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**External Surveillance of Irish Fiscal Policy During
the Boom**

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1. Introduction

The current international financial crisis, greatly amplified by the collapse of a domestic property bubble and construction boom, has caused enormous damage to Ireland's public finances. Between 2007 and 2009, the general government balance moved from small surplus to a deficit amounting to 14.3% of GDP, while the ratio of gross government debt to GDP rose from 25% to 64%.

This deterioration is quite the sharpest experienced by any EU member state, as Chart 1 makes clear. Notably, the deteriorations registered by Greece, Portugal and Spain have been less pronounced. Likewise, there are few historical precedents for what has been experienced in Ireland. In an EU context, the only comparable episode is what happened in Finland in the early 1990s. There, the budget balance swung from a 6.9% of GDP surplus to an 8.3% of GDP deficit between 1989 and 1993, while the debt/GDP ratio increased by 41% points.

The deterioration in Ireland's public finances has occurred in the context of an exceptionally large contraction in output and employment. Real GDP, having increased at an average rate of 7.3% per annum over the previous fourteen years, is estimated to have fallen by 10% cumulatively on a calendar year basis between 2007 and 2009 (the fall in GNP, a more meaningful measure of income in Ireland's case, is estimated to have been somewhat steeper at 14%) while employment is estimated to have shrunk by 9%. The only contraction of comparable severity to have occurred in a developed economy in the post-war era is, again, that recorded by Finland in the early 1990s.

In investigating the reasons for the abrupt collapse in Ireland's public finances, analysts have been more or less harshly critical of the conduct of Irish fiscal policy during the boom that preceded the crisis. Of particular interest are the verdicts pronounced by organisations whose role includes the surveillance of Irish policy. The IMF is one such agency. In its 2009 Article IV report on Ireland, it had this to say:

“ Well before the crisis hit, public finances had developed serious structural weaknesses. The facts are well known. In the boom years, personal income tax rates were lowered and expenditure grew rapidly (at about the highest pace amongst OECD economies). Buoyant property-related revenues (stamp duties, VAT and capital taxes masked the growing structural deficit which reached 12.5% of GDP in 2008.”

¹ An earlier version of this paper was presented at the Dublin Economics Workshop Annual Policy Conference in Kenmare in October 2009 and subsequently at seminars in the Department of Economics, Finance and Accounting at NUI-Maynooth and the Department of Economics at NUI-Galway. I would like to thank participants at those seminars for useful comments and suggestions.

“Various commentators and the IMF in its Article IV consultations did warn that the seemingly unstoppable growth masked serious imbalances, including the fragility of public finances.”

This conveys the impression that the IMF foresaw the crisis and warned about it, but it begs a number of questions. Did the IMF foresee the crisis? Did it warn about it and, if so, how explicit were those warnings? Did it advise the government on how a crisis might be averted and, if so, did the government ignore that advice? Of course, the IMF is not the only external agency that is charged with the responsibility for carrying out surveillance of Irish fiscal policy. The EC and the OECD are also active in this field. Similar questions can be asked of them.

The primary purpose of this paper is to answer these questions with a view to assessing the quality of external surveillance of Irish fiscal policy during the boom years. The paper is organised as follows. In Section 2 we provide an overview of the conduct of fiscal policy and the evolution of the public finances in the 2001-2007 period. In Section 3 we ascertain what, with the benefit of hindsight, the principal errors made in the conduct of fiscal policy during this period were. In Sections 4 to 6 we examine the record of the IMF, the EC and the OECD respectively in relation to the surveillance of Irish fiscal policy between 2001 and 2007, by reviewing the reports on the Irish economy and public finances published by these agencies. In Section 7 we highlight some of the weaknesses that characterised the surveillance effort, paying particular attention to deficiencies of methodology. Section 8 summarises and sets out some concluding remarks.

2. The conduct of fiscal policy: 2001-2007

On the face of it, the conduct of fiscal policy in Ireland in the two decades prior to the onset of the current crisis was exemplary. Having run very large double-digit budget deficits during the late 1970s and most of the 1980s, racking up a huge debt which had grown to 113% of GDP by 1987, Ireland staged a remarkably successful fiscal consolidation in the late 1980s. By 1989 the deficit had dropped below 3% of GDP, never to breach this level again until 2008, and the debt ratio had fallen below 100%, a prelude to it falling a good deal further.

By 1997, the Irish government was running a budget surplus and that outcome was repeated in all but one of the next ten years. Over the 1997-2007 period the budget surplus averaged 1.7% of GDP and the debt-GDP ratio fell from 74% to 25%. In the five years prior to the onset of the current crisis the average budget surplus was somewhat less than this at 1.3% of GDP.

It is worth making the point that while Ireland was not unique amongst EU member states in the consistency with which it ran budget surpluses between 1997 and 2007 (Finland and Luxembourg also achieved surpluses in 10 out of 11 of these years, Denmark in nine, Sweden in eight), it was well ahead of the norm in this regard. Several member states -

France, Italy, Austria and Portugal amongst them – failed to register a single budget surplus in this period, and the aggregate position of the EU as a whole is that a surplus was recorded in only one year (2000).

By the same token, Ireland's performance looks very impressive when evaluated with reference to its debt/GDP ratio which fell by 49% points between 1997 and 2007, a bigger decline than that recorded by any other EU member over the period, and one which took the Irish ratio to a lower level than that of any other EU15 country except Luxembourg.

Of course, this impressive evolution of Ireland's public finances occurred against a highly supportive economic background. Rapid growth in output and employment imparted a powerful boost to tax revenues, depressed cyclical expenditures and greatly increased the denominator in the fiscal ratios. The issue that recent bitter experience raises about all of this is, of course, the issue of the sustainability of the output and employment gains that were taking place. In this connection, it is worth distinguishing between two phases of the long Irish boom.

These phases are roughly divided by the millennium year. In the period leading up to that year, a substantial real exchange rate depreciation (see Chart 2) helped to generate exceptionally rapid export growth, while relatively high real interest rates (see Chart 3) are likely to have exerted some dampening effect on the property market and construction activity. In the subsequent period, quite the reverse pattern obtained: near-zero real interest rates stimulated credit growth, housing demand and residential construction, while a sharp real exchange rate appreciation slowed the pace of exporting activity².

The result, in a nutshell, was that the economy shifted from an export-led growth dynamic to one that leaned heavily on domestic demand, construction investment in particular. This is evident in the changing pattern of employment growth. In the 1994-2000 period, of the net increase in total non-agricultural employment of 467,000 some 74,000 or 16% was accounted for by construction and a further 72,000 (15%) by the public service. In contrast, of the net employment increase of 440,000 recorded between 2000 and 2007, 26% (114,000) and 34% (148,000) were accounted for by construction and the public service respectively.

Not only was the *rate of increase* recorded by construction in the latter period unsustainable, but the *levels* achieved were not sustainable and were liable to unravel. By 2007 those at work in construction represented almost 14% of the total workforce (up from 10% in 2000 and 7.5% in 1993). The equivalent proportions in other advanced economies in 2007 were in the range 5-7%. In 2006, the construction industry produced 93,000 residential units. This compared with estimates of 60-65,000 for underlying demand on the assumption of zero net outward migration³. Indeed, not only in 2006, but

² For good discussions of the role of credit growth in the pre-crisis years, see Kelly (2009), Connor et al (2010)

³ See for example the ESRI *Medium-Term Review* 2005-2012

also in each of the years 2003 to 2005, and again in 2007, did the number of residential units completed exceed this estimate of underlying demand.

- Current expenditure

If the year 2000 represented a watershed in the transition of the economy from export-led growth to construction boom, it also marked something of a regime change in terms of the management of the public finances, and of public spending in particular. In each of the years 1993 through 2000 the rate of growth of government current spending was below (and in some years very considerably below) the growth rate of nominal GDP, as Chart 4 illustrates. For most of this period indeed, current spending growth was subject to an explicit limit⁴. The result was that the ratio of current spending to GDP fell steadily and, on a cumulative basis, substantially, from 33.4% in 1993 to 24.6% in 2000. No such restraint is evident in subsequent years. The explicit cap on spending growth was abandoned in 2001 and, in each of the years 2001 through 2007 current spending increased at a faster rate (and in some years at a much faster rate) than nominal GDP. By 2007, the ratio of spending to GDP was back above 30%.

So, the first feature that all the budgets of the 2001-2007 period have in common is disproportionately rapid current spending growth. Another, related, feature that is common to six out of seven of these budgets (2006 is the exception) is that an already generous initial spending allocation was exceeded. In some years the margin of overshoot was very large. 2001 is a particularly egregious example: in that year, current spending increased by just under 20%, almost 5% points faster than had been budgeted for.

- Tax revenue

There is a widespread perception that the period from 2000 to 2007 was one during which taxes were greatly reduced in Ireland. Actually, this is not the case. It is true that some taxes were reduced, but the overall tax burden remained unchanged. What defines the period rather better is the big shifts that occurred in the *composition* of tax revenue and the extent to which the *income tax* base shrank.

Measured as a fraction of GDP, the tax burden (including social security contributions etc.) was the same in 2007 as it had been in 2000, at 30%. This, despite the fact that most (though not all) of the budgets introduced in the intervening years contained packages of tax reducing measures. Far and away the most generous was the 2001 budget which implemented a package of tax cuts equivalent to 1.4% of GDP. This was followed by two budgets in which taxes were raised: by the equivalent of 0.5% of GDP and 0.7% of GDP respectively. In fact, it was 2005 before another tax-cutting package was announced. The

⁴ The government in power from December 1994 to June 1997 adopted a limit of x% per annum growth in an aggregate called Gross Current Supply Services Spending (the aggregate to which Chart 4 relates), which excludes debt service costs and is gross of PRSI receipts, Health Contribution receipts and other appropriations-in-aid. The government that assumed power in mid-1997 adopted a limit of 4% growth on an annual average basis over its term of office in respect of net current expenditure, an aggregate that includes debt service and is net of PRSI receipts etc. The budget of 2001 explicitly signalled the abandonment of this limit.

budget of that year reduced taxes by the equivalent of 0.4% of GDP; the budget of 2006 did likewise, while the 2007 budget cut taxes by a net 0.6% of GDP.

An important feature of the period is the extent to which overall tax receipts diverged from budget. In 2001, 2002 and 2007, revenue ended up well below target, but in each of the years 2003 through 2006, receipts overshot target by large amounts. In 2006, for example, tax receipts exceeded what had been projected at budget time by €3.6bn or 9%. The forecasting errors were concentrated in those tax categories that are sensitive to activity levels in property and construction. Thus, of the cumulative overshoot of €9bn in the 2003-06 period, €6bn was accounted for by capital taxes and stamp duties, and a further €2bn by VAT which benefited from unexpected buoyancy in new home sales.

The strong influence of property transactions and construction activity is also evident in the changing composition of tax receipts (see Chart 5). In the early 1990s, the share of capital taxes and stamp duties in total tax revenue fluctuated in the range 3-4%. By 2000, it had reached 8%, although it fell back to 6.6% in 2002 in response to the economic slowdown of 2001-02. In the next few years it rose rapidly and peaked at close to 16% in 2006. Just as there was a more or less secular increase in the share of capital taxes and stamp duties in total revenue from the mid-1990s, so there was a secular decline in the share of income tax in the total. It fell by about 10% points over this period. This fall was partly the outcome of a policy of reducing effective rates of income tax.

Table 1 provides key information on the income tax reductions implemented in the budgets of 2001 through 2007. In each case, the table identifies the total cost in terms of revenue foregone of the package of income tax measures, how this total compares with the cost of indexing the income tax system to the CPI, and how the total breaks down between its principal constituent parts. The main points to note are as follows:

- In 5 out of 7 years, the cost of the package greatly exceeded the cost of indexation.
- A relatively small amount of resources was directed at cutting income tax *rates*. Indeed, none of the budgets of 2002 through 2006 implemented rate cuts.
- Rather more than half the €5.3bn of tax relief given over the period 2001-07 was absorbed by increasing the value of tax *credits*.

This last point is of critical importance since increasing tax credits effectively takes income earners out of the tax net altogether and thereby reduces the tax base. Between 2000 and 2007 the proportion of income earners legitimately not paying any income tax increased from 28% to 40%.

- *The budget balance and the fiscal stance*

As mentioned already, in six of the seven years prior to the onset of the current financial crisis, the Irish government recorded a budget surplus. The exception was 2002 when a deficit amounting to 0.4% of GDP was registered, the first deficit since 1996.

In four of the other years (2003 through 2006), a surplus was achieved despite the initial target being a deficit. Mostly this was because the margin of overshoot on the revenue side outweighed the margin of overspending. In 2006 the happy coincidence of a very big tax overshoot and a small spending undershoot conspired to produce a budget surplus of 2.9% of GDP in place of the 0.6% of GDP deficit that had been originally targeted. This was exceptional however. It was more often the case that some portion of the unexpected revenue buoyancy was used to finance higher than budgeted spending. In 2007, a spending overshoot combined with a tax undershoot to produce a much smaller budget surplus than had been targeted.

What was the fiscal stance during the period under review? We can infer the intended stance of policy from estimates of the cyclically adjusted budget balance contained in the *Stability Programme Update* published by the Department of Finance at budget time each year since 2001. These estimates are set out in Table 2.. They suggest that the *ex ante* policy stance was expansionary in 2001, contractionary in each of the years 2002 through 2004, and expansionary again in each of the next three years. This points to a curious, if not perverse pattern, because in each of the years in which fiscal policy was intended to have a contractionary effect, according to this measure, the Department of Finance was forecasting that the economy would grow at a rate below prevailing estimates of its potential growth rate, and in each of the years in which the intended policy stance was expansionary, especially 2001, GDP growth was forecast to exceed potential.

Having said that, it is worth pointing out that the Department of Finance has, for a long time, been openly sceptical about the usefulness of estimates of the potential growth rate and the cyclically adjusted budget balance for Ireland. The text accompanying such estimates as it is constrained to publish under the auspices of successive *Stability Programme Updates* betrays this scepticism⁵.

3. Policy errors

Why did Ireland's public finances deteriorate so sharply during the recent crisis? Table 3 identifies the main proximate reason: a collapse in revenue. Total current receipts dropped by 13% in 2008 and by a further 19% the following year, for a two-year cumulative decline of 29%. The decline in tax receipts proper over this period was only a little less at 25.3%. In the meantime, current spending continued to rise at a brisk pace, at an annual average rate of 5% in nominal terms (and at a slightly faster rate in real terms).

The collapse in revenues took place against the background of a steep downturn in economic activity. Even so the decline in taxes greatly exceeded the 14% contraction of nominal GDP between 2007 and 2009, implying a large *ex post* elasticity of about 1.8. Given that the 2009 tax take was boosted by a range of revenue-raising measures, the *ex ante* elasticity would have been appreciably higher than this.

⁵ An appendix to the *Stability Programme Update* of December 2000 sets out in detail the Department's reservations about the use of this methodology. Subsequent *Updates* reiterate these reservations.

This suggests that the factors behind the revenue collapse may be divided in two: (i) those that caused the extraordinarily steep fall in nominal GDP and, (ii) those that caused the remarkably high sensitivity of tax receipts to economic activity.

In fact the two sets of factors overlap to an important degree, with the collapse in house-building activity and the property market responsible for most of the fall in GDP in 2008 and 2009 and also for the disproportionality of the tax revenue response. It is no surprise that exactly the same tax heads that exhibited such remarkable buoyancy during the boom years were those that saw the steepest reversal between 2007 and 2009. Thus receipts from capital taxes and stamp duties, which had grown by 45% and 34% per annum respectively between 2002 and 2006, fell by 52% and 46% on an annual average basis between 2007 and 2009.

Viewed from this perspective, the overarching error of fiscal policy in the boom years was the failure to anticipate the reversal of the tax revenue surge that occurred during this period. To safeguard against this reversal, much bigger budget surpluses than were recorded would have been required. Instead, the government used large transitory tax receipts to fund the rapid growth of permanent spending commitments and the narrowing of the tax base. Another policy error, arguably of a lower order of gravity, was the inappropriately pro-cyclical fiscal stance from year to year⁶.

These policy errors stand out starkly when viewed from the wreckage of today. But, how reasonable a test is that? How evident were these errors in real time? There are several individual commentators who can validly claim that they pointed out the errors as they were being made, and drew attention to the risks created by committing them, although not even the most pessimistic of these came close to forecasting the scale of the deterioration in the public finances⁷. However, in terms of exerting influence on decision makers, it is not individual analysts that matter so much as those agencies, especially international agencies, whose function it is to carry out policy surveillance, and whose stature and influence is such that decision makers are likely to listen carefully to what they have to say. It is to a review of such surveillance efforts that we now turn.

4. Policy surveillance: the EU

- Policy instruments and the surveillance cycle

Surveillance of fiscal policy by EU institutions takes place under the auspices of the *Stability and Growth Pact* (SGP), which is essentially an agreement amongst euro zone

⁶ Year-to-year changes in the overall fiscal stance *per se*, however inappropriate they may have been, did not play much (if any) causal role in the deterioration of the public finances between 2007 and 2009, or in the severely constrained position in which the Irish government found itself when the crisis struck. What would have mitigated the former was less reliance on property-related sources of revenue during the boom; what would have mitigated the latter was larger surpluses *on average* over the boom years.

⁷ A good example is Davy Stockbrokers (2006) which warned that the budget deficit might approach the Maastricht 3% of GDP limit in the event that there was a severe correction in the property market.

member states to manage their public finances within certain parameters, the key objective being the avoidance of excessive deficits.

The SGP provides for the deployment of a small range of policy instruments under its 'preventive' and 'dissuasive' arms respectively. The 'preventive' arm is concerned with averting excessive deficits. To this end, one of two instruments may be directed at a member state:

- an *early warning*, from the ECOFIN Council on the basis of a proposal from the Commission, that the member state in question is straying from the path necessary to prevent an excessive deficit from occurring, accompanied by a recommendation that adjustments be made in order to return to that path;
- formal *policy advice* from the Commission which allows the Commission to directly address a member state about the implications of its fiscal policies for long-term sustainability of its public finances⁸.

The 'dissuasive' arm, on the other hand, is concerned with the situation that arises when a deficit breaches the 3% of GDP threshold. Such a breach triggers the *excessive deficit procedure*, under which, if a deficit is determined to be excessive within the meaning of the Treaty, the ECOFIN Council issues recommendations to the member state concerned to eliminate the excessive deficit within a specified timeframe.

The EU surveillance cycle unfolds as follows:

- the ECOFIN Council promulgates a set of broad economic policy guidelines (BEPG), the purpose of which is to improve the co-ordination of economic policy across member states and facilitate the smooth functioning of economic and monetary union. Promulgation of the BEPG used to be annual but now occurs at three-yearly intervals;
- member state governments update their *Stability Programmes* which are medium-term plans for maintaining stability of their respective public finances and avoiding (or eliminating) excessive deficits;
- Commission staff assess the respective *Stability Programmes* from the point of view of ensuring their compatibility with the objective of avoiding excessive deficits (or eliminating an excessive deficit if one exists) and also from the point of view of ensuring compatibility with the BEPG. This assessment may prompt the Commission to tender formal policy advice directly to a member state or to recommend to the Council that an early warning be issued;
- Having received the Commission's assessment, the ECOFIN Council delivers its opinion, which opinion may give rise to a member state receiving an early warning.

It is worth noting that, prior to the recent crisis, the instruments available under the preventive arm were used sparingly. According to the European Commission's website, the Commission has recommended that the Council address an early warning to a euro zone member on only four occasions since 2002 (Portugal and Germany in January 2002,

⁸ This instrument was introduced in the reform of the SGP in 2005

France in November 2002 and Italy in April 2004) and on only one of these occasions (the French case of 2002-03) did the Council follow up with an early warning. The policy advice instrument was not used at all before 2008.

- *The Brussels-Dublin controversy of 2001*

Ireland fell foul of the EU surveillance process in 2001. The BEPG promulgated in June 2000 suggested that member states speed up fiscal consolidation by, *inter alia*, 'taking advantage of any additional room for manoeuvre in achieving better-than-expected budgetary positions'. Ireland was specifically enjoined to ensure that budgetary policy avoid overheating of the economy and to restrain the growth in public consumption in the light of the exceptional rates of economic growth being recorded.

In December of that year, Charlie McCreevy presented his budget for 2001. That budget provided for net tax cuts amounting to the equivalent of 1.4% of GDP, an increase of 11.6% nominal in gross current spending⁹, and a general government surplus of 4.3% of GDP, down from 4.7% of GDP in 2000. As already noted, this implied the intention to reduce the cyclically adjusted surplus by 0.7% of GDP between the two years. At the same time the Department of Finance was forecasting real GDP growth of 8.8% in 2001, well above even the most sanguine estimates of the economy's potential growth rate.

Also published with the budget was the *Stability Programme Update*. This envisaged real GDP growth averaging 6% in 2002 and 2003, budget surpluses of 3.8% and 4.6% of GDP respectively in those years and a decline in the debt/GDP ratio to 24% by end-2003 from 39% at end-2000.

The Commission's assessment of the 2001 budget found that it was expansionary and pro-cyclical¹⁰. Guided by this assessment, in February 2001 the ECOFIN Council opined that the budget and the associated *Stability Programme Update* were inconsistent with the BEPG and recommended that the government resolve the matter by adopting 'countervailing budgetary measures' during the year.

The Commission's assessment and the Council's recommendation were coolly received in Ireland, not only by the government but also by many politically independent commentators¹¹. No 'countervailing budgetary measures' were adopted and in a subsequent review, carried out in November 2001, the Council appeared to retract its earlier injunction when it stated that 'unexpected economic developments were such that the inconsistency underlying the recommendation had lost its force'. What had happened between the time of the original recommendation and the review was that an international

⁹ The current spending aggregate the growth of which the government had committed itself to restrain to an average annual rate of 4% nominal for the duration of its term of office was targeted to increase by 9% in 2001, which would have brought the annual average growth rate in this aggregate for the 1997-2001 period to 6.3%. In his budget speech of December 2000, the Minister for Finance announced that: 'The Government decided that an increase beyond the 4% limit was justified in order to make more rapid progress in key social spending areas, and to help secure industrial peace'.

¹⁰ See European Commission (2001)

¹¹ There were exceptions, amongst them Barry and FitzGerald (2001)

economic slowdown had gathered force and the pace of economic activity in Ireland had slowed sharply. Between the first and fourth quarters of 2001, the year-on-year increase in real GDP in Ireland decelerated from 13.1% to 0.1%.

- *EU surveillance outcomes 2002-07*

After the 2001 controversy, there was no further formal censure of Irish fiscal policy by the competent EU authorities. At no stage between 2002 and 2007 were either the early warning or policy advice instruments invoked in the Irish case.

This is not to say that there were no critical observations made in relation to the management of Ireland's public finances by the Commission or the Council over this period. There were. For example, concerns were expressed about the budget deficits projected in the *Stability Programme Updates* of 2002 and 2003, the Irish practice of resorting to large contingency provisions in medium-term budgetary projections drew disapproving comment on the grounds that it displayed a less than desirable degree of specificity, and frustration was expressed at Ireland's slow progress in introducing a medium-term fiscal framework.

On the other hand, the dominant message was one of satisfaction that Ireland was adhering to the Stability and Growth Pact, and a reasonable reading of the succession of Commission assessments and Council opinions published on Ireland between 2002 and 2007 is that their tone became less critical and more approving over time. A remark that is not atypical of the latter part of this period is the following, contained in the concluding paragraph of the Commission's assessment of Ireland's *Stability Programme Update* of 2005-07 and reiterated in the Councils' opinion of same: '...the fiscal position can be considered as sound and the budgetary strategy provides a good example of fiscal policies conducted in compliance with the Pact'¹². A similar verdict was delivered by the Council in relation to Ireland's *Stability Programme Update* of 2006-09.

Of course, the Commission's assessments (and the Council's opinions) published in this period, and especially the latter part of the period, contain references to downside macroeconomic risks to the public finance position. Amongst the risks referred to are those associated with Ireland's sensitivity to the international economic climate and with a sharp downturn in the property/construction sector. Still, the strong impression conveyed by the relevant texts is that such risks were comfortably manageable. For example, the Commission's assessment of the 2005-07 *Stability Programme Update* noted the downside risks mentioned above, but went on to judge that the overall risks to the budgetary projections contained therein 'seem to be on the positive side, in particular in 2006'¹³.

By way of further example in the same vein, it is worth noting that the Council opinion on the 2006-09 *Stability Programme Update*, published in February 2007, while noting

¹² *Official Journal of the European Union*, C 82/19 5th March 2006

¹³ See European Commission (2006)

that ‘a sharp downturn in high levels of residential construction and property prices are important risks’, went on to say:

“The risks in the budgetary projections in the programme appear broadly balanced. On the one hand, the macroeconomic situation, after a probably stronger than assumed starting position, could evolve less favourably than projected, and, associated with this, specific revenue sources, particularly those most closely linked to the housing market, could also be significantly weaker. On the other hand, other revenues taken together appear to have been projected cautiously, and in recent years expenditures have been contained within or close to planned levels.”¹⁴

Table 4 summarises the outcome of the ECOFIN council’s examinations of Ireland’s last three *Stability Programme Updates* before the onset of the crisis, under a number of headings. Some of these headings are self-explanatory; some not. The safety margin question relates to whether there was judged to be a sufficient margin relative to the 3% of GDP deficit limit throughout the projection period. The long-term sustainability risk relates to how vulnerable to the long-term implications of ageing the public finances are judged to be. A quick perusal of the table indicates that none of the assessments would have signalled grounds for acute concern about the Irish situation.

5. Policy surveillance: the IMF

The economic and financial policies of all IMF member countries are subject to IMF surveillance, a process that involves policy monitoring and advice. A key part of that surveillance process is the regular (typically annual) round of consultations by IMF staff with government, central bank officials and other organisations in individual member countries. These consultations take place under Article IV of the Fund’s *Articles of Association*.

Following these Article IV consultations by the IMF staff mission to the country in question, a staff report is prepared and presented for discussion to the Fund’s Executive Board. A summary of the Board’s views is then sent to the relevant government concerned. Subsequently, and with the consent of the government concerned, a summary of the Board’s assessment, together with the staff report upon which that assessment is based, are published.

In the case of Ireland, the IMF carried out Article IV consultations in each of the years 2001 through 2007, and all the corresponding staff reports and Board assessments for the period have been published. The ambit of the IMF documents extends well beyond fiscal policy to include macroeconomic trends, international competitiveness, the state of the property market, the condition of the banking industry and the financial system more generally and more besides. In what follows, we focus mainly on the IMF’s appraisal of fiscal policy, and confine our attention to the successive Executive Board assessments and to the paragraphs of the successive staff reports setting out the overall staff appraisal.

¹⁴ *Official Journal of the European Union* C70/1 27th March 2007

A concern repeatedly raised by the IMF was the inappropriately pro-cyclical fiscal stance. This criticism was explicitly made in 2001 (echoing ECOFIN), 2002, 2005 and in 2007. Interestingly, while the staff report made the case for a neutral fiscal stance in 2001, the view was taken at the time of publication (August of that year) that a mid-year adjustment was not warranted because of the economic slowdown that had occurred since the budget was announced. It is also interesting to note that the 2007 Executive Board assessment suggested a less than unanimous view that the pro-cyclical stimulus planned for that year was undesirable¹⁵. Here there are echoes of the disagreement revealed in the previous year's publication, when a number of Board members demurred from the majority recommendation that some fiscal tightening be undertaken in 2007¹⁶.

Another recurring theme is the need to restrain spending. In fact, every year from 2001 through 2007 the IMF recommended, in one form or another, that spending growth be limited. In the early years of this period, the recommendation sprung from a concern that the benchmarking process would greatly increase public sector pay bill, necessitating, in the IMF's view, offsetting measures elsewhere. In the later years, the recommendation took the form of an injunction to cap the growth of current spending at or below the growth rate of nominal GDP. Throughout, the judgement that the actual growth of spending was excessive has to be inferred and was never made explicit.

Yet another theme that recurs is the desirability of expanding the tax base. In 2002 the IMF suggested that it might be necessary for the government to find new sources of revenue and in 2004, and again in 2005 and 2006, it recommended that the tax base be widened through one or other of: (i) the introduction of a property tax; (ii) the curtailment/elimination of mortgage interest relief, and/or (iii) the phasing out of other remaining property-related tax incentives. At the same time, the IMF was clearly supportive of the broad thrust of government policy in relation to taxes on labour. In 2001 it welcomed the cuts in tax rates and the broadening of the rate bands implemented in that year's budget, and in subsequent reports commended the low labour tax wedge that obtained in Ireland. At no stage did the IMF betray concern about the narrowing of the *income tax* base that the budgets of the 2001-2007 period brought about.

In the earlier discussion of fiscal policy, it was suggested that the overarching error made during the boom was the failure to anticipate that the huge surge in property- and construction-related tax revenues would be reversed. Was the IMF cognisant of the transitory nature of such receipts, and what did it suggest by way of policy response? As early as 2004, the Executive Board assessment noted that stronger than expected tax receipts were due in part to buoyancy of the property market and urged that political pressure to spend the windfall be resisted. The same recommendation was repeated in

¹⁵ The relevant excerpt from the document is: 'Many Directors, however, saw the planned reduction in the fiscal surplus as an undesirable pro-cyclical fiscal stimulus, while acknowledging Ireland's pressing need to increase infrastructure and social spending.' See IMF (2007).

¹⁶ The relevant excerpt is: '...most Directors considered that a modest fiscal tightening would be desirable in 2007, given the strength of domestic demand, potential risks of a hard landing, and the need to prepare for population ageing...A number of Directors, however, saw less merit in fiscal tightening at the current juncture, pointing for the need for further increases in spending to achieve social goals.' See IMF (2006).

2005, but curiously not in 2006. In 2007, a slightly different but related point was made in the staff report which noted that some weakening of the fiscal position was likely on the basis of unchanged policies in 2008 because of a cooling property market.

However, while the IMF identified the issue of transitory tax receipts, there is nothing in the Executive Board assessments or the staff reports to indicate an appreciation of quite how big a problem this would become. The 2007 staff report seemed to suggest that it could be insured against by a combination of limiting the increase in current spending to the growth rate in nominal GDP and refraining from tax cuts¹⁷, a policy prescription that now seems remarkably timid.

In summary, IMF surveillance during the period under review did identify the principal vulnerabilities of the Irish public finances that have since been revealed to such devastating effect, but in discussing them, conveyed the impression that they were of second order importance. Such an impression would have been greatly reinforced by a feature common to IMF reports on Ireland during this period, namely the repeated description of macroeconomic policies as ‘sound’ and/or of fiscal policy as ‘prudent’.

Every year between 2002 and 2007, the opening paragraph of the Executive Board assessment lavished plaudits on Ireland’s policy-makers. There is more than a hint of Ireland as poster child about some of these. In 2004, for example, the IMF had this to say:

‘Executive Directors commended the continued impressive performance of Ireland’s economy, which is based on sound economic policies, providing useful lessons for other countries.’

By 2005, the Executive Directors’ commendation was explicitly extended to include ‘prudent’ fiscal policy, and this was repeated in 2006 and 2007¹⁸. Nor was the laudatory tone confined to what might be regarded as the more politicised text published by the Executive Board¹⁹. Almost identical sentiments were expressed in the staff reports.

6. Surveillance by the OECD

Like the IMF, the OECD plays a role in the monitoring of policy and the provision of policy advice. Its reports range across a broader canvass than those of the IMF however and, at least in the case of smaller economies like Ireland, tend to be rather less frequent. In the 2001-2007 period, the OECD published just three *Economic Surveys* of Ireland: in 2001, 2003 and 2006. In what follows, we confine our remarks to the 2006 *Survey*, on the

¹⁷ ‘In 2008, on unchanged policies, some weakening of the fiscal position due to the cooling housing market is likely. Given the uncertainty about the size of the decline in revenue from the cooling housing market, this is the time to preserve a strong underlying fiscal position by restraining current spending increases to nominal GDP growth and avoiding tax cuts.’ See IMF (2007).

¹⁸ The 2006 assessment, for example, begins with: ‘The Executive Directors commended Ireland’s continued impressive economic performance, which has been supported by sound policies, including prudent fiscal policy, low taxes on labour and business income, and labour market flexibility.’ IMF (2006)

¹⁹ The Executive Board comprises 24 directors who are appointed or elected by member countries.

grounds that the 2001 *Survey* was too early in the period we are reviewing to be hugely significant in its own right and the 2003 *Survey* did not feature fiscal policy as a major theme.

The 2006 *Survey* had quite a deal to say about fiscal policy and was, at one level at least, remarkably prescient. It was critical of the government's plan (per the *Stability Programme Update* published in December 2005) to run deficits in each of the years 2006 through 2008, on the familiar grounds of providing inappropriately pro-cyclical stimulus. More tellingly, it warned that sizeable spending commitments were being locked in at what could be the peak of the revenue cycle. It also warned that even a soft landing for the housing market would sharply weaken government receipts and result in a 'substantial structural budget deterioration' on top of any cyclical weakening.

The OECD's policy advice however, betrayed a failure to come close to appreciating the size of the risks about which it was warning. It concluded its analysis by saying:

'For all these reasons, a prudent approach...would be to leave sufficient room for manoeuvre...In practice this means returning to (budget) balance or running a small surplus'.²⁰

This was published in March 2006, against the background of a target budget deficit of 0.6% of GDP for that year and projected deficits of 0.8% of GDP for 2007 and 2008. By the end of the year a large budget surplus amounting to 2.9% of GDP had emerged for 2006 and the government was projecting surpluses for each of the years 2007 through 2009 in its December 2006 *Stability Programme Update*. Had the *Survey* been published nine months later than it was, would these changes in the fiscal arithmetic have convinced its authors that sufficient room for manoeuvre had been created?

7. Deficiencies of surveillance

To varying degrees, the external agencies that carry out policy surveillance identified the main vulnerabilities that developed in Ireland's public finances during the boom years. However, those vulnerabilities were not afforded anything like the prominence, nor was the need to address them invested with anything like the urgency that subsequent events indicate was warranted. Indeed, a reasonable reading of international assessments published between 2001 and 2007 is that the vulnerabilities and risks that characterised the public finances were matters of second-order importance by comparison with the perceived prudence and soundness of the overall fiscal stance.

It may be speculated that part of the reason for this was a kind of cognitive bias that distorted international agencies' perceptions of what was going on in an economy that had come to be regarded by them as a model of success. What is certain is that what muted warnings were issued were marked by a form of 'disaster myopia', a consistent

²⁰ OECD (2006)

tendency to hugely underestimate the downside. This cognitive error is rooted in part in serious methodological deficiencies to which we now turn.

At the peak of the property and construction boom, in 2006, the Irish government posted a budget surplus of 2.9% of GDP. To what extent was this apparently healthy budgetary position exaggerated by the prevailing condition of the economy? The answer to this question is crucial to assessing the soundness of the fiscal policy stance. Economists attempt to answer it by estimating the cyclical component of the budget balance, in other words, by estimating the degree to which the actual budget surplus was boosted by transitory factors. Such estimates vary, depending on the precise methodology used and on the point in time at which the analysis is conducted.

What we're interested in here, in the first instance, are the answers provided, not with the benefit of hindsight and subsequent methodological innovation, but in real time (or as close to real time as is practicable, given reporting lags) by the analytical techniques used by international surveillance agencies. Given what we now understand to have happened, the answers are arresting. In 2007, each of the agencies whose surveillance records we are reviewing, estimated that Ireland's structural or cyclically-adjusted budget was in *surplus* to the tune of 2.5-3% of GDP in 2006, implying that the actual surplus recorded that year had been boosted to a trivial extent by cyclical factors.

It is worth examining the corresponding data for each of the years 2000 through 2007 (see Table 5). What we have done in each case is reproduce the first estimates published by the respective agencies after the end of the year in question. Thus, the EC estimate for 2000 is that published in the *Public Finances in EMU* report for 2001, the EC estimate for 2001 is that published in the 2002 *Public Finances in EMU* report, and so on. In respect of any given year, there are differences in estimates across agencies, but these differences are of minor importance when set against the broadly similar story told by the series of estimates constructed by each agency.

There was agreement across the three agencies that the Irish government ran a large structural budget surplus in 2000, followed by a small structural deficit in 2001 and a rather larger deficit in 2002. There was some disagreement in respect of 2003, but all pre-crisis estimates suggested that the Irish government was running substantial structural surpluses in each of the years 2004 through 2006 and a rather smaller surplus in 2007.

Judged with reference to these estimates, Irish fiscal policy appears to have been sound in the years immediately preceding the crisis. Viewed from an EU perspective, such estimates suggested that Ireland, which was so clearly observing the *letter* of the Stability and Growth Pact by operating comfortably within the Pact's explicit numerical parameters, was also observing the *spirit* of the Pact which calls for budgets to be kept close to balance or in surplus in the medium term.

The methodology used by all three international agencies to identify the cyclical component of budget balances is essentially of the 'gaps and elasticities' variety. As such it incorporates two components: (i) an estimate of the margin by which output (GDP) in a

given year exceeds or falls short of its 'potential' level, and (ii) a set of elasticity estimates that reflect the sensitivity of elements of the budget – principally taxes - to variations in output. In general, both components are susceptible to considerable error. In the case of Ireland in the 2001-2007 period, and especially towards the end of that period, it is now evident that contemporaneous estimates of the cyclically adjusted budget balance were very seriously impaired on both counts.

- *Tax elasticities*

The estimates of tax elasticities used by the European Commission and the OECD in computing the cyclical adjusted budget balance for Ireland are set out in Table 6. Four different categories of receipts are separately identified: personal tax; corporate tax; social contributions and indirect taxes. Receipts from capital taxes are allocated between the personal and corporate categories. Stamp duties are treated as an indirect tax.

Average tax elasticities for Ireland for the 2007-09 period are set out in Table 7. These are not comparable with the EC/OECD estimates on a category-by-category basis, because of classification differences. Nor are the aggregate figures strictly comparable, because the EC/OECD estimate is *ex ante* while the actual estimate is *ex post* and, as such, incorporates the effects of changes in tax rates. Still, a comparison of the two sets of figures is instructive.

The *ex post* tax elasticity over this period is 1.83, markedly higher than the estimate of 1.14 incorporated in EC/OECD calculations of the CAB. *Ex ante*, the tax elasticity for this period would have been materially higher again reflecting the fact that tax rates, especially social contribution rates, were raised sharply in response to the fiscal crisis. (Excluding social contributions, the *ex post* tax elasticity for 2007-09 is 2.2.)

So, EC/OECD tax elasticity estimates seriously underestimated the sensitivity of Irish tax receipts to changes in GDP, perhaps by a factor of one-half²¹, and their incorporation in estimates of Ireland's CAB correspondingly boosted such estimates and exaggerated the underlying health of the public finances during the boom. This is not an issue of unique relevance to Ireland, or course. There is a considerable empirical literature on the unreliability of official tax elasticity measures for a wide range of countries, dating back to the early years of this decade, much of it generated by economists working for the agencies engaged in international fiscal surveillance²².

- *The output gap*

Estimates of the Irish output gap for the years 2000 through 2007 are set out in Table 8. These are assembled on the same basis as the CAB estimates of Table 5. Again, there are differences across agencies on a year-by-year basis, but again the story told by each

²¹ For every 1% fall in GDP, the EC/OECD estimates suggest a 1.1% decline in tax receipts, but the actual behaviour of tax receipts between 2007 and 2009 indicates a 2.2% fall in receipts for every 1% fall in GDP.

²² See, for example, Eschenbach and Schuknecht (2002), Girouard and Price (2004), Jaeger and Schuknecht (2004) and Martinez-Mongay et al (2007).

series over time is broadly similar. The Irish economy was perceived to be operating well above its potential output level in the early part of the decade by all three agencies, but to be at or close to potential in the latter part of the period.

How could an economy experiencing a large and unsustainable building boom be represented as operating at or close to its potential output level or, in other words, in the vicinity of its medium-term sustainable level of output? The answer, of course, resides in the methodology. The traditional methodology estimates potential output in the basis of a production function that does not distinguish between different sectors of the economy. As such, it is susceptible to serious biases in circumstances where an economy is experiencing major structural change, even more so when that structural change is being driven by something like a building boom.

In the case of Ireland in the 2001-2007 period, the application of the traditional methodology meant that the slower average growth rate of the period was being represented as a reflection of an economy in which actual growth had dropped below potential – hence the gradual elimination of the estimated output gap. In contrast, what was actually happening was that, because of the rapid growth of the 1990s and the resultant decrease in spare capacity, the economy's potential growth rate had declined. Meanwhile the output growth that was taking place was increasingly accounted for by the construction sector.

Recent work by the IMF, based on a more refined approach than the traditional methodology, paints a radically different picture of the evolution of Ireland's potential output during the boom²³. As a result, the IMF now estimates a positive output gap in 2007 amounting to the equivalent of 7.1% of GDP. Parallel work carried out at the OECD has yielded broadly similar results. The result is that the latest surveillance reports on Ireland from these agencies contain sharply revised estimates of the CAB or structural budget balance in the years immediately prior to the crisis. The new IMF estimates, for example, show structural budget *deficits* of 5.4%, 5.7% and 8.7% of GDP in 2005, 2006 and 2007 respectively, in place of the structural budget surpluses previously estimated for these years²⁴.

8. Summary and conclusions

Throughout the boom years, Ireland's principal fiscal ratios behaved impressively: a budget surplus was recorded in every year but one between 2001 and 2007 and the debt/GDP ratio had fallen to 25% by the end of this period. These high-level ratios obscured a dangerous and growing structural imbalance however. A property bubble and associated construction boom generated a large but transitory surge in tax revenues, the reversal of which was not anticipated by fiscal policy. Instead, the government used the windfall to ramp up recurring expenditures and to narrow the tax base. When tax revenues evaporated in the face of a very deep construction-led recession, Ireland

²³ See Athanasopolou (2009)

²⁴ See IMF (2009)

experienced quite the sharpest fiscal deterioration of any EU member. Between 2007 and 2009, the budget balance shifted from small surplus to a deficit of 14.3% of GDP while the gross debt/GDP ratio rose to 64%.

To varying degrees, the external surveillance agencies identified the main vulnerabilities that developed in Ireland's public finances during the boom years. However, those vulnerabilities were not afforded anything like the prominence, nor was the need to address them invested with anything like the urgency that subsequent events indicate was warranted. Indeed, a reasonable reading of international assessments of the Irish economy published between 2001 and 2007 is that the risks that characterised the public finances were matters of second-order importance by comparison with the perceived prudence and soundness of the overall fiscal stance.

One reason for the failure of surveillance is methodological. There was a systematic overestimation of Ireland's potential output during the years prior to the crisis and, by the same token, a systematic underestimation of the extent to which economic activity was boosted by unsustainable factors. Moreover, the estimates of tax elasticities used in the agencies' models greatly understated the sensitivity of Irish tax receipts to a given fall in output. The net result of all this was that the government budget was unanimously represented as being in substantial structural surplus at the height of the construction boom, whereas it is now clear in hindsight that it was in deep structural deficit.

The failure of surveillance cannot be entirely ascribed to methodological shortcomings however. To do so would be to impute more faith in the standard methodology on the part of the surveillance agencies than the evidence warrants. As early as 2003, for example, both the European Commission and the OECD were warning about the frailties of output gap estimates for Ireland and the risks attached to using them to assess the stance of fiscal policy²⁵. Also, as noted earlier, economists in each of these organisations, and in the IMF, had been drawing attention to the particular sensitivity of tax revenues to asset price movements and the risk that ignoring this phenomenon (a deficiency of the standard methodology) poses for budgetary analysis in a series of papers dating back to 2002.

Moreover, it is scarcely conceivable that the European Commission, the IMF and the OECD, in their consultations with Irish officials, would not have been made aware of the very strong reservations harboured by the Department of Finance about the standard methodology used to cyclically adjust the Irish budget balance, reservations that were repeatedly expressed in the annual *Stability Programme Updates* published by the Irish government.

What the evidence suggests therefore is that international surveillance agencies persisted with the application to Ireland of a methodology that they had reason to believe was not

²⁵ The European Commission (2003) opined that 'calculations of the output gap are subject to a particularly large margin of error in Ireland'. The OECD (2003) stressed that in the Irish case potential output is difficult to estimate and warned on that account that care should be exercised in drawing conclusions about the stance of fiscal policy.

fit for purpose. No doubt considerations of efficiency played a part here: from the point of view of an organisation involved in the surveillance of a large number of economies, it makes more sense to use a framework that can be applied uniformly across countries than to design bespoke techniques for individual countries, including very small ones.

The same principle need not apply to verbal commentary of course. There was ample opportunity for published reports to enter strong caveats about the formal analysis and escalate concern about growing economic and fiscal imbalances through the use of language, but this was not done. The overall tone remained positive, if not laudatory²⁶.

Cognitive bias may also have been a factor. There is more than a hint of Ireland as ‘poster child’ in some of the assessments. Thus, to the European Commission and the ECOFIN Council, Ireland’s budgetary strategy provided ‘a good example of fiscal policies in compliance with the Stability and Growth Pact’. To the IMF, the impressive performance of the Irish economy provided ‘useful lessons for other countries’. It may have become difficult for agencies accustomed to regarding Ireland as a model of success to fully recognise the frailties of that model.

Jim O’Leary
NUI-Maynooth
June 2010

²⁶ Preliminary content analysis of IMF reports on Ireland between 2001 and 2007, using content analysis software, suggest no significant change in tone over this period and not much difference in tone from those published for other euro zone economies. (Golubovskaja (2010))

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Chart 1: Deterioration in Fiscal Positions: EU Members, 2007-09

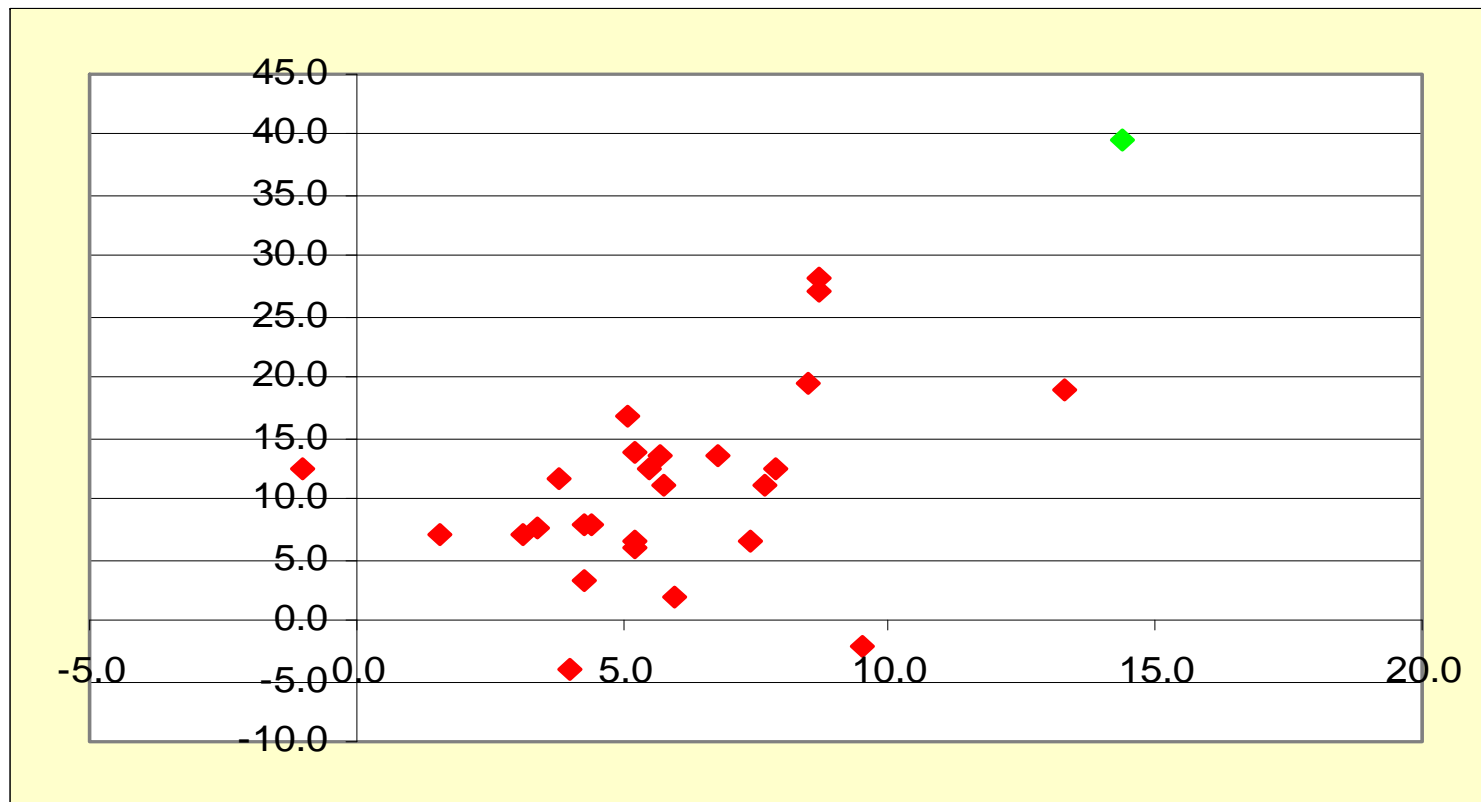


Chart plots change in budget balance (x-axis) and in gross debt (y-axis), as % of GDP between 2007 and 2009. Source: *Public Finances in EMU, EC 2009*

Chart 2: Irish Effective Exchange Rates (1999Q1 = 100)

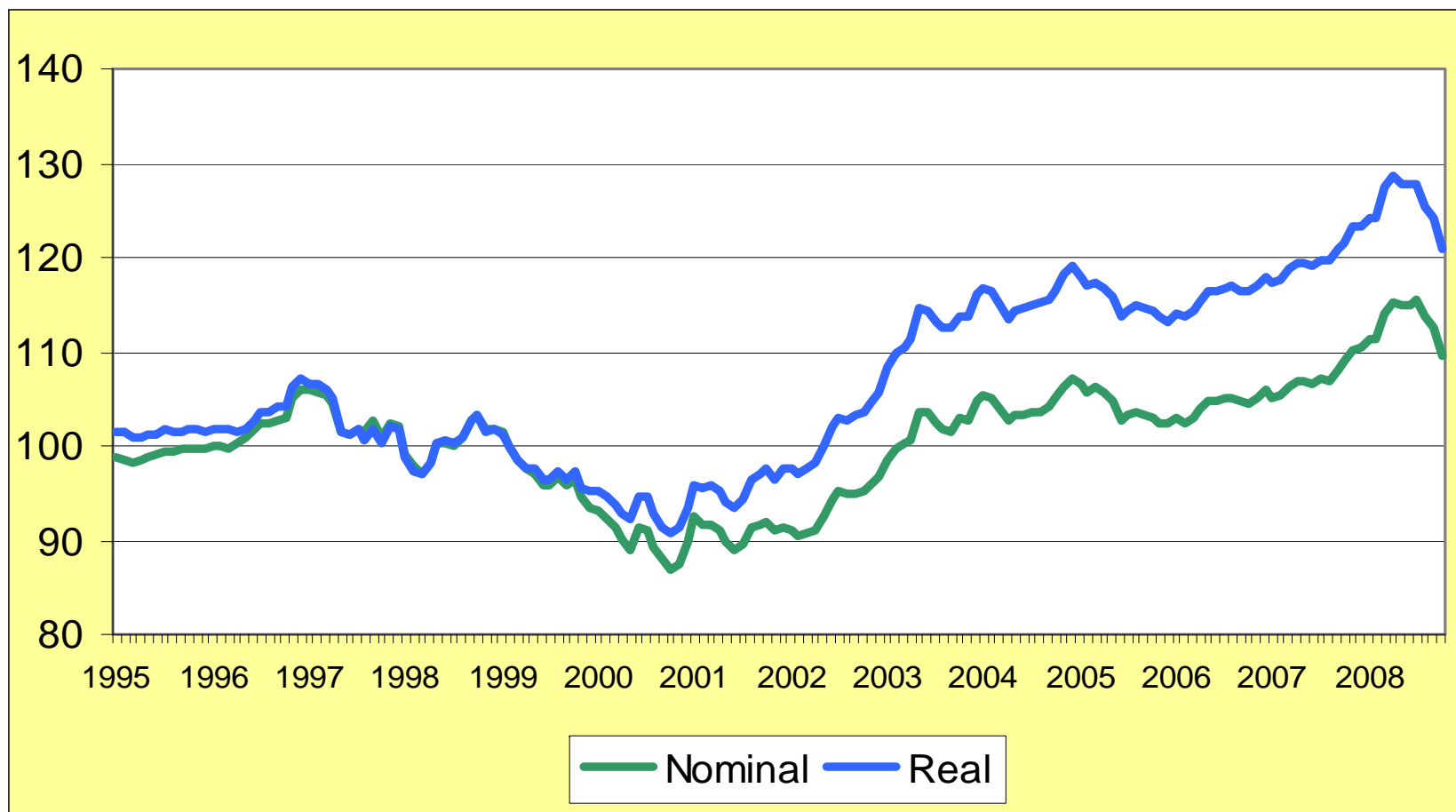


Chart 3: Mortgage Interest Rates and CPI Inflation

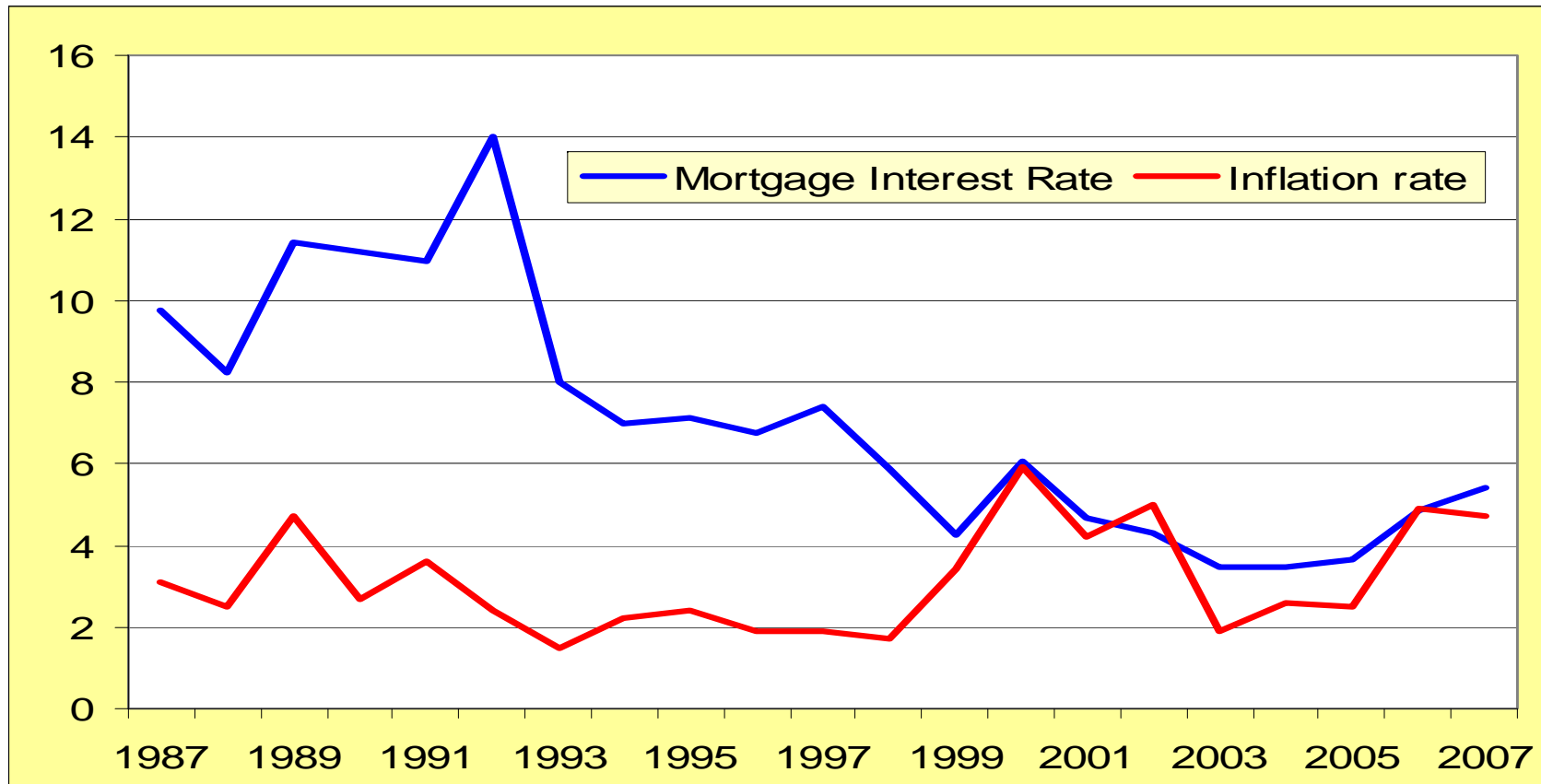


Chart 4: Government Current Spending and Nominal GDP (% change)

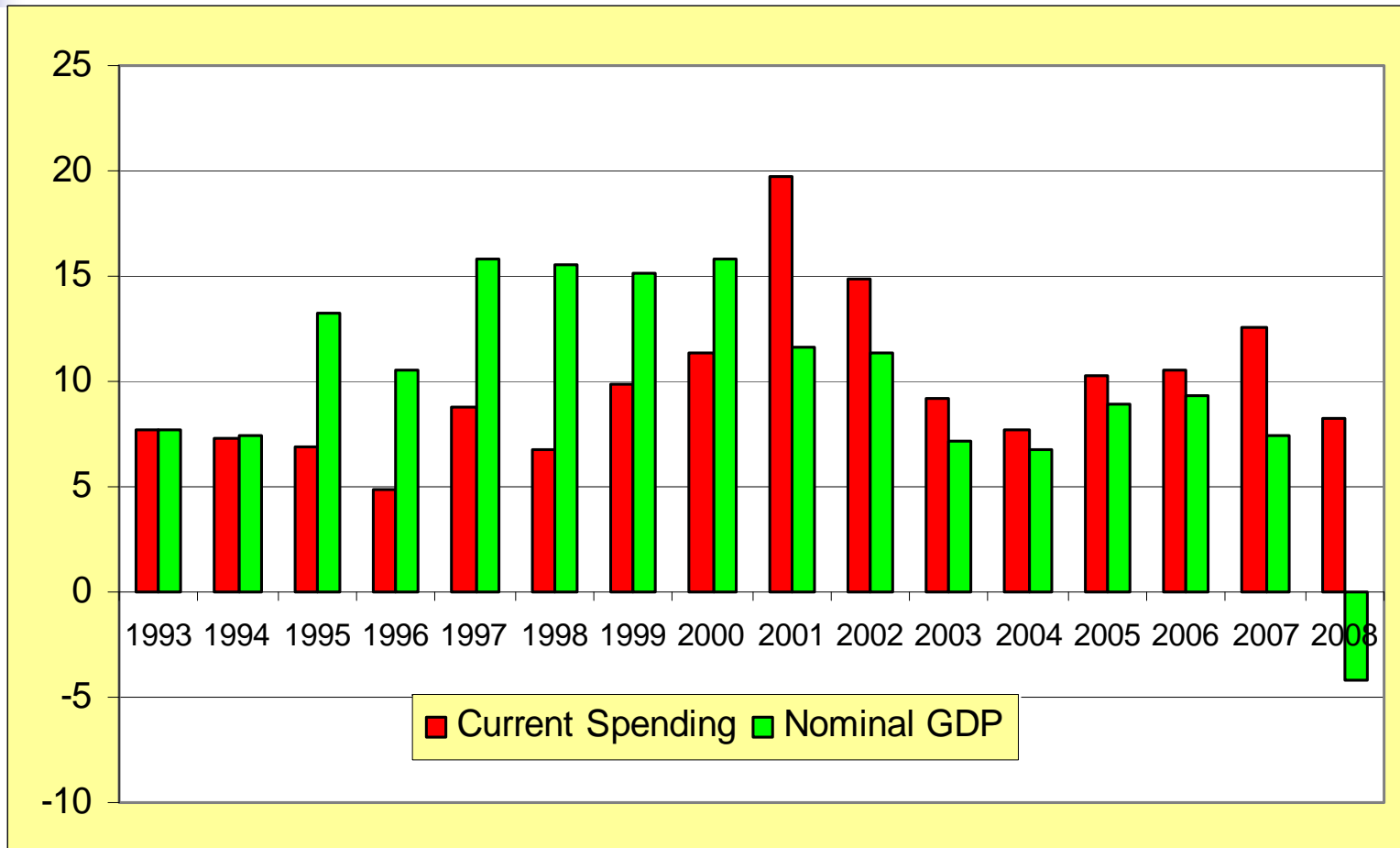


Chart 5: Cumulative Growth of Tax Receipts, 2000-2007 (%)

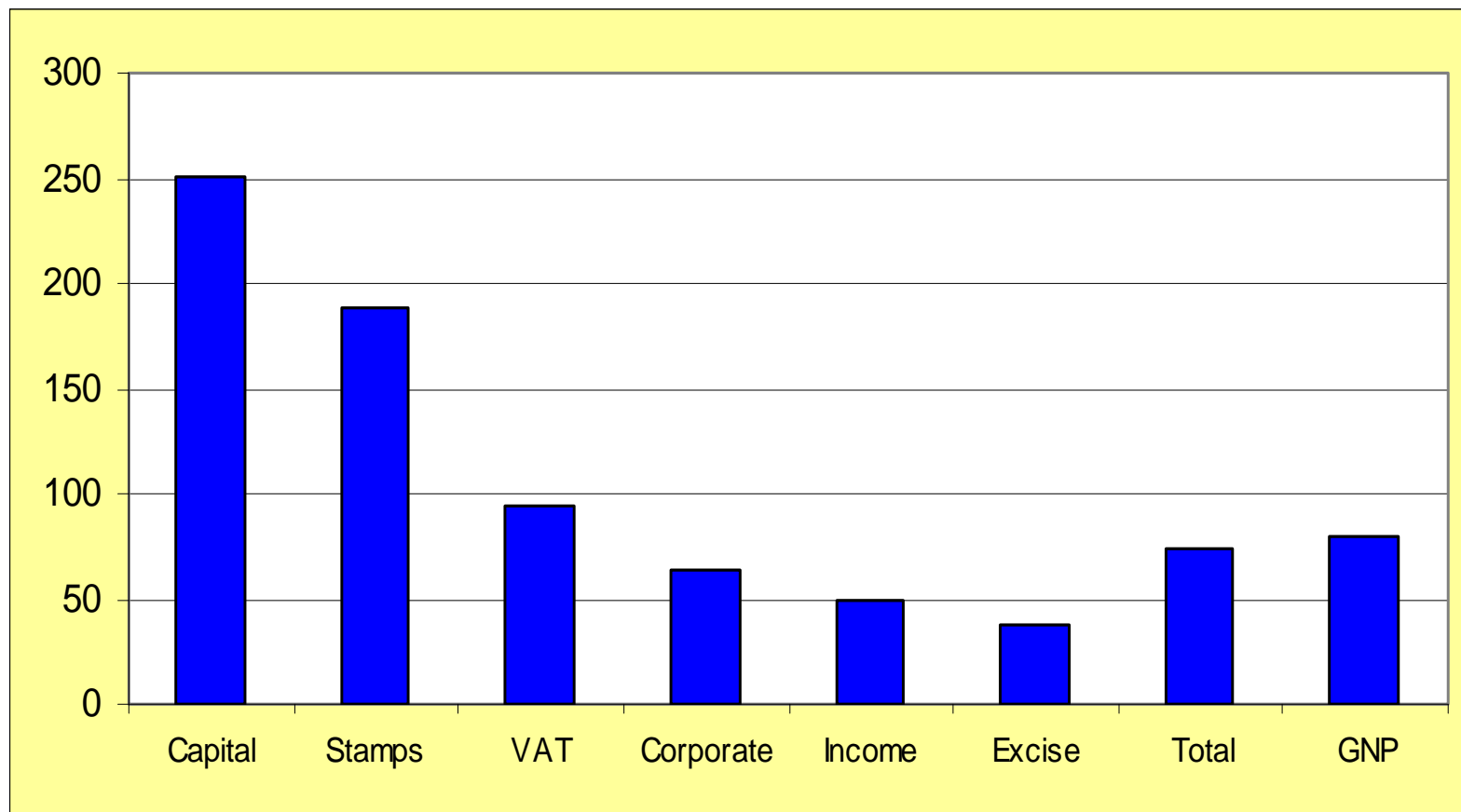


Table 1: Income Tax Packages: 2001-2007

(€mn)	ETC	Other credits	Standard Band	Rates	Other	Total	Index
2001	323	363	353	471	0	1510	300
2002	180	215	223	0	16	634	340
2003	161	0	0	0	25	186	350
2004	282	0	0	0	5	287	225
2005	283	115	233	0	17	648	275
2006	285	96	456	0	18	855	450
2007	350	275	365	186	44	1220	565
2001-07	1864	1064	1630	657	125	5340	2505

Full year cost of income tax adjustments in €m; ETC is the Employee Tax Credit (formerly the PAYE allowance); last column gives cost of indexing everything to CPI

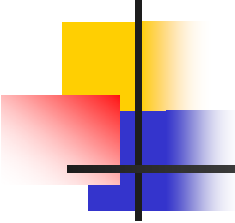
Table 2: Intended Fiscal Stance, 2001-2007

(% of GDP)	CAB: Estimated (t-1)	CAB: Projected (t)	Change ex ante**	GDP growth (%)(f)
2001	3.6	2.9	-0.7	8.8
2002	-0.2	-0.1	+0.1	3.9
2003	-1	-0.4	+0.6	3.5
2004	-0.8	-0.5	+0.3	3.3
2005*	1.4(0.5)	0	-1.4 (-0.5)	5.1
2006	0.8	0.2	-0.6	4.8
2007	2.7	1.8	-0.9	5.3

* figures in brackets exclude once-off factors

** +/- signifies intended contractionary/expansionary stance

Table 3: Public Finances, 2006-2009



(€bn)	2006	2007	2008	2009(f)
Current revenue	46.1	47.9	41.6	33.9
Current spending	37.1	40.9	44.7	45.3
Current balance	9.1	7.0	-3.1	-11.4
General govt balance	5.2	0.4	-13.3	-23.4
(% of GDP)	(2.9)	(0.2)	(-6.4)	(-14.3)

Table 4: Council Assessments of Ireland's Stability Programme Updates

	Macro outlook	Risks to budget targets	Safety margin provided	Fiscal stance	Long-term sustainability risk
2006-09	plausible	broadly balanced	throughout period	risk of pro-cyclicality in 2007; ok in 2008, 2009	medium
2005-08	plausible	better than projected	yes	n.s.	medium
2004-07	plausible	broadly balanced	yes	n.s.	relatively favourable



Table 5: CAB Estimates for Ireland (% of GDP)

	2000	2001	2002	2003	2004	2005	2006	2007
OECD	2.8	-0.4	-2.3	-0.4	1.0	0.8	2.5	0.3
IMF	3.1	-0.1	-1.8	0.5	1.7	1.0	2.7	na
EC	3.1	-0.1	-0.9	0.1	1.6	1.8	3.0	0.2



Table 6: EC/OECD Estimates of Tax Elasticities for Ireland

Personal tax	1.44
Corporate tax	1.30
Social contributions	0.88
Indirect taxes	1.00
Overall	1.14

Table 7: *Ex Post* Tax Elasticities, 2007-2009



Income	0.9
Corporate	2.8
VAT & Excise	1.8
Capital	5.6
Stamps	5.1
PRSI etc.	0.1
Overall	1.8

Table 8: Output Gap Estimates for Ireland (% of potential GDP)

	2000	2001	2002	2003	2004	2005	2006	2007
OECD	6.0	5.6	5.7	1.9	0.8	0.5	0.8	-0.3
IMF	4.5	4.1	3.6	-0.5	-0.5	0.0	0.4	na
EC	3.5	4.5	1.8	0.3	0.8	1.2	-0.2	0.2