.0	0.4
MTR 2003	2.7	4.5	1.8	1.8	1.0
Average for 9 MTRs			0.9	1.2	1.9

Over the nine previous *Medium-Term Reviews* the average error in the growth rate over the forecast period was 0.9 percentage points. This error is calculated by taking the average annual growth rate forecast in each review over the relevant time horizon, including the growth rate in the year the forecast was published. This growth rate is then compared to the average growth rate shown for the same period by the latest CSO national accounts figures.

On this measure, with regard to the average error, the *MTRs* have generally proved to be pessimistic in their forecasts, underestimating growth over the forecast time horizon. The forecast error was particularly large in the 1994 *Medium-Term Review*, with a very serious underestimate of the capacity of the economy to grow over the rest of the 1990s. Only two of the *MTRs* have overestimated future growth – the 1989 *MTR* which failed to predict the slowdown in the EU economy (and the resulting effects on Ireland) in the early 1990s and the 2001 *MTR* benchmark forecast prepared before September the 11th (though published after it) which overestimated the growth rate over the early years of this decade.[1]

While on average pessimistic, up to the late 1990s the *MTR's* forecasts were generally felt to be unduly optimistic at the time they were published – the general mood was even more pessimistic about future growth prospects than was the *Review*. Since the first *MTR* was published the research embodied in successive publications pointed to the Irish economy having the capacity to outperform its neighbours. The use of the standard methodology for estimating potential output, used by the EU Commission and others, which gives a high weight to past performance, tended to underestimate the growth potential of the economy over the 1990s to an even greater extent than the *MTRs*.

Probably the best measure of the forecasting accuracy is the average absolute error of the medium-term forecast in each *MTR*. For the last nine *Reviews* it averaged 1.2 percentage points. For economies such as our EU partners where the growth rate has ranged between 0 and 3 percentage points over the last ten or fifteen years such an average absolute error would seem

[1] In the case of the 2001 *MTR* it was published just after September the 11th and an alternative low growth scenario was included which, by the time of publication, looked a more likely outcome than the benchmark forecast included in Table A1.1. As it happens, that Low Growth scenario underestimated growth by almost as much as the high growth scenario overestimated growth in the period 2001-4.

high. However, over the last twenty years the Irish growth rate has ranged between -0.2 and +9.5 per cent. The standard deviation of the annual growth rate over that period was 2.8 percentage points.

The final column in Table A1.1 shows the average absolute error in the year by year forecasts in each *Review*. At 1.9 percentage points it is much higher than the error in the forecast of the average growth rate over the forecast time horizon. This highlights the fact that successive *Reviews* have been much better at forecasting the future trend of growth than in forecasting the pattern of growth over the relevant time horizon. This reflects the experience of short-term forecasting where forecasters are poor at foreseeing turning points. The advantage in medium-term forecasting is that it is less important to foresee the precise timing of the business cycle with success owing more to a proper understanding of the factors driving potential output in the economy.

Inflation

Table A1.2 examines the forecasting record for the deflator of personal consumers' expenditure over successive *Reviews*. This is probably the most appropriate measure of inflation. The standard deviation in the historical inflation rate over the period 1986 to 2004 was 1.0 per cent. This is much lower than the standard deviation of the growth rate for GNP. Over the nine *Reviews* the average error in the forecast for the chosen time horizon of each publication was 0.2 percentage points. The average absolute error over the same period was 0.7 percentage points.

Table A1.2: Medium-Term Forecasts of Inflation, Percentage Points

	Average Over Forecast Period				Annual Forecast
	Average Annual Growth		Average Error	Average Absolute Error	Average Absolute Error
	MTR	CSO			
MTR 1986	3.8	3.3	-0.5	0.5	1.1
MTR 1987	3.4	3.1	-0.3	0.3	0.4
MTR 1989	3.6	2.8	-0.8	0.8	1.0
MTR 1991	2.8	2.7	-0.1	0.1	2.2
MTR 1994	2.5	3.3	0.8	0.8	1.8
MTR 1997	2.1	4.0	1.9	1.9	1.3
MTR 1999	2.6	3.8	1.2	1.2	0.8
MTR 2001	4.0	3.6	-0.4	0.4	0.0
MTR 2003	2.7	2.6	-0.2	0.2	0.0
Average for 9 MTRs			0.2	0.7	0.9

The earlier *Reviews* tended to overestimate future inflation over a period when the inflation rate was generally falling. By contrast, the publications which covered the late 1990s and the early years of the current decade tended to underestimate the inflationary pressures. This failure was partly due to the apparent change in the underlying process for determining of inflation in Ireland, with a slower pass through of the effects of exchange rate changes than was the case in the pre-EMU period. The average absolute error in the year by year forecast was 0.9 percentage points, not much worse than the absolute error in the forecast average growth rate.

This result is not terribly satisfactory. While in the case of the growth of GNP the standard deviation of the actual growth rate was quite high over the last twenty years, it was much lower for the inflation rate. Thus the target of the inflation forecasts was inherently easier than was the case in forecasting the growth of real GNP.

Unemployment

In the case of the unemployment rate we have evaluated forecasting performance by comparing the forecast unemployed rate for the last year shown in each *Review* with the actual rate for that year.[2] As can be seen from Table A1.3, with the exception of the 1989 publication, successive *Reviews* greatly overestimated the future unemployment rate. The errors were particularly large in the period up to 1997 with a general expectation that the intractable problem of unemployment would not be solved within the forecast time horizon. This pessimism about the unemployment rate suggests a continuing failure to understand the working of the labour market up to the late 1990s.

Table A1.3: Medium-Term Forecasts of Unemployment Rate (PES), Percentage Points of the Labour Force

	Forecast for End Year of Forecast Period			
	Forecast	Actual	Average Error	Average Absolute Error
MTR 1986	18.5	13.4	-5.1	5.1
MTR 1987	18.3	15.9	-2.4	2.4
MTR 1989	12.7	15.6	2.9	2.9
MTR 1991	16	12.9	-3.1	3.1
MTR 1994	13.4	6.4	-7.0	7.0
MTR 1997	8.4	6.2	-2.2	2.2
MTR 1999	5.3	5.4	0.1	0.1
MTR 2001	5.8	5.4	-0.4	0.4
MTR 2003	5.4	5.4	0.0	0.0
Average for 9 MTRs			-1.9	2.6

Since 1997, there has been very little variation in the unemployment rate so that the much improved forecasting performance is unsurprising. Also the experience of the late 1990s, spawning significant research, has enhanced our understanding of the factors driving the behaviour of the Irish labour market.

Conclusions

In this Appendix we have assessed the forecasting performance of the last nine *Reviews*. In many cases the forecasts reflected the perception of policy-makers around the time that each forecast was made. To the extent policy makers believed the forecasts and took action to avoid potential future dangers the outturn could have been better than anticipated. However, it is not possible to assess whether such "endogeneity" in the forecasting process affected outcomes.

Looking back over nine *Reviews* the 1999 publication stands out as having had the most accurate predictions. That is in spite of the fact that its forecast horizon spanned the September 2001 terrorist attacks on the US and the collapse of the 'Dot Com' bubble. With the benefit of hindsight, in covering a full cycle of growth from peak to trough its forecast average growth rates probably had a better chance of being right.

The analysis in this Appendix indicates that the forecasts for individual years published in this *Review* should be treated with considerable caution. The authors put much more emphasis on the forecast average rate of change over the full forecast period. Past performance suggests that these average growth rates can provide some useful indications of future performance. However, even here there remains considerable uncertainty as is indicated in Chapter 6,

[2] In each case it is the PES unemployment rate for the second quarter (April) of the relevant year.

which discusses two very different scenarios for growth over the next seven years.

Table A1.4: Forecast of Annual Growth in Real GNP, %

	MTR 1986	MTR 1987	MTR 1989	MTR 1991	MTR 1994	MTR 1997	MTR 1999	MTR 2001	MTR 2003	Actual
1986	2.5									-0.2
1987	2.75									3.2
1988	3	-0.4								1.5
1989	3	3	4							5.0
1990	3	3.3	7.1							6.8
1991		3.7	5.6	2						2.8
1992		3.6	4.6	3.7						2.3
1993			4.8	4.3						3.3
1994			3.2	3.3	4.3					6.7
1995				3.6	6.9					7.3
1996				3.7	5.7					7.8
1997					4.6	5.7				9.4
1998					4.8	5.9				7.7
1999					4.7	5.3	6.3			8.5
2000					4.5	4.4	5.8			9.5
2001						3.7	5.5	6		3.9
2002						4.5	5	1.8		2.7
2003						5.3	4.9	4.2	2.4	5.1
2004							5	5.1	3	4.0

Table A1.5: Forecast of Annual Inflation Rate for Consumers' Expenditure, %

	MTR 1986	MTR 1987	MTR 1989	MTR 1991	MTR 1994	MTR 1997	MTR 1999	MTR 2001	MTR 2003	Actual
1986	4.5									3.7
1987	4									2.7
1988	4	3								4.0
1989	3.5	3	3.3							4.0
1990	3	3.7	4.2							2.0
1991		3.7	4.2	2.7						2.7
1992		3.7	3.5	2.4						3.0
1993			3	2.6						2.2
1994			3.5	3	3					2.8
1995				3.1	2.6					2.8
1996				3.1	2.3					2.7
1997					2.3	2.1				2.6
1998					2.4	1.9				4.0
1999					2.4	2.1	1.8			3.2
2000					2.4	2.2	2.2			4.8
2001						2.1	2.9	4.8		4.3
2002						2.1	2.9	3.9		5.2
2003						2.1	2.9	3.8	3.5	4.0
2004							3	3.5	2	1.2

Table A1.6: Forecast of Unemployment Rate (PES), % of Labour Force

	MTR 1986	MTR 1987	MTR 1989	MTR 1991	MTR 1994	MTR 1997	MTR 1999	MTR 2001	MTR 2003	Actual
1986	17									17.4
1987	17.5									17.6
1988	18	19.5								16.7
1989	18.25	19.1	16							15.6
1990	18.5	18.5	14.6							13.4
1991		18.2	13.4	15.8						15.5
1992		18.3	13	15.9						15.9
1993			12.8	15.7						16.6
1994			12.7	16	16.9					15.6
1995				16	16.1					13.3
1996				16	15.3					12.9
1997					14.6	10.9				11.8
1998					14.2	9.1				9.8
1999					13.7	8.3	6.5			7.6
2000					13.4	8.6	5.6			6.4
2001						8.8	5.4	3.8		5.7
2002						8.9	5.3	3.6		6.3
2003						8.4	5.4	4.3	4.9	6.4
2004							5.3	5.3	5.7	5.8

APPENDIX 2: DETAILED TABLES

HIGH GROWTH FORECAST

Table A2.1: Expenditure on GNP

	2004 €m	Volume %	Price %	2005 €m	Cont. to Growth %	Volume %	Price %	2006 €m	Cont. to Growth %
Personal Consumption	67,079	5.2	2.1	72,080	3.2	5.0	2.7	77,714	3.0
Public Consumption	20,761	3.4	4.7	22,477	0.6	3.6	5.0	24,452	0.6
Fixed Investment	36,156	7.3	2.9	39,903	1.8	4.3	1.9	42,412	1.1
Building	27,090	5.2	3.7	29,562	0.8	2.2	2.1	30,849	0.3
Machinery	9,068	10.4	3.4	10,348	1.1	7.2	4.3	11,574	0.8
Final Domestic Demand	123,997	5.4	2.8	134,460	5.5	4.6	2.8	144,578	4.7
Stock Building	793			294	0.1			286	0.1
Total Domestic Demand	124,790	5.6	2.3	134,755	5.7	4.7	2.7	144,864	4.8
Total Exports	122,301	4.6	-0.1	127,758	6.2	4.3	1.7	135,570	5.8
Merchandise	81,058	3.8	-0.9	83,378	3.7	4.2	1.3	88,020	4.1
Services	41,243	6.4	1.2	44,381	2.5	4.5	2.5	47,550	1.7
Total Demand	247,091	5.0	1.2	262,513	11.9	4.5	2.3	280,434	10.6
Total Imports	100,446	5.0	0.6	106,101	5.6	4.1	1.9	112,486	4.5
Gross Domestic Product	145,939	5.7	2.3	157,746	7.1	4.9	2.2	169,177	6.2
Net Factor Income	-23,624	6.1	-2.9	-24,323	-1.6	5.4	2.3	-26,209	-1.4
Gross National Product	122,315	5.6	3.3	133,423	5.6	4.8	2.2	142,968	4.8

	2006 €m	Volume %	Price %	2007 €m	Cont. to Growth %	Volume %	Price %	2008 €m	Cont. to Growth %
Personal Consumption	77,714	3.7	1.8	82,046	2.3	3.5	1.7	86,362	2.1
Public Consumption	24,452	3.9	2.5	26,047	0.6	3.9	2.5	27,743	0.6
Fixed Investment	42,412	2.5	1.6	44,187	0.6	3.1	2.5	46,716	0.8
Building	30,849	1.5	1.9	31,911	0.2	2.0	3.4	33,660	0.3
Machinery	11,574	3.8	2.1	12,269	0.4	4.5	1.4	13,003	0.5
Final Domestic Demand	144,578	3.5	1.8	152,280	3.5	3.5	2.1	160,822	3.5
Stock Building	286			630	-0.1			839	0.1
Total Domestic Demand	144,864	3.4	2.1	152,910	3.5	3.6	2.0	161,661	3.6
Total Exports	135,570	7.8	1.8	148,716	10.4	6.9	1.6	161,517	9.4
Merchandise	88,020	7.1	1.6	95,746	6.8	6.1	1.4	102,997	5.9
Services	47,550	9.5	1.8	52,970	3.7	8.7	1.7	58,520	3.5
Total Demand	280,434	5.9	1.6	301,626	13.9	5.5	1.6	323,178	13.0
Total Imports	112,486	5.6	1.9	120,967	6.1	5.0	1.9	129,432	5.5
Gross Domestic Product	169,177	6.2	1.2	181,887	7.8	6.0	1.2	194,975	7.5
Net Factor Income	-26,209	8.6	1.8	-28,975	-2.2	9.6	1.6	-32,270	-2.6
Gross National Product	142,968	5.6	1.3	152,912	5.6	5.0	1.4	16,2704	5.0

Table A2.1 (continued): Expenditure on GNP

	2008 €m	Volume %	Price %	2009 €m	Cont. to Growth %	Volume %	Price %	2010 €m	Cont. to Growth %
Personal Consumption	86,362	3.3	1.9	90,897	1.9	4.7	2.6	97,622	2.7
Public Consumption	27,743	3.9	2.7	29,579	0.6	3.8	3.5	31,787	0.6
Fixed Investment	46,716	2.9	3.1	49,522	0.7	4.9	4.5	54,248	1.2
Building	33,660	2.1	4.1	35,771	0.3	4.9	5.6	39,643	0.7
Machinery	13,003	3.8	1.2	13,667	0.4	4.7	1.3	14,508	0.5
Final Domestic Demand	160,822	3.3	2.4	169,998	3.2	4.6	3.3	183,657	4.4
Stock Building	839			1,013	0.1			1,163	0.1
Total Domestic Demand	161,661	3.4	2.4	171,011	3.3	4.6	3.3	184,820	4.5
Total Exports	161,517	6.9	1.6	175,361	9.6	6.4	1.9	190,136	9.1
Merchandise	102,997	6.1	1.1	110,526	6.0	5.6	1.3	118,204	5.5
Services	58,520	8.7	1.9	64,836	3.6	8.1	2.6	71,932	3.5
Total Demand	323,178	5.4	1.7	346,372	12.9	5.7	2.5	374,956	13.6
Total Imports	129,432	5.3	1.9	138,882	5.8	5.7	1.9	149,568	6.3
Gross Domestic Product	194,975	5.5	1.4	208,718	7.1	5.6	2.8	226,617	7.3
Net Factor Income	-32,270	8.7	1.6	-35,624	-2.4	9.2	1.9	-39,656	-2.7
Gross National Product	162,704	4.7	1.6	173,095	4.7	4.6	3.3	186,961	4.6

	2010 €m	Volume %	Price %	2011 €m	Cont. to Growth %	Volume %	Price %	2012 €m	Cont. to Growth %
Personal Consumption	97,622	4.1	3.1	104,809	2.4	3.7	3.6	112,650	2.1
Public Consumption	31,787	3.5	4.2	34,274	0.5	3.5	5.4	37,388	0.5
Fixed Investment	54,248	4.3	4.6	59,189	1.0	3.8	4.9	64,480	0.9
Building	39,643	4.5	5.7	43,784	0.6	4.0	5.9	48,200	0.5
Machinery	14,508	4.0	1.5	15,316	0.4	3.6	1.9	16,178	0.4
Final Domestic Demand	183,657	4.0	3.8	198,272	3.9	3.7	4.3	214,518	3.6
Stock Building	1,163			1,240	0.0			1,301	0.0
Total Domestic Demand	184,820	4.1	3.7	199,512	3.9	3.7	4.3	215,819	3.6
Total Exports	190,136	5.8	2.2	205,508	8.3	5.2	2.4	221,299	7.6
Merchandise	118,204	5.0	1.3	125,790	5.0	4.4	1.3	133,111	4.5
Services	71,932	7.4	3.1	79,718	3.3	6.7	3.6	88,189	3.1
Total Demand	374,956	5.1	2.8	405,020	12.3	4.6	3.2	437,118	11.2
Total Imports	149,568	5.6	1.9	160,875	6.2	5.1	1.9	172,306	5.8
Gross Domestic Product	226,617	4.7	3.4	245,373	6.1	4.1	4.1	266,040	5.4
Net Factor Income	-39,656	5.7	2.2	-42,833	-1.7	6.2	2.4	-46,561	-1.9
Gross National Product	186,961	4.4	3.8	202,540	4.4	3.5	4.7	219,480	3.5

Table A2.2: Output

	2004 €m	Volume %	Price %	2005 €m	Cont. to Growth %	Volume %	Price %	2006 €m	Cont. to Growth %
Agriculture	3,687	-0.5	0.5	3,685	0.0	-0.6	1.2	3,707	0.0
Industry	48,382	5.6	1.4	51,788	2.8	4.0	2.7	55,287	2.0
Manufacturing	34,673	5.4	1.1	36,951	2.3	3.9	3.1	39,606	1.7
Utilities	1,517	8.0	-1.3	1,618	0.1	6.8	-1.6	1,700	0.1
Building	12,192	6.1	2.2	13,220	0.4	3.5	2.2	13,981	0.2
Market Services	59,007	7.5	4.0	66,005	3.5	5.2	1.6	70,592	2.5
Distribution	13,842	6.4	2.4	15,090	0.7	4.8	2.0	16,133	0.6
Transport & Communications	7,545	6.5	2.5	8,232	0.4	4.8	2.0	8,800	0.3
Other Market Services	37,620	8.3	4.8	42,684	2.3	5.5	1.4	45,659	1.6
Non-Market Services	17,172	3.3	4.3	18,495	0.4	3.6	3.2	19,765	0.4
Health & Education	12,415	3.4	4.5	13,407	0.3	3.0	3.4	14,279	0.3
Public Administration	4,757	3.0	3.8	5,088	0.1	5.0	2.7	5,486	0.2
GDP at Factor Cost	128,953	5.3	2.1	138,640	5.9	4.4	2.4	148,123	4.9
Taxes on Expenditure	19,639	8.7	3.0	21,993	1.4	7.9	1.1	23,980	1.3
Subsidies	2,652	7.2	1.5	2,887	0.2	-0.6	2.0	2,927	0.0
GDP at Market Prices	145,939	5.7	2.3	157,746	7.1	4.9	2.2	169,177	6.2
Net Factor Income	-23,624	6.1	-2.9	-24,323	-1.6	5.4	2.3	-26,209	-1.4
GNP at Market Prices	122,315	5.6	3.3	133,423	5.6	4.8	2.2	142,968	4.8

	2006 €m	Volume %	Price %	2007 €m	Cont. to Growth %	Volume %	Price %	2008 €m	Cont. to Growth %
Agriculture	3,707	1.8	1.1	3,815	0.1	2.3	3.0	4,020	0.1
Industry	55,287	8.4	0.7	60,305	4.2	7.8	0.4	65,257	4.0
Manufacturing	39,606	8.5	1.1	43,446	3.5	8.0	-0.2	46,848	3.5
Utilities	1,700	5.9	6.9	1,924	0.1	7.3	-4.5	1,971	0.1
Building	13,981	8.3	-1.4	14,935	0.5	6.1	3.7	16,438	0.4
Market Services	70,592	5.3	0.7	74,890	2.5	5.2	0.8	79,439	2.4
Distribution	16,133	4.2	0.2	16,853	0.5	4.4	0.0	17,593	0.5
Transport & Communications	8,800	5.0	0.6	9,296	0.3	5.2	0.8	9,853	0.4
Other Market Services	45,659	5.8	0.9	48,741	1.7	5.5	1.1	51,993	1.6
Non-Market Services	19,765	4.2	4.1	21,430	0.5	4.1	4.0	23,199	0.5
Health & Education	14,279	4.0	4.4	15,502	0.3	4.0	4.2	16,805	0.3
Public Administration	5,486	4.6	3.3	5,927	0.1	4.4	3.3	6,395	0.1
GDP at Factor Cost	148,123	6.5	0.9	159,211	7.2	6.2	0.9	170,687	7.0
Taxes on Expenditure	23,980	3.8	3.0	25,636	0.6	3.6	2.8	27,285	0.6
Subsidies	2,927	1.9	-0.7	2,960	0.1	2.1	-0.9	2,997	0.1
GDP at Market Prices	169,177	6.2	1.2	181,887	7.8	6.0	1.2	194,975	7.5
Net Factor Income	-26,209	8.6	1.8	-2,8975	-2.2	9.6	1.6	-32,270	-2.6
GNP at Market Prices	142,968	5.6	1.3	152,912	5.6	5.0	1.4	162,704	5.0

Table A2.2 (continued): Output

	2008 €m	Volume %	Price %	2009 €m	Cont. to Growth %	Volume %	Price %	2010 €m	Cont. to Growth %
Agriculture	4,020	1.3	3.1	4,197	0.1	1.8	2.4	4,377	0.1
Industry	65,257	6.9	1.1	70,484	3.6	6.3	1.9	76,368	3.4
Manufacturing	46,848	7.6	-0.5	50,118	3.3	7.3	-0.3	53,578	3.3
Utilities	1,971	5.2	6.5	2,210	0.1	1.8	-21.1	1,777	0.0
Building	16,438	2.7	7.5	18,156	0.2	0.8	14.8	21,013	0.1
Market Services	79,439	5.1	0.8	84,191	2.4	5.6	1.6	90,312	2.6
Distribution	17,593	4.3	0.1	18,365	0.5	5.6	0.4	19,480	0.6
Transport & Communications	9,853	5.3	0.8	10,464	0.4	6.0	0.9	11,191	0.4
Other Market Services	51,993	5.4	1.0	55,362	1.6	5.5	2.1	59,640	1.6
Non-Market Services	23,199	4.1	4.0	25,107	0.5	4.1	4.8	27,370	0.5
Health & Education	16,805	4.0	4.2	18,211	0.3	4.0	5.0	19,878	0.3
Public Administration	6,395	4.3	3.4	6,896	0.1	4.2	4.3	7,492	0.1
GDP at Factor Cost	170,687	5.8	1.2	182,751	6.6	5.7	2.1	197,198	6.6
Taxes on Expenditure	27,285	3.4	2.9	29,006	0.6	4.6	7.2	32,520	0.8
Subsidies	2,997	1.5	-0.1	3,039	0.0	2.2	-0.1	3,101	0.1
GDP at Market Prices	194,975	5.5	1.4	208,718	7.1	5.6	2.8	226,617	7.3
Net Factor Income	-32,270	8.7	1.6	-35,624	-2.4	9.2	1.9	-39,656	-2.7
GNP at Market Prices	162,704	4.7	1.6	173,095	4.7	4.6	3.3	186,961	4.6

	2010 €m	Volume %	Price %	2011 €m	Cont. to Growth	Volume %	Price %	2012 €m	Cont. to Growth %
Agriculture	4,377	1.1	3.2	4,566	0.0	1.1	3.0	4,753	0.0
Industry	76,368	4.7	3.6	82,796	2.5	4.3	1.1	87,314	2.3
Manufacturing	53,578	5.5	-1.0	55,984	2.6	4.7	-1.1	57,980	2.2
Utilities	1,777	0.8	52.9	2,737	0.0	9.6	-33.8	1,985	0.2
Building	21,013	-0.5	15.1	24,076	0.0	-1.4	15.2	27,349	-0.1
Market Services	90,312	5.1	2.4	97,258	2.5	4.3	5.8	107,293	2.1
Distribution	19,480	5.0	0.9	20,645	0.6	4.6	1.5	21,916	0.5
Transport & Communications	11,191	5.5	0.9	11,919	0.4	5.0	1.0	12,632	0.3
Other Market Services	59,640	5.1	3.2	64,695	1.5	4.0	8.1	72,745	1.2
Non-Market Services	27,370	3.6	5.5	29,907	0.4	3.6	6.4	32,968	0.4
Health & Education	19,878	4.0	5.6	21,836	0.3	4.0	6.5	24,197	0.3
Public Administration	7,492	2.6	5.0	8,071	0.1	2.5	6.0	8,772	0.1
GDP at Factor Cost	197,198	4.7	3.3	213,300	5.5	4.2	4.0	231,100	4.8
Taxes on Expenditure	32,520	4.0	4.3	35,285	0.7	3.7	4.7	38,279	0.6
Subsidies	3,101	1.4	2.1	3,211	0.0	1.3	2.7	3,339	0.0
GDP at Market Prices	226,617	4.7	3.4	245,373	6.1	4.1	4.1	266,040	5.4
Net Factor Income	-39,656	5.7	2.2	-42,833	-1.7	6.2	2.4	-46,561	-1.9
GNP at Market Prices	186,961	4.4	3.8	202,540	4.4	3.5	4.7	219,480	3.5

Table A2.3: National Income and National Product, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agricultural Incomes	2,998	3,035	3,097	3,190	3,387	3,556	3,726	3,900	4,070
Non-Agric. Wage Income	58,701	64,562	69,248	73,700	78,690	84,097	90,973	98,508	107,327
Non-Agric. Profits Net	51,505	53,897	57,806	63,057	67,981	73,018	78,823	85,706	92,806
Non-Agric. Profits Gross	51,196	54,406	58,256	63,563	68,484	73,547	79,383	86,298	93,429
Adjustment for Stock Appreciation	-309	509	450	507	503	529	560	592	623
Domestic Income	113,204	121,494	130,151	139,947	150,057	160,670	173,522	188,114	204,203
Depreciation	15,749	17,146	17,972	19,265	20,629	22,081	2,3675	25,186	26,897
GDP (Factor Cost)	128,953	138,640	148,123	159,211	170,687	182,751	197,198	213,300	231,100
Taxes on Expenditure	19,639	21,993	23,980	25,636	27,285	29,006	32,520	35,285	38,279
Domestic	19,23	21,263	23,160	24,743	26,313	27,946	31,360	34,039	36,935
EC	316	730	820	893	972	1,060	1,160	1,246	1,343
Subsidies (-)	2,652	2,887	2,27	2,960	2,997	3,039	3,01	3,211	3,339
Domestic	864	905	920	957	1,001	1,047	1,103	1,161	1,224
EC	1,788	1,982	2,007	2,04	1,996	1,992	1,999	2,050	2,115
GDP (Market Prices)	145,939	157,746	169,177	181,887	194,975	208,718	226,617	245,373	266,040
Net Factor Income	-23,624	-24,323	-26,209	-28,975	-32,270	-35,624	-39,656	-42,833	-46,561
Gross National Product	122,315	133,423	142,968	152,912	162,704	173,095	186,961	202,540	219,480

Table A2.4: Personal Income and Personal Expenditure, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agricultural Incomes	2,998	3,035	3,097	3,190	3,387	3,556	3,726	3,900	4,070
Non-Agric. Wage Income	58,701	64,562	69,248	73,700	78,690	84,097	90,973	98,508	107,327
Transfer Income	15,498	18,038	18,757	19,886	21,026	22,238	23,624	25,438	2,7621
Domestic	15,457	17,534	18,024	19,120	2,0231	21,413	22,753	24,515	26,633
Foreign	41	504	733	766	795	826	871	924	988
Other Personal Income	15,703	15,460	16,564	16,890	16,842	16,888	17,032	17,926	18,556
Non-Agricultural Profits	51,196	54,406	58,256	63,563	68,484	73,547	79,383	86,298	93,429
National Debt Interest	1,747	1,790	1,828	1,680	1,703	1,724	1,743	1,746	1,751
Net Factor Income	-23,624	-24,323	-26,209	-28,975	-32,270	-35,624	-39,656	-42,833	-46,561
Government Trading & Investment Income (-)	1,246	1,450	1,800	1,925	2,048	2,179	2,354	2,550	2,763
Other Private Income	28,073	30,423	32,075	34,343	35,868	37,469	39,116	42,661	45,856
Undistributed Profits (-)	12,370	14,962	15,510	17,453	19,026	20,581	22,085	24,735	27,301
Personal Income	92,900	101,096	107,666	113,666	119,944	126,779	135,355	145,772	157,573
Taxes on Personal Income	17,616	18,887	20,441	21,506	22,656	24,032	24,185	25,614	27,780
Personal Disposable Income	75,284	82,209	87,225	92,160	97,288	102,747	111,170	120,158	129,793
Personal Consumption	67,079	72,080	77,714	82,046	86,362	90,897	97,622	104,809	112,650
Personal Savings	8,205	10,129	9,511	10,114	10,926	11,850	13,549	15,349	17,143
Tax Ratio (% Personal Income)	19.0	18.7	19.0	18.9	18.9	19.0	17.9	17.6	17.6
Savings Ratio (% of Disposable Income)	10.9	12.3	10.9	11.0	11.2	11.5	12.2	12.8	13.2

Table A2.5: Balance of Payments, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports – Total	122,301	127,758	135,570	148,716	161,517	175,361	190,136	205,508	221,299
Merchandise	81,058	83,378	88,020	95,746	102,997	110,526	118,204	125,790	133,111
Services	41,243	44,381	47,550	52,970	58,520	64,836	71,932	79,718	88,189
Imports – Total	100,446	106,101	112,486	120,967	129,432	138,882	149,568	160,875	172,306
Balance of Trade	21,855	21,658	23,084	27,750	32,086	36,479	40,568	44,633	48,993
as % of GNP	17.9	16.2	16.1	18.1	19.7	21.1	21.7	22.0	22.3
International Transfers									
EC Subsidies	1,788	1,982	2,007	2,004	1,996	1,992	1,999	2,050	2,115
EC Taxes (-)	316	730	820	893	972	1,060	1,160	1,246	1,343
Government Payments (-)	1,484	1,721	1,900	2,043	2,191	2,355	2,558	2,769	3,008
Government Receipts	277	174	130	139	148	157	170	184	200
Private Transfers	41	504	733	766	795	826	871	924	988
Net International Transfers	306	209	150	-28	-225	-440	-679	-857	-1,049
Factor Income Flows	-23,624	-24,323	-26,209	-28,975	-32,270	-35,624	-39,656	-42,833	-46,561
National Debt Interest (-)	1,554	1,664	1,770	1,660	1,666	1,672	1,677	1,675	1,674
Profits etc. Outflows (-)	26,348	28,156	30,564	32,835	35,198	37,679	40,910	43,315	45,899
Other Factor income	4,279	5,497	6,125	5,520	4,594	3,727	2,932	2,156	1,012
Current Account Balance	-1,463	-2,456	-2,974	-1,254	-410	416	234	943	1,384
as % of GNP	-1.2	-1.8	-2.1	-0.8	-0.3	0.2	0.1	0.5	0.6
Capital Transfers	401	360	340	355	369	383	404	428	458
Effective Current Balance	-1,062	-2,096	-2,634	-898	-41	799	638	1371	1,842
as % of GNP	-0.9	-1.6	-1.8	-0.6	0.0	0.5	0.3	0.7	0.8

Table A2.6: National Debt, Current prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Government Securities	19,568	19,578	19,544	19,614	19,636	19,653	19,720	19,796	19,876
Other Borrowing from Central Bank	5,781	5,781	5,781	6,183	6,579	6,999	7,560	8,190	8,875
Small Savings	4,518	4,518	4,517	4,478	4,431	4,374	4,318	4,253	4,181
Total Debt Held Domestically	16,799	16,809	16,774	17,207	17,577	17,958	18,530	19,171	19,863
Total € Debt	29,867	29,877	29,842	30,275	30,645	31,026	31,598	32,239	32,931
Foreign Debt:									
Foreign Currency	-5	-46	97	217	389	540	473	404	329
Government Securities	13,068	13,068	13,068	13,068	13,068	13,068	13,068	13,068	13,068
Total Foreign Debt	13,063	13,022	13,165	13,285	13,457	13,608	13,541	13,472	13,397
Total National Debt	29,862	29,831	29,939	30,492	31,034	31,565	32,071	32,643	33,261
General Government Debt	47,261	48,072	47,596	48,150	48,692	49,223	49,728	50,300	50,918
Other Bank Borrowing	-1,300	-1,300	-1,300	-1,390	-1,479	-1,574	-1,700	-1,842	-1,996
Debt Ratios (% of GNP)									
Total National Debt	24.4	22.4	20.9	19.9	19.1	18.2	17.2	16.1	15.2
General Government Debt	38.6	36.0	33.3	31.5	29.9	28.4	26.6	24.8	23.2
Total Domestic Debt	13.7	12.6	11.7	11.3	10.8	10.4	9.9	9.5	9.1
Total Foreign Debt	10.7	9.8	9.2	8.7	8.3	7.9	7.2	6.7	6.1
Total € Debt	24.4	22.4	20.9	19.8	18.8	17.9	16.9	15.9	15.0
Total Foreign Currency Debt	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.2	0.2
Debt Ratios (% of GDP)									
Total National Debt	20.5	18.9	17.7	16.8	15.9	15.1	14.2	13.3	12.5
General Government Debt	32.4	30.5	28.1	26.5	25.0	23.6	21.9	20.5	19.1
Total Foreign Debt	9.0	8.3	7.8	7.3	6.9	6.5	6.0	5.5	5.0

Table A2.7: Public Authorities Accounts, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Taxes on Income and Wealth	22,972	24,336	26,384	27,873	29,606	31,522	32,231	34,301	37,227
Company	5,365	5,458	5,953	6,376	6,960	7,501	8,058	8,700	9,461
Personal	17,607	18,878	20,431	21,496	22,646	24,021	24,173	25,601	27,766
Taxes on Expenditure	19,323	21,263	23,160	24,743	26,313	27,946	31,360	34,039	36,935
Gross	19,332	21,687	23,674	25,324	26,966	28,680	32,187	34,945	37,935
EC Budget Contribution (-)	9	423	513	581	653	734	827	907	1,000
Net Trading & Investment Income	1,246	1,450	1,800	1,925	2,048	2,179	2,354	2,550	2,763
Transfers From Abroad	277	174	130	139	148	157	170	184	200
Total Current Receipts	43,827	47,232	51,484	54,690	58,126	61,816	66,127	71,087	77,139
Subsidies	864	905	920	957	1,001	1,047	1,103	1,161	1,224
National Debt Interest	1,747	1,790	1,828	1,680	1,703	1,724	1,743	1,746	1,751
Other Transfer Payments	16,941	19,255	19,924	21,163	22,422	23,768	25,312	27,283	29,641
Foreign	1,484	1,721	1,900	2,043	2,191	2,355	2,558	2,769	3,008
Residents	15,457	17,534	18,024	19,120	20,231	21,413	22,753	24,515	26,633
Public Consumption	20,761	22,477	24,452	26,047	27,743	29,579	31,787	34,274	37,388
Total Current Expenditure	40,313	44,427	47,123	49,847	52,870	56,118	59,944	64,465	70,004
Public Authorities Savings (net)	3,514	2,805	4,361	4,843	5,256	5,699	6,183	6,623	7,135
as % of GNP	2.9	2.1	3.1	3.2	3.2	3.3	3.3	3.3	3.3
Total Capital Receipts	2,895	2,964	3,045	3,083	3,119	3,164	3,252	3,364	3,502
Grants – Housing	98	100	102	104	110	117	134	151	169
Grants – Industry	57	59	62	65	69	73	77	81	86
Investment	6,133	6,572	7,044	7,410	7,792	8,207	8,673	9,196	9,784
Other Capital Expenditure	746	943	857	900	946	997	1,058	1,131	1,216
Total Capital Expenditure	7,033	7,675	8,065	8,480	8,917	9,395	9,943	10,559	11,256
Borrowing for Capital Purposes	-4,139	-4,711	-5,019	-5,397	-5,798	-6,231	-6,691	-7,195	-7,754
Total Borrowing	-625	-1,906	-659	-554	-543	-532	-507	-573	-619
as % of GNP	-0.5	-1.4	-0.5	-0.4	-0.3	-0.3	-0.3	-0.3	-0.3
Budgetary Definitions									
Exchequer Surplus	112	-2,008	-1,942	-1,838	-1827	-1816	-1,791	-1,857	-1,903
as % of GNP	0.1	-1.5	-1.4	-1.2	-1.1	-1.0	-1.0	-0.9	-0.9
Current Budget Surplus	5,699	5,141	5,157	5,639	6,052	6,495	6,979	7,419	7,931
as % of GNP	4.7	3.9	3.6	3.7	3.7	3.8	3.7	3.7	3.6
EU Definitions									
General Government Balance	-2,117	811	-476	-581	-592	-602	-627	-562	-516
as % of GDP	-1.5	0.5	-0.3	-0.3	-0.3	-0.3	-0.3	-0.2	-0.2
as % of GNP	-1.7	0.6	-0.3	-0.4	-0.4	-0.3	-0.3	-0.3	-0.2

Table A2.8: Employment and the Labour Force, Thousands, Mid-April

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	114	110	109	105	102	100	97	94	92
Industry	504	526	531	530	536	543	557	565	569
Manufacturing:									
Traditional	98	98	98	97	96	96	95	93	90
Food Processing	47	48	47	47	46	45	44	43	41
High Technology	141	133	130	132	135	140	145	147	147
Manufacturing	286	278	275	276	278	281	284	282	278
Utilities	13	13	14	14	14	14	14	14	13
Building	204	234	242	241	244	248	259	269	278
Market Services	754	802	826	850	875	902	932	961	990
Distribution	260	277	287	291	294	297	302	306	307
Transport & Communications	112	112	112	113	116	119	121	123	123
Other Market Services	382	413	427	446	465	486	508	533	560
Non-Market Services	402	415	429	446	463	481	500	518	536
Health & Education	307	317	327	340	353	367	382	397	413
Public Administration	95	98	103	106	110	114	118	120	123
Total Employment	1,774	1,853	1,895	1,931	1,977	2,026	2,086	2,138	2,187
Unemployment	109	105	110	124	126	123	107	101	88
Labour Force	1,883	1,958	2,005	2,055	2,103	2,149	2,193	2,240	2,274

APPENDIX 3: DETAILED TABLES

LOW GROWTH FORECAST

Table A3.1: Expenditure on GNP

	2004 €m	Volume %	Price %	2005 €m	Cont. to Growth %	Volume %	Price %	2006 €m	Cont. to Growth %
Personal Consumption	67,079	5.2	2.1	72,080	3.2	5.0	2.7	77,714	3.0
Public Consumption	20,761	3.4	4.7	22,477	0.6	3.6	5.0	24,452	0.6
Fixed Investment	36,156	7.3	2.9	39,903	1.8	4.3	1.9	42,412	1.1
Building	27,090	5.2	3.7	29,562	0.8	2.2	2.1	30,849	0.3
Machinery	9,068	10.4	3.4	10,348	1.1	7.2	4.3	11,574	0.8
Final Domestic Demand	123,997	5.4	2.8	134,460	5.5	4.6	2.8	144,578	4.7
Stock Building	793			294	0.1			286	0.1
Total Domestic Demand	124,790	5.6	2.3	134,755	5.7	4.7	2.7	144,864	4.8
Total Exports	122,301	4.6	-0.1	127,758	6.2	4.3	1.7	135,570	5.8
Merchandise	81,058	3.8	-0.9	83,378	3.7	4.2	1.3	88,020	4.1
Services	41,243	6.4	1.2	44,381	2.5	4.5	2.5	47,550	1.7
Total Demand	247,091	5.0	1.2	262,513	11.9	4.5	2.3	280,434	10.6
Total Imports	100,446	5.0	0.6	106,101	5.6	4.1	1.9	112,486	4.5
Gross Domestic Product	145,939	5.7	2.3	157,746	7.1	4.9	2.2	169,177	6.2
Net Factor Income	-23,624	6.1	-2.9	-24,323	-1.6	5.4	2.3	-26,209	-1.4
Gross National Product	122,316	5.6	3.3	133,423	5.6	4.8	2.2	142,968	4.8

	2006 €m	Volume %	Price %	2007 €m	Cont. to Growth %	Volume %	Price %	2008 €m	Cont. to Growth %
Personal Consumption	77,714	2.8	1.9	81,435	1.7	2.1	1.9	84,742	1.3
Public Consumption	24,452	2.9	2.6	25,832	0.5	2.9	2.7	27,297	0.4
Fixed Investment	42,412	1.8	1.1	43,661	0.5	1.8	0.9	44,882	0.5
Building	30,849	0.7	1.2	31,446	0.1	0.5	1.2	31,974	0.1
Machinery	11,574	3.2	2.1	12,195	0.3	3.6	1.5	12,820	0.4
Final Domestic Demand	144,578	2.6	1.8	150,928	2.6	2.2	1.8	156,921	2.2
Stock Building	286			529	-0.1			653	0.1
Total Domestic Demand	144,864	2.4	2.1	151,456	2.5	2.2	1.8	157,574	2.3
Total Exports	135,570	5.4	1.4	144,807	7.2	4.6	1.7	154,040	6.2
Merchandise	88,020	4.9	0.9	93,183	4.7	4.0	1.4	98,342	3.9
Services	47,550	6.5	1.9	51,624	2.5	5.9	1.9	55,697	2.3
Total Demand	280,434	4.1	1.5	296,264	9.7	3.6	1.5	311,614	8.5
Total Imports	112,486	3.7	1.9	118,871	4.1	2.9	1.9	124,639	3.2
Gross Domestic Product	169,177	4.4	1.1	178,620	5.6	4.2	1.1	188,203	5.3
Net Factor Income	-26,209	6.8	1.4	-28,385	-1.8	7.3	1.7	-30,975	-1.9
Gross National Product	142,968	3.8	1.2	150,235	3.8	3.4	1.2	157,228	3.4

Table A3.1 (continued): Expenditure on GNP

	2008 €m	Volume %	Price %	2009 €m	Cont. to Growth %	Volume %	Price %	2010 €m	Cont. to Growth %
Personal Consumption	84,742	1.1	1.9	87,322	0.7	2.2	2.2	91,170	1.3
Public Consumption	27,297	2.9	2.4	28,751	0.4	2.9	2.5	30,299	0.4
Fixed Investment	44,882	1.0	0.9	45,726	0.2	2.8	1.6	47,741	0.7
Building	31,974	-0.2	1.1	32,268	0.0	2.2	1.9	33,602	0.3
Machinery	12,820	2.5	1.3	13,309	0.3	3.4	1.3	13,946	0.4
Final Domestic Demand	156,921	1.3	1.7	161,800	1.3	2.4	2.1	169,210	2.4
Stock Building	653			741	0.1			823	0.0
Total Domestic Demand	157,574	1.4	1.7	162,540	1.4	2.5	2.1	170,033	2.4
Total Exports	154,040	4.7	1.6	163,855	6.4	4.5	1.8	174,393	6.3
Merchandise	98,342	4.1	1.3	103,656	3.9	3.9	1.4	109,236	3.8
Services	55,697	6.0	1.9	60,199	2.5	5.9	2.2	65,158	2.5
Total Demand	311,614	3.3	1.4	326,395	7.8	3.7	1.8	344,426	8.7
Total Imports	124,639	3.0	1.9	130,747	3.2	3.5	1.9	137,815	3.8
Gross Domestic Product	188,203	3.6	1.0	196,876	4.6	3.8	1.7	207,839	4.9
Net Factor Income	-30,975	6.8	1.6	-33,621	-1.9	6.9	1.8	-36,613	-2.0
Gross National Product	157,228	2.7	1.1	163,255	2.7	3.0	1.9	171,226	3.0

	2010 €m	Volume %	Price %	2011 €m	Cont. to Growth %	Volume %	Price %	2012 €m	Cont. to Growth %
Personal Consumption	91,170	1.8	2.1	94,767	1.0	1.9	2.0	98,418	1.1
Public Consumption	30,299	2.1	2.1	31,581	0.3	2.1	2.3	32,980	0.3
Fixed Investment	47,741	2.6	1.5	49,726	0.6	2.6	1.6	51,865	0.6
Building	33,602	2.1	1.8	34,937	0.3	2.1	1.9	36,342	0.3
Machinery	13,946	3.2	1.3	14,579	0.3	3.3	1.5	15,285	0.4
Final Domestic Demand	169,210	2.1	2.0	176,074	2.0	2.1	2.0	183,263	2.0
Stock Building	823			863	0.0			923	0.0
Total Domestic Demand	170,033	2.1	2.0	176,937	2.0	2.1	1.9	184,186	2.0
Total Exports	174,393	4.4	1.9	185,488	6.3	4.4	1.8	197,161	6.3
Merchandise	109,236	3.8	1.5	115,050	3.7	3.7	1.5	121,102	3.7
Services	65,158	5.9	2.1	70,438	2.5	5.9	2.0	76,059	2.6
Total Demand	344,426	3.5	1.7	362,425	8.3	3.5	1.7	381,347	8.3
Total Imports	137,815	3.7	1.9	145,667	4.1	3.8	1.9	154,030	4.2
Gross Domestic Product	207,839	3.2	1.6	217,986	4.2	3.2	1.6	228,546	4.2
Net Factor Income	-36,613	3.1	1.9	-38,449	-0.9	3.0	1.8	-40,321	-0.9
Gross National Product	171,226	3.3	1.5	17,-9537	3.3	3.3	1.5	188,225	3.3

Table A3.2: Output

	2004 €m	Volume %	Price %	2005 €m	Cont. to Growth %	Volume %	Price %	2006 €m	Cont. to Growth %
Agriculture	3,687	-0.5	0.5	3,685	0.0	-0.6	1.2	3,707	0.0
Industry	48,382	5.6	1.4	51,788	2.8	4.0	2.7	55,287	2.0
Manufacturing	34,673	5.4	1.1	36,951	2.3	3.9	3.1	39,606	1.7
Utilities	1,517	8.0	-1.3	1,618	0.1	6.8	-1.6	1,700	0.1
Building	12,192	6.1	2.2	13,220	0.4	3.5	2.2	13,981	0.2
Market Services	59,007	7.5	4.0	66,005	3.5	5.2	1.6	70,592	2.5
Distribution	13,842	6.4	2.4	15,090	0.7	4.8	2.0	16,133	0.6
Transport & Communications	7,545	6.5	2.5	8,232	0.4	4.8	2.0	8,800	0.3
Other Market Services	37,620	8.3	4.8	42,684	2.3	5.5	1.4	45,659	1.6
Non-Market Services	17,172	3.3	4.3	18,495	0.4	3.6	3.2	19,765	0.4
Health & Education	12,415	3.4	4.5	13,407	0.3	3.0	3.4	14,279	0.3
Public Administration	4,757	3.0	3.8	5,088	0.1	5.0	2.7	5,486	0.2
GDP at Factor Cost	128,953	5.3	2.1	138,640	5.9	4.4	2.4	148,123	4.9
Taxes on Expenditure	19,639	8.7	3.0	21,993	1.4	7.9	1.1	23,980	1.3
Subsidies	2,652	7.2	1.5	2,887	0.2	-0.6	2.0	2,927	0.0
GDP at Market Prices	145,939	5.7	2.3	157,746	7.1	4.9	2.2	169,177	6.2
Net Factor Income	-23,624	6.1	-2.9	-24,323	-1.6	5.4	2.3	-26,209	-1.4
GNP at Market Prices	122,316	5.6	3.3	133,423	5.6	4.8	2.2	142,968	4.8

	2006 €m	Volume %	Price %	2007 €m	Cont. to Growth %	Volume %	Price %	2008 €m	Cont. to Growth %
Agriculture	3,707	1.8	1.4	3,829	0.1	2.3	3.0	4,032	0.1
Industry	55,287	5.4	-1.1	57,632	2.7	5.3	-1.3	59,866	2.7
Manufacturing	39,606	4.9	-1.1	41,094	2.0	4.9	-0.9	42,719	2.0
Utilities	1,700	5.8	7.1	1,927	0.1	7.2	-4.1	1,981	0.1
Building	13,981	8.7	-3.9	14,611	0.5	7.3	-3.3	15,166	0.5
Market Services	70,592	4.4	1.4	74,709	2.1	4.1	1.7	79,093	1.9
Distribution	16,133	3.3	0.3	16,719	0.4	3.1	0.1	17,249	0.4
Transport & Communications	8,800	4.0	0.6	9,210	0.3	3.8	0.8	9,635	0.3
Other Market Services	45,659	4.9	1.9	48,780	1.4	4.5	2.4	52,210	1.3
Non-Market Services	19,765	2.8	4.2	21,183	0.3	2.8	4.2	22,684	0.3
Health & Education	14,279	2.5	4.6	15,303	0.2	2.5	4.5	16,388	0.2
Public Administration	5,486	3.6	3.5	5,880	0.1	3.4	3.5	6,296	0.1
GDP at Factor Cost	148,123	4.6	0.8	156,125	5.1	4.4	0.8	164,448	5.0
Taxes on Expenditure	23,980	2.8	3.1	25,420	0.5	2.2	2.7	26,684	0.4
Subsidies	2,927	1.3	-1.4	2,925	0.0	1.5	-1.3	2,928	0.0
GDP at Market Prices	169,177	4.4	1.1	178,620	5.6	4.2	1.1	188,203	5.3
Net Factor Income	-26,209	6.8	1.4	-28,385	-1.8	7.3	1.7	-30,975	-1.9
GNP at Market Prices	142,968	3.8	1.2	150,235	3.8	3.4	1.2	157,228	3.4

Table A3.2 (continued): Output

	2008 €m	Volume %	Price %	2009 €m	Cont. to Growth	Volume %	Price %	2010 €m	Cont. to Growth %
Agriculture	4,032	1.3	3.0	4,210	0.1	1.8	2.5	4,392	0.1
Industry	59,866	4.4	-1.0	61,873	2.3	4.3	-0.7	64,078	2.2
Manufacturing	42,719	4.6	-1.1	44,189	2.0	4.8	-0.8	45,979	2.1
Utilities	1,981	5.2	6.5	2,220	0.1	1.7	-21.3	1,777	0.0
Building	15,166	3.1	-1.1	15,464	0.2	1.5	4.0	16,321	0.1
Market Services	79,093	3.7	1.3	83,083	1.8	4.1	1.3	87,657	2.0
Distribution	17,249	2.4	0.1	17,672	0.3	3.5	0.1	18,307	0.4
Transport & Communications	9,635	3.5	0.8	10,056	0.2	4.1	0.9	10,560	0.3
Other Market Services	52,210	4.2	1.7	55,355	1.2	4.4	1.8	58,790	1.3
Non-Market Services	22,684	2.7	3.7	24,168	0.3	2.7	3.6	25,725	0.3
Health & Education	16,388	2.5	3.9	17,460	0.2	2.5	3.8	18,584	0.2
Public Administration	6,296	3.3	3.2	6,708	0.1	3.2	3.2	7,140	0.1
GDP at Factor Cost	164,448	3.9	0.8	172,105	4.4	4.0	0.9	180,623	4.6
Taxes on Expenditure	26,684	1.3	2.5	27,700	0.2	2.3	6.5	30,151	0.4
Subsidies	2,928	0.6	-0.6	2,929	0.0	1.2	-1.0	2,934	0.0
GDP at Market Prices	188,203	3.6	1.0	196,876	4.6	3.8	1.7	207,839	4.9
Net Factor Income	-30,975	6.8	1.6	-3,3621	-1.9	6.9	1.8	-36,613	-2.0
GNP at Market Prices	157,228	2.7	1.1	163,255	2.7	3.0	1.9	171,226	3.0

	2010 €m	Volume %	Price %	2011 €m	Cont. to Growth %	Volume %	Price %	2012 €m	Cont. to Growth %
Agriculture	4,392	1.0	3.3	4,585	0.0	1.0	3.2	4,778	0.0
Industry	64,078	3.3	1.1	66,920	1.8	3.7	-1.9	68,081	2.0
Manufacturing	45,979	3.8	-1.4	47,068	1.7	3.9	-1.5	48,152	1.7
Utilities	1,777	0.6	50.8	2,696	0.0	9.0	-35.0	1,911	0.2
Building	16,321	0.6	4.5	17,155	0.0	0.8	4.2	18,018	0.0
Market Services	87,657	3.9	1.1	92,097	1.9	3.4	3.5	98,605	1.7
Distribution	18,307	3.2	0.0	18,904	0.4	3.3	-0.1	19,516	0.4
Transport & Communications	10,560	3.9	0.9	11,073	0.3	3.8	1.0	11,605	0.3
Other Market Services	58,790	4.2	1.4	62,120	1.3	3.4	5.1	67,484	1.0
Non-Market Services	25,725	1.7	3.2	26,987	0.2	1.6	3.0	28,249	0.2
Health & Education	18,584	1.5	3.4	19,496	0.1	1.5	3.1	20,408	0.1
Public Administration	7,140	2.1	2.8	7,491	0.1	2.0	2.6	7,841	0.1
GDP at Factor Cost	180,623	3.4	1.4	189,360	3.9	3.3	1.4	198,486	3.9
Taxes on Expenditure	30,151	2.0	2.8	31,597	0.3	2.0	2.6	33,068	0.3
Subsidies	2,934	0.6	0.6	2,971	0.0	0.7	0.6	3,009	0.0
GDP at Market Prices	207,839	3.2	1.6	217,986	4.2	3.2	1.6	228,546	4.2
Net Factor Income	-36,613	3.1	1.9	-38,449	-0.9	3.0	1.8	-40,321	-0.9
GNP at Market Prices	171,226	3.3	1.5	179,537	3.3	3.3	1.5	188,225	3.3

Table A3.3: National Income and National Product, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agricultural Incomes	2,998	3,035	3,097	3,204	3,399	3,568	3,741	3,923	4,104
Non-Agric. Wage Income	58,701	64,562	69,248	73,333	77,644	81,612	86,065	89,979	93,898
Non-Agric. Profits Net	51,505	53,897	57,806	60,323	62,783	64,856	67,200	70,484	74,077
Non-Agric. Profits Gross	51,196	54,406	58,256	60,773	63,233	65,306	67,650	70,934	74,527
Adjustment for Stock Appreciation	-309	509	450	450	450	450	450	450	450
Domestic Income	113,204	121,494	130,151	136,860	143,827	150,037	157,006	164,386	172,079
Depreciation	15,749	17,146	17,972	192,65	20,621	22,069	23,616	24,974	26,407
GDP (Factor Cost)	128,953	138,640	148,123	156,125	164,448	172,105	180,623	189,360	198,486
Taxes on Expenditure	19,639	21,993	23,980	25,420	26,684	27,700	30,151	31,597	33,068
Domestic	19,323	21,263	23,160	24,540	25,740	26,687	29,064	30,455	31,870
EC	316	730	820	880	944	1,013	1,087	1,141	1,198
Subsidies (-)	2,652	2,887	2,927	2,925	2,928	2,929	2,934	2,971	3,009
Domestic	864	905	920	948	981	1,012	1,047	1,084	1,122
EC	1,788	1,982	2,007	1,977	1,947	1,917	1,887	1,887	1,887
GDP (Market Prices)	145,939	157,746	169,177	178,620	188,203	196,876	207,839	217,986	228,546
Net Factor Income	-23624	-24,323	-26,209	-28,385	-30,975	-33,621	-36,613	-38,449	-40,321
Gross National Product	122316	133,423	142,968	150,235	157,228	163,255	171,226	179,537	188,225

Table A3.4: Personal Income and Personal Expenditure, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agricultural Incomes	2,998	3,035	3,097	3,204	3,399	3,568	3,741	3,923	4,104
Non-Agric. Wage Income	58,701	64,562	69,248	73,333	77,644	81,612	86,065	89,979	93,898
Transfer Income	15,498	18,038	18,757	19,985	21,286	22,594	23,875	25,234	26,527
Domestic	15,457	17,534	18,024	19,229	20,510	21,799	23,054	24,385	25,648
Foreign	41	504	733	756	775	794	821	849	878
Other Personal Income	15,703	15,460	16,564	16,300	15,853	15,112	14,363	14,515	14,753
Non-Agricultural Profits	51,196	54,406	582,56	60,773	63,233	65,306	67,650	70,934	74,527
National Debt Interest	1,747	1,790	1,828	1,664	1,683	1,696	1,706	1,707	1,712
Net Factor Income	-23,624	-24,323	-26,209	-28,385	-30,975	-3,3621	-36,613	-38,449	-40,321
Government Trading & Investment Income (-)	1,246	1,450	1,800	1,891	1,980	2,055	2,156	2,260	2,370
Other Private Income	28,073	30,423	32,075	32,160	31,961	31,326	30,586	31,931	33,548
Undistributed Profits (-)	12,370	14,962	15,510	15,860	16,109	16,214	16,223	17,416	18,795
Personal Income	92,900	101,096	107,666	112,822	118,182	122,886	128,044	133,651	139,281
Taxes on Personal Income	17,616	18,887	20,441	21,597	23,352	25,410	26,165	27,614	29,043
Personal Disposable Income	75,285	82,209	87,225	91,224	94,830	97,476	101,880	106,036	110,238
Personal Consumption	67,079	72,080	77,714	81,435	84,742	87,322	91,170	94,767	98,418
Personal Savings	8,205	10,129	9,511	9,790	10,088	10,153	10,710	11,270	11,820
Tax Ratio (% Personal Income)	19.0	18.7	19.0	19.1	19.8	20.7	20.4	20.7	20.9
Savings Ratio (% of Disposable Income)	10.9	12.3	10.9	10.7	10.6	10.4	10.5	10.6	10.7

Table A3.5: Balance of Payments, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Exports – Total	122,301	127,758	135,570	144,807	154,040	163,855	174,393	185,488	197,161
Merchandise	81,058	83,378	88,020	93,183	98,342	103,656	109,236	115,050	121,102
Services	41,243	44,381	47,550	51,624	55,697	60,199	65,158	70,438	76,059
Imports – Total	100,446	106,101	112,486	118,871	124,639	130,747	137,815	145,667	154,030
Balance of Trade	21,855	21,658	23,084	25,936	29,401	33,108	36,578	39,821	43,132
as % of GNP	17.9	16.2	16.1	17.3	18.7	20.3	21.4	22.2	22.9
International Transfers									
EC Subsidies	1,788	1,982	2,007	1977	1,947	1,917	1,887	1,887	1,887
EC Taxes (-)	316	730	820	880	944	1,013	1,087	1,141	1,198
Government Payments (-)	1,484	1,721	1,900	2,012	2,129	2,246	2,383	2,506	2,637
Government Receipts	277	174	130	137	143	148	156	163	171
Private Transfers	41	504	733	756	775	794	821	849	878
Net International Transfers	306	209	150	-23	-208	-400	-606	-749	-899
Factor Income Flows	-23,624	-24,323	-26,209	-28,385	-30,975	-3,3621	-36,613	-38,449	-40,321
National Debt Interest (-)	1,554	1,664	1,770	1,660	1,670	1,676	1,683	1,686	1,691
Profits etc. Outflows (-)	26,348	28,156	30,564	32,246	33,976	35,541	37,520	38,480	39,430
Other Factor income	4,279	5,497	6,125	5,520	4,670	3,597	2,590	1,717	800
Current Account Balance	-1,463	-2,456	-2,974	-2,472	-1,781	-913	-642	623	1,912
as % of GNP	-1.2	-1.8	-2.1	-1.6	-1.1	-0.6	-0.4	0.3	1.0
Capital Transfers	401	360	340	351	360	368	381	394	407
Effective Current Balance	-1,062	-2,096	-2,634	-2,121	-1,422	-545	-261	1,017	2,320
as % of GNP	-0.9	-1.6	-1.8	-1.4	-0.9	-0.3	-0.2	0.6	1.2

Table A3.6: National Debt, Current prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total Government Securities	19,568	19,578	19,544	19,548	19,506	19,437	19,399	19,354	19,306
Other Borrowing from Central Bank	5,781	5,781	5,781	6,075	6,358	6,601	6,924	7,260	7,611
Small Savings	4,518	4,518	4,517	4,492	4,459	4,417	4,373	4,314	4,242
Total Debt Held Domestically	16,799	16,809	16,774	17,046	17,255	17,388	17,627	17,860	18,091
Total € Debt	29,867	29,877	29,842	30,114	30,323	30,456	30,695	30,928	31,159
Foreign Debt:									
Foreign Currency	-5	-46	97	350	641	960	1,103	1,250	1,372
Government Securities	13,068	13,068	13,068	13,068	13,068	13,068	13,068	13,068	13,068
Total Foreign Debt	13,063	13,022	13,165	13,418	13,709	14,028	14,171	14,318	14,440
Total National Debt	29,862	29,831	29,939	30,464	30,964	31,416	31,798	32,178	32,531
General Government Debt	47,261	48,072	47,596	48,122	48,621	49,073	49,455	49,835	50,188
Other Bank Borrowing	-1,300	-1,300	-1,300	-1,366	-1,430	-1,484	-1,557	-1,633	-1,712
Debt Ratios (% of GNP)									
Total National Debt	24.4	22.4	20.9	20.3	19.7	19.2	18.6	17.9	17.3
General Government Debt	38.6	36.0	33.3	32.0	30.9	30.1	28.9	27.8	26.7
Total Domestic Debt	13.7	12.6	11.7	11.3	11.0	10.7	10.3	9.9	9.6
Total Foreign Debt	10.7	9.8	9.2	8.9	8.7	8.6	8.3	8.0	7.7
Total € Debt	24.4	22.4	20.9	20.0	19.3	18.7	17.9	17.2	16.6
Total Foreign Currency Debt	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.7	0.7
Debt Ratios (% of GDP)									
Total National Debt	20.5	18.9	17.7	17.1	16.5	16.0	15.3	14.8	14.2
General Government Debt	32.4	30.5	28.1	26.9	25.8	24.9	23.8	22.9	22.0
Total Foreign Debt	9.0	8.3	7.8	7.5	7.3	7.1	6.8	6.6	6.3

Table A3.7: Public Authorities Accounts, Current Prices, € million

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Taxes on Income and Wealth	22,972	24,336	26,384	27,964	29,995	32,323	33,305	35,012	36,802
Company	5,365	5,458	5,953	6,376	6,653	6,924	7,152	7,410	7,771
Personal	17,607	18,878	20,431	21,588	23,342	25,399	26,154	27,603	29,031
Taxes on Expenditure	19,323	21,263	23,160	24,540	25,740	26,687	29,064	30,455	31,870
Gross	19,332	21,687	23,674	25,114	26,377	27,393	29,844	31,290	32,762
EC Budget Contribution (-)	9	423	513	573	638	706	780	835	892
Net Trading & Investment Income	1,246	1,450	1,800	1,891	1,980	2,055	2,156	2,260	2,370
Transfers From Abroad	277	174	130	137	143	148	156	163	171
Total Current Receipts	43,827	47,232	51,484	54,542	57,867	61,224	64,692	67,903	71,225
Subsidies	864	905	920	948	981	1,012	1,047	1,084	1,122
National Debt Interest	1,747	1,790	1,828	1,664	1,683	1,696	1,706	1,707	1,712
Other Transfer Payments	16,941	19,255	19,924	21,241	22,639	24,046	25,436	26,891	28,285
Foreign	1,484	1,721	1,900	2,012	2,129	2,246	2,383	2,506	2,637
Residents	15,457	17,534	18,024	19,229	20,510	21,799	23,054	24,385	25,648
Public Consumption	20,761	22,477	24,452	25,832	27,297	28,751	30,299	31,581	32,980
Total Current Expenditure	40,313	44,427	47,123	49,684	52,600	55,504	58,489	61,263	64,099
Public Authorities Savings (net)	3,514	2,805	4,361	4,858	5,267	5,721	6,203	6,640	7,126
as % of GNP	2.87	2.10	3.05	3.23	3.35	3.50	3.62	3.70	3.79
Total Capital Receipts	2,895	2,964	3,045	3,079	3,113	3,143	3,196	3,247	3,298
Grants – Housing	98	100	102	102	101	99	102	105	108
Grants – Industry	57	59	62	65	69	73	76	80	83
Investment	6,133	6,572	7,044	7,396	7,766	8,154	8,562	8,990	9,440
Other Capital Expenditure	746	943	857	899	944	992	1,041	1,093	1,148
Total Capital Expenditure	7,033	7,675	8,065	8,463	8,880	9,317	9,781	10,268	10,779
Borrowing for Capital Purposes	-4,139	-4,711	-5,019	-5,384	-5,768	-6,174	-6,586	-7,021	-7,481
Total Borrowing	-625	-1,906	-659	-526	-501	-453	-383	-381	-355
as % of GNP	-0.51	-1.43	-0.46	-0.35	-0.32	-0.28	-0.22	-0.21	-0.19
Budgetary Definitions									
Exchequer Surplus	112	-2,008	-1,942	-1,810	-1,784	-1,737	-1,667	-1,665	-1,639
as % of GNP	0.1	-1.5	-1.4	-1.2	-1.1	-1.1	-1.0	-0.9	-0.9
Current Budget Surplus	5,699	5,141	5,157	5,654	6,063	6,517	6,999	7,436	7,922
as % of GNP	4.7	3.9	3.6	3.8	3.9	4.0	4.1	4.1	4.2
EU Definitions									
General Government Balance	-2,117	811	-476	-608	-634	-681	-752	-753	-780
as % of GDP	-1.5	0.5	-0.3	-0.3	-0.3	-0.3	-0.4	-0.3	-0.3
as % of GNP	-1.7	0.6	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.4

Table A3.8: Employment and the Labour Force, Thousands, Mid-April

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	114	110	109	105	102	100	97	94	92
Industry	504	526	531	527	527	526	531	531	531
Manufacturing:									
Traditional	98	98	98	97	96	95	94	92	90
Food Processing	47	48	47	46	46	45	45	44	43
High Technology	141	133	130	131	133	134	136	134	133
Manufacturing	286	278	275	275	275	275	275	271	266
Utilities	13	13	14	14	14	14	14	14	13
Building	204	234	242	239	239	238	242	247	251
Market Services	754	802	826	846	864	878	895	914	936
Distribution	260	277	287	288	288	287	288	290	292
Transport & Communications	112	112	112	112	113	114	116	118	120
Other Market Services	382	413	427	446	462	477	491	507	524
Non-Market Services	402	415	429	440	451	462	474	481	488
Health & Education	307	317	327	335	343	352	361	366	371
Public Administration	95	98	103	105	108	111	113	115	117
Total Employment	1,774	1,853	1,895	1,919	1,944	1,966	1,996	2,021	2,047
Unemployment	109	105	110	135	154	174	181	193	192
Labour Force	1,883	1,958	2,005	2,054	2,099	2,139	2,177	2,214	2,238