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RECOVERY SCENARIOS FOR IRELAND

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CONTENTS

LIST OF FIGURES

Page

LIST OF TABLES

Page

EXECUTIVE SUMMARY

The Irish economy is facing extremely challenging times. It is in the throes of a deep recession, unemployment is rising rapidly and the Irish banking system is facing serious funding difficulties. As a consequence, by the end of 2010 output per head will have fallen back to its 2001 level. Nonetheless, our analysis suggests that the potential growth rate of the economy is around 3 per cent a year. Given the very severe recession that Ireland is currently experiencing, this means that when the world economy eventually recovers the Irish economy can be expected to experience a period of above average growth. On this basis, output per head could be restored to its 2007 level by the middle of the next decade. Consistent with this forecast, our estimates suggest that there will be a permanent loss of output of 10 per cent compared to where the economy might have been. This will represent a very painful permanent "scar" on the economy arising from the current recession.

The dramatic deterioration in the public finances in 2008 and the early months of 2009 exposed the scale of the structural deficit – the deficit in the public finances which would remain even after a world recovery unless fiscal action is taken to close it. This structural deficit largely reflects the legacy of unwise fiscal policies in recent years. The experience of Ireland in the 1980s and of many other countries since then, suggests the importance of taking early action to tackle such a fiscal crisis. The budgets of 2009 and the budget promised for 2010 are together likely to halve the size of the structural deficit to 3 to 4 per cent of GDP. This seems to us to be an appropriate fiscal policy response to the very serious public finance problems. However, it will be very important that there is no slippage in the main parameters of the budget planned for 2010.

Our assessment is that if the world economy recovers significant momentum by 2011, the Irish economy, as long as it regains competitiveness, can be expected to grow quite rapidly in the 2011-2015 period, recovering some of the lost ground of the current recession. Under these circumstances the economy could temporarily grow at an average of over 5 per cent a year to 2015. If this happened, the unemployment rate would be reduced from a peak of around 17 per cent in 2010 to between 6 and 7 per cent by 2015.

If the world recovery were delayed a year to 2012, we estimate that the permanent loss of output and income could be closer to 15 per cent, the turnaround in the unemployment rate would be further delayed and there would be higher emigration. This would also lead to a higher structural budget deficit in which case further tough budgetary action from 2011 onwards would be appropriate.

In addition to action on fiscal policy, the authorities have taken steps to help stabilise the banking sector. Our analysis suggests that the long-term cost to the State of the necessary additional action to deal with the problem may be small relative to the debts accruing as a result of borrowing to fund the normal activities of the government. However, even if the funding needs of the banking system are eventually largely repaid, the full resolution of this problem will take some considerable time. In the interim the very substantial overhang of debt needed to fund a solution to the banking problems will add to uncertainty and to the risks facing the economy.

The uncertainty arising from the crisis in the financial system would argue for continuing action to tackle the structural deficit over the period 2011-15. The objective should be to eliminate the structural deficit by 2015. While this will require the maintenance of a tight fiscal policy over the period, it will be a much less severe policy stance than we are currently experiencing. It would also be less severe than the prospective budgetary policy envisaged as being necessary by the Department of Finance for the period 2011-13 in its *Macro-Economic and Fiscal Framework: 2009-13*.

The analysis in this paper highlights the importance of improving the competitiveness of the Irish economy – this is essential if the economy is to return to full employment within a reasonable time scale. We envisage a major reduction in the level of costs, including labour costs, relative to the Euro Area over the period 2009-11. In this context, it is important that public policy should do all that it can to speed this essential adjustment. A revised partnership agreement which recognised the importance of reducing costs, broadly defined, would help in this regard.

The Irish economy faces a period of very high unemployment. It will be very important that public policy learns from past research in Ireland and elsewhere on how best to prevent the unemployed of today becoming the long-term unemployed of tomorrow. This problem will be particularly acute for those losing their jobs who have relatively low levels of education and skills. This suggests that priority needs to be given to labour market initiatives that will effectively tackle this skills deficit among many of the unemployed. In preparing for a recovery, the economy would also benefit from increased policy attention to measures to enhance productivity and innovation in the tradable sector of the economy.

1. INTRODUCTION

The exceptional nature of the recession which the world is currently experiencing inevitably has very serious consequences for an economy that is as open as Ireland's. However, the problems for the domestic economy have been greatly aggravated by past policy mistakes, which allowed a major property market bubble to develop (and burst), permitted the banking system to become overexposed to this dangerous development and financed a structural expansion of the public sector with cyclical taxes.

While the legacy effects of past policy mistakes make things much worse in Ireland than they would otherwise have been, it is important to recognise that up to a half of Ireland's current problems with the public finances and in the labour market arise from the global financial and economic crisis – they would have happened anyway no matter how appropriate fiscal policy had been over the last decade.[1] This diagnosis of the current Irish economic crisis has important implications for how best to tackle the problems. The consequences of past policy mistakes have to be addressed by very painful reforms, while the domestic consequences of the world recession will be largely corrected by a world recovery.

Though today's economic problems are exceptional, the basic fabric of the economy remains reasonably intact. Provided that the world economy finds its way back to reasonable growth over the next two years, the Irish economy can be expected to follow. The task of policymakers is to prepare the economy so that it will be in a position to benefit from a world recovery and to ensure that the lag between the world recovery and its translation into Irish growth in output and employment is minimised.

The dramatic fall in output that has occurred must still be translated into an actual fall in living standards if the economy is to remain competitive. In the past, such adjustments have sometimes been attained by a devaluation of the Irish currency. With Ireland in the Euro Area, this is no longer possible. Instead, the adjustment must now involve acceptance of a fall in nominal wage rates across much of the economy, and budgetary measures to restore the public finances to a sustainable path. By 2010 output per head (using GNP) will have fallen to roughly the level it was in 2001. Over the past number of months, the Irish population has begun to feel the impact of the recession – the impact has been relatively modest for those with guaranteed incomes (e.g., employees and pensioners with unchanged salaries), but has been acute for people who have lost jobs, whose businesses have closed, or whose pensions are at risk. However, further adjustment is required by those in employment, as our changed

[1] As discussed in this paper our estimate is that prior to the budget of April 2009 roughly half of the government deficit was structural. This structural deficit is almost wholly due to past mistakes in fiscal policy.

financial circumstances must involve the acceptance of a fall in nominal wage rates across much of the economy. There will also be the impact on living standards of the implementation of a series of tough budgets to restore the public finances to a sustainable path. The government's supplementary budgets in 2009 represent an appropriate first step in this adjustment process.

As a result of the recession, the Irish economy today suffers from four major challenges which have to be addressed. These are:

- The restoration of order to the banking system,
- The structural re-balancing of the government accounts,
- The correction of the serious loss of competitiveness, which the economy experienced between 2003 and 2008, reflected in the burgeoning balance of payments deficit, and
- The economic and social consequences of the related dramatic increase in the unemployment rate.

As a result of the bubble in the property market, the building and construction sector grew to be more than twice the size that would have been sustainable. To achieve this remarkable level of output it effectively squeezed out a significant part of the tradable sector of the economy. With the building and construction sector now dramatically reduced in size, the restoration of full employment in the economy will require a significant expansion in the tradable sector of the economy. This will only be possible with an improvement in competitiveness.

The current recession has led to a very serious deterioration in the public finances. In 2006 the general government balance was in surplus to the tune of 3 per cent of GDP; by 2008 this had shifted to a deficit of over 7 per cent and, without the government's corrective fiscal actions it could have widened to 15 per cent or more in 2009. Despite the fact that the Irish economy's net debt position at the end of 2008 stood at just 20 per cent of GDP,[2] the speed of deterioration has led to a reassessment of Irish government debt risk on international markets.

In a recession the public finance position normally deteriorates through the operation of the so-called automatic stabilisers (higher unemployment leads to higher welfare payments, lower tax revenues etc.). To the extent that these automatic stabilisers are responsible for the deterioration, they can be expected to unwind in a recovery. However, it has long been clear that the dramatic deterioration in the public finances owes much to the collapse in the property market bubble and that, as a result, no recovery is likely to restore some of the major areas of lost government revenue.

The key question for policymakers in 2009 is to determine how much of the deficit is structural and how much is cyclical (driven by the recession). Prior to the April Supplementary Budget we estimated that the structural deficit was of the order of 6 to 8 per cent of GDP. When the April

[2] This figure nets off savings funds (National Pension Reserve Fund (NPRF), Social Insurance Fund (SIF) etc.) and deposits with the Central Bank which at the end of 2008 were especially large.

Supplementary Budget is taken into account, and assuming the government's budget outline for 2010 is fully implemented, we estimate that it will lie in the range 3 to 4 per cent of GDP.[3] While the country is facing an exceptionally deep recession in 2009, provided that a world recovery sets in during 2010 and 2011, Ireland has the opportunity to restore some of the ground lost during the recession.

This paper examines the possible scenarios to bring the Irish economy to recovery over the period to 2015. Depending on the nature of the world recovery and its timing, it should be possible to restore the economy to a sustainable growth path within two or three years and to address the critical rise in unemployment by the middle of the next decade. If appropriate policies are followed it shows that, with a reasonable recovery in the world economy, output per head, which will fall to the 2001 level in 2010, could have returned to its pre-recession 2007 level by around 2014 or 2015.

Following on from the series of budgetary measures introduced for 2009, this paper suggests that it will be important to implement the budget for 2010 along the broad lines already announced by the government. In exploring alternative scenarios, either less benign or more benign, this paper suggests that the current stance of fiscal policy can be seen as a "no regrets policy" – even if the world recovery were delayed by a year (or proved more robust than assumed) current policy would prove to be broadly appropriate. Finally, the paper suggests that preconditions for a successful recovery will be the restoration of order to the Irish banking system and the achievement of a significant improvement in the competitiveness of the economy.

Even with a world recovery beginning in 2011, the current recession is likely to result in a permanent substantial loss of output of the order of 10 per cent relative to what was envisaged in the Benchmark Scenario of the *Medium-Term Review 2008-2015*. Were the recovery to be delayed for an additional year, this loss would be of the order of 13 per cent. In addition, we estimate that the costs to the exchequer in relation to the banking crisis, even if they will eventually be largely recouped from the proceeds of asset sales, could imply an increase in government interest payments in the region of 2 percentage points of GDP per annum out to 2015 and beyond.

Section 2 of this paper considers the background to the current crisis. It also considers the experience of major shocks elsewhere. Section 3 looks at three major medium-term challenges facing the Irish economy. The first is the banking crisis and its likely effect on the national debt. The second is the scale of the structural deficit facing the authorities. The third is the financial sustainability of the current crisis and anticipated rise in public sector debt. Section 4 will consider alternative scenarios on world recovery and how they will impact on the Irish economy. Conclusions are drawn in Section 5.

[3] This does not allow for any long-term costs from the reform of the banking system.

2. BACKGROUND TO THE CURRENT CRISIS

2.1 Domestic Origins – Property

The Irish economy enjoyed an exceptional period of sustained growth from 1994 through to the early years of this decade. This growth was driven by the expansion in world trade and the very competitive nature of the Irish economy. The result was a rapid increase in world market share for Irish exports at a time when world trade was also rising fast. This produced a rapid but sustainable growth in Irish output and living standards.

By the late 1990s, as unemployment fell to historically low levels, the economy found itself approaching capacity output. Substantial immigration helped relieve labour market pressures (Barrett, Fitz Gerald and Nolan, 2002) but it was clear that growth could not continue at the same rate indefinitely. The natural mechanism to slow the economy was a real appreciation of the currency. In the absence of an independent exchange rate this had to take place through a loss of competitiveness as wage rates and other prices rose more rapidly than in the rest of the Euro Area. Managing this real appreciation through differential inflation was never going to be easy without overshooting. It would have been better, as argued by the EU Commission in 2001 (and also by Barry and Fitz Gerald, 2001), if fiscal policy had been tightened to slow the process.

However, the bursting of the dotcom bubble did slow the world economy and hence the Irish economy. This slowdown was less severe than had been initially expected and it effectively provided some breathing room for the Irish economy.

Its particular demographic structure meant that Ireland entered the boom period under-endowed with infrastructure in the form of dwellings. The numbers of adults per dwelling was substantially higher than in the other EU member states (with the exception of Spain). The rapid rise in incomes together with the increased availability of low cost finance as a consequence of EMU membership and the globalisation of the financial sector resulted in a boom in the building and construction sector. In its early stages this rapid expansion in house building was both sustainable and desirable: people wanted and could afford dwellings. However, from 2003 onwards the housing boom entered a phase that was unsustainable constituting a growing "bubble". In contrast to the earlier years where growth was driven by exports, the housing boom drove economic growth over the following years so that the level of actual output rose well above the potential of the economy to deliver in a sustainable manner.

Fitz Gerald, 2001, and Barry and Fitz Gerald, 2001, recommended that the tax system be used to prevent the development of a housing bubble.

Again in 2003 in the *Medium-Term Review: 2003-2010* (pp. 84-85) we warned of the need for policy action to prevent over-heating in the property sector of the economy. This refrain was repeated in many subsequent reports. The effect of the massive expansion in the building and construction sector was the crowding out of the tradable sector of the economy (Morgenroth and Fitz Gerald, 2006). Wage rates were driven up across the economy by the rapid growth in labour demand in the building and construction sector and, as a consequence, firms that were dependent on export markets suffered. In effect, the building and construction sector "crowded out" the rest of the economy, especially the tradable sector.

This domestic imbalance as a result of the building and construction boom began to be reflected in the balance of payments. Having run a surplus on the current account over the export-led boom years, a growing deficit emerged. The combination of EMU membership and the globalisation of financial markets meant there was less concern about such a phenomenon than there would have been in the past. It was seen as being easily financeable. To finance the housing boom the banking sector borrowed extensively abroad so that the net foreign liabilities of the banking system rose from a low of 10 per cent of GNP in 2003 to over 60 per cent of GNP by 2007.

The boom in the building and construction sector was only made possible through the availability of ready finance from the banking sector. The potential exposure of the banks to the property market was clearly underestimated by the regulatory authorities. These dangers were only becoming apparent to those outside the financial system from late 2005 onwards (Fitz Gerald *et al.,* 2005 and Traistaru-Siedschlag, 2007). Appropriate regulatory action could have reduced the dangers of a banking crisis. Such action could have helped control the property market bubble, but it would also have required a much more activist fiscal policy stance over the course of the current decade.

2.2 Competitiveness and Unemployment

From a healthy competitive position at the start of EMU with high productivity, relatively strong cost competitiveness and a relatively weak exchange rate the Irish economy has more recently suffered a significant loss of competitiveness. This loss of competitiveness was reflected in the increasing deficit on the current account of the balance of payments in recent years. The most recent report of the National Competitiveness Council (NCC) has highlighted the competitiveness challenge facing the Irish economy. The NCC report for 2008 finds that Ireland's trade weighted exchange rate has appreciated by 18 per cent since 2000 making Irish goods and services more expensive on international markets.

This deterioration in competitiveness in recent years is primarily a result of the labour market pressures exerted by the growing bubble in the property market and the building sector of the economy. However, other inefficiencies, including a lack of competition in key areas of the economy, also contributed to the problem. The exceptionally tight labour market in the period to 2007 saw wage rates and other prices rise very rapidly, although there are significant differences across sectors with the loss of competitiveness proving more severe in low-productivity, non-manufacturing sectors of the economy (NCC, 2009). This problem

particularly affected the non-tradable sector resulting in higher domestic prices for services as well as increased labour costs (Siedschlag, 2008).

To undo the consequences of this loss of competitiveness and to improve the situation sufficiently to attract new business will require a substantial reduction in relative costs, especially labour costs. Within EMU this must take place through changes in nominal wage rates in Ireland relative to the rest of the Euro Area. Because nominal wage rates are currently rising very slowly in the Euro Area, such an improvement in competitiveness can only be achieved quickly by a reduction in nominal wage rates in Ireland. Such reductions in nominal wage rates are crucial if the economy is to be restored to full employment.

While previous research on the labour market would suggest that wage rates are relatively flexible, we have no experience of such flexibility where falling prices would warrant cuts in nominal wage rates. In addition, international evidence suggests that it normally takes a number of years for wages to adjust to a new equilibrium. Thus, while instantaneous adjustment to the appropriate level of wage rates would be very desirable for Ireland, in terms of minimising the cost of the recession, it is likely to take some time. The longer that the adjustment is delayed, the higher will be the eventual cost in terms of lost output and higher unemployment. There are signs that wage rates are falling in some parts of the private sector but it will be some time before the extent of the pace of change becomes clear in published data.

Private sector wage rates are not a policy tool available to the government as they are set on the market. Research in the 1990s suggests that the partnership process has not had a long-term impact on the outcome for private sector wage rates (Fitz Gerald, 1999). However, it is possible that the partnership process may impact on the rise in nominal wage rates over a limited period. A renegotiation of the current partnership agreement to reflect the dramatic fall in prices that is underway and the deterioration in labour market prospects since September could prove helpful and it would be in the spirit of the partnership process. Arguably, the potential to increase the speed of labour market adjustment, reducing the cost of the recession, provides the potential for a win-win agreement by the social partners.

Crucially, the economy will have to gain competitiveness to incentivise new investment to replace the jobs lost in existing business in the tradable sector and to provide jobs for the prospective large increase in the number of unemployed.

2.3 World Financial and Economic Crisis

While the seeds of a domestic crisis were sown in Ireland during the early years of this decade, their "maturing" need not have been quite as catastrophic as it has turned out were it not for simultaneous development of a very severe world recession. In that sense Ireland can consider itself a little unlucky.

The depth of the current world recession is greater than that of any recession experienced in the world over the last 65 years. It is also more global in the sense that it is affecting all economies rather than being concentrated in particular regions of the world. The recent IMF World

Economic Outlook notes that 15 of 21 advanced economies are already in recession. For Ireland, the consequences are aggravated by this increased synchronisation of the world business cycle which is also reflected in the increased synchronisation of the Irish cycle with that of the Euro Area as a whole (Goggin and Siedschlag, 2009). This enhances the depth of the recession and also probably affects its duration. There is no region of the world where robust growth is continuing that could serve as an "engine" to restore growth to its neighbours. Given the extreme openness of the Irish economy any major world economic crisis would always be expected to have a major impact on domestic activity and living standards in Ireland.

The world financial crisis has cruelly exposed defects in the banking system in many other countries. It has certainly ensured that all the problems with the Irish financial system would be exposed. It is hard to see a robust world recovery until the world financial system is put on a path to recovery. This highlights the importance of policy actions being taken by central banks and governments throughout the globe.

2.4 Lessons from the Past

Ireland experienced a prolonged recession in the 1980s. While the fall in output in any single year was very limited, the cumulative underperformance of the economy over that decade was probably of a greater order of magnitude than is the case for today's recession. Furthermore, the Irish economy at the start of the 1980s was operating at a very different level of activity than when the present recession began. Despite these differences, the 1980s recession holds some lessons for the current situation.

Despite a growing twin deficit problem, with both the balance of payments deficit and government borrowing growing rapidly in the early 1980s, governments were initially slow to take action, greatly aggravating the depth and length of the recession. While the impending crisis was apparent in early 1980, effective fiscal action to cut the deficit was delayed until 1983. Then, over the three years 1983-5 taxation was raised and capital expenditure was cut introducing a very tight fiscal policy. However, it was not until 1987 that there was a turnaround in the public finances, mirrored in a stabilisation of the debt-GNP ratio, for which it was necessary to raise taxation further and to cut current expenditure. With the benefit of hindsight the cuts in capital expenditure were probably too drastic while the cuts in current expenditure should have taken place earlier in the 1980s. Possibly because of the length of the recession, public confidence in the robustness of the economy was very slow to return.

Every recession is different and the appropriate medicine for the 1980s recession, prescribed with the benefit of hindsight, is not necessarily equally appropriate today. However, the experience of the 1980s does suggest that more rapid, though severe, action would have turned the economy around more rapidly and that an early restoration of public confidence could have truncated the length of the painful adjustment. This time round it suggests that rather than awaiting a recovery before tackling the public finance crisis, early action is desirable. This lesson has been learned with the government's series of budgets for 2009 and their plans for the budget for 2010.

Among developed economies possibly the most notable example of a really deep recession is the experience of Finland and Sweden in the early 1990s. In the case of Finland and Sweden financial liberalisation in the late 1980s allowed the banking systems to expand rapidly their lending for investment in housing and property. As a result of this unregulated expansion a property market bubble developed across Scandinavia. The problems caused by the bursting of this bubble were greatly aggravated for Finland by the collapse of the Soviet Union – the main market for the exports from many Finnish firms. Honkapohja and Koskela (1999) described the Finnish crisis thus:

> *In the 1990s, Finland underwent a deep recession as its GDP dropped about 14% and unemployment rose from 3 to almost 20%. This is a story of bad luck and bad policies.*

The crisis in Finland required a dramatic adjustment in the public finances but it also required a major reorientation of the economy away from building and construction and the production of goods for the Soviet market (Jonung, Kiander and Vartia, 2007). The Finnish economy had to reposition itself to develop export markets in the EU. To do this it had to improve its competitiveness very substantially.

While Finland took reasonably prompt action to restore the public finances with a serious tightening of fiscal policy in 1991 and 1992, it was slow to act to achieve the necessary improvement in competitiveness. It delayed for two years before changing its exchange rate. Meanwhile domestic costs did not adjust downwards. It was only with a very substantial devaluation that the necessary improvement in competitiveness was achieved. As a result, unemployment rose towards 20 per cent of the labour force before falling back very gradually in the late 1990s. However, it never fell back to the level experienced in the years immediately prior to the crisis.

For Ireland the Finnish experience suggests the benefit of prompt action to tackle any public finance crisis. Furthermore, it also suggests that prompt action to achieve the necessary improvement in competitiveness is important if the subsequent rise in unemployment is to be limited. In the case of Ireland this has to be achieved by a reduction in domestic price levels, including wage rates, given our fixed exchange rate relative to other Euro Area countries. Finally, it highlights the importance of developing adequate labour market policies to ensure that the essentially temporary rise in unemployment does not result in an increase in the numbers of long-term unemployed over the course of the next decade.

3. MEDIUM-TERM CHALLENGES

3.1 Introduction

In assessing the 'cure' for the economy it is important first to diagnose how much damage the 'disease' has caused. In this Section we first consider the potential growth rate of the Irish economy over the coming decade 2011-2020 and how it has been damaged by the current recession. Second, we present an illustrative scenario on the possible effect that government funding of the banking sector could have on the national debt and debt interest payments over the next decade. Third, we discuss the issue of the financial sustainability of the Irish economy. We argue that the current recession, which has stimulated a large increase in savings on the part of the household and business sector, will ensure that Ireland avoids a twin-deficit problem in future years as private sector net foreign indebtedness is likely to fall significantly over the medium term. This will ensure the financial sustainability of the economy vis-à-vis foreign debtors.

3.2 Potential Output and the Structural Deficit

In considering the likely growth path of the economy in the medium term a crucial issue is the potential growth rate of the economy over the relevant period. Potential output is itself a function of the endowment of physical and human capital in the economy. In turn, these vary over time driven by developments in the world economy. The measurement of the potential output of the economy is not straightforward and some of the commonly adopted approaches are described in Appendix 1.

The combination of the bursting of the property market bubble and the world financial crisis has had a substantial impact on the endowment of labour and capital in Ireland. This has served to permanently reduce the potential output of the economy. This reduction has been driven by four factors:

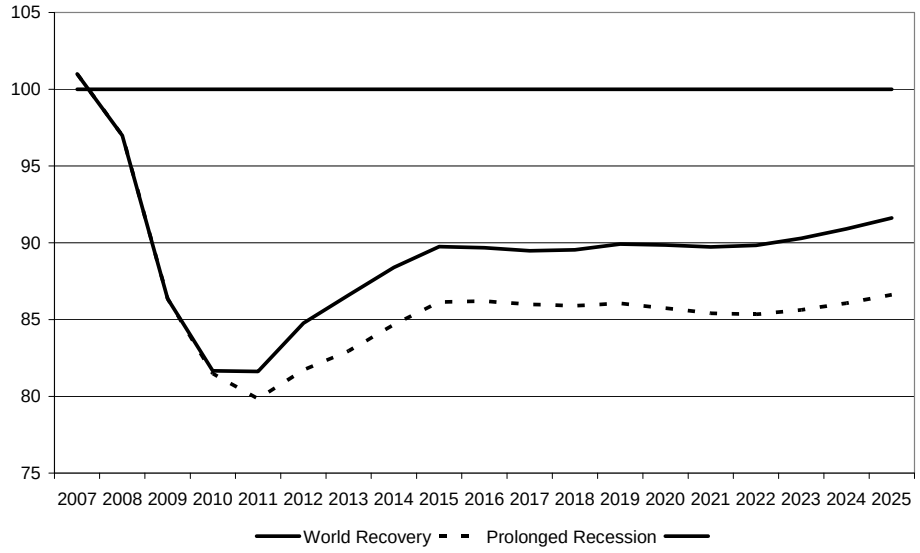
- A significant part of the capital stock has been rendered obsolete through the closure of many businesses. While new investment will take place in the recovery phase, it will take much longer to put in place this new investment than it has taken to write off the investment due to the closure of existing businesses.
- The dramatic increase in government indebtedness will result in a major increase in the burden of taxes, especially of taxes on labour. The deadweight effects of the increased tax burden will adversely affect the economy's productive capacity.
- The rise in the risk premium on borrowing has not only raised the cost of borrowing for the government but it has also affected the cost of capital for all borrowers. In turn, this means that the

optimal level of the capital stock has been reduced and, with it, the potential output of the economy.

- Finally, these factors are also affecting the wider world economy and, as discussed in Section 4 below, there has been a once-off reduction in the potential output of the world economy.

The combined effect of these four factors is that while the *Medium-Term Review 2008-2015 (MTR)* published in Spring 2008 suggested that the potential output growth rate for the Irish economy over the period 2005-20 was around 3.6 per cent a year, today we feel that it is closer to 3.0 per cent a year. The impact of this reduction in the rate of growth in potential output of the economy is illustrated in Figure 1. This shows the reduction in the expected output of the economy today compared to what was expected as little as a year ago. So for example, we estimate that by 2010, the depth of the current recession will imply that GDP will be almost 20 per cent below the level estimated in the Spring 2008 *MTR*. This gap narrows over subsequent years as the bounce-back from such a deep recession involves higher annual growth rates in the recovery phase. Nevertheless, even ten years later, these estimates suggest that GDP will be 10 per cent lower. The extreme nature of the recession being experienced, operating through the four mechanisms discussed above, may have resulted in a permanent loss of output relative to previous potential of around 10 percentage points.

Figure 1: Permanent Loss of Output Due to the Recession



The current estimate of the potential output of the Irish economy derived using the *HERMES* model is shown in Table 1 below for a series of five year periods, including the period to 2020. These estimates of the varying rate of growth of potential output reflect the changing endowment of physical and human capital. However, they also take account of the extent to which the utilisation of these factors would be consistent with the maintenance of balance in the economy – balance in the public finances; balance in the external payments of the economy; and balance in the labour market, reflected in a rate of wage inflation consistent with an unemployment rate of around 5 per cent. We favour this model-based approach to measuring the productive potential of the economy because it

takes account of the endogeneity of key prices in the economy and also of the fact that labour supply is unusually elastic in Ireland.

Table 1: Rate of Growth in Potential Output

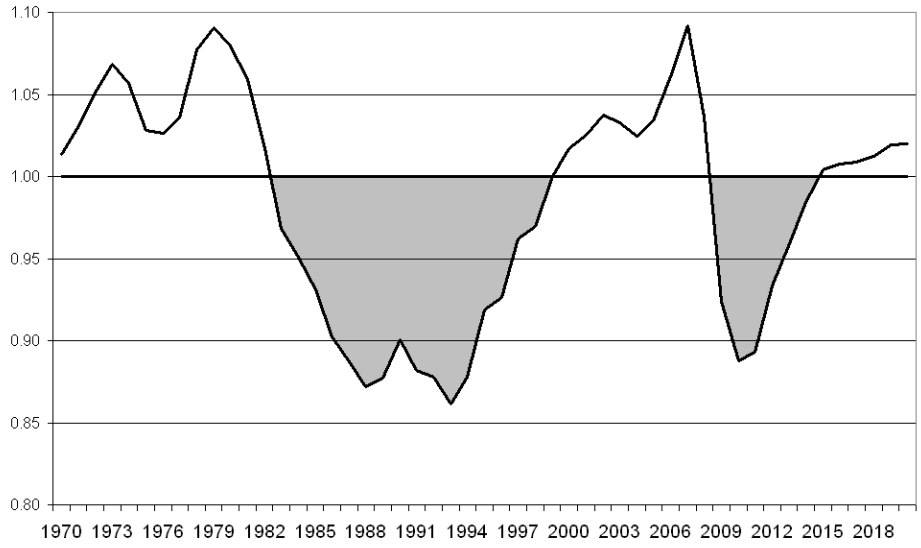
1990-95	1995-00	2000-2005	2005-2010	2010-2015	2015-2020
4.0	7.2	5.0	3.0	3.0	3.0

Obviously when using the model in the out of sample period a degree of judgement is required. In estimating potential output to 2020, we use the *World Recovery* scenario described later in this paper (see Section 4.4 for details). This scenario meets the requirement that it reflects a sustainable growth path for the Irish economy in terms of the balances identified above, while also ensuring appropriate utilisation rates of capital and labour in the medium term.

On the basis of these rates of growth in potential output and of the actual growth in output in the past (and the output levels shown below in the *World Recovery* scenario to 2020) we show the ratio of actual to potential output between 1970 and 2020 in Figure 2. Where the ratio is over one it implies that the economy was operating above its potential output. While, as shown in the Figure, this could persist for some time, the consequences of such above capacity output generally sets in train a series of events which makes this trajectory unsustainable. For example, in the period to 2007 there was a much higher rate of inflation in Ireland (including wage inflation) than in its key trading partners and the balance of payments showed a rapid deterioration after 2003.

Sustained under-performance where output is below potential is also possible, as evident in Figure 2, when in the case of the 1980s it is also reflected in domestic imbalances. In that case the dramatic rise in unemployment and its persistence into the late 1990s at a high level was symptomatic of an economy operating below capacity.

Figure 2: The Output Gap. Actual/Potential Output 1970-2020



In Figure 2 potential output has been benchmarked by being set equal to actual output in 1999, a year when the labour market was close to full employment and there was no evidence of significant wage inflation. Also the current account of the balance of payments was close to balance in that year. On this basis, Figure 2 shows actual output was above potential for most of the period from 2000 to 2007. Over that period the labour market remained very tight and the rate of wage inflation rose over time. The internal imbalances in the economy were also reflected in a rising balance of payments deficit from 2003 onwards. By 2007, when the housing bubble reached its maximum, actual output was nearly 10 percentage points above the long-term potential of the economy.

With the dramatic reduction in output in 2008-2010 actual output is expected to fall to over 10 per cent below potential in 2010. As the world economic recovery begins, the ratio will begin to climb back so that by 2015 the level of actual output will be back close to its long-term potential. With the economy assumed to grow at potential from 2015 onwards (around 3 per cent) the index would remain close to unity. As can be seen from the shaded areas in Figure 2, while the amplitude of the loss of output relative to potential in this recession may prove to be similar to that of the 1980s, the cumulative loss of output sustained in the 1980s was very large compared to the expected loss of output from the current crisis. This illustrates the potential advantage to the economy of taking prompt policy action to address the current crisis. If appropriate policy action is taken the loss of output compared to the previous recession can be greatly reduced.

If the world recession had not occurred and if, as a result, the potential growth rate of the economy for the period 2005-20 had been 3.6 per cent a year as suggested in the last *Medium-Term Review*, then the output gap would have been slightly smaller in 2007. However, it would still have been very substantial reflecting the fact that the economy was in an unsustainable position at that point in time.

In Appendix 1 we show an alternative method for deriving an estimate of potential output which uses a less sophisticated methodology than the model-based approach used here. It arrives at roughly the same conclusion as to the extent of the output gap today.

In summary, the current financial crisis and the resulting economic recession has taken a heavy toll on the Irish economy. It is not just that there has been a collapse in output but the nature of the recession and the change in the cost of capital may have longer-term consequences. It is likely that there has been some reduction in the potential growth rate of both the world economy and the Irish economy. As a result, even when there is a recovery it is likely that the level of output will not bounce back to where it would otherwise have been – in other words there will be a permanent loss of output. However, as with most recessions, the rate of growth in the recovery phase will rise above the potential output growth rate of the world economy, recovering some of the loss ground.

What this analysis implies is that once the world recovery has picked up momentum it will begin to impact positively on Ireland. Current international forecasts suggest that this could happen in 2011. As discussed below in Section 4, in this recovery phase growth rates of 5 to 6 per cent in Ireland would be likely. A similar pattern of above average growth rates in

the recovery phase can be expected in the US, the EU and the rest of the world economy. However, this would not be a return to the heady days of the 1990s and the recovery would reflect a restoration of only some of the major losses sustained over the period 2008-10. It would still leave the long-term loss of output as a result of the recession at over 10 per cent.

This rapid growth in the recovery period will reflect the fact that in the very many businesses that survive the recession, there will be very considerable spare capacity. Without any further investment they will be able to ramp up output in the recovery phase once world demand begins to rise.

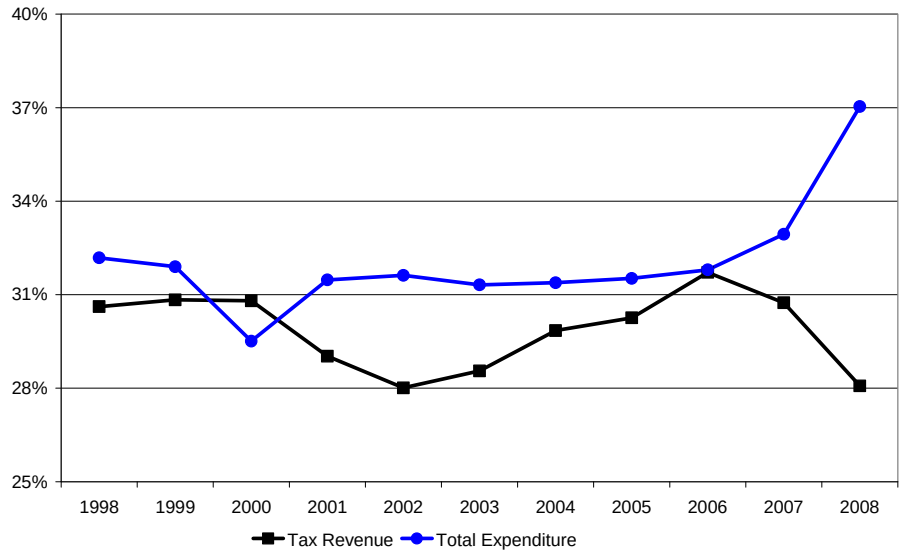
The very large gap between actual and potential output that has emerged since 2008 has led to a very rapid deterioration in the public finances. This has occurred through the operation of the automatic stabilisers, where lower economic activity and employment lead to lower tax revenues and higher cyclical expenditure. However, the scale of the deficit which emerged in 2008, at 7.1 per cent of GDP, and the extremely rapid deterioration in the tax share in the Irish economy revealed the depth of the structural problems facing the fiscal authorities. The serious policy mistake at the turn of the decade was effectively to use the windfall inflows of property-related taxes to substitute for other sources of taxation, rather than to set those funds aside for a "rainy day". These windfall gains were in turn used to fund expenditure, so that the collapse in the housing market has left the authorities with a very large "structural deficit".

The structural deficit is the deficit that will remain when the economy recovers so that the actual level of output is roughly equal to the capacity level of output. The rest of the deficit today, the cyclical component, is then due to the fact that the economy is currently operating well below its long-run potential. The world recovery and the related recovery in the Irish economy can be expected to eliminate this cyclical component of the deficit but the structural element will persist unless and until the government takes action to raise taxes or to cut expenditure. In this paper we use the *HERMES* model to estimate the current magnitude of the structural deficit.[4]

As shown in Figure 3 the share of tax revenue in GNP in 2008 fell by almost 4 percentage points relative to 2006. This was largely driven by the dramatic fall in property related taxes in 2007 and 2008, which in turn was driven by the growing dependence of the government's finances on such taxes since 2000. The rapid increase in the share of expenditure in GDP in 2008 reflects the fall in nominal GDP as well as an increase in debt interest payments and in welfare payments, the latter being mainly due to the rise in unemployment.

[4] As shown below in the *World Recovery* scenario in Chapter 4 actual output in the Irish economy should be roughly equal to potential output by 2015. Hence, with the cyclical component of the deficit eliminated in that year, the remaining deficit in 2015 is defined as being "structural".

Figure 3: Tax Revenue and Total Expenditure as a Percentage of GDP



The emergence of a substantial structural deficit in recent years was masked by the effects of the property bubble boosting temporarily the property related taxes. Once the full magnitude of this structural deficit was exposed at the end of 2008, it left the authorities with no option but to tighten fiscal policy despite the depth of the recession.[5]

The appropriate target for fiscal policy is the structural deficit, namely the deficit that is due to structural imbalances in the economy. The structural deficit is relatively invariant to short term fluctuations in the outside world and is, thus, a more certain target for fiscal policy. The rest of the deficit, the cyclical element, should not be targeted by public policy; it will disappear as the world economy recovers pulling the Irish economy with it.

Before the budget on 7 April 2009, our estimate was that the general government deficit in 2009 was likely to substantially exceed 10 per cent of GDP, and could have reached as high as 15 per cent. This represented a substantial deterioration in the prospective deficit for 2009 since the beginning of the year. Much of this deterioration was due to the dramatic downward revision in the prospective growth rates for the major world economies. Forecasts for economic growth in our key neighbours remain highly uncertain. This makes the targeting of a specific borrowing figure for 2009 exceptionally difficult.

Our research suggests that roughly half of this deficit was structural. We estimate that the structural deficit for 2009 before the April Supplementary Budget was of the order of 6 per cent to 8 per cent of GDP. As indicated above this estimate is based on the estimated size of the actual deficit once the economy has returned to its potential growth rate, in other words once

[5] The scale of structural deficit exposes the difficult choice facing the authorities. Were there no structural deficit, then the most appropriate action for the authorities would be to allow the cyclical deficit to increase through the automatic stabilisers, in other words, take no discretionary fiscal action. Indeed, when economies face very deep recessions, such as that which Ireland currently faces, it is often argued that fiscal policy should be used to stimulate economic activity.

all cyclical effects have been removed. In relation to our *World Recovery* scenario in this document, this occurs around 2015, when the labour market is close to equilibrium and a number of years of rapid growth will have closed the gap between actual and potential output (see Figure 2 above).

3.3 The Banking System and the National Debt

At this stage it is not possible to quantify in any formal way the likely long-run impact on the economy of the government actions needed to achieve a resolution of the current crisis in the banking sector. Here we provide an illustrative set of numbers which allow us to tease out the mechanisms through which this resolution will affect the government accounts and the wider economy. Because of the tentative nature of this analysis we have not attempted to incorporate these numbers into the macro-economic scenarios shown below.

There are currently three key elements to the government's approach to the resolution of this crisis.

First, the government guarantee for two years of the bank's liabilities, which was given at the end of September 2008. This guarantee, and the uncertainty it caused about the government's finances, has resulted in a very substantial risk premium being charged on Irish government borrowing.

The second element is the decision to set up the National Asset Management Agency (NAMA) which will purchase the property loans from the banks (probably by exchanging the assets for government bonds) at what is likely to be a steep discount on the book value of the loans. It is important that this discount adequately reflects the likely eventual reduction in the value of these loans. The loans will thereafter be managed by, or on behalf of, NAMA.

The third element is the recapitalisation of the banks. The bigger the discount offered for taking the property loans the bigger the write-down required in the bank's capital and accordingly the higher will be the necessary investment of risk capital into the banks to restore their capital to regulatory adequacy. While private investors might conceivably be willing to make some of that injection, in current international market conditions it is likely that the government will be the only willing investor. At the very least it will probably acquire a large equity stake or possibly even full ownership.

There is a range of different ways that the banking crisis could impact on the government's finances resulting in a permanent loss of output in the economy.

The first, and probably the most important, is the potential long-term impact of the banking crisis on the availability of finance for the company and the household sectors. This is already having a substantial impact on current activity and, unless resolved, a credit shortage could delay or even

prevent an economic recovery from 2011 onwards.[6] It is for this reason that the government needs to take urgent action to resolve this aspect of the crisis. If successful, the government action should see finance becoming available to underpin any recovery from 2011 onwards.

Table 2: Assumed Irish Risk Premium Relative to Germany on Government Borrowing, Percentage Points

2007	2008	2009	2010	2011	2012	2013	2014	2015
0.0	0.5	3	2	1.5	1.25	1	1	0.75

Source: IMF International Financial Statistics for 2007 and 2008. Authors' assumptions for 2009-2015.

The second way that the government finances are impacted by the banking crisis is the risk premium charged on all government borrowing because of the uncertainty about the government's contingent liabilities (due to the bank guarantee). For illustrative purposes we assume a profile for this risk premium as shown in Table 2. It is assumed that the risk margin begins to fall in 2010 as the crisis begins to abate. On the assumption that the economy shows a rapid recovery from 2011 onwards the margin is assumed to fall in 2011 and 2012, though still remaining above pre-crisis levels out to at least 2015.

If the property loans are taken from the banks at a price that is equal to their underlying market value, there should be no long-term cost to the taxpayer from this transaction. Of course, it will be difficult to choose an appropriate valuation in the absence of a market for these assets. However, even if the appropriate valuation could be determined, it would have a major effect on the public finances for quite a number of years. For illustrative purposes we assume that the value of the property portfolio transferred to NAMA will amount to between €80 billion and €90 billion. The appropriate price to be paid for this portfolio is yet to be determined. For illustrative purposes we use here a figure of €50 billion, the illustrative number used in the NTMA press release of 8 April, 2009.

In return for the assets sold to NAMA the banks will receive government bonds. The counterpart to these bonds will be a liability by NAMA to the government equal to the value of the bonds so issued. The interest on these bonds will be a continuing charge on the public finances with the interest being paid to the banks (the holders of the bonds). In return, NAMA will be liable to pay an equivalent amount of interest to the government until the loan and property portfolio of NAMA is liquidated. At the point that the portfolio is liquidated the government will redeem the equivalent amount of government bonds with the proceeds from the winding up of NAMA.

On the simplifying assumption that NAMA will have no current income, it will continue to roll up its interest liabilities to the government until its entire portfolio is liquidated. This is an extreme assumption as many of the loans will continue to be remunerated by the beneficiaries. However, it simplifies the exposition for the purpose of this analysis.

[6] Central Bank and Financial Services Authority of Ireland, "Irish Responses to the Euro Area Bank Lending Survey", April 2009.

If NAMA is to realise the full value of this portfolio it will be many years before all of the loans are repaid or the assets are sold off. For illustrative purposes we here assume that the entire portfolio is simultaneously liquidated in 2020. At that point we assume that NAMA would repay all of its loans from the government, including the accumulated interest liability. In turn, the government would then pay back an equivalent amount of government bonds, reducing the national debt.

The third element of the government package will involve the recapitalisation of the banks. The amount of capital required will be increased as a result of the severe write down of the banks' property portfolio to reflect its long-term value. For illustrative purposes we assume that the amount of the recapitalisation will be around 12 per cent of GDP or around €20 billion (including the capital already injected).[7] This money will have to be borrowed by the government through issuing more bonds. In turn the interest on these bonds will add to government borrowing. Once again we assume that this interest is rolled up till the banks are eventually sold off.

To simplify the exposition we assume here that no dividend is paid by the banks to the government until the government sells off its shares in the recapitalised banks. In turn, for illustrative purposes, we assume that this all takes place in 2015 and that the price received equals the amount of the capital injected by the government together with the accumulated interest on the bonds issued to raise that capital. However, it is quite possible that some of the cost of the write down in the value of the assets will affect the value of the banks such that the government may not realise the full cost of its investment.

On this set of assumptions, which is used strictly for the purposes of illustration, there would be three ways that the Irish State could make a loss from the banking crisis. These are of course additional to the loss that has already been incurred as a result of the very substantial damage done to the wider economy by the banking crisis. It is difficult to separate this cost from the wider costs of the bursting of the property bubble and the world recession. Nonetheless, as shown in this paper, the costs are likely to be very large as a result of a permanent reduction in the output capacity of the Irish economy.

- First, there is the cost of the risk premium attaching to Irish government borrowing as a result of the banking crisis. On the basis of the moderate risk premium shown in Table 2, the cumulative cost of the higher interest payments as a result of the risk premium would reach a total of 8 per cent of GDP by 2015.
- The second potential way the State could lose would be through overpaying for the property portfolio of the banks. Here it is assumed that the State gets the price right and that it eventually realises the full value of its investment in NAMA so that there is no loss.

[7] The IMF recently suggested a figure of €24 billion. However, we have rounded it down to take account of the fact that once the property loans are bought by NAMA the government bonds in the banks' restructured portfolios of assets will be very low risk assets, with consequential implications for the banks' capital needs.

- The third way the State could lose would be through a failure by the State to realise the full value of its capital injection into the banking system at the point where the State's shareholding is sold off. In Table 3 it is assumed that the State recovers the exact amount of its initial investment, including the accumulated interest cost of financing the government's injection of capital. However, as noted above, because of the losses of the banks, the government may not realise the full value of its investment.

It is also possible that the State could make a profit either from NAMA's management of the property loan portfolio or from the recapitalisation of the banking system. Honohan,[8] has argued that NAMA should buy the property loan portfolio at a price that leaves some scope for such a profit. Such an approach would reduce the danger of mispricing in a market where accurate values are difficult to determine. Depending on the terms of the property acquisition by NAMA, any resulting profit would either accrue wholly to the government or some of it could be shared with the shareholders in the banks.

Table 3: National Debt, Percentage of GDP

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Normal Debt	41	57	70	77	80	82	82	82	82	82	82	82	81
NAMA		30	31	31	30	29	28	28	27	27	27	27	0
Recapital-isation		12	13	13	12	12	12	11	0	0	0	0	0
Gross debt:	41	99	114	121	123	123	122	121	110	110	109	108	81
NPRF	11	12	13	12	12	11	11	10	10	10	10	10	10
Liquid assets	10	11	11	11	5	4	0	0	0	0	0	0	0
NET debt	20	76	90	98	106	107	111	110	99	100	100	99	72

Table 3 shows the effects of these illustrative assumptions on the national debt over the period to 2020. The "normal debt" is the result of borrowing by the government sector to fund the general government deficit, as set out in Chapter 4 of this paper in the *World Recovery* scenario. In addition to the "normal" debt, the funding needed for NAMA and the recapitalisation of the banking system is added to give the gross debt. The figures for NAMA include an estimate of the interest on their debts which is assumed to be rolled up until the assets are all sold off and NAMA is closed. As a result, it is assumed that when the debts are repaid to the State the repayment will include the accumulated interest liabilities of the relevant entities. In this illustrative model, when these deductions are taken into account the gross debt to GDP ratio is assumed to peak at 123 per cent of GDP in 2012 before falling back to 72 per cent in 2020.

To arrive at the net debt of the government sector, the true measure of the State's exposure, a number of items are deducted. For simplicity, it is assumed that there is no further investment in the National Pensions Reserve Fund (NPRF). The NPRF is assumed to achieve a rate of return equal to the German government bond rate of interest over the period 2010-20. The liquid assets held by the government are assumed to be

[8]http://www.thepost.ie/post/pages/p/story.aspx-qqqt=NEWS+FEATURES-qqqm=nav-qqqid=41001-qqqx=1.asp

phased out as the government's borrowing needs are brought under control. (Under these circumstances the concerns about liquidity which currently underlie the need for such holdings will disappear.) Taking these factors into account the net debt to GDP ratio would peak at 111 per cent of GDP in 2014 before falling back to 72 per cent of GDP in 2020.

In addition to the effect of the funding of NAMA and the bank recapitalisation on the national debt, there will also be a significant impact on national debt interest payments. In Table 3 it is assumed that the bank recapitalisation and NAMA will only pay their share of the interest payments when they are liquidated – assumed to be 2015 and 2020 respectively. In this case the government interest payments would not be offset by any current receipt and the government borrowing requirement will be increased by the amount of the additional interest payments. This effect is shown in Table 4.

Table 4: Additional National Debt Interest Payments, Percentage of GDP

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1.6	1.7	1.8	1.9	2.0	2.1	1.5	1.5	1.4	1.4

Of course it will be open to the government to require the banks to pay dividends once they return to profitability. These dividends would offset some of the interest cost from 2012 or 2013 onwards. In addition the government has suggested that it will require the banks to pay around €1.5 billion (0.9 per cent of GDP) a year for the government guarantee and recapitalisation beginning in 2009. However, it is not clear whether this will go ahead in the face of the recapitalisation and the establishment of NAMA.

Over the period 1995-2003, before the property bubble got out of hand, the operating surplus of the banking sector in Ireland averaged something over 4 per cent of GDP a year. On the basis of the market share of Irish banks this would translate into an operating surplus for them of around 2.5 per cent a year. In addition to this sum must be added the operating surplus of the Irish-owned banks from their overseas operations.

The effect of the current economic crisis will be to reduce dramatically the operating surplus of the banks, both Irish and foreign. This loss of profitability will likely persist until after the economy recovers. However, if the economy were to recover from 2011 onwards the profitability of the restored banking system would be likely to recover over the period 2012 to 2015. In turn, its operating surplus (effectively profits before deductions for losses, valuation changes, taxes etc.) will then begin to recover towards its pre crisis levels.

If the result of the recapitalisation of the banking system by the government was that it acquired at least a majority shareholding in the main Irish banks, then a significant share of this operating surplus would accrue to the government. While it might be prudent to retain most of these profits in the banks in the early stages of any recovery, they would serve to enhance the likely resale value of the banks when they are sold off, while also allowing the possibility of some dividend income for the government in the period before such a sale takes place. While the

accumulated losses of the banking system could see the government failing to realise the full value of its investment in the banking system, with a return to growth along the lines set out in this paper, a profitable banking sector would hold out the prospect of the government being able to sell off its shares at a profit for the taxpayer in the period 2015 to 2020.

One danger is that the banks under State control might not be permitted to return to their "normal" profitability levels once the economy recovers. Currently, the banks are earning an unusually low margin on their lending because of high interest rates on their borrowings and depressed interest rates on their loan portfolio. If interest rates did not rise in the recovery period to restore normal margins the tax payer could be faced with a substantial continuing loss that might never be recouped and the eventual disposal of the banks could be much delayed.

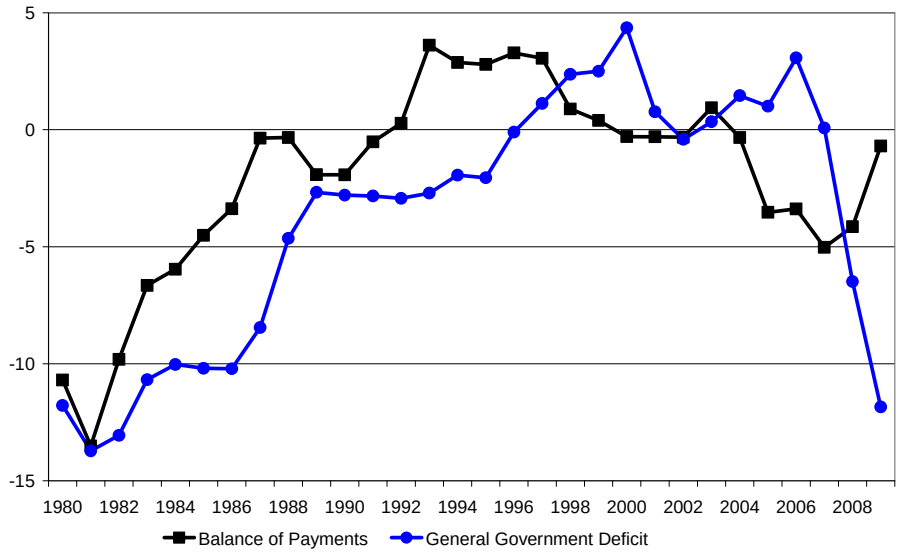
In the case of NAMA it is quite possible that it will pay some dividend to the government from its inception, reflecting the fact that some of the borrowers from NAMA will be paying significant interest payments. This could also reduce the impact on the borrowing requirement of the recapitalisation of the banking system.

3.4 Financial Sustainability and the Balance of Payments

In considering the financial sustainability of the Irish economy, and of the public finances in particular, there are a number of important considerations. First, the government sector began 2009 with a very low debt/GDP ratio. When allowance is made for financial assets held at the NTMA, it amounted to only 20 per cent of GDP, an exceptionally low level by international standards. Second, under the *World Recovery* scenario set out in Section 4.4 the current account of the balance of payments is likely to move into surplus and remain in surplus over the period to 2015. The counterpart to the surplus on the current account will be an outflow on the capital account as Ireland reduces its net foreign liabilities over that period. While government foreign liabilities will rise, the net liabilities of the private sector, including the banking system, will fall by even more.

Under monetary union private debts by Irish citizens or companies were not considered as having major national implications. If an Irish citizen or company were to have difficulty repaying its foreign debts, that difficulty was considered to be a problem for the private sector creditors and private sector debtors so affected. However, the deterioration in the current account (Figure 4) masked a major change affecting the banking system. While the government's accounts were broadly in balance up to 2007, the massive expansion in activity in the building and construction sector, especially in housing, ran well ahead of personal sector savings. As a result the household sector had very extensive recourse to the banking sector to finance its investment boom.

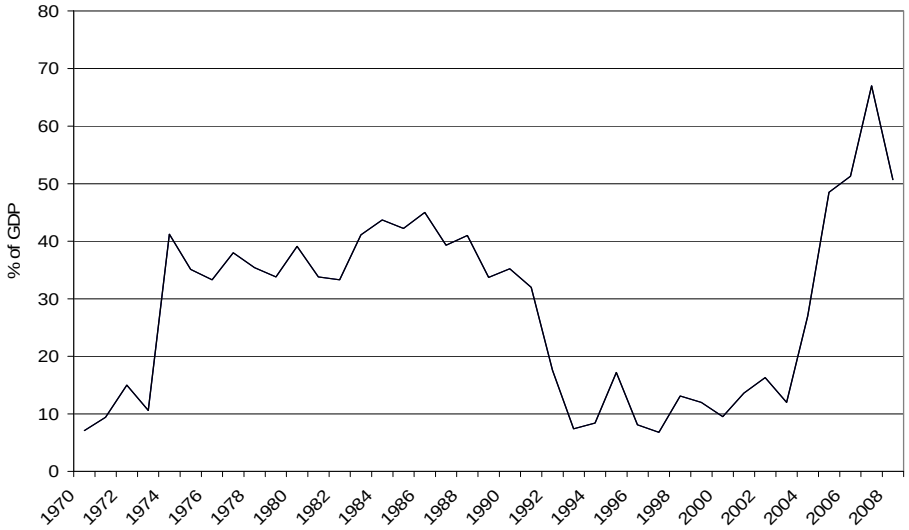
Figure 4: Balance of Payments and Government Borrowing, Percentage of GDP



Source: ESRI Databank.

In turn the banking sector financed this boom by borrowing extensively abroad. Figure 5 shows the net foreign liabilities of the banking system over the last three decades. While under normal circumstances this increase in net foreign liabilities was easily fundable, since September 2008 it proved very difficult to do so in a normal manner because of the dislocation in the world financial system. While the ECB stepped in to provide liquidity, the deep-rooted problems in the banking system, specifically the problems in Anglo-Irish Bank, forced major government intervention. As a result the liabilities of the Irish banking system have become the contingent liabilities of the government (largely counterbalanced by the associated banking sector assets).

Figure 5: Net Foreign Liabilities of Banking System, Percentage of GDP



Source: ESRI Databank.

There is a major difference between the current situation in Ireland and that of Ireland in the early 1980s (or Spain, Greece or Estonia today). As shown in Figure 4, whereas the government borrowing requirement may be around 12 per cent of GDP in 2009, the balance of payments deficit is forecast to disappear in 2010. This contrasts with the crisis in the early 1980s when both were over 10 per cent, which meant that Ireland as a whole was increasing its net foreign liabilities at a rapid rate in a manner which was clearly unsustainable in the long run.

The government deficit in 2009 will be substantially funded by borrowing abroad while the household and the company sectors are accumulating a very large surplus of funds which they are using to reduce their borrowing.[9] In the medium term it seems likely that the bulk of this reduction in the net financial liability of the private sector will be reflected in increased deposits and reduced lending by the domestic banking system. Signs of this turnaround can be seen in Figure 5 for 2008 where the banking system's net foreign liabilities fell very significantly over the course of the year.

Given that fiscal policy has delivered a significant reduction in the government's structural deficit in 2009 and if the further reduction planned for 2010 is implemented, that will contribute to the major improvement in the current account.[10] This means that the external borrowing by the government sector of almost 12 per cent of GDP will be counterbalanced by a substantial reduction in the banking sector's net foreign liabilities. With the liabilities of the Irish banking sector being guaranteed by the Irish government, this will mean that the government's contingent liabilities will remain roughly unchanged in 2009 and 2010.

Looking beyond 2010, any recovery in the Irish economy is likely to occur through a recovery in world demand that increases the demand for Irish exports. Consequently, as shown later in Section 4.4, the next few years are likely to see a continuing significant surplus on the balance of payments counterbalanced by a gradual fall in government borrowing. This is likely to mean a continuing reduction in the net foreign liabilities of the banking system.

The Irish economy is today operating within a global financial system. The bulk of the funding for the government is likely to come from abroad while the bulk of the debt repayment by the banking system will be to its external creditors. Viewed in this light, the prospect of a surplus on the current account balance means that the current fiscal crisis, while obviously undesirable because of the loss of productive capital that it involves and the prospect of future distortions that it holds out, is sustainable.

When one compares the position of the Irish economy, with its balance of payments current account heading towards balance, with that of other countries with substantial continuing deficits, the risk premium currently exacted on lending to the Irish government relative to those countries seems surprising. With the burden of the government's contingent

[9] See Box on pages 27-29 of the ESRI's Winter 2008 *Quarterly Economic Commentary*.
[10] Generally every 1 percentage point reduction in the structural deficit is accompanied by a 1 percentage point improvement in the current account of the balance of payments.

liabilities unchanging or even falling, the overall financial sustainability of the government sector and of the economy as a whole should not be in doubt. With effective fiscal action to tackle the deficit in the budget for 2010, a gradual fall in the current risk premium could be anticipated from 2011 onwards.

4. PATHS TO RECOVERY

4.1 Introduction

This section explores two growth scenarios for the Irish economy over the period 2009-2015. We refer to these as the *World Recovery Scenario* and the *Prolonged Recession Scenario*. We begin by outlining the assumptions underlying these two scenarios. These assumptions concern the timing and strength of the world economy and the fiscal policy pursued by the government over the next eighteen months. It then develops these scenarios for the Irish economy concentrating on the period to 2015. The additional risks facing the economy in the medium term and the implications of our results for policy are discussed at the end of this section.

Two scenarios for the Irish economy are examined for the period 2009-2015. The objective of these scenarios is to assess the extent to which the current public finance problems are structural and how an economic recovery will affect the future path of unemployment. Using two different assumptions about the world recovery these scenarios model the resultant time path of the economy and of the public finances out to 2015.

These scenarios have been developed using the *HERMES* macro-economic model of the Irish economy. (Details of the behaviour of this model are set out in a separate ESRI Working Paper by Bergin, Conefrey, Fitz Gerald and Kearney, 2009.) They are roughly calibrated to the *Quarterly Economic Commentary* numbers for 2009 and 2010, published in April 2009.

The *World Recovery Scenario* presented in this paper shows how the Irish economy would develop on the basis of the Budgets implemented for 2009 and the planned Budget for 2010, as recently outlined by the government in the Supplementary Budget. Beyond 2010 we assume a neutral fiscal policy.[11]

The *Prolonged Recession Scenario* assumes that the world economy recovers from recession one year later; in other words, growth is assumed to return to the world economy in 2012 rather than 2011.

Throughout the scenarios it is assumed that the financial system is reformed and restructured so that it responds to the recovery in the economy in 2011/12 by providing adequate credit. However, no account is taken in the analysis presented of the need to finance this restructuring of the banks because of the large degree of uncertainty with regard to these numbers. This issue was addressed in Section 3.3 earlier in this paper and is discussed further in Section 4.7 below.

[11] This means that beyond 2010 our fiscal policy assumptions deviate from those envisaged in the *Macro-Economic and Fiscal Framework: 2009-13*, where continued policy adjustments to reduce the deficit are envisaged in each of the subsequent years to 2013.

4.2 World Economy

Both world demand and Ireland's relative cost competitiveness drive the output of the tradable sector in the domestic economy. Our estimates suggest that a fall in world output of 1 per cent in the long run reduces the demand for Irish output by around 1.1 per cent (Bergin, Conefrey, Fitz Gerald and Kearney, 2009). Bergin and Kearney (2007) suggest that the responsiveness to world activity could even be higher than this. Whichever estimate is used, it is clear that Irish output is very sensitive to any global downturn.

The share of world production that is located in Ireland depends on the investment decisions by individual firms. In the case of the high technology sector, the bulk of new investment comes from foreign firms and takes the form of foreign direct investment (FDI). One of the risks associated with the current recession is that firms may decide to pull out of Ireland. If they pull out, they will not come back when the upturn occurs whereas a temporary reduction in output (downsizing) could be reversed more easily. In terms of competitiveness, any gain in Ireland's relative position increases Ireland's global market share and leads to faster growth than in the world economy, while any loss in competitiveness reverses this process. Finally, Euroframe (Spring Report 2007) highlight the importance of the financial and monetary policy channels in the transmission of shocks across countries.

In considering how the Irish economy is likely to exit from the current recession the key lies with the timing and nature of a world recovery. In the scenarios which we develop later in this paper we explore two different examples of a world recovery. In the *World Recovery* scenario the forecasts for the world economy for 2009-2010 are taken from the *OECD Economic Outlook Interim Report* (March 2009) and the medium term forecasts to 2015 come from the *National Institute Economic Review* of January 2009. In essence, they anticipate a sharp contraction in activity in the major economic blocks in 2009 that impacts immediately on the Irish economy. A tentative recovery is expected in 2010 with growth expected to be very modest or flat that year. Most of the world's economies are forecast to grow at rates close to potential over the period 2011-2015. Table 5 summarises the growth prospects for the international economy over the medium term.

Table 5: Real GDP Growth, *World Recovery*

	2007	2008	2009	2010	2011-2015
USA	2.0	1.3	-4.0	0.0	3.0
UK	3.0	0.7	-3.7	-0.2	2.6
Euro Area	2.6	0.9	-4.1	-0.3	2.1
World	5.0	3.5	-4.3	-0.1	4.2

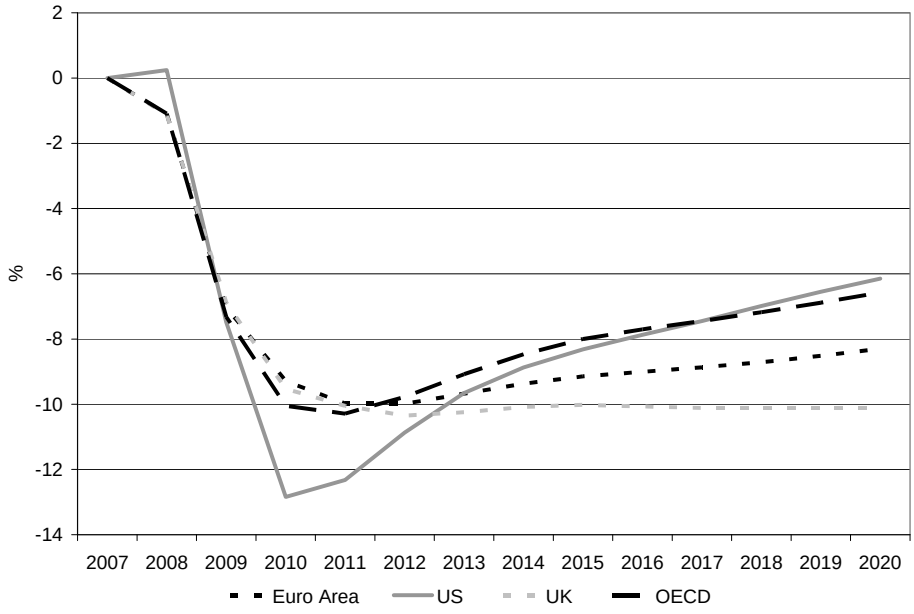
Source: NIESR, OECD.

Although the medium-term growth rates may appear optimistic, we have actually adopted a rather conservative strategy in relation to the long-term damage to the world economy (assuming that it is quite large). The fall in output in 2009 in the OECD forecast is much greater than that assumed in the NIESR forecast, on which our medium-term growth assumptions are based. It is possible that the more severe downturn could be mirrored by a more vigorous recovery which would produce more favourable results for the Irish economy than we are assuming here. Our assumptions are also significantly more pessimistic than the "benign

scenario" in the latest IMF *World Economic Outlook*. If we used the IMF scenario instead of the one shown in Table 5, the recovery in Ireland would be significantly stronger than shown in this paper and the permanent loss of output would be slightly less than shown in Figure 1.

Figure 6 shows what these forecasts imply for the permanent effect on the level of output arising from the financial crisis. The graph shows that on the basis of these forecasts output in the Euro Area, the US, the UK and the OECD would be permanently between 6 and 10 per cent below where it otherwise would have been without the current crisis.

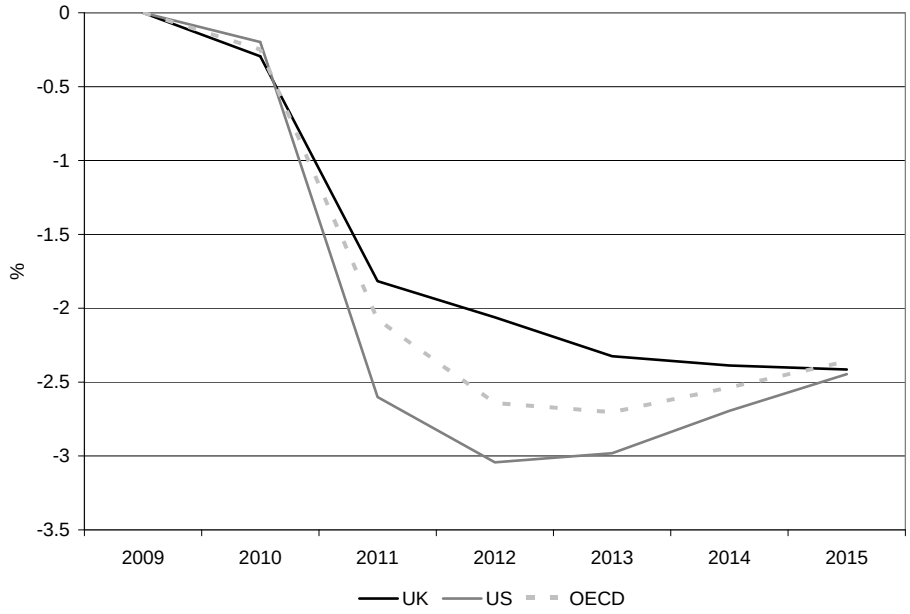
Figure 6: Scarring from the Financial Crisis: Effect on the Level of GDP Compared to the MTR 2008 *Benchmark*



Source: OECD, NIESR.

This permanent loss of output will arise from the same set of factors that are expected to give rise to a permanent loss of output in Ireland (Section 3.2). This set of forecasts is predicated on the assumption that problems in the international banking sector will be resolved quickly. However, because of uncertainty about how rapidly these problems will be dealt with it is important to examine the implications for the domestic economy of a delay in the recovery of the international economy. In Section 4.5, we examine the effect of pushing back the recovery in the international economy by one year so that it begins in 2011 instead of 2010. Figure 7 shows the effect on the **level** of GDP (not the growth rate) for the UK, the US and the OECD of pushing back the recovery by a year – it reduces the level of GDP by around 2.5 per cent below where it otherwise would have been over the medium term. This *Prolonged Recession* scenario, is in turn, less pessimistic than the IMF's "downside scenario" which assumes that world governments do not take the appropriate action to promote an economic recovery.

Figure 7: The Impact on the Level of GDP of the *Prolonged Recession Scenario Compared with* the *World Recovery* Scenario



Source: OECD, NIESR.

A delayed recovery along the lines we have assumed would be quite severe, not just for Ireland but for the rest of the world. When the loss of output implied by Figure 6 for the *World Recovery* scenario is added to that in Figure 7 the permanent loss of output for the US, the UK and the Euro Area would amount to over 10 per cent of GDP. This is the international background to the *Prolonged Recession* scenario considered below for the Irish economy.

4.3 Irish Public Finances

The scenarios shown in the next two sections incorporate the decisions made based on the January 2009 *Addendum to the Irish Stability Programme Update* and the April 7th 2009 Supplementary Budget. In preparing these scenarios, it is also assumed that the broad measures for the 2010 budget outlined in the supplementary budget will be implemented as planned in terms of the reduction in the structural deficit. The fiscal policy assumptions underlying the different scenarios are summarised in Table 6. The first column shows the effects within the calendar year 2009 of fiscal policy measures taken in 2009. The second column shows the full year effects of these measures. The third column shows the effects within 2010 of measures to be taken in the 2010 budget and the fourth column shows the full year effects of those measures.

The January package of €1.8 billion primarily affected current expenditure through reducing payroll costs via the pension levy and it was equivalent to €2 billion in a full year. In the April 7th Supplementary Budget, additional cuts in current expenditure of €886 million were also announced, again mainly falling on payroll costs. In addition to these cuts on the current expenditure side, the April measures also included cuts of €576 million on capital expenditure. On the taxation side, we have implemented the announced tax increases in the April supplementary budget, which mainly fall on income tax (via the income levy) and the health levy. Together these amount to increases of €1.8 billion, rising to

€3.55 billion on a full year basis. These cuts are equivalent to €1.2 billion on a full year basis. On a full year basis, and including the expenditure cuts introduced in February, these measures together are equivalent to over 4 per cent of GDP.

For 2010 we also fully implemented the broad measures announced in the Supplementary Budget. To operationalise the increase in taxes of €1.75 billion announced, we spread these increases across income taxes (€850 million), excise taxes (€100 million), a carbon tax and other taxes. This package is purely illustrative. On the expenditure side, gross current expenditure is cut by €1.5 billion while gross capital expenditure is cut by €750 million. On a full year basis the 2010 measures are equivalent to almost 3 per cent of GDP.

If fully implemented, the cumulative impact of these measures would be such that the government will have *ex ante* reduced borrowing by over 7 per cent of GDP in 2010. The scale of this correction is very large, unprecedented in Irish fiscal history. In terms of the composition of the announced cuts, they are spread equally between revenue and expenditure, with the emphasis being placed on 'price' savings that can be made on the expenditure side. Official budget figures suggest that volume of government consumption of goods and services should remain unchanged in 2010, implying further cuts in wages and prices paid for goods and services in the public sector that year.

Table 6: Fiscal Policy Assumptions

	2009 Supplementary Budgets		2010 Budget	
	Effects in 2009	**Full Year**	**Effects in 2010**	**Full Year**
Tax revenue (incl PRSI and health levy)	1,799	3,550	1,750	2,500
Current expenditure (gross)	-2,686	-3,200	-1,500	-1,500
Capital expenditure (gross)	-576	-576	-750	-750
Total *ex ante* cuts	**5,061**	**7,326**	**4,000**	**4,750**
% GDP	3.0%	4.4%	2. 4%	2.9%

It is assumed that in both 2009 and 2010, the budget numbers take account of a fall in the price of building and construction investment resulting in a saving of around €1 billion. In addition, the volume of public investment is assumed to be reduced by around €0.5 billion as projects are re-phased to take account of the lower than expected growth in the economy and lower expected levels of congestion in the use of public infrastructure.

It is assumed that no further fiscal policy interventions occur beyond 2010, in effect, that a neutral fiscal policy is pursued. That means that tax rates are held constant (or indexed in the case of specific taxes) and tax

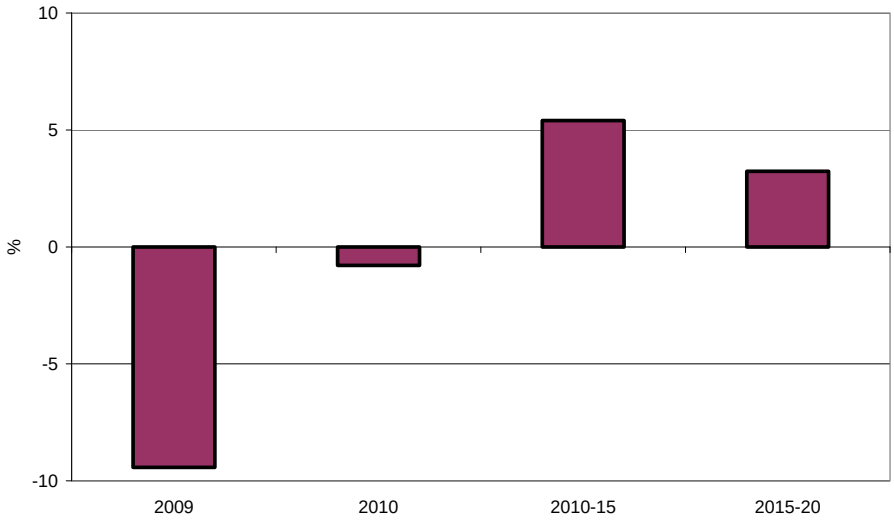
bands are also indexed. It is assumed that there is no change in public service numbers over the full period. (This might in other contexts be considered to be a non-neutral assumption as it implies a fall in the share of public goods provision in the economy between 2011 and 2015.) Transfers adjust to take account of changing numbers unemployed. Also rates of transfers are indexed. These assumptions contrast with the government's stated intention that it will continue to raise taxes and cut expenditure in each of the following years out to 2013.

4.4 World Recovery Scenario

This scenario is based on the public finance assumptions and assumptions on world economic conditions outlined in Sections 4.2 and 4.3. Following two years of significant contraction in economic activity in 2009 and 2010, we expect economic growth to resume from 2011 onwards. This is predicated on the assumption that the world economy, and hence world demand for Irish exports, will have recovered from the current slowdown by 2011.

The strong recovery in the Irish economy after 2011 envisaged in the *World Recovery* scenario can be explained by two factors. First, the openness of the Irish economy ensures that an increase in world activity has a substantial effect on Irish output. Growth in world trade directly affects the Irish economy through the manufacturing, business and financial services and tourism sectors. The internationalisation of business services has increased substantially the combined effect (through all channels) of growth in world demand on the Irish economy. It is this relatively high degree of responsiveness to changes in world activity which gives rise to the strong recovery in the Irish economy from 2011– just as it contributed to the sharpness of the downturn earlier.

Figure 8: GNP, Growth Rates



The second factor which fuels the growth in the Irish economy after 2011 in this scenario is the expected improvement in competitiveness in Ireland relative to the rest of the world. Domestic competitiveness relative to the rest of the world determines what share of world output is produced in Ireland. Real after tax wage rates in Ireland are, inter alia, a function of the CPI and wage rates in the UK. The increase in unemployment associated with the contraction in economic activity over the period 2008

to 2010 is expected to lead to significant wage moderation in the private sector. This scenario takes into account the pensions levy introduced in January 2009, which effectively reduces wage rates in the public sector. As a result the standard model suggests that nominal wage rates in the economy as a whole could decline by a cumulative 6.0 per cent over the period 2009 to 2011. This significant improvement in competitiveness relative to the rest of the Euro Area will help drive the growth in GNP over the period from 2011 to 2015. As illustrated in a separate simulation exercise, Irish manufacturing output shows a supply elasticity of unity when faced with a 1 percentage point improvement in competitiveness (Bergin *et al.*, 2009).

For 2009 and 2010, the recession in the international economy, in addition to falling domestic demand, leads to a substantial fall in output in the manufacturing and market services sectors. Overall GNP is expected to fall by over 9.4 per cent in 2009 and almost 1 per cent in 2010 (Table 7). The recovery in the international economy assumed in the *World Recovery* scenario, in addition to the improvement in Irish competitiveness, is expected to give rise to a strong recovery in both sectors over the period 2010 to 2015 as illustrated in Figure 8. As shown in Table 7, average wage rates, which are expected to continue falling into 2011, are forecast to rise by something over 3 per cent a year in the period 2010-2015. As a result of the world recovery and the improvement in competitiveness, GNP growth is expected to resume, averaging 5.4 per cent between 2010 and 2015 before moderating to an annual average rate of 3.2 per cent for the remainder of the period, close to its long-run potential rate of growth.

Table 7: *World Recovery* Scenario: Major Aggregates[12]

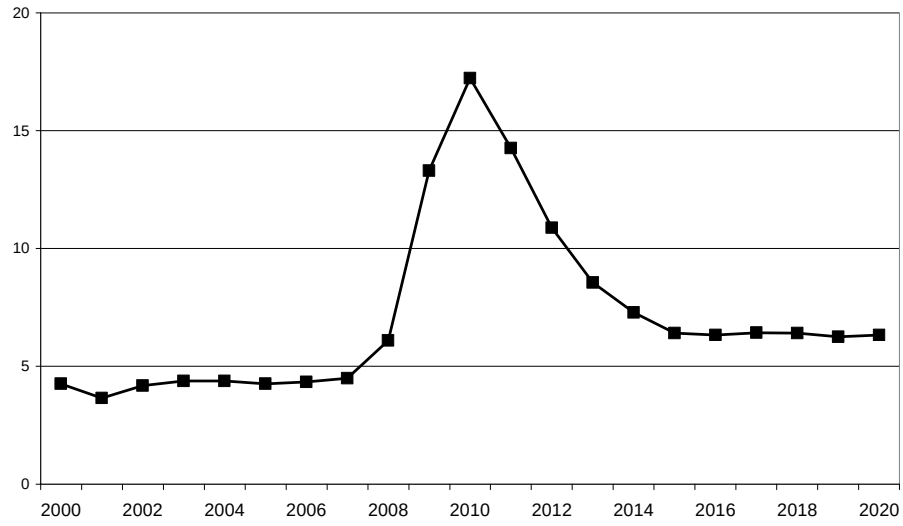
	2009	2010	2010-15	2015-20
	Annual % Growth Rate		Average Annual % Growth	
GDP	-8.2	-1.0	5.6	3.3
GNP	-9.4	-0.8	5.4	3.2
Total Employment	-9.4	-6.1	3.0	1.1
Output, industry	-9.7	-2.1	8.4	3.8
Output, market services	-7.6	-0.1	5.8	3.2
Consumer Prices	-1.0	-0.2	2.6	2.6
Non-agricultural Wage Rates	-2.5	-1.4	3.2	4.2
Year End:	**2009**	**2010**	**2015**	**2020**
Personal Savings Ratio	11.7	13.3	8.5	7.1
General Government Balance, % GDP	-11.8	-11.2	-3.3	-2.4
Net Government Debt, % of GDP	34.2	46.2	71.4	71.6
General Government Debt, % GDP	57.5	70.3	81.8	81.3
Balance of Payments, % GNP	-0.8	2.6	3.5	4.0
Unemployment Rate, % of labour force	13.3	17.2	6.4	6.3
Net Migration, 000s	30	30	-13	-20

[12] The numbers for 2009 and 2010 are generated by the *HERMES* model. The model has been roughly calibrated so as to reproduce the major aggregates of the *Quarterly Economic Commentary* published in April 2009. However, there are some remaining differences.

Once the world recovery picks up momentum it will begin to impact on Ireland. Current international forecasts suggest that this could happen in 2011. In this recovery phase growth rates of 5 to 6 per cent would be likely. However, this would not be a return to the heady days of the 1990s but would reflect a restoration of only some of the losses sustained over the period 2008-10. It would still leave the long-term loss of output as a result of the recession at around 10 per cent.

The sharp slowdown in the economy in the years 2008 to 2010 is expected to result in a dramatic rise in unemployment and the unemployment rate, as illustrated in Figure 9. As a result of lower levels of activity in the building, manufacturing and market services sectors total employment is expected to fall by 9.4 per cent in 2009 and by a further 6.1 per cent in 2010. The unemployment rate is expected to exceed 13 per cent in 2009 before peaking at around 17 per cent in 2010. In line with the anticipated recovery in economic activity from 2011 onwards, employment growth is expected to resume and average 3.0 per cent over the period 2010 to 2015. As a result, the unemployment rate is expected to fall to 6.4 per cent by 2015 and 6.3 per cent by 2020.

Figure 9: Unemployment Rate, Per Cent of the Labour Force



Source: ESRI Databank and results of model simulations.

Significantly, the economy is not expected to return to full employment[13] in the *World Recovery* scenario. This mirrors the experience of the Finnish economy in the 1990s where the unemployment rate still stood at 11 per cent in 1999, five years after the revival of economic growth began. The persistence of a high unemployment rate in Ireland long after the economy has recovered would reflect a legacy of a structural unemployment problem left behind by the current severe recession and in particular the re-adjustment of the construction sector of the economy back to a more sustainable scale. To minimise the risk of such an outcome, action should be taken in the next few years to provide adequate training to fit the unemployed for the jobs of the future. In addition, action may be

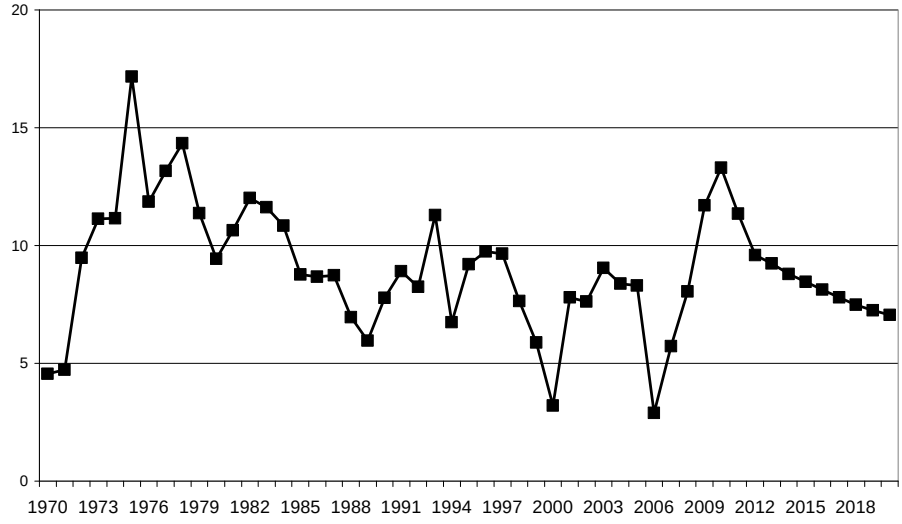
[13] Full employment here refers to pre-recession unemployment rates, averaging approximately 5 per cent of the labour force.

needed to ensure that poverty traps are minimised allowing those who are long-term unemployed to avail of the job opportunities which an economic recovery will bring.

Throughout these simulations migration is assumed to be driven by movements in after-tax wage rates and the unemployment rate in Ireland relative to alternative EU labour markets. However, with a world-wide recession the propensity to migrate for a given wage differential may well fall. If migration were not to resume, this would lead to a higher unemployment rate and a slower decline in the unemployment rate during the recovery period than we have assumed here. In this scenario, emigration is assumed to reach a peak in 2012 at over 40,000 before reverting to limited net immigration in the second half of the next decade. The cumulative net emigration of almost 116,000 over the period 2009 to 2015 assumed in this scenario represents a significant reduction in the labour force as a result of the current severe recession.

Households have already reacted to the current economic crisis by dramatically increasing their personal savings rate. This is illustrated in Figure 10. The savings rate is expected to stand at 13 per cent in 2010, the highest level since 1978. This rise in the savings rate has a counterpart in an increased government deficit reflecting the fact that domestic consumption has a substantial tax content. As the economy recovers after 2011, the savings rate is expected to fall back gradually to reach 8.5 per cent in 2015 and 7.1 per cent in 2020. The fall in the savings ratio and the associated rise in consumption will add further impetus to the recovery in the economy after 2011 and it will make a contribution, albeit limited, to restoring balance to the public finances.

Figure 10: Personal Savings Ratio, Per Cent



Source: ESRI Databank and results of model simulations.

For every 1 percentage point reduction in government borrowing through discretionary fiscal action the balance of payments current account deficit (surplus) also tends to fall (rise) by around 1 percentage point (see Bergin *et al.* 2009). The fiscal action taken by the government in January and April, together with the expected budget for 2010, will tend to push the balance of payments current account into surplus in 2010. As any

recovery in the Irish economy is likely to occur initially through a recovery in world demand, increasing the demand for Irish exports, the period after 2010 is likely to see a substantial continuing surplus on the current account of the balance of payments. In this scenario the combined effect of these forces would see the balance of payments surplus, currently forecast to be 2.6 per cent of GNP in 2010, increasing to 4.0 per cent by 2015.

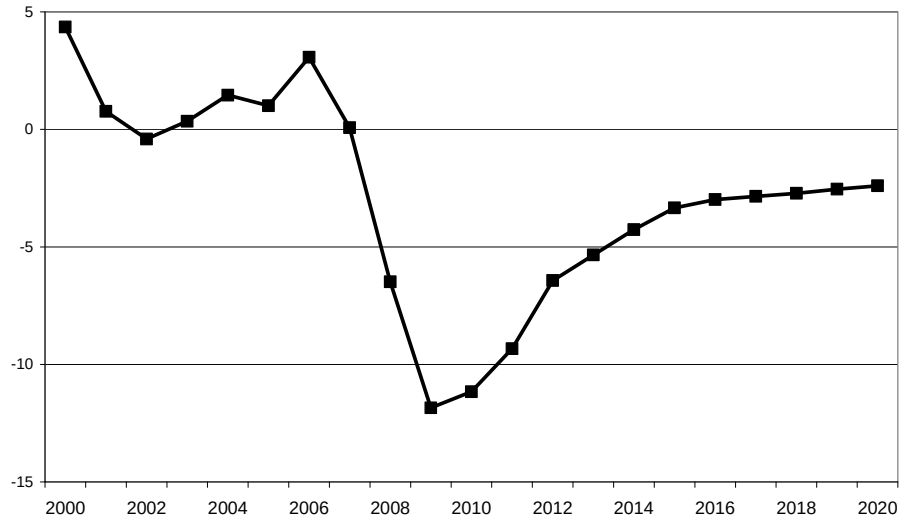
The significant continuing balance of payments surplus will see the Irish economy increasing its net foreign financial asset position. The increased borrowing by the government will be more than offset by increased investment (or reduction in debt) by the private sector. A significant share of this net external investment (loan repayment) will occur through the banking system. As a result, the net foreign liabilities of the banking system can be expected to fall dramatically during the recovery period.

On the public finances, the lower level of economic activity and employment is likely to reduce government receipts from a range of taxes. At the same time, government expenditure is expected to rise due to higher welfare payments arising from the increase in unemployment and a major increase in debt interest payments. Taking into account the fiscal measures for 2009 and Budget 2010 announced to date, the general government balance as a percentage of GDP is expected to reach -11.8 per cent in 2009 and -11.2 per cent in 2010. As noted above, given the paucity of information, it is not possible to take account here of the need to restore order to the banking system and the consequent costs to the economy. This issue was discussed separately in Section 3.3.

As a consequence of the high level of borrowing, the net government debt to GDP ratio would rise to 46 per cent in 2010 and 71 per cent by 2015.[14] However, the resumption of significant economic growth after 2011 would be likely to bring about a substantial increase in government revenue from taxation, even without further fiscal policy action after 2010. The rise in employment would bring about an increase in income tax revenue while the fall in unemployment would reduce government welfare payments. This would result in a significant improvement in the general government balance, which would fall to -3.3 per cent of GDP by 2015 as shown in Figure 11. This is the deficit that would remain, assuming a normal world recovery beginning in 2011 and no further fiscal policy action after 2010. On the basis of this scenario, to eliminate government borrowing fully by 2015 would require some limited further fiscal policy action in the intervening period.

[14] This is the net debt. It is derived by deducting from the general government debt liquid assets consisting of deposits with the Central Bank together with the NPRF, the SIF and a number of other funds. In 2008 the gross debt figures was 41.3 per cent of GDP while the net debt figure was 20 per cent of GDP, 40 billion lower.

Figure 11: General Government Balance, Per Cent of GDP



Source: ESRI Databank and results of model simulations.

The housing market will see some recovery too in the period after 2011. However, as discussed in Box 1, it will never recover the level of output seen in the boom years 2005-7. Nonetheless, the level of output needed to meet the demands of the population will be significant.

Since there is growing appreciation of the need to take account of environmental sustainability in the pattern of recover, we provide an estimate of the effects of this *World Recovery* scenario on emissions of greenhouse gases in Appendix 2. It shows that, as a result of the recession, Ireland may be close to complying with its target for emissions under the Kyoto protocol.

Box 1: The Housing Market

by David Duffy

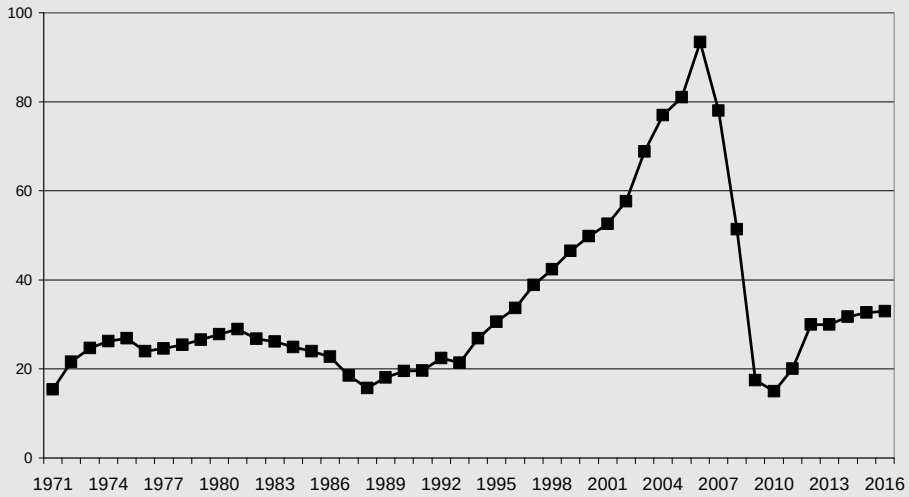
Domestically one of the main reasons behind the decline in economic growth has been the sharp fall in activity in the housing market. The residential component of the construction sector increased in size to such an extent that the Irish economy was exposed to both a house price and a residential output shock. The recovery outlined above suggests that the Irish economy will return to growth in 2011. However, the housing market is expected to lag this recovery and growth in housing demand is unlikely to take place until households become more positive in their expectation about the economic outlook and job security.

House prices have now been declining since the first half of 2007. Given the scale of the downturn in the economy, we expect that house prices will fall by around 35 per cent from their peak in 2007 (a drop of almost 50 per cent in real terms). On the basis of the economic outlook the trough in nominal prices is assumed to occur around the end of 2010 or the beginning of 2011. For the period 2010-2015 nominal house prices are expected to show little change.

Having peaked at over 93,000 dwellings completed in 2006, 22 per thousand population, it now seems likely that less than 20,000 units will be completed in 2009 and again in 2010 (Figure 1). However, many of the fundamentals that underpin the housing market remain in place and so, as

the economy recovers, the volume of completions is expected to rise to an annual average of over 30,000 between 2010 and 2015.

Figure 1: Housing Completions, 000

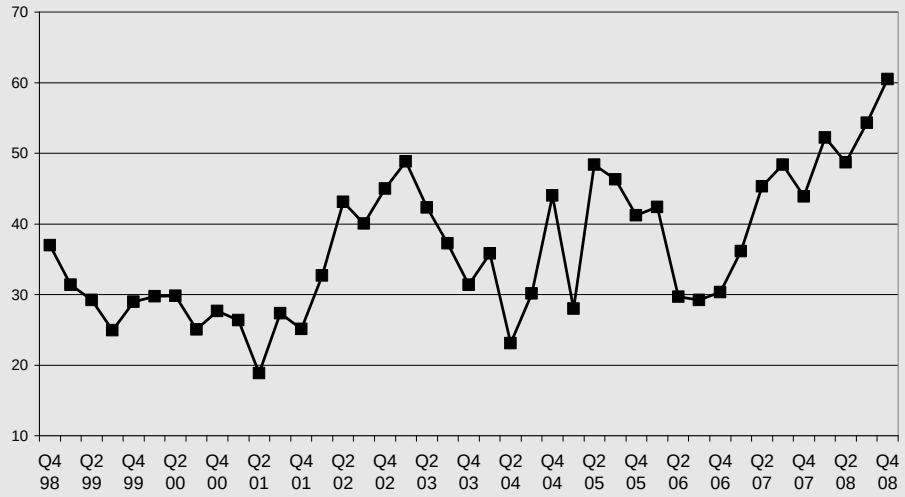


Source: ESRI Databank and results of model simulations.

This forecast for housing completions is based on an assumption of no change in headship and no additions to the stock of vacant dwellings over the period. However, other data suggests that this outlook may err on the pessimistic side. Figure 2 shows the annual change in the number of households, based on estimates by the CSO *QNHS* (*Quarterly National Household Survey*). The most recent data show that the number of households in quarter 4, 2008 was approximately 60,000 higher than the same period in 2007. This reflects a significant increase in headship rates – the proportion of each group who are "head" of an independent household. This strength of household formation in 2007 and 2008 is surprising. A possible explanation is that headship rates, which are low in Ireland relative to the rest of the EU-15, may be beginning to converge on rates in other EU-15 countries now that rents are falling rapidly. Also the high rate of household formation is affected by the relative youth of Ireland's population.

Based on these numbers for household formation, combined with the expectation that Irish headship rates will converge on UK rates by 2021 we have produced a decomposition of the demand for housing by its main components – see Table 1. In addition to rising headship rates, this decomposition takes account of a return to limited net immigration that is anticipated in the period after 2015. When the sources of demand are added together this would suggest a demand for more than 40,000 dwellings a year over the period 2012-21 (see Total in Table 1). This is substantially higher than the number of completions generated in the *World Recovery* forecast. If this proved to be the case then the economy would in fact require a higher number of dwellings in the future than is anticipated in the *World Recovery* forecast.

Figure 2: Change in Number of Households



Source: CSO Quarterly National Household Survey.

Table 1: Decomposition of Housing Demand, Thousands

	1991-1996	1997-2002	2003-06	2007-11	2012-16	2017-21
Population Growth	16.5	20.0	19.8	27.9	31.2	18.7
Change in Headship	3.1	0.9	8.2	8.0	5.1	16.9
Migration	0.0	5.9	17.5	3.3	-3.2	8.3
Vacant	0.1	6.4	16.1	0.0	0.0	5.0
Obsolescence	4.9	11.6	13.4	7.0	7.0	7.0
Total	24.7	44.8	74.8	46.3	40.2	55.9
Dwellings Forecast				36.4	31.5	33.2

4.5 Prolonged Recession Scenario

The *World Recovery* scenario set out in Section 4.4 was predicated on the assumption of a world recovery taking hold in 2010. This is currently the consensus view among the main international forecasting institutions such as the OECD, NIESR and the IMF. It is based on the belief that the large macroeconomic stimulus around the world combined with the assistance to financial systems will drive a timid recovery in 2010 which will become well established in 2011. However, given the conditions pertaining in the current international economic environment there remains a substantial degree of uncertainty surrounding the likely length and depth of the current recession. In this scenario we consider the impact of a more severe slowdown in the world economy by assuming that the world recession will persist into 2012 (see Section 4.2 above for details).

Table 8 summarises the impact of this shock on the key economic aggregates. Obviously, the overall impact of the shock would be to delay further rather than prevent the recovery in economic activity in Ireland. Reflecting Ireland's heavy exposure to the world economy, the effect of the shock would be to reduce significantly external demand for Irish output and exports in 2011 leading to lower output and employment. Under this scenario, output in the industrial sector would grow by 7.2 per cent a year between 2010 and 2015, down from 8.4 per cent a year in the *World Recovery* scenario. This would leave the level of industrial output almost 7 per cent

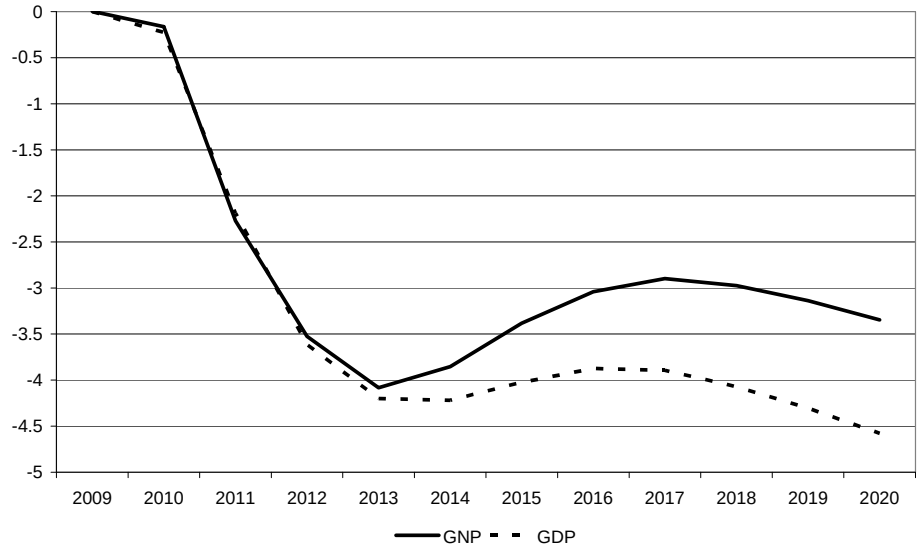
lower than in the *World Recovery* scenario in 2015. The increase in market services output would be 5.0 per cent a year compared to 5.8 per cent in the *World Recovery* scenario.

Table 8: *Prolonged Recession* Simulation Results: Major Aggregates

	2009	2010	2010-15	2015-20
	Annual % Growth Rate		Average Annual % Growth	
GDP	-8.2	-1.3	4.8	3.2
GNP	-9.4	-1.0	4.7	3.2
Total Employment	-9.4	-6.2	2.8	1.1
Output, industry	-9.7	-2.5	7.2	3.7
Output, market services	-7.6	-0.3	5.0	3.1
Consumer Prices	-1.0	-0.4	2.4	2.6
Non-ag. Wage Rates	-2.5	-1.7	2.4	4.4
Year End:	**2009**	**2010**	**2015**	**2020**
Personal Savings Ratio	11.7	13.3	8.3	7.0
General Government Balance, % GDP	-11.8	-11.3	-4.9	-4.2
Net Government Debt, % of GDP	34.2	46.5	79.2	82.6
General Government Debt, % GDP	57.5	70.6	89.5	92.2
Balance of Payments, % GNP	-0.8	2.4	1.2	1.2
Unemployment Rate	13.3	17.4	6.8	6.9
Net Migration, 000s	30	30	-11	-22

In the case of GNP the average growth rate would be reduced to 4.7 per cent a year from 5.4 per cent. In each case the bulk of the fall relative to the *World Recovery* scenario would occur in 2011 and 2012. This would mean that the level of GDP would end up around 4 per cent lower than in the *World Recovery* scenario in 2015, as illustrated in Figure 12, while the reduction in the level of GNP would be around 3.4 per cent.

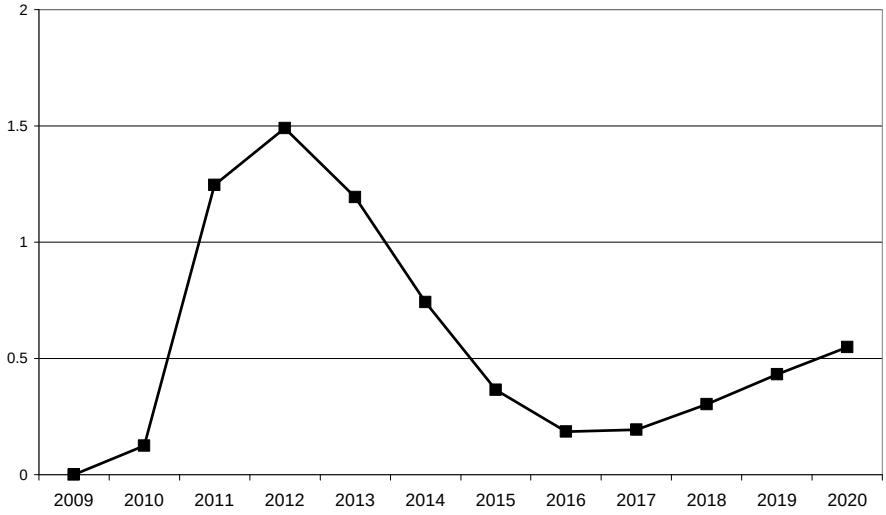
Figure 12: *Prolonged Recession and Growth:* Effect of One Year Delay in International Recovery on Level of GNP and GDP Compared to *World Recovery*



The delay in the world recovery would inflict further damage on the potential output of the Irish economy as shown in Figure 12. It would be unlikely that the additional ground lost by the extension of the world recession into 2011 would be made up later in the decade.

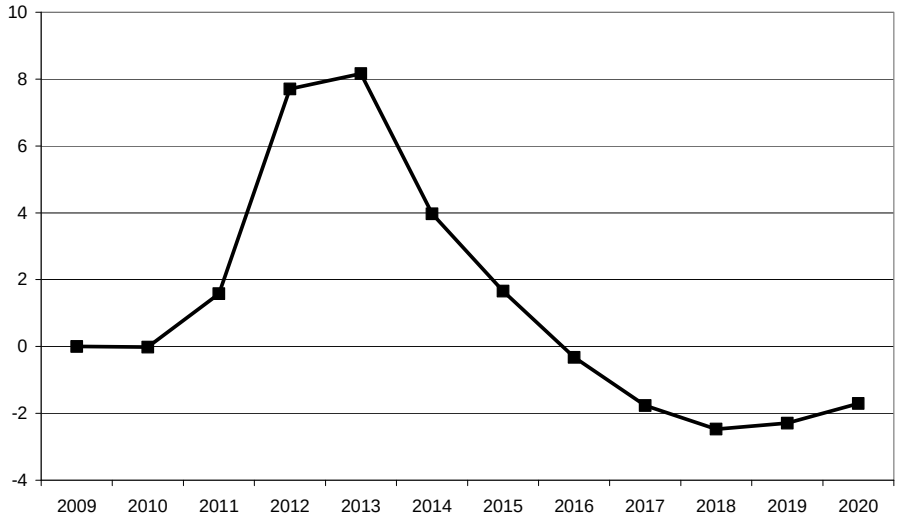
Despite emigration, the additional decline in activity would mean that the unemployment rate would remain higher for significantly longer under the *Prolonged Recession* scenario compared with the *World Recovery* scenario. Figure 13 shows the additional unemployment in this scenario. The addition to the unemployment rate would be at its greatest in 2012 at an additional 1.5 percentage points. However, the higher unemployment would induce increased emigration, as shown in Figure 14. By 2015 cumulative net emigration would be around 23,000 higher than in the *World Recovery* scenario. This increase in net emigration together with the reduced levels of output and employment would represent permanent losses to the economy.

Figure 13: *Prolonged Recession and Unemployment:* Effect of One Year Delay in International Recovery on Unemployment Rate Compared to *World Recovery*



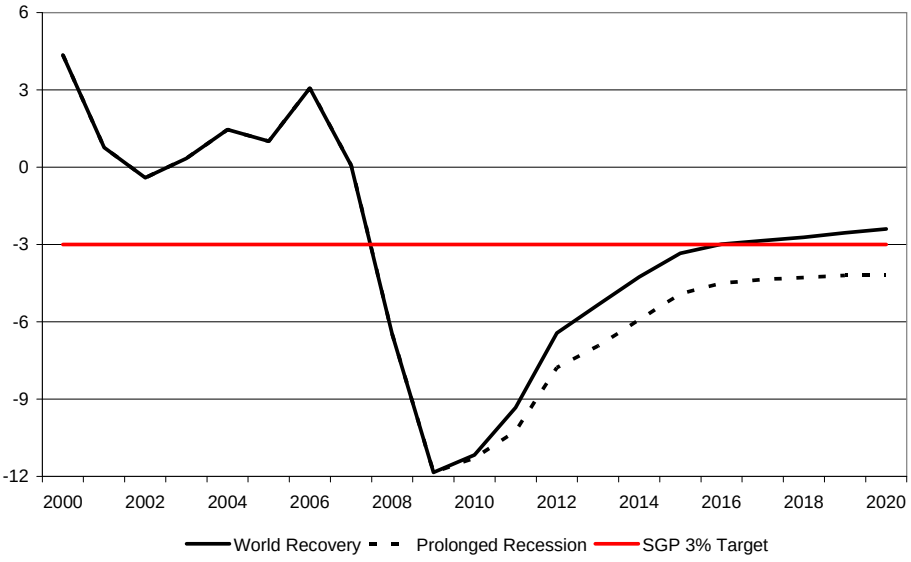
Higher unemployment would also result in the growth in wage rates over the period 2010-2015 being 2.4 per cent a year compared to 3.2 per cent a year in the *World Recovery* scenario. The higher emigration and the lower wage rates would see the differential between the unemployment rate in the *Prolonged Recession* and the *World Recovery* scenarios falling over time so that the unemployment rate in 2015 under this scenario would be back down to 6.8 per cent of the labour force compared to 6.4 per cent in the *World Recovery* scenario.

Figure 14: *Prolonged Recession and Emigration:* Effect of One Year Delay in International Recovery on Net Emigration Compared to *World Recovery*



One of the most significant effects of this shock would be its impact on the public finances as shown in Figure 15. The lower level of economic activity arising from the prolonged world recession would reduce government revenue from taxation while the higher unemployment rate and borrowing would increase government expenditure on welfare payments and interest payments. This would result in a significant deterioration in the general government balance compared to the *World Recovery* scenario as shown in Figure 15. By 2015 the general government balance as a percentage of GDP under the *Prolonged Recession* scenario would stand at 4.9 per cent compared to 3.3 per cent in the *World Recovery*. While the deficit in the *World Recovery* would approach the 3 per cent Stability and Growth Pact (SGP) limit by 2015, with a delayed world recovery there would still be a substantially higher deficit by the end of the period. By 2015 the net debt GDP ratio would be 8 percentage points higher under the *Prolonged Recession* scenario compared with the *World*

Figure 15: General Government Balance as a Per Cent of GDP



Recovery scenario. This would suggest the need for further remedial action in 2011 and 2012.

4.6 Risks to the Forecast Scenarios

As ever, when forecasting a number of years ahead, there are significant uncertainties surrounding the resultant scenarios. Such uncertainties stem from both the underlying assumptions about key drivers of the economy, such as world growth and fiscal policy, and also from the possibility of changes in the underlying behaviour of the economy embedded in whatever model is used.[15] These problems are well-known and well-rehearsed. However, at present there is an exceptional level of uncertainty surrounding the future prospects for the world economy, and for individual major economies.

In this paper we have tried to capture some of this uncertainty by developing two different scenarios for the world and the Irish economy out to 2015. However, even these two scenarios do not capture the full range of the risks and possibilities currently faced by the Irish economy. As a result, in this Section we consider a number of these "uncertainties" and what their implications are for the scenarios set out in this paper. The first concerns uncertainty about the future path of the world economy. The second concerns the execution of domestic fiscal policy. The third concerns the sensitivity of our results to alternative outcomes on domestic competitiveness. The fourth concerns uncertainty about labour market behaviour. The fifth concerns the possibility of deflation and the last concerns uncertainty about the impact of the banking crisis on the Irish economy.

To facilitate this work using the *HERMES* macroeconomic model we draw on research already in the public domain in the form of an ESRI Working Paper that analyses how the Irish economy might respond to changes in individual exogenous variables (Bergin, Conefrey, Fitz Gerald and Kearney, 2009). These "multipliers" or "shocks" to the model along a range of dimensions can be used to explore how changes in our assumptions might affect key aggregates such as growth and unemployment.

Table 9: Long-Run Impact of 1 Per Cent Increase in Variables in *HERMES*

	World Output	Irish Competitiveness	Irish Labour Costs
GDP, % Change	1.1	0.5	-0.3
GNP, % Change	1.1	0.1	-0.1
Labour force, % Change	0.4	0.1	0.2
Unemployment, % labour force	-0.1	-0.2	0.6
General government balance, % of GDP	1.4	0.3	-0.1
Balance of Payments % of GDP	0.4	0.5	-0.2

[15] Here we use the *HERMES* macro-economic model of the Irish economy. However, even when there is no formal model, analysts carry an implicit model in their heads when they project future trends.

In Table 9 we show summary results from Bergin, Conefrey, Fitz Gerald and Kearney (2009), for a 1 per cent change in certain key variables: world output, Irish competitiveness and Irish wage rates. (Table 9 shows the results for an increase in each variable but the results for a fall would be identical to that shown in Table 9 but with the opposite sign.) Within reasonable ranges these multipliers provide guidance as to the impact on Ireland of alternative outcomes on world growth or competitiveness. This analysis can then be used by readers to develop simple alternative scenarios.

The first uncertainty concerns the nature and the timing of a future world recovery. As discussed in Section 4.2, the international consensus is that the world economy should show signs of recovery by the second half of 2010. Nevertheless, there is significant doubt surrounding the timing of this recovery, and also concerning its likely strength. Some of the doubts are related to the ongoing difficulties involved in restoring order to the international financial system and some of it is related to the loss of consumer and investor confidence that has occurred over the past twelve months. If the current upheaval in international financial markets were to prove prolonged, this would delay the World and hence the Irish recovery, as illustrated in the *Prolonged Recession* scenario. However, a failure to deal with the financial crisis could instead see a recovery which was both delayed and which was much more muted than existing models would suggest.

In the *Prolonged Recession* scenario, by 2015 a prolongation of the recession of one further year would imply significant permanent costs to the Irish economy: GDP would be 4 percentage points lower, a cumulative increase in net emigration of 23,000 and an increase in the structural deficit of almost 1.5 percentage points of GDP. The clear implication of these results is that if the world recovery were to be delayed for several years, the costs to the Irish economy would be very substantial.

If the world recovery began in 2011 but it was less robust than we have assumed, this would affect the long-term growth potential of the Irish economy. As shown in Table 9, for every 1 percentage point that world output in 2015 fell short of expectations, Irish GDP would be around 1.1 per cent below the level in our *World Recovery* scenario. In turn this shortfall would see the unemployment rate in 2015 being 0.1 percentage points higher and the structural deficit would be higher by 1.4 percentage points of GDP.

While most of the risks in relation to the world recovery currently appear to be on the downside, there is still some possibility of a pleasant surprise. If short-term forecasts of major institutions are to be believed the world recovery could begin at the end of 2009. In that case the IMF's *World Economic Outlook* "benign" scenario could prove appropriate which would see higher world growth than we have assumed in our *World Recovery* scenario, especially in our trading partners. If this happened the recovery in Ireland might be stronger in 2011 than we have anticipated and the reduction in unemployment by 2015 would also be greater. The figures in Table 9 can be used to quantify what this upside might be if it happened.

The second uncertainty concerns the "political economy" of the adjustment under way in the Irish economy. In policy terms, the *World Recovery* scenario presented in Section 4.4 assumes full implementation of

the Supplementary Budget measures announced for both 2009 and 2010. While these represent an historically large fiscal adjustment, both in terms of taxation increases and expenditure cuts, the results of this paper highlight the need for such an adjustment to restore order to the public finances and to restore investor confidence in the economy. Were the fiscal correction to falter, or even halt in the course of 2009 and 2010, this could do serious long-term damage to the ability of the Irish economy to benefit from the world recovery when it occurs. Clearly, the level of cuts involved will be challenging to implement both at a political and an institutional level. In this context it is important that both policymakers and individual citizens are made aware of the long-term benefits of such a fiscal consolidation.

As highlighted in Figure 2 of this paper, the lost output through the underperformance of the economy in the 1980s was very substantial. In assuming that the fiscal adjustment takes place along planned lines we expect the lost output this time round to be much less (the shaded area in Figure 2). However, serious slippage could see a prolongation of the current crisis so that the loss in output could instead approach that of the 1980s.

The analysis in this paper suggests that the current recession could see Ireland gain substantial labour cost competitiveness by 2011 relative to its Euro Area partners, which will in turn help boost the performance of Irish firms in the upturn. The third uncertainty concerns this prospective improvement in competitiveness. In the *World Recovery* scenario the standard model of wage formation would suggest that nominal wage rates will fall by a cumulative 6 per cent over the three years 2009-11. However, we have never seen such a fall in nominal wage rates and there remains some uncertainty as to whether the labour market will prove "normal" in this way. As shown in Table 9, for every 1 percentage point that wage rates are above the forecast level, the long-term impact on GDP would be to reduce it by 0.3 per cent and the long-term impact on unemployment would be to raise it by 0.6 percentage points.

Wage costs are only one component of competitiveness. Table 9 also shows the effect of an improvement in Irish competitiveness of 1 per cent. This simulation incorporates a 1 percentage point reduction in wage rates as well as a similar reduction in all relevant Irish prices. To the extent that the price level as a whole adjusted downwards more rapidly than we have anticipated through enhanced competition, this could have quite a strong positive impact on the economy. This highlights the long-term importance of policies to promote competition, even if there are some short-term costs for the sectors affected.

The fourth uncertainty concerns the behaviour of the labour market. Our model of migration behaviour is based on past experience. While we anticipate significant cumulative net emigration of 150,000 over the period 2009 to 2015, this forecast could be affected by the very adverse circumstances in other labour markets. If emigration were to be lower than anticipated, this would raise unemployment in the period 2011-15 above the level we have anticipated. However, it would also put some limited downward pressure on wage rates and domestic costs. If the world recovery were to prove more robust, falling unemployment in competing labour markets could even increase the numbers leaving Ireland.

As well as uncertainty about the possible response of migration, there must be concerns that the expected very high level of unemployment in 2010-11 could lead to a permanent increase in the numbers of long-term unemployed. In our scenarios we have assumed that this does not happen. However, as discussed in Section 2, the Finnish experience was that after the major shock to its economy in the early 1990s the rate of unemployment never returned to its pre-existing very low level. To ensure that an economic recovery does see a return to full employment it will be important to adopt suitable labour market policies (O'Connell, 2009).

The fifth possible concern with our scenarios relates to the possible danger of deflation. Because of the anchor provided by the Euro we do not see this as posing a serious danger for the Irish economy. While we anticipate a substantial fall in the price level in Ireland of 5 per cent or more, provided that the Euro Area as a whole continues to experience positive inflation, the Irish economy will eventually revert to a low but positive inflation rate.

The final uncertainty identified above concerns the resolution of the banking crisis. If action to resolve the problem with the banking system were indefinitely delayed, leaving "zombie" banks to recapitalise themselves, the Irish recovery might not happen even if the world recovery were to proceed. Hence, there is great urgency in restoring the Irish banking system to working order. There is also the danger that the government could overpay for a resolution of the crisis. In both these cases it is very difficult to quantify the possible risks. Nonetheless, it is clear that doing nothing is not an option and that rapid action is to be preferred if the economy is to be fit for recovery.

There remains the possibility that the fabric of the economy may have been so changed that it might not respond to a world recovery in the way that it did in the past. With lower prospective FDI inflows into the EU the external environment may also be different than in the past. However, there is no evidence at this time that there has been such a change in the behaviour of the Irish economy. Key parts of the tradable sector have performed relatively well, in recent years in spite of cost disadvantages (Fitz Gerald (ed.), 2008). Even over the last year (to February 2009) exports and output in the high-tech sectors of the economy have proved reasonably robust, at least by comparison with our neighbours. Our model of the tradable sector of the economy suggests that, with a return to world growth and an improvement in relative competitiveness, output will respond as it has done in the past. Even before the recession the structure of the economy was already developing to reflect the changing nature of the world economy and the evolution of Ireland's endowment of skills. This process will certainly continue in the recovery phase. Obviously such a recovery would benefit from increased policy attention to enhancing productivity and innovation in the tradable sector of the economy. However, such policies take time to develop and implement successfully.

4.7 Implications

At the time of writing this paper (May 2009), our view is that the *World Recovery* scenario is the most likely outturn for the period to 2015. This is based both on the assessment of international forecasting agencies, and on the evidence in recent months of domestic policy action to tackle the structural deficit and the banking crisis. In the *World Recovery* scenario it is assumed that the international economy will begin to recover from the current severe recession in 2011. However, it is quite possible that this recovery could be delayed by a year and consequently, we have also explored the consequences of such a postponed world recovery in a *Prolonged Recession* scenario. The gap between the two forecasts for the period 2011 to 2015 is quite large indicating the considerable uncertainty that is involved in any forecast of turning points in the economic cycle. However, the two scenarios imply very similar forecasts for the average growth over the forecast period beyond 2015.

Even if Ireland faces significant challenges in the short term, it has the potential to achieve an average growth rate of over 5 per cent over the years 2010 to 2015. A world recovery beginning in 2011 would bring about a significant reduction in the unemployment rate. The *World Recovery* scenario implies a structural budget deficit of between 3 and 4 per cent if the measures announced in the Supplementary Budget for 2010 are implemented. However, this estimate does not take account of the medium-term cost of government intervention to help restore the banking system.

As discussed in Section 3.3 the national debt interest on borrowing to deal with the banking crisis could eventually add up to 2 percentage points to this. However, when account is taken of special levies on the banks (to pay for government guarantees etc.) and potential dividends, the net cost could be around 1 per cent. While all of this cost may eventually be recouped when the assets (held by NAMA and the banks) are sold, the debt interest payments will have to be funded in the interim. If anything, this would argue for more ambition in tackling the structural deficit.

The *Prolonged Recession* scenario considers the possibility that the current slowdown in the world economy will last longer than in the *World Recovery* scenario. In this scenario the economy underperforms significantly in the short run leading to lower output and employment and higher net emigration compared to the *World Recovery* scenario. This would add to the problems facing the public finances implying more severe action by the government on spending and taxation levels in the years 2011-15.

There remains the possibility that the economy could recover from the current severe recession and return more quickly to the growth trajectory described in the *World Recovery*. If the world recovery proved stronger than expected, mirroring the extreme nature of the decline in output in 2008 and 2009, this would have positive implications for the strength of the Irish recovery. In effect we would have a recession described as being more V-shaped than U-shaped.

With a structural deficit of between 3 and 4 percentage points of GDP at the end of 2010, and taking account of the potential costs of the reform of the financial system, there will still be a need to take significant fiscal action to eliminate borrowing by 2015. This could imply discretionary fiscal

action to reduce borrowing by around 1 percentage point a year over the period. (By way of illustration, *ex ante* the cuts in 2009 and 2010 amount to 7.3 per cent of GDP.) The uncertainties about the timing of the recovery mean that planning should still continue for quite a tight fiscal policy over the years 2011-13, as currently envisaged by the Department of Finance in their *Macro-Economic and Fiscal Framework: 2009-13*. However, if over the course of the next eighteen months (mid-2009 to end-2010) the *World Recovery* scenario appears to be correct, it would then be appropriate to plan for a less stringent (though still deflationary) fiscal policy over the course of the period 2011-13. Also, if the problems in the banking system were resolved within a tighter time scale, so that the disposal of the relevant assets began before 2015, this could also ease fiscal pressures by realising some of the State capital to be invested in the banking system.

5. CONCLUSIONS

The Irish economy is facing extremely challenging times. It is in the throes of a deep recession, unemployment is rising rapidly and the Irish banking system is facing serious funding difficulties. As made clear in the Spring 2009 *Quarterly Economic Commentary*, this situation is likely to persist into 2010 with output continuing to fall, albeit at a slower pace. However, our assessment is that while substantial damage has been done to the economy, it still remains reasonably robust. With the forecast substantial improvement in competitiveness in 2009, 2010 and into 2011, the Irish economy is repositioning itself to benefit from a world recovery.

Our assessment is that if the world economy recovers significant momentum by 2011, the Irish economy will be likely to grow quite rapidly in the 2011-2015 period, recovering some of the lost ground of the current recession. While the return to growth will see some improvement in living standards after 2011, it seems clear that this recovery will also still leave output and living standards approximately 10 per cent lower than they would have been without the current crisis. This will represent a very painful "scar" on the economy. Under these circumstances, while the rate of unemployment can be expected to fall quite rapidly from a peak at the end of 2010, without further action it will still not have returned to "full employment" by 2015.

These estimates are based on a world recovery in 2011. If the world recovery were delayed a year to 2012, we estimate that the permanent loss of output and income could be closer to 15 per cent, the fall in the rate of unemployment would be further delayed and there would be higher emigration.

The dramatic deterioration in the public finances in 2008 and 2009 posed a very serious dilemma. While under more normal circumstances the economic prescription might have been to let the "automatic stabilisers" work and to eliminate the deficit once the economy was recovering, the current situation made that a wholly inappropriate response for several reasons. First, the sheer magnitude of the deterioration meant that corrective action was inescapable – if not tackled the problem could have become explosive. Second, research has shown that early action in such cases produces substantial benefits through restoring the confidence of consumers and investors. Third, and related to the confidence issue, the uncertainty created by the massive borrowing has greatly added to the interest rate paid by the government. Early action to tackle the problem holds out the prospect of an earlier reduction in the risk premium for Irish borrowing, with a beneficial long-term impact on the economy. Fourth, while the bulk of the costs of dealing with the banking crisis may eventually be recouped by the tax payer, the high level of debt in the intervening years increases the uncertainty concerning the public finances. This too argues for early rather than delayed action.

The large structural deficit that was apparent prior to the April 2009 Budget largely reflected the legacy of unwise fiscal policies in recent years. Against this background the authorities have taken steps to address the rapid deterioration in the public finances since the autumn of 2008. We have argued that the appropriate target for fiscal policy is the structural deficit and this approach has been adopted by the government. We estimate that the measures introduced for 2009 will begin to reduce the structural deficit. Clearly, it is essential that the Budget for 2010 should achieve the additional reduction in the structural deficit that the government have already announced. Assuming the announced 2010 budgetary measures are implemented, the fiscal tightening over 2009 and 2010 is likely to bring the structural deficit from an estimated 7-8 per cent of GDP to an estimated 3-4 per cent of GDP. This seems to us to be an appropriate response to the very serious problems posed for the economy by the public finance crisis.

If the recovery were to proceed along the lines of the *World Recovery* scenario this would leave a structural deficit of 3 to 4 per cent of GDP to be eliminated over the years 2011-2015. This task would require fiscal action which would be much less painful than the range of budgetary measures currently envisaged by the Department of Finance as being necessary for those years. However, as indicated above in the *Prolonged Recession* scenario, if the world recovery were to be delayed a year the structural deficit would rise to 4-5 per cent of GDP. In that case tougher budgetary action from 2011 onwards would be appropriate.

The experience of other countries and, in particular the experience of Ireland in the 1980s, suggests the importance of taking rapid action to tackle the unsustainable position of the public finances. As is illustrated in Figure 2, the delays in the 1980s resulted in the cumulative lost output (the shaded area in Figure 2) being very large. If instead action is taken along the lines proposed by the government, then under the *World Recovery* scenario the cumulative loss in output in this recession, while still very substantial, could be smaller than that of the 1980s.

In addition to action on fiscal policy, the authorities have taken steps to help stabilise the banking sector. The outlook for the banking system suggests that the long-term cost to the State, in terms of a permanent increase in the debt, may be small relative to the debts accruing as a result of borrowing to fund the day-to-day activities of the government. However, even if the funding needs of the banking system were eventually largely repaid, the full resolution will take some considerable time. In the interim the very substantial overhang of debt will add to uncertainty and the risks facing future governments. This enhanced risk is reflected in the expected higher cost of borrowing by the State and, as explained above, it argues for accelerated action to tackle the fiscal crisis along the lines of current government policy.

This paper has concentrated on the overall stance of fiscal policy rather than on its composition or on its distributional impact (Callan *et al.*, 2009). However, the ultimate impact on the economy of the tightening of fiscal policy will depend on the composition of the increase in taxation and cuts in expenditure. In the case of taxation, in future budgets it would be better to rely less on taxes on labour (income tax and social insurance) and more on broadening the tax system through, for example, the introduction of a

property tax and a carbon tax. These taxes would have a less damaging impact on future employment growth. In the case of expenditure cuts, it will be important to concentrate on improving efficiency rather than on cutting valuable services. The effective cut in pay rates implemented in February 2009 (through the introduction of the Public Sector Pension Levy) was appropriate given the fact that public service wage rates were significantly higher than those in the private sector when allowance is made for the structure of employment in the two sectors (Kelly, McGuinness and O'Connell, 2008). Finally, even after the cuts in capital expenditure are implemented, public investment in infrastructure in the period 2011-13 could still meet the likely needs of the economy if the price of such investment is reduced by an appropriate amount (Morgenroth, 2009). Given the spare capacity in the building industry, the fall in land prices and the downward adjustment in the national price level, the cost of infrastructural investment should end up very much lower than in the recent past and more in line with costs elsewhere in the Euro Area . It will be important that public policy ensures that the benefits of this fall are realised by the State.

The analysis in this paper highlights the importance of improving the competitiveness of the Irish economy if it is to return to full employment within a reasonable time scale. We envisage a major reduction in the level of costs, including labour costs, relative to the Euro Area over the period 2009-11. We see this improvement coming about through the normal operation of the labour market. However, we are in uncharted territory where the "normal" behaviour of labour costs implies a substantial fall in nominal wage rates mirroring the fall in other costs and prices. If nominal rigidities prevented this happening it could have serious consequences for the economy, putting in doubt the relatively robust recovery envisaged in the *World Recovery* scenario. Also, the longer the adjustment in competitiveness takes to play out (here we assume three years) the longer will be the delay in the recovery in the labour market. Hence, it is important that public policy should do all that it can to speed this essential adjustment. A revised partnership agreement which recognised the importance of reducing costs, broadly defined, would help in this regard.

The Irish economy faces a period of very high unemployment. It will be very important that public policy learns from past research in Ireland and elsewhere on how best to prevent the unemployed of today becoming the long-term unemployed of tomorrow (O'Connell, 2009). This problem will be particularly acute for those losing their jobs who have only limited education. The Irish experience of the 1990s was that by raising the skill level in the work force, the supply of unskilled labour was sufficiently reduced to substantially eliminate long-term unemployment (Bergin and Kearney, 2007). This suggests that priority needs to be given to labour market initiatives that will effectively tackle this skills deficit among many of the unemployed.

Finally, the potential output of the economy is driven not just by the input of domestic labour and capital but also by the technology with which we combine them to produce goods and services. This issue was partially addressed in the Government's "Smart economy" plan launched in December. However, much more work is needed to identify how public policy can influence this key variable in the future. What will be crucial is that the significant sums of money still being spent on investment in

human capital and research and development are allocated effectively to enhance the future productivity of the economy, and in such a manner as to allow the translation of R&D expenditure into real innovation.

APPENDIX 1: MEASURING POTENTIAL OUTPUT

Generally the potential output of an economy is the level of output which an economy can achieve if it makes optimal use of its resources – physical capital, human capital, and technology. For limited periods an economy can operate above potential, for example, through labour working abnormal hours (extra overtime). Similarly, an economy can operate below potential with capital being underutilised and labour unemployed.

The measure of potential output in an economy is important for a number of reasons. It measures how fast an economy can grow under "normal" circumstances. The relationship between the actual level of output and the potential output of an economy is a guide to the sustainability of the current level of activity. Where output is above potential it suggests the presence of inflationary pressures, making such a level of activity unsustainable. Where output is below potential it gives an indication of how much of the underemployment of resources in an economy (e.g. unemployment) is temporary in nature.

It is used to establish the normal or cyclically adjusted budget deficit. The cyclically adjusted deficit or surplus on the government accounts is the government sector's balance at a "normal" level of activity – potential output. Where there would be a significant deficit if the economy were operating at potential this deficit is defined as being structural.

There are a number of different ways of measuring the potential output of the economy. All of these methods aim to show what the maximum normal level of output would be given the endowment of resources in the economy. Some of them take account of the specific structure and factor endowments of an economy while others are little more than a rule of thumb.

One popular measure of potential output is derived using a production function for an economy. Such a function describes how a given mix of inputs, physical and human capital, materials and technology, can be combined to produce national output. It is always possible for an economy to produce within the production frontier described by the production function. However, where that happens it means that the economy is producing less output than would be feasible with the available mix of inputs. It is not physically possible for an economy to produce more than the limit described by the production function for any sustained period of time.

This method is used by the EU Commission. However, they impose a specific type of production function – a Cobb Douglas – which assumes that the share of labour (and capital) in value added is constant. They also assume the same fixed factor shares for all EU-15 countries. In Ireland's case the share of labour is not fixed, it has fallen over time. The EU average labour share is very far from the actual share in the case of Ireland. In addition, the EU Commission estimate the labour input consistent with a stable rate of inflation. However, this methodology is highly questionable when applied to Ireland because of the elasticity of labour supply through migration. Finally, Total Factor Productivity is measured by a moving average process which will have major difficulties handling a recession as deep as the current one. For all of these reasons the EU methodology is not really appropriate when applied to the Irish economy.

A second way of characterising the production technology of an economy is as a cost function. Theory shows that under a range of maintained assumptions, for any production function there exists a cost function that represents the same technology (is dual to it). A cost function describes how the factors of production can be combined to produce a given level of output at minimum cost. Firms are then assumed to maximise profits through choosing the appropriate level of output in Ireland. This measure of potential output is implemented in this paper using the *HERMES* macroeconomic model of the Irish economy. Eight of the eleven productive sectors of the economy represented in the model are characterised by an individual cost function. For a given set of factor prices these cost functions describe the least cost combination of inputs to produce a given output. The optimal or potential output is that which maximises the profitability of the firms producing in each sector. In the short run the technology assumes that capital is fixed and firms optimise their mix of inputs to produce the desired level of output. In the long run firms adjust the capital stock to minimise the long-run cost of producing their optimal level of output.

A third method developed, and used in the 1970s, assumed that the maximum levels of output actually observed in each cycle of the economy represented the maximum potential output at that point in time (Kenny, 1995). The potential output in intervening periods was derived by interpolation. However, this methodology suffered from major problems because of the need to project the growth in potential output beyond the last peak to cover the current period.

A fourth simple approach takes a moving average of past output to determine the trend or potential output. However, such methods also suffer from the problem that past behaviour may not be a good indicator of the potential output of the economy in the future, especially when the endowment of labour and capital are changing rapidly.

For these reasons we believe that the approach used in this paper using the *HERMES* model of the Irish economy provides a better guide to the potential output of the Irish economy. It does have the disadvantage that it is based on a large model of the economy which is difficult to summarise. However, it takes account of the endogeneity of the labour supply through migration and also of the fact that wage rates and other factor prices are also endogenous.

Alternative Estimate of Potential Output

Rather similar results can be derived using a simple decomposition of the contribution to the growth rate by the different factors of production. As indicated above, this assumes a simple production function for the economy and underlies the approach to measuring potential output used by a number of authorities, including the EU Commission. In this example, the productive capital stock is taken to exclude the stock of housing. To allow for the fact that unemployed labour represents a potential resource we use the growth in the labour force rather than the growth in actual employment. We also allow for the impact of the increasing human capital of the labour force (see Durkan, Fitzgerald and Harmon, 1999; Bergin and Kearney, 2007 and Fitz Gerald (ed.), 2008).

In this case the contribution of productive capital (excluding housing) and labour (here taken to be the labour force) are weighted by their actual shares in value added. The results for this measure are shown in Table A1. This application of the methodology differs from that of the EU Commission in a number of ways. In particular, where we assume varying weights for the different factors of production the EU assumes constant shares applicable to the EU as a whole rather than just to Ireland.

Table A1: Production Function Measure of Potential Output

	1970-75	1975-80	1980-85	1985-90	1990-95	1995-00	2000-05	2005-10	2010-15	2015-20
Capital	1.3	1.6	1.1	0.7	0.7	2.6	2.6	2.0	1.8	2.0
Labour Force	0.5	0.8	0.5	0.0	1.0	1.6	1.3	0.7	0.2	0.4
Human Capital	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.1	0.1
TFP smoothed	2.5	2.5	2.5	2.5	2.5	2.5	1.3	1.3	1.3	1.3
Total contribution	4.5	5.2	4.3	3.4	4.5	6.9	5.5	4.2	3.4	3.8
GDP	4.8	5.3	1.8	3.6	4.2	9.3	5.5	0.3	5.7	3.2
Index	0.98	0.99	0.87	0.88	0.87	0.97	0.97	0.80	0.89	0.87

In this case Total Factor Productivity (TFP) is not the actual rate of TFP observed in each period. Instead we have used smoothed values which roughly reflect the averages for two different periods of growth. For the period up to 2000, when the economy was catching up with the rest of the EU-15, it was quite high. However, we assume that post 2000 the rate has been halved. However, what is not taken account of in this Table is the permanent loss of output the economy has suffered as a result of the current recession.

When the contributions of the different factors (including TFP) are added they do not sum to the actual growth in GDP. This reflects the fact that over the last thirty years the economy experienced periods of growth above potential and periods when it grew below potential. This is captured in the Index at the bottom of the table (set to be identical for 1995-00 to the average of the Index used in Figure 2 in the paper). The permanent loss of output as a result of the current recession sees the Index remaining around 0.9 in the period 2010-20.

This treatment differs from that in Figure 2 of the paper where the permanent loss of output is taken into account by reducing the potential growth rate of the economy for the period 2005-20. Thus the Index using

the methodology in this Appendix remains around 0.9 in the long run because of the permanent loss of output) whereas the Index using the more sophisticated approach in the paper returns to unity. However, they tell the same underlying story.

APPENDIX 2: GREENHOUSE GAS EMISSIONS

Seán Lyons and Richard S.J. Tol

Climate change is the problem that tops the environmental agenda. Ireland has signed up to ambitious international agreements on greenhouse gas emission reduction. A carbon tax on transport and home heating fuels may be introduced in the foreseeable future. Any excess emissions over the target will have to be made good by buying permits from abroad. Climate policy is thus closely related to fiscal policy. Therefore, this box projects emissions of greenhouse gases.[16]

We assume that the EU Emissions Trading Scheme (ETS) will continue unreformed after 2012; that a carbon tax will be levied on all carbon dioxide emissions that are outside the ETS; and that the carbon tax will be €20 per tonne of CO_2 in 2010 and all following years.

Figure B1 shows carbon dioxide emissions by sector. See also Table B1. In 2009, carbon dioxide emissions are projected to fall by 8.2 per cent followed by a further fall of 5.6 per cent in 2010. Construction (including cement production) takes the biggest hit with a fall in emissions of one-third in 2009, but services and power generation are also down by some 10 per cent per year. After 2011, emissions start to grow again, by 3.0 per cent in 2011 and 2.1 per cent in 2012. Construction, driven by the National Development Plan, bounces back particularly rapidly. Between 2013 and 2020, we project an average growth rate of 1.9 per cent.

Figure B2 and Table B1 show the other greenhouse gases as well. The economic recession is muted in agriculture, the main source of methane and nitrous oxide. The same holds for pharmaceuticals and semiconductor manufacturing. As a result, the decline in total greenhouse gas emission is 5.7 per cent in 2009 and 3.7 per cent in 2010, much less than the drop in

[16] Emissions are projected using Ireland's Sustainable Development Model (*ISus*), version 0.3. The model uses a mix of techniques ranging from simple extrapolation of trends in emission intensities (e.g., for HFCs emissions) to detailed behavioural modelling (e.g., for waste and electricity). See http://www.esri.ie/research/research_areas/environment/isus/ for the model documentation.

carbon dioxide emissions. After 2010, emissions start growing again at an average rate of 1.3 per cent until 2020.

The recession implies that Ireland will almost comply with its short-term obligation under the Kyoto Protocol. Cumulated over the period 2008-2012, emissions exceed the target by 5.9 million metric tonnes of carbon dioxide equivalent ($MMTCO_{2eq}$). At the futures prices of April 21, 2009, €81 million will need to be spent on permit imports, substantially less than the €270 million reserved for this purpose in the carbon fund.

Because emissions are projected to resume growth in 2011, Ireland is not likely to meet its target under the EU agreements for 2020, which call for a reduction of emissions by 20 per cent from their 2005 level. The projected distance to target is 14.2 $MMTCO_{2eq}$.[17] As the price of carbon permits may well rise to €40/tCO2 in 2020, this implies that €570 million would need to be spent on permit imports, €450 million of which would fall on the Exchequer.

Table B1 also shows that the carbon tax would raise €480 million in 2010 rising to €500 million in 2012.

Figure B3 compares these projections to the ones in the *Medium-Term Review 2008-2015* (Fitz Gerald *et al.,* 2008) and to the latest projections by the Environmental Protection Agency (EPA).[18] This publication uses more recent data, so it starts to deviate from the *MTR* in 2006. The gap between the two projections starts to grow rapidly in 2008 and reaches its peak in 2010 with a difference of 8.7 $MMTCO_{2eq}$, or 12.4 per cent below the *MTR* projection. After 2010, the two projections converge again with a gap of only 3.4 $MMTCO_{2eq}$.

Our latest projections (62.7 $MMTCO_{2eq}$ on average for 2008-2012) are slightly below the latest EPA projections *with additional measures* (64.1 $MMTCO_{2eq}$) and substantially below the EPA projection *with measures* (67.6 $MMTCO_{2eq}$).[19] For 2020, our projection (64.1 $MMTCO_{2eq}$) is in between the two EPA projections (61.0 $MMTCO_{2eq}$ and 70.5 $MMTCO_{2eq}$) but closer to the *with measures* one.

[17] This gap has been substantially reduced from the figure of 17.6 $MMTCO_{2eq}$ as projected in Fitz Gerald *et al.* (2008).

[18] http://www.epa.ie/downloads/pubs/air/airemissions/GHG_Emission_Proj_08_12_300 32009.pdf

[19] EPA projections with measures include only announced policies and targets, while EPA projections with additional measures also consider draft policies and targets. The ESRI projections only considers policies, disregarding targets that are not backed up by policy measures, but includes likely yet unannounced policies such as a carbon tax.

Table B1: Emissions of Carbon Dioxide by Sector and Emissions of Other Greenhouse Gases for Selected Years as Observed (1990, 2005) and As Projected (Other Years); Emission Targets; Emissions by Regulation (ETS v non-ETS); Carbon Tax Revenue and Value of Permit Imports. All Values are in Million Metric Tonnes of Carbon Dioxide Equivalent, Except the Tax Revenue and Permit Imports Which are in Million Euro

	1990	2005	2008	2009	2010	2011	2012	2020
Carbon dioxide								
Agriculture and food	1.7	2.0	2.0	1.9	1.9	1.9	1.9	1.8
Construction (incl. cement)	2.5	4.9	4.0	2.7	2.4	2.9	3.8	5.5
Manufacturing	3.4	3.5	3.8	3.7	3.7	3.9	4.4	6.7
Services	2.0	2.3	2.3	2.0	1.9	1.9	1.9	1.7
Power generation	10.9	15.1	13.7	12.6	11.2	11.6	10.4	9.9
Transport	5.0	12.8	13.1	12.2	11.7	11.9	12.5	16.0
Households	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.2
Total carbon dioxide	32.5	47.7	46.0	42.2	39.9	41.1	41.9	48.9
Methane	13.4	13.2	12.9	12.9	12.9	12.8	12.6	11.7
Nitrous oxide	9.5	8.7	8.0	7.9	7.9	7.8	7.7	6.9
Halocarbons	0.0	0.7	0.9	0.9	0.9	1.1	1.3	3.0
Total greenhouse gases	55.5	70.3	67.8	63.9	61.6	62.7	63.5	70.5
Target			62.7	62.7	62.7	62.7	62.7	56.3
Distance to target			5.1	1.2	-1.1	0.0	0.8	14.2
ETS (CO_2)	14.0	21.3	19.4	17.1	15.4	16.4	16.4	19.4
Non-ETS (CO_2)	18.7	26.0	26.0	24.6	24.0	24.1	25.0	29.5
Non-ETS (other GHG)	23.0	22.6	21.8	21.7	21.7	21.7	21.6	21.6
Carbon tax revenue					479	482	500	591
Permit import			73	11	-13	0	9	569

Figure B1: Carbon Dioxide Emissions Per Sector as Observed (1990-2007) and as Projected (2008-2020)

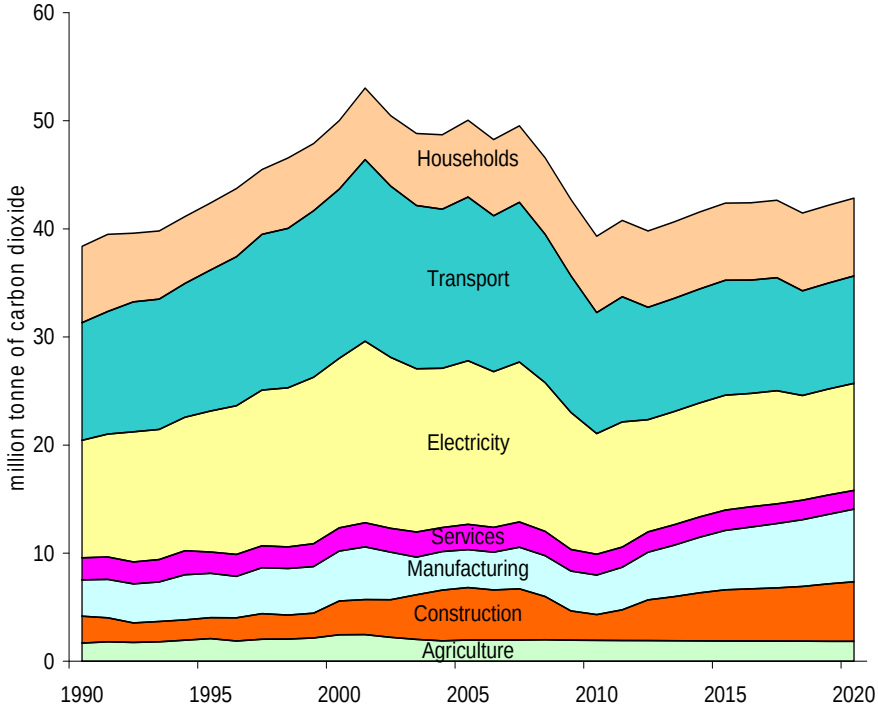


Figure B2: Greenhouse Gas Emissions Per Gas as Observed (1990-2007) and As Projected (2008-2020); and the Emissions Targets under the Kyoto Protocol and the Burden Sharing Agreement of the European Union

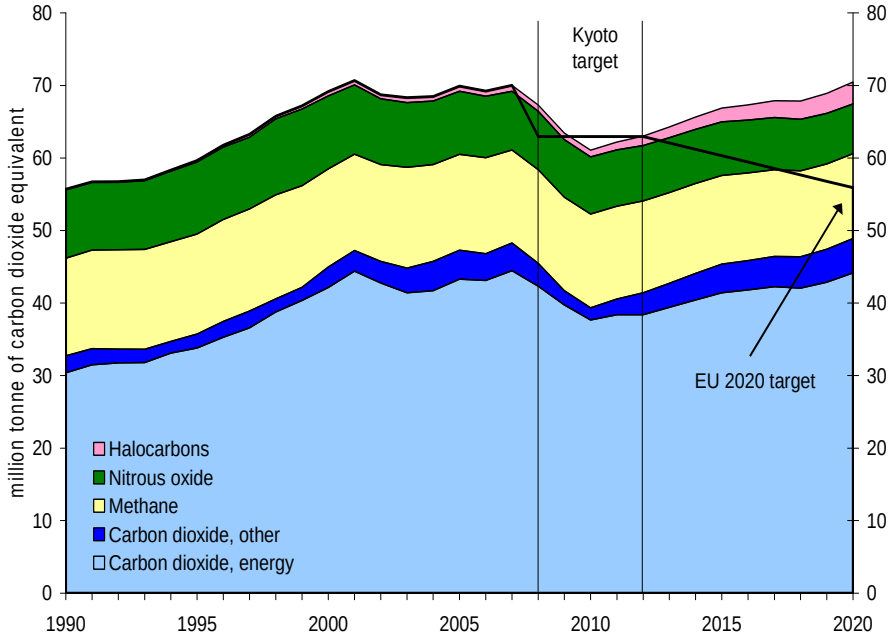
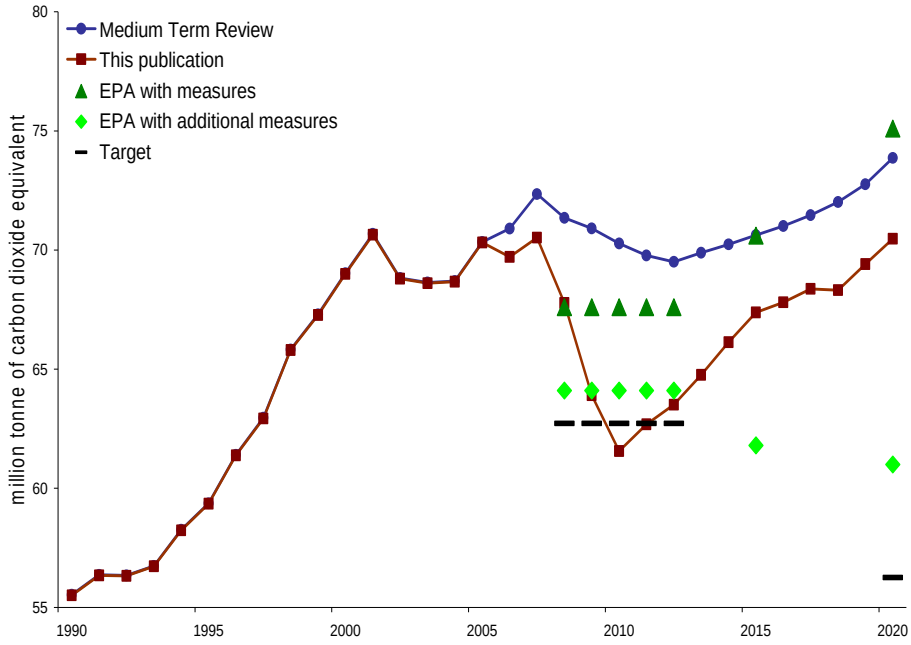


Figure B3: Alternative Projections of Total Greenhouse Gas Emissions



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