



Working Paper No. 326

October 2009

Fiscal Policy for Recovery

John Fitz Gerald

Corresponding Author: John.FitzGerald@esri.ie

ESRI working papers represent un-refereed work-in-progress by members who are solely responsible for the content and any views expressed therein. Any comments on these papers will be welcome and should be sent to the author(s) by email. Papers may be downloaded for personal use only.

Fiscal Policy for Recovery

Section 1: Introduction

A year ago, when the full impact of the financial crisis hit Ireland, it took some time for economists to assess what was happening and what were the full implications of the disaster. Economic forecasts were changing daily and the huge uncertainty about what was actually developing made policy-making exceptionally difficult. However, over the course of the winter and early spring economists came to understand what was happening in Ireland and the outside world somewhat better. In May, with colleagues in the ESRI, we published a paper (Bergin *et al.*, 2009) which considered the possible paths to recovery for the Irish economy. This analysis suggested that the Irish economy, while suffering major permanent damage as a consequence of the recession, would return to a period of quite rapid growth once the world economy itself entered the recovery phase. At the time of publishing the recovery in the world economy was only a gleam in the economists' eye. However, over the last six months there have been increasing signs of a return, if not to business as usual in the world economy, at least to limited growth.

This paper considers the role of fiscal policy in ensuring that this recovery takes place in Ireland and that the economy is returned to its potential output. However, before considering policy for the future it is important first to understand the nature of the policy failure that has landed us where we are today. Section 2 of this paper discusses some aspects of this policy failure. Section 3 then discusses the potential growth rate of the Irish economy and it considers the possible paths to recovery. The final section of this paper discusses some of the policy options needed to restore the economy to a sustainable growth path.

Section 2 Getting Here

In considering how we got into this mess in Ireland it is useful to look back and consider the source of the policy failures. To what extent were wrong or dangerous policies adopted since 2000 because of a lack of information about what was happening and how

the economy worked and to what extent was it due to a failure to follow good policy advice? The answer to this question can help us develop a more robust policy-making process in the next decade.

There were two major policy failures that contributed to the current Irish economic disaster. (Ireland could not have prevented the world financial collapse, which has contributed so much to the economy's current woes). The first was the failure to ensure that the domestic financial system was operated in a prudent manner and the second was the failure to manage domestic demand, in particular the failure to prevent the development of a property market bubble.

With the benefit of hindsight the collapse of the domestic financial system could and should have been prevented by the financial regulator – IFSRA, more recently re-branded as *Financial Regulator*. The complete failure of IFSRA to either see the increasingly dangerous exposure of the system from the middle years of the decade or to take action to prevent it has landed us in the current mess. Honohan, 2009, has documented some of the problems and failures. However, even if the IFSRA failed in its task what about external oversight of the system?

For those working within the financial system it was not easy or realistic to expect them to cry foul in public. It is certainly clear that, even if they had misgivings, they did not act on them in managing their own businesses. However, the wider academic community also paid little heed to these risks. In the case of the ESRI we had scant resources to devote to researching or monitoring the domestic financial system. Similarly those doing research in financial economics tended to concentrate on areas of interest other than financial stability.¹ One suspects that the Department of Finance, like the academic community, also relied on IFSRA and the Central Bank over the same period to do the work, allocating very limited resources to monitoring developments in the financial system.

¹ The work of Honohan was a notable exception see, for example, Honohan, and Klingebiel, 2003.

Even with the limited resources devoted to the area, some concerns began to be expressed from late 2005 onwards about developments in the financial system. For example, in the ESRI *Medium-Term Review* published in December 2005 the effects of a possible housing price collapse was examined. The authors commented:

“In addition, this scenario assumes that the financial sector would prove to be robust in the face of the major shock to the housing sector and the very rapid doubling in the unemployment rate. Should significant problems arise due to the high level of household indebtedness this could greatly complicate the recovery process.”

While the possibility of a financial crisis was adverted to, this concern was not given much attention. In October 2006, a paper given at this conference by a colleague (later published in the ESRI QEC as Traistaru-Siedschlag, 2007) raised concerns about financial stability. These concerns were reiterated later in an *Irish Times* article by Kelly at the end of 2006 and subsequently in a paper by him in the ESRI QEC in mid 2007. However, even then the focus of attention of the economic community remained on the housing market rather than on the risks to the financial system. It was really only from the end of 2007 that very real concerns were being discussed in private, and even then it was felt to be difficult to air them in public without having undertaken the necessary background research.²

Looking back on this record I would conclude that while the primary failure in policy rests with the responsible authority which had all the resources needed to undertake its task – IFSRA – the wider economics community did not devote attention to the topic in the years preceding the crisis. Of course, these comments apply to the economics community in many other economies too.

The other crucial ingredient of the current crisis is the growth and bursting of the property bubble. The factors driving this bubble, the very serious consequences arising

² There was also the danger of legal action if too trenchant views were expressed on the stability of an individual bank.

from the bubble bursting, and the policy responses that would have prevented it are discussed in Conefrey and FitzGerald, 2009.

While policy makers can with some validity claim that their slumbers on the job of regulating the financial system were not disturbed by any outside noises, this is not true about the failure to manage the housing market. As far back as 2001 the ESRI warned about the need under EMU for governments to use fiscal policy to prevent property market bubbles occurring. Specifically we suggested that the withdrawal of mortgage interest relief with the possible additional imposition of a tax on mortgage interest payments as the best mechanism to use for this purpose (FitzGerald, 2001 and Barry and FitzGerald, 2001).

Over the last twenty years each of our *Medium-Term Reviews* has referred to some relevant story from classical Greek mythology in the introduction. In the 2003 *Review* we began with the story of Icarus. At the time we were concerned that unduly expansionary fiscal policy, specifically the failure to control the housing market, meant that the Irish economy was flying to close to the sun. Like Daedalus this warning was ignored! The introduction to the 2005 *Review* contained the following passage:

When Odysseus undertook his long voyage home from Troy he encountered many dangers. Not least were the distractions that the Lotus-eaters provided for his crew.

“They went about among the Lotus-eaters, who did them no hurt, but gave them to eat of the lotus, which was so delicious that those who ate of it left off caring about home. .” HOMER, *Odyssey*, Book IX, vss. 83-104

The lure of good times with the Lotus-eaters nearly derailed the voyage and tough measures had to be taken by Odysseus to get the crew back on board.

“I forced them back to the ships and made them fast under the benches. so they took their places and smote the grey sea with their oars.” HOMER, *Odyssey*, Book IX, vss. 83-104

In that *Review* the authors went on to simulate the economic effects of a 30% fall in house prices (which would have left prices well below where they are forecast to be next year). This analysis suggested that if the property market bubble was not deflated in a controlled manner, unemployment could rise to 11% on the bursting of the bubble.

These concerns for the risks the economy was running through the adoption of inappropriate fiscal policy were repeated in many other ESRI publications, including many issues of the *Quarterly Economic Commentary*. Thus, whatever about the failure to foresee the risks to the financial system, the risks arising from a property market bubble bursting were well flagged.

Quite often when mistakes are made the word goes out – “the media did not report it”. In this case I believe that that is not true. Brendan Keenan in the Irish Independent, Paul Tansey in the Irish Times and George Lee in RTE all reported on the research that pointed to impending dangers for the Irish economy associated with the housing market. Not only did they “report” but in their comment they placed their own emphasis and interpretation as to the source and gravity of the problems facing the Irish economy.

For example, the Irish Independent in its editorial the morning after our *Review* was published in 2005 said:

“No one will be accusing the ESRI of a surfeit of seasonal spirit this Christmas, thanks to the gloomy report on the economy it issued yesterday. So is it a case of Bah Humbug? Has Ebenezer Scrooge taken up residence in the ESRI offices? Time will tell, but there is a great deal in this report that we should be chewing on with the turkey. An obvious point is that a boom which is increasingly reliant on a high level of activity in the construction sector, cannot go on forever.”

The following day Brendan Keenan went on to say:

“Builders and estate agents yesterday took issue with the claims by the Economic and Social Research Institute (ESRI) that the property market poses a threat to the economy and should be cooled down. The ESRI recommended an immediate end to tax reliefs for property and possible introduction of a property tax and abolition of mortgage interest relief. ...

The 2008 *Review* did not anticipate the world financial collapse and, as a result, greatly underestimated the adverse impact on Ireland of the economic crisis. Because of its timing, this failure to anticipate the recession did not affect policy. By then the damage had been done with the property market already collapsing. With the benefit of hindsight the forecasts proved much too optimistic.

There were many factors behind the failure to heed Cassandra’s warnings. After a decade of generally high growth and low unemployment there was a growing feeling among households and companies that the Irish economy was invincible – many people did not

want to hear the message.³For those in the financial sector and the building sector the prospect of profits today clouded their judgement. However, there was a more general problem that the traditional understanding of the role of fiscal policy was no longer central to public discourse on economic policy. Much attention focused on the Stability and Growth Pact (SGP). However, as argued in Conefrey and FitzGerald, 2009, the SGP was not the appropriate policy target for Ireland and Spain. Rather, they should have run substantial budget surpluses and taken specific measures to choke off demand for property.⁴ In addition, the belief was often expressed in Ireland that fiscal policy fine tuning, like monetary policy fine tuning, was neither possible nor wise. While this may be true under some circumstances, when faced with the problems of excess demand in Ireland and Spain it was not a case of fine tuning. What was needed was significant deflationary action.

It is a wider question for political scientists and historians, which I will not try to address here, as to why policy makers chose to ignore the warning signs in relation to property. Action to control the property market would undoubtedly have been unpopular. In particular, there is a continuing refrain that taxing mortgage interest payments would be unthinkable. While this issue is now irrelevant, the experience could be repeated in different ways in the future.⁵ Many non-economists expect economists to produce palatable medicine. When unpalatable medicine is prescribed it is automatically rejected. In the 1980s it took many years for reality to sink in and for enough painful medicine to be taken. The concern this time round for economists and policy makers is both about preparing the right prescription for the Irish economy as well as communicating the need for the unpleasant medicine to a very unhappy patient.

³ That people did not want to face up to the economic reality was evident in the discourse in the 2007 General Election, where both the government and opposition parties talked of a continuing boom.

⁴ Blanchard, 2001, recommended tighter fiscal policy for Spain.

⁵ For example, ruling out property taxes because they are “unthinkable”.

Section 3: How the Economy Works

In considering the appropriate medicine to prescribe for Ireland's current economic ills a key issue is what is the potential growth rate of the economy: how fast could it grow in a recovery? Economies can underperform and grow more slowly than their potential but they cannot exceed that potential on a sustained basis. The job of policy in the coming years is to ensure that the potential growth of the Irish economy is realised (and even enhanced).

The potential output of the economy is also very important in assessing the significance of the level of government borrowing. Currently the economy is well below its level of potential output – with the labour force and capital stock available it could produce much more. However, that potential has itself been significantly damaged by the recession – the capital stock has been adversely affected, as manifested by the dramatic fall in investment. As discussed later, with a world recovery and a re-pricing by Ireland to make the economy competitive, output could be expected to return to potential. Our estimate is that as of today (before next year's budget), the general government deficit could fall to roughly half its current level with an economic recovery. Thus the task of fiscal adjustment to restore balance to the public finances involves increases in taxation and cuts in expenditure over the coming years to cut the borrowing by around 6 per cent of GDP, rather than the over 12 per cent of the GGB for this year. However, this estimate is conditional on the measure of the potential output of the economy we are using being correct.

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.

As outlined above, the measure of potential output 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 (also used by the Department of Finance in their Stability Programme) 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 Bergin *et al.*, 2009, 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, this method also suffers 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 I believe that the approach used in Bergin *et al.*, 2009, using the HERMES model of the Irish economy, provides a better guide to the potential output of the Irish economy than the other methods. It does have the disadvantage that it is based on a large model of the economy which is difficult to summarise and not as transparent as the other methods. 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.

Rather similar results can be derived using a simple decomposition of the contribution to the growth rate by the different factors of production. This approach has the advantage of simplicity. 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 1. 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 1: 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 assumed that post 2000 the rate has been halved. However, what is not taken account of in Table 1 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. The permanent loss of output as a result of the current recession sees the Index remaining around 0.9 in the period 2010-20.

What this analysis suggests is that output will fall to almost 20 per cent below what it would have been without the crisis. However, in the recovery it has the potential to grow quite rapidly for a period making up around half of the lost ground. As shown in the table this would see a temporary rise in the average growth rate to between 5 and 6 per cent over the period 2010 to 2015. This is the potential: the job of policy is to ensure that the economy realises this potential by addressing the obstacles in terms of the public finance crisis and the serious lack of competitiveness.

On this basis Bergin *et al.*, 2009, looked at two scenarios. Both scenarios assumed that the government implements the 2010 budget along the lines set out in the April 2009 budget: taking roughly 3 per cent of GDP out of the economy. Two alternatives for the world economy were considered – one where the world economy recovers next year (which now seems most likely) and another where the world recovery does not commence till 2011. Table 2 sets out the forecasts from that paper based on the world recovery happening next year. While the numbers shown for 2009 and 2010 have been taken from the latest *Quarterly Economic Commentary* they would not greatly change the numbers for 2011-15.

Table 2: *World Recovery Scenario: Major Aggregates*

	2009	2010	2010-15	2015-20
	Annual % Growth Rate		Average Annual % Growth	
GDP	-7.2	-1.1	5.6	3.3
GNP	-8.7	-1.9	5.4	3.2
Total Employment	-7.9	-4.1	3.0	1.1
Non-agricultural Wage Rates	-1.0	-2.5	3.2	4.2
Year End:	2009	2010	2015	2020
Personal Savings Ratio	11.9	11.6	8.5	7.1
General Government Balance, % GDP	-12.9	-12.8	-3.3	-2.4
Balance of Payments, % GNP	-1.2	1.8	3.5	4.0

Note: The figures for 2009 and 2010 are taken from the latest *Quarterly Economic Commentary*. The figures for 2010-15 and 2015-20 are taken from Bergin, *et al.*, 2009 and are not fully consistent with the more recent QEC figures.

The key points that I would draw from this analysis about the period 2011 to 2015 are:

- The Irish economy can recover some, but not all, of the lost ground due to the current economic crisis. If the economy has the potential to grow at 3 per cent a year this implies significantly higher growth in actual than in potential output in the recovery phase from 2011 to 2015.
- It will take quite a number of years to move the economy back towards full employment. Even with favourable adjustment in labour costs it could be 2015-17 before full employment is restored.
- The return to growth (plus the assumed 2010 Budget) will eliminate most, but not all, of the current government deficit. Between 2011 and 2015 there will have to be some further moderate tightening of fiscal policy to return the public finances to a sustainable path. However, the analysis suggests that this fiscal action would be more limited than that envisaged by the Department of Finance last April.
- The personal savings ratio is currently very high. Together with the dramatic fall in investment (to 15% of GDP), the government's large borrowing, and the move into balance of payments surplus, this means that the private sector of the economy is acquiring financial assets (or repaying loans) at a very rapid rate.

The move into balance of payments surplus has major implications for the economy and the sustainability of the recovery, especially in the banking system. With the government borrowing over 12 per cent of GDP next year, the balance of payments surplus will mean that the private sector will be net acquiring foreign assets (or repaying debts) amounting to over 13 per cent of GDP. While some of this will be accounted for by net foreign direct investment, the bulk of it over the coming years is likely to be accounted for by changes in the net stocks of foreign financial assets and liabilities. It is likely that quite a lot of this will flow through the banking system. This would mean that the banking system would be repaying its net foreign liabilities at a rapid rate. If it were to continue for a number of years, the banking sector would have repaid all its net foreign liabilities by the middle of the next decade.

When such a pattern becomes well established it will change the international perceptions of the Irish banking system. If suitably recapitalised and if the problem of dud assets is dealt with, it would allow the banks to wean themselves off dependence on the ECB for liquidity. However, this will not happen just on the basis of such forecasts. It will only be when the recovery in the economy is well established from 2011 onwards that credibility can be restored. Actions speak louder than forecasts!

Section 4: Fiscal Policy for Recovery

The background to fiscal policy is that the Irish economy is quite uncompetitive. While consumer prices are adjusting downwards there is little evidence to date that other prices, including the price of labour, are adjusting. The failure to foresee this fall in prices meant that the inflation rates underlying the budgets for 2009 were much too high. The lack of competitiveness of the economy and the possibility that there could be a further deflationary surprise next year needs to be kept in mind in formulating fiscal policy.

In public discourse much attention now focuses on what taxes should or should not be increased and what expenditures should or should not be cut. There is a dash to detail avoiding an important discussion that is needed about the big picture. Too often in discussing budgets in the past this attention to detail has been the centre of attention. This is part of our problem today. If more attention had been given in the past to the inappropriate stance of fiscal policy, as set out in the Stability Programme Update

accompanying each Budget document on budget day, we might not be in the mess we are in today.

The framework for fiscal policy should begin with the medium term prospects for the economy. We can work back from that to the immediate policy issues facing government, especially on the budget. Before we can determine the appropriate path of fiscal policy over the next five years we must first decide on what is the long run level of public services that we want. Then the tax level will have to be set at an appropriate level to fund that level of services.

It is essentially a political question as to what level of public services and investment is likely to be “desired” by the public in the next decade. Currently we are looking at government expenditure approaching 55 per cent of GNP, a level last reached in 1988. However, the recovery in the economy would see this ratio fall significantly in the medium term. If the long term acceptable level of government expenditure were to settle around 45 per cent of GNP, roughly the 1995 level, then some moderate increase in the tax level would still be required from the current position. To achieve the related level of expenditure would, in turn, require substantially greater cuts in current expenditure (than increases in taxation) from the current level. If instead the target level were 40 per cent of GNP, dramatic cut backs in expenditure (and services) would be required over the coming years, while allowing significant cuts in taxation from today’s level. My own preference would be to target a level of expenditure and revenue in the medium term equivalent to 45 per cent of GDP. However, every government has to make its own mind up on this issue. Whatever that target is should inform the composition of the next budget.

If the analysis in the last Section is correct, over the next five years a structural deficit of 6 or 7 per cent of GDP rests to be eliminated. While a less daunting task than supposed by the Department of Finance last April, it is nonetheless a huge problem and it will be very painful to achieve. A key question is how rapidly this is to be done.

There is a substantial international debate about this issue. On the one hand there is the traditional Keynesian argument that fiscal policy should be countercyclical. On the other there are a series of arguments that suggest that for Ireland, if not for many other

countries, the option of adopting a countercyclical policy is not available because of the gravity of the fiscal crisis. Past mistakes precluded this option for today's government.

Essentially the question is how much of the heavy lifting should be done in the 2010 budget and how much left for the future?

An argument for delay is that doing more now pushes unemployment even higher in the short run. If there is a ratchet in unemployment then you end up with higher unemployment over a prolonged period than you might get from a more gradual adjustment. I don't buy the simple Keynesian model - expectations and confidence matter - and I also don't buy such extreme hysteresis in unemployment.

The lessons drawn from the experience of Ireland in the 1980s and of Finland in the 1990s suggest, instead, the importance of taking action rapidly. A major factor in the recession in Ireland, and a particularly important factor in the fall in employment, is the collapse in domestic demand. At present consumers are scared and are saving like mad. Households and businesses have stopped investing. There will be no major recovery in employment till the domestic private sector recovers its confidence. At present we all know that we are facing a crisis. Many employees are uncertain whether they will have jobs tomorrow. Many are also uncertain what their after tax income will be tomorrow. Over the last year this uncertainty has been driven by forces other than domestic fiscal policy. However, with a world recovery, over the coming years a very big factor in consumers' and investors' confidence will be their expectations of the burdens to be placed on them by future fiscal policy.

If it is right that one big push on fiscal policy would be enough to set the economy and the public finances on a recovery path then, once that recovery is established in 2011 and 2012, domestic demand will recover. However, if the private sector faces further years of uncertainty as to what the cuts will be and what will be the increase in the tax burden, then confidence will be very slow to return delaying a return of actual output to its potential level.

Tough action now is likely to result in enhanced confidence in financial markets about the sustainability of the Irish recovery. In turn, this could see a fall in the risk premium for lending or investing in Ireland, helping cut the cost of capital for both government and

private investors. Delay in tackling the fiscal problems would be likely to add to such costs, postponing the recovery. Also the potential growth rate of the economy in the long term is dependent on the growth in the capital stock. A higher cost of capital will see a lower capital stock in the long term and a slower growth in potential output.

Fiscal policy should be formulated on a “no regrets” basis. The forecasts presented above come with wide margins of error. What if the recovery scenario did not happen and it was 2012 before the light appeared at the end of the tunnel (the alternative scenario considered in Bergin *et al.*, 2009a)? Under those circumstances a second tough budget would be needed in 2011 and a tough budget in 2010 would not have been “wasted”. If, on the other hand, the recovery proved more robust than suggested above, it would mean that the 2010 budget might be the last major deflationary budget but it would still not have gone “too far”.

Conclusion 1: the proposed adjustment for 2010 set out in the April 2009 budget is about right (an *ex ante* cut in the deficit of around 3 per cent of GDP). If it is accomplished it will do half, but not all, of the work of restoring the public finances to sustainability.

Given such a budget for 2010 designed to take roughly € billion out of the economy what should its composition be?

Our model of the labour market suggests that nominal wage rates should fall by 7% over 3 years (FitzGerald *et al.*, 2008). This means that wages are currently above their long-run equilibrium level. Our model of the labour market also implies that in the long run the bulk of the incidence of taxes, including employers’ and employees’ social insurance contributions, will fall on business. However, where employees wages are above the equilibrium level already it would be expected that more of the incidence would fall on employees. This means that the negative effect of taxes on labour in the short run will be less than in the long run. However, in the long run the disadvantages of taxes on labour should still hold.

Conclusion 2: In choosing increases in taxation in the 2010 budget it would be best to avoid increasing taxes on labour in the medium term. As the Commission on Taxation has suggested, a carbon tax and a property tax would be much more beneficial. However, we also need to keep in mind that labour taxes in Ireland up to 2008 were very low for

those people on average or below average incomes (Lane 2008). If the increase in taxation in 2010 is less than the 2009 budget envisaged (2.5 billion) it would be appropriate to have some further increase in taxation in subsequent years to bring tax revenue close to 45 per cent of GDP.

Conclusion 3: Given the temporary disequilibrium in the labour market, with wage rates being too high, there is an argument for temporarily shifting some of the burden from employers' social insurance contributions to employees' or to income tax. Under normal conditions this would achieve little (because the incidence of all taxes on labour is ultimately largely on business) but under current conditions, where wage rates are above the equilibrium, there is little chance of employees seeking and getting compensation in terms of higher wages. Such a rebalancing would mimic the effect of a wage cut on competitiveness.

With the prospect of a return to growth in the next decade it is important to maintain a consistent approach to public investment. The level of investment in the boom was clearly much too high (FitzGerald and Morgenroth, 2006). However, there is a danger that it will fall below its optimal level because of discontinuities and time lags in writing and implementing contracts. The composition of the investment should be examined to ensure it produces the maximum impact on the productive capacity of the economy (and hence on employment in the long term). Public investment should not be seen as a way of generating jobs in the short term. As Morgenroth, 2009, has shown, it is not a good way to create jobs and putting jobs first is likely to produce less valuable investment and fewer sustainable jobs in the medium term.

Conclusion 4: adjust to a stable level of infrastructural investment. This is likely to be 4% of GNP, or possibly slightly higher.

On expenditure the aim should be to increase efficiency with a minimum impact on services. This will probably mean that the cuts can not be implemented instantaneously where they involve significant reorganisation. Don't go for the easy cuts – go for those which will improve efficiency. Don't cut services where they are likely to reappear by popular demand when the good times come again.

The size of the required reduction in current expenditure in the long run may approach the cuts in McCarthy (€5 billion). However, this is more than is required or would be appropriate in terms of making the adjustment to borrowing, identified above, for 2010. However, if you don't do it now then it will be very difficult to do it in 2013 - it will be difficult to keep on making cuts when the economy is in recovery mode. Cuts in expenditure now, with an agreed reform package, may well be the only way to achieve long-term reform.

Conclusion 5: Cuts in current expenditure in 2010 of more than the €1.5 billion indicated in the April 2009 Budget would be appropriate. It would be desirable if some of the cuts involved restructuring, where the cuts happened over a two year period – delivering a further significant cut in 2011. If an irrevocable process can be entered into which delivered a cut of say €2 billion to €2.5 billion in 2010 and a further cut of €1 billion to €1.5 billion in 2011 this would go a substantial way to achieving the necessary medium-term targets for reducing current expenditure. The pain of the decision would be front end loaded while the implementation would be achieved more efficiently over a two year period. Also it would probably ensure that the balance of fiscal tightening between 2010 and 2011 was appropriate

In considering what to do about welfare a very important issue will be to redesign the welfare system so it is fit for purpose over the recovery period. At present the crude replacement rate is at an all time high. Today it is probably not causing people to give up jobs. However, in the future it will deter some of those who are unemployed taking new relatively low paid jobs. (This is also true of the minimum wage.) Changes should be made to try and reduce the danger of poverty traps. At its simplest this would involve an actual cut in welfare rates. However, more indirect ways of getting the same result would seem preferable. In formulating policy on welfare, account also needs to be taken of the results in Jennings *et al.*, 2009, which show that the fall in prices for those on welfare, though significant, has been less than that for the population as a whole.

When it comes to child benefit there is a very strong argument for taxing it rather than setting income limits, which would result in very high marginal withdrawal rates over certain ranges (Callan, 2009). (The analysis above would count the revenue from taxation

of child benefit as part of the savings on expenditure, not as a replacement for other increases in taxation.) An intermediate policy would be to cut child benefit to save the same amount. However, this would have a significantly greater impact on poor families with children than would the taxation option. If any other measures were taken affecting welfare payments it could give rise to large unplanned impacts on some families already in poverty.

Conclusion 6: The welfare system needs to be prepared for a world where wage rates and prices are lower than they were in 2008. It needs to be redesigned so it does not create poverty traps or hinder a return to work. This is an entirely new challenge for policy which has for five decades been formulated in a context of rising wage rates and prices.

My own view is that the 7% public service pay cut in March has made a significant dent in the difference between public and private differentials, while still leaving a substantial public sector premium. The tacit acceptance by the public sector of these cuts was quite a remarkable recognition of the crisis which the economy faces. It is very hard to find a similar adjustment in recent history in the OECD area, with or without industrial unrest. To achieve the necessary improvement in the competitiveness of the economy we need a further cut in wage rates across the board, public and private of at least 5%. The delivery of such a reduction in the public sector would be greatly facilitated if it was clear that such cuts were taking place in the private sector.

Section 5: Conclusion

Today the task of the Irish government is like that of Odysseus – the population will have to go back to the oars in a very unpleasant sea! Whether the crew will mutiny and fire Odysseus remains to be seen.

References

- Bergin A., T. Conefrey, J. FitzGerald and I. Kearney, 2009a, *Recovery Scenarios for Ireland*, Dublin: The Economic and Social Research Institute, Research Series No. 7.
- BARRY, F., and J. FITZ GERALD, 2001. "Irish Fiscal Policy in EMU and the Brussels-Dublin Controversy" in *Fiscal Policy in EMU: Report of the Swedish Committee on Stabilization Policy in EMU*, Stockholm: Statens Offentliga Utredningar.
- BERGIN, A., T. CONEFREY, J. FITZ GERALD, I. KEARNEY, 2009b. "The Behaviour of the Irish Economy: Shocks to the HERMES Macro-economic Model", ESRI Working Paper 287, Dublin: The Economic and Social Research Institute.
- BERGIN, A., and I. KEARNEY, 2007. "Human Capital Accumulation in an Open Labour Market: Ireland in the 1990s", *Economic Modelling*, November.
- BERGIN, A., J. CULLEN., D. DUFFY, J. FITZ GERALD, I. KEARNEY, and D. MCCOY, 2003. *Medium-Term Review: 2003-2010*, Dublin: The Economic and Social Research Institute.
- Blanchard, O., 2001, "Country adjustments within the euro area: lessons after two years". In *Defining a Macroeconomic Framework for the Euro Area*, London: CEPR.
- DURKAN, J. D. FITZGERALD and C. HARMON, 1999. "Education and Growth in the Irish Economy" in F. Barry (ed.), *Understanding Ireland's Economic Growth*, London and New York: Macmillan Press Ltd.
- Fitz Gerald, J., 2001, "Fiscal Policy in a Monetary Union: the Case of Ireland", *Quarterly Economic Commentary*, March.
- Fitz Gerald J., A. Bergin, I. Kearney, A. Barrett, D. Duffy, S. Garrett, and Y. McCarthy, 2005, *Medium-Term Review: 2005-2012*, Dublin: The Economic and Social Research Institute.
- Fitz Gerald J., et al., 2008, *Medium-Term Review: 2008-2015*, Dublin: The Economic and Social Research Institute.
- FITZ GERALD, J., and E. MORGENROTH (eds.), 2006. *Ex Ante Evaluation of the Investment Priorities for the National Development Plan 2007-2013*, Policy Research Series No. 59, Dublin: The Economic and Social Research Institute.
- Honohan, P., 2009, "Resolving Ireland's Banking Crisis", *Economic and Social Review*, Vol. 40, No. 2, Summer, 2009, pp. 207–231.
- Honohan, P. and D. Klingebiel, 2003, "The Fiscal Cost Implications of an Accommodating Approach to Banking Crises" *Journal of Banking and Finance*. 2003.
- Kelly, M., 2007, "On the Likely Extent of Falls in Irish House Prices", Dublin: ESRI *Quarterly Economic Commentary*, Summer.
- MORGENROTH, E., 2009. "Irish Public Capital Spending in a Recession", ESRI Working Paper Forthcoming, Dublin: The Economic and Social Research Institute.
- Traistaru-Siedschlag, I. 2007. "Macroeconomic Adjustment in Ireland under the EMU", *Quarterly Economic Commentary*, Special Article, Spring, Dublin: The Economic and Social Research Institute.

Year	Number	Title/Author(s) ESRI Authors/Co-authors <i>Italicised</i>
2009		
	325	The EU 20/20/2020 Targets: An Overview of the EMF22 Assessment Christoph Böhringer, Thomas F. Rutherford, and <i>Richard S.J. Tol</i>
	324	Counting Only the Hits? The Risk of Underestimating the Costs of Stringent Climate Policy Massimo Tavoni, <i>Richard S.J. Tol</i>
	323	International Cooperation on Climate Change Adaptation from an Economic Perspective Kelly C. de Bruin, Rob B. Dellink and <i>Richard S.J. Tol</i>
	322	What Role for Property Taxes in Ireland? <i>T. Callan, C. Keane and J.R. Walsh</i>
	321	The Public-Private Sector Pay Gap in Ireland: What Lies Beneath? <i>Elish Kelly, Seamus McGuinness, Philip O'Connell</i>
	320	A Code of Practice for Grocery Goods Undertakings and An Ombudsman: How to Do a Lot of Harm by Trying to Do a Little Good <i>Paul K Gorecki</i>
	319	Negative Equity in the Irish Housing Market <i>David Duffy</i>
	318	Estimating the Impact of Immigration on Wages in Ireland <i>Alan Barrett, Adele Bergin and Elish Kelly</i>
	317	Assessing the Impact of Wage Bargaining and Worker Preferences on the Gender Pay Gap in Ireland Using the National Employment Survey 2003 <i>Seamus McGuinness, Elish Kelly, Philip O'Connell, Tim Callan</i>
	316	Mismatch in the Graduate Labour Market Among Immigrants and Second-Generation Ethnic Minority Groups <i>Delma Byrne and Seamus McGuinness</i>

- 315 Managing Housing Bubbles in Regional Economies under EMU: Ireland and Spain
Thomas Conefrey and John Fitz Gerald
- 314 Job Mismatches and Labour Market Outcomes
Kostas Mavromaras, *Seamus McGuinness*, Nigel O'Leary, Peter Sloane and Yin King Fok
- 313 Immigrants and Employer-provided Training
Alan Barrett, Séamus McGuinness, Martin O'Brien and *Philip O'Connell*
- 312 Did the Celtic Tiger Decrease Socio-Economic Differentials in Perinatal Mortality in Ireland?
Richard Layte and Barbara Clyne
- 311 Exploring International Differences in Rates of Return to Education: Evidence from EU SILC
Maria A. Davia, *Seamus McGuinness* and *Philip, J. O'Connell*
- 310 Car Ownership and Mode of Transport to Work in Ireland
Nicola Commins and Anne Nolan
- 309 Recent Trends in the Caesarean Section Rate in Ireland 1999-2006
Aoife Brick and Richard Layte
- 308 Price Inflation and Income Distribution
Anne Jennings, Seán Lyons and Richard S.J. Tol
- 307 Overskilling Dynamics and Education Pathways
Kostas Mavromaras, *Seamus McGuinness*, Yin King Fok
- 306 What Determines the Attractiveness of the European Union to the Location of R&D Multinational Firms?
Iulia Siedschlag, Donal Smith, Camelia Turcu, Xiaoheng Zhang
- 305 Do Foreign Mergers and Acquisitions Boost Firm Productivity?
Marc Schiffbauer, Iulia Siedschlag, Frances Ruane
- 304 Inclusion or Diversion in Higher Education in the Republic of Ireland?

Delma Byrne

- 303 Welfare Regime and Social Class Variation in Poverty and Economic Vulnerability in Europe: An Analysis of EU-SILC
Christopher T. Whelan and *Bertrand Maitre*
- 302 Understanding the Socio-Economic Distribution and Consequences of Patterns of Multiple Deprivation: An Application of Self-Organising Maps
Christopher T. Whelan, Mario Lucchini, Maurizio Pisati and *Bertrand Maitre*
- 301 Estimating the Impact of Metro North
Edgar Morgenroth
- 300 Explaining Structural Change in Cardiovascular Mortality in Ireland 1995-2005: A Time Series Analysis
Richard Layte, Sinead O'Hara and Kathleen Bennett
- 299 EU Climate Change Policy 2013-2020: Using the Clean Development Mechanism More Effectively
Paul K Gorecki, Seán Lyons and *Richard S.J. Tol*
- 298 Irish Public Capital Spending in a Recession
Edgar Morgenroth
- 297 Exporting and Ownership Contributions to Irish Manufacturing Productivity Growth
Anne Marie Gleeson, *Frances Ruane*
- 296 Eligibility for Free Primary Care and Avoidable Hospitalisations in Ireland
Anne Nolan
- 295 Managing Household Waste in Ireland: Behavioural Parameters and Policy Options
John Curtis, Seán Lyons and *Abigail O'Callaghan-Platt*
- 294 Labour Market Mismatch Among UK Graduates; An Analysis Using REFLEX Data
Seamus McGuinness and *Peter J. Sloane*
- 293 Towards Regional Environmental Accounts for Ireland
Richard S.J. Tol, Nicola Commins, Niamh Crilly, Sean Lyons and *Edgar Morgenroth*

- 292 EU Climate Change Policy 2013-2020: Thoughts on Property Rights and Market Choices
Paul K. Gorecki, Sean Lyons and Richard S.J. Tol
- 291 Measuring House Price Change
David Duffy
- 290 Intra-and Extra-Union Flexibility in Meeting the European Union's Emission Reduction Targets
Richard S.J. Tol
- 289 The Determinants and Effects of Training at Work: Bringing the Workplace Back In
Philip J. O'Connell and Delma Byrne
- 288 Climate Feedbacks on the Terrestrial Biosphere and the Economics of Climate Policy: An Application of *FUND*
Richard S.J. Tol
- 287 The Behaviour of the Irish Economy: Insights from the HERMES macro-economic model
Adele Bergin, Thomas Conefrey, John FitzGerald and Ide Kearney
- 286 Mapping Patterns of Multiple Deprivation Using Self-Organising Maps: An Application to EU-SILC Data for Ireland
Maurizio Pisati, Christopher T. Whelan, Mario Lucchini and Bertrand Maitre
- 285 The Feasibility of Low Concentration Targets: An Application of *FUND*
Richard S.J. Tol
- 284 Policy Options to Reduce Ireland's GHG Emissions

Instrument choice: the pros and cons of alternative policy instruments
Thomas Legge and Sue Scott
- 283 Accounting for Taste: An Examination of Socioeconomic Gradients in Attendance at Arts Events
Pete Lunn and Elish Kelly
- 282 The Economic Impact of Ocean Acidification on Coral Reefs

Luke M. Brander, Katrin Rehdanz, *Richard S.J. Tol*, and
Pieter J.H. van Beukering

- 281 Assessing the impact of biodiversity on tourism flows:
A model for tourist behaviour and its policy implications
Giulia Macagno, Maria Loureiro, Paulo A.L.D. Nunes and
Richard S.J. Tol
- 280 Advertising to boost energy efficiency: the Power of One
campaign and natural gas consumption
Seán Diffney, Seán Lyons and *Laura Malaguzzi Valeri*
- 279 International Transmission of Business Cycles Between
Ireland and its Trading Partners
Jean Goggin and *Iulia Siedschlag*
- 278 Optimal Global Dynamic Carbon Taxation
David Anthoff
- 277 Energy Use and Appliance Ownership in Ireland
Eimear Leahy and *Seán Lyons*
- 276 Discounting for Climate Change
David Anthoff, Richard S.J. Tol and Gary W. Yohe
- 275 Projecting the Future Numbers of Migrant Workers in the
Health and Social Care Sectors in Ireland
Alan Barrett and Anna Rust
- 274 Economic Costs of Extratropical Storms under Climate
Change: An application of FUND
Daiju Narita, Richard S.J. Tol, David Anthoff
- 273 The Macro-Economic Impact of Changing the Rate of
Corporation Tax
Thomas Conefrey and *John D. Fitz Gerald*
- 272 The Games We Used to Play
An Application of Survival Analysis to the Sporting Life-
course
Pete Lunn
- 2008**
- 271 Exploring the Economic Geography of Ireland
Edgar Morgenroth

- 270 Benchmarking, Social Partnership and Higher Remuneration: Wage Settling Institutions and the Public-Private Sector Wage Gap in Ireland
Elish Kelly, Seamus McGuinness, Philip O'Connell
- 269 A Dynamic Analysis of Household Car Ownership in Ireland
Anne Nolan
- 268 The Determinants of Mode of Transport to Work in the Greater Dublin Area
Nicola Commins and Anne Nolan
- 267 Resonances from *Economic Development* for Current Economic Policymaking
Frances Ruane
- 266 The Impact of Wage Bargaining Regime on Firm-Level Competitiveness and Wage Inequality: The Case of Ireland
Seamus McGuinness, Elish Kelly and Philip O'Connell
- 265 Poverty in Ireland in Comparative European Perspective
Christopher T. Whelan and Bertrand Maitre
- 264 A Hedonic Analysis of the Value of Rail Transport in the Greater Dublin Area
Karen Mayor, Seán Lyons, David Duffy and Richard S.J. Tol
- 263 Comparing Poverty Indicators in an Enlarged EU
Christopher T. Whelan and Bertrand Maitre
- 262 Fuel Poverty in Ireland: Extent, Affected Groups and Policy Issues
Sue Scott, Seán Lyons, Claire Keane, Donal McCarthy and Richard S.J. Tol
- 261 The Misperception of Inflation by Irish Consumers
David Duffy and Pete Lunn
- 260 The Direct Impact of Climate Change on Regional Labour Productivity
Tord Kjellstrom, R Sari Kovats, Simon J. Lloyd, Tom Holt,
Richard S.J. Tol
- 259 Damage Costs of Climate Change through Intensification of Tropical Cyclone Activities:

- An Application of FUND
Daiju Narita, Richard S. J. Tol and David Anthoff
- 258 Are Over-educated People Insiders or Outsiders?
A Case of Job Search Methods and Over-education in UK
Aleksander Kucel, Delma Byrne
- 257 Metrics for Aggregating the Climate Effect of Different
Emissions: A Unifying Framework
*Richard S.J. Tol, Terje K. Berntsen, Brian C. O'Neill, Jan S.
Fuglestvedt, Keith P. Shine, Yves Balkanski and Laszlo
Makra*
- 256 Intra-Union Flexibility of Non-ETS Emission Reduction
Obligations in the European Union
Richard S.J. Tol
- 255 The Economic Impact of Climate Change
Richard S.J. Tol
- 254 Measuring International Inequity Aversion
Richard S.J. Tol
- 253 Using a Census to Assess the Reliability of a National
Household Survey for Migration Research: The Case of
Ireland
Alan Barrett and Elish Kelly
- 252 Risk Aversion, Time Preference, and the Social Cost of
Carbon
David Anthoff, Richard S.J. Tol and Gary W. Yohe
- 251 The Impact of a Carbon Tax on Economic Growth and
Carbon Dioxide Emissions in Ireland
*Thomas Conefrey, John D. Fitz Gerald, Laura Malaguzzi
Valeri and Richard S.J. Tol*
- 250 The Distributional Implications of a Carbon Tax in Ireland
*Tim Callan, Sean Lyons, Susan Scott, Richard S.J. Tol and
Stefano Verde*
- 249 Measuring Material Deprivation in the Enlarged EU
Christopher T. Whelan, Brian Nolan and Bertrand Maitre
- 248 Marginal Abatement Costs on Carbon-Dioxide Emissions: A
Meta-Analysis

- Onno Kuik, Luke Brander and *Richard S.J. Tol*
- 247 Incorporating GHG Emission Costs in the Economic Appraisal of Projects Supported by State Development Agencies
Richard S.J. Tol and Seán Lyons
- 246 A Carton Tax for Ireland
Richard S.J. Tol, Tim Callan, Thomas Conefrey, John D. Fitz Gerald, Seán Lyons, Laura Malaguzzi Valeri and Susan Scott
- 245 Non-cash Benefits and the Distribution of Economic Welfare
Tim Callan and Claire Keane
- 244 Scenarios of Carbon Dioxide Emissions from Aviation
Karen Mayor and Richard S.J. Tol
- 243 The Effect of the Euro on Export Patterns: Empirical Evidence from Industry Data
Gavin Murphy and Iulia Siedschlag
- 242 The Economic Returns to Field of Study and Competencies Among Higher Education Graduates in Ireland
Elish Kelly, Philip O'Connell and Emer Smyth
- 241 European Climate Policy and Aviation Emissions
Karen Mayor and Richard S.J. Tol
- 240 Aviation and the Environment in the Context of the EU-US Open Skies Agreement
Karen Mayor and Richard S.J. Tol
- 239 Yuppie Kvetch? Work-life Conflict and Social Class in Western Europe
Frances McGinnity and Emma Calvert
- 238 Immigrants and Welfare Programmes: Exploring the Interactions between Immigrant Characteristics, Immigrant Welfare Dependence and Welfare Policy
Alan Barrett and Yvonne McCarthy
- 237 How Local is Hospital Treatment? An Exploratory Analysis of Public/Private Variation in Location of Treatment in Irish Acute Public Hospitals
Jacqueline O'Reilly and Miriam M. Wiley

- 236 The Immigrant Earnings Disadvantage Across the Earnings and Skills Distributions: The Case of Immigrants from the EU's New Member States in Ireland
Alan Barrett, Seamus McGuinness and Martin O'Brien
- 235 Europeanisation of Inequality and European Reference Groups
Christopher T. Whelan and Bertrand Maitre
- 234 Managing Capital Flows: Experiences from Central and Eastern Europe
Jürgen von Hagen and *Iulia Siedschlag*
- 233 ICT Diffusion, Innovation Systems, Globalisation and Regional Economic Dynamics: Theory and Empirical Evidence
Charlie Karlsson, Gunther Maier, Michaela Trippl, *Iulia Siedschlag*, Robert Owen and *Gavin Murphy*
- 232 Welfare and Competition Effects of Electricity Interconnection between Great Britain and Ireland
Laura Malaguzzi Valeri
- 231 Is FDI into China Crowding Out the FDI into the European Union?
Laura Resmini and *Iulia Siedschlag*
- 230 Estimating the Economic Cost of Disability in Ireland
John Cullinan, Brenda Gannon and *Seán Lyons*
- 229 Controlling the Cost of Controlling the Climate: The Irish Government's Climate Change Strategy
Colm McCarthy, *Sue Scott*
- 228 The Impact of Climate Change on the Balanced-Growth-Equivalent: An Application of *FUND*
David Anthoff, Richard S.J. Tol
- 227 Changing Returns to Education During a Boom? The Case of Ireland
Seamus McGuinness, Frances McGinnity, Philip O'Connell
- 226 'New' and 'Old' Social Risks: Life Cycle and Social Class Perspectives on Social Exclusion in Ireland

Christopher T. Whelan and Bertrand Maitre

- 225 The Climate Preferences of Irish Tourists by Purpose of Travel
Seán Lyons, Karen Mayor and Richard S.J. Tol
- 224 A Hirsch Measure for the Quality of Research Supervision, and an Illustration with Trade Economists
Frances P. Ruane and Richard S.J. Tol
- 223 Environmental Accounts for the Republic of Ireland: 1990-2005
Seán Lyons, Karen Mayor and Richard S.J. Tol
- 2007** 222 Assessing Vulnerability of Selected Sectors under Environmental Tax Reform: The issue of pricing power
J. Fitz Gerald, M. Keeney and S. Scott
- 221 Climate Policy Versus Development Aid
Richard S.J. Tol
- 220 Exports and Productivity – Comparable Evidence for 14 Countries
The International Study Group on Exports and Productivity
- 219 Energy-Using Appliances and Energy-Saving Features: Determinants of Ownership in Ireland
Joe O'Doherty, Seán Lyons and Richard S.J. Tol
- 218 The Public/Private Mix in Irish Acute Public Hospitals: Trends and Implications
Jacqueline O'Reilly and Miriam M. Wiley
- 217 Regret About the Timing of First Sexual Intercourse: The Role of Age and Context
Richard Layte, Hannah McGee
- 216 Determinants of Water Connection Type and Ownership of Water-Using Appliances in Ireland
Joe O'Doherty, Seán Lyons and Richard S.J. Tol
- 215 Unemployment – Stage or Stigma?
Being Unemployed During an Economic Boom

Emer Smyth

- 214 The Value of Lost Load
Richard S.J. Tol
- 213 Adolescents' Educational Attainment and School Experiences in Contemporary Ireland
Merike Darmody, Selina McCoy, Emer Smyth
- 212 Acting Up or Opting Out? Truancy in Irish Secondary Schools
Merike Darmody, Emer Smyth and Selina McCoy
- 211 Where do MNEs Expand Production: Location Choices of the Pharmaceutical Industry in Europe after 1992
Frances P. Ruane, Xiaoheng Zhang
- 210 Holiday Destinations: Understanding the Travel Choices of Irish Tourists
Seán Lyons, Karen Mayor and Richard S.J. Tol
- 209 The Effectiveness of Competition Policy and the Price-Cost Margin: Evidence from Panel Data
Patrick McCloughan, *Seán Lyons* and William Batt
- 208 Tax Structure and Female Labour Market Participation: Evidence from Ireland
Tim Callan, A. Van Soest, J.R. Walsh
- 207 Distributional Effects of Public Education Transfers in Seven European Countries
Tim Callan, Tim Smeeding and Panos Tsakloglou