# Quarterly Economic Commentary

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## Research Notes

David Duffy and Eddie Casey

## Special Articles

Ide Kearney

## Research Bulletin

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# Special Articles

# Measuring Fiscal Stance 2009-2012

## Ide Kearney[1]

### 1.    Introduction

Over the period since mid-2008 the Irish government has introduced a series of austerity measures equivalent to approximately 15 per cent of GDP. These measures were taken to try and reverse the deterioration in the government deficit that began in 2008. It is never a straightforward exercise to assess the outcome of such a package of discrete policy changes on the public finances. It is made more difficult in circumstances where the economy is going through a precipitous collapse in output and employment as occurred in Ireland between 2008 and 2011. This collapse caused a dramatic decline in taxation revenues and an increase in unemployment-related expenditures, both of which serve to worsen the public finance position. In such circumstances, it is important to disentangle the effect of policy decisions (e.g. higher tax rates or lower transfer payments) which affect the discretionary fiscal position from those changes which are driven by the collapse in the economy.

To address this issue we look at the fiscal stance adopted in individual budgets over the period 2008-2012 in this paper. The fiscal stance indicator we use is an attempt to isolate for each year discretionary changes in the budget balance from the total budget balance. In effect it looks at the difference between the actual budget outcome and the outcome that would have arisen assuming no change in policy, an "indexed" budget.

We estimate an indexed budget using a set of detailed indexation rules which are included in the ESRI *HERMES* macroeconomic model. Using these rules, we simulate the *HERMES* model in successive years to estimate the budget balance that would have pertained in the absence of any discretionary budgetary changes in that year. The difference between the actual budget balance and this indexed budget is a measure of fiscal stance.

We examine budgetary outcomes for each of the years since the onset of the fiscal and banking crisis in Ireland in 2008. Over the years 2009-2012 our results suggest that the cumulative effect of discretionary fiscal policy has been to

reduce the deficit by 5½ percentage points of GDP. Our results suggest that the impact of the very large package of measures introduced in 2009 was very modest. This was partly due to the very rapid deflation that occurred in 2009, our estimates suggest that this deflation served to  more than offset the nominal current expenditure cuts that were introduced in that budget. In 2010 and 2011 the impact of fiscal policy has been much more marked, knocking between 1 ½ and 2 percentage points of GDP off the deficit in each year. We estimate that the effects of the 2012 Budget could also reduce the deficit by 1 ¾ percentage points of GDP.

Looking further back to the last major crisis in the public finances in the 1980s, the estimates we present here suggest that the effect of the current fiscal consolidation for the years 2009-2012 has been much deeper than the fiscal consolidation in the period 1982-1986. In both periods, austerity measures were introduced against a backdrop of low or negative growth and rapidly rising unemployment.

The structure of the paper is as follows. In Section 2 we review the public finance position. In Section 3 we outline the methodology used to estimate the fiscal stance using the ESRI *HERMES* macroeconomic model. In Section 4 we present our estimates of the fiscal stance for each of the years 2008-2012. Section 5 discusses the results.

## 2.    The Actual Budget Balance 2008-2012

The Irish economy went into freefall in 2008, with output, income and prices collapsing. By 2011 GDP in current prices had fallen 16 per cent from its 2007 peak, while GNP in current prices had fallen by almost one-quarter. The deep recession affected both output levels and prices. This caused a massive erosion of the tax base with a consequent collapse in government revenue. The heavy reliance on property-related taxes in the years preceding the collapse further exacerbated this, and exposed the narrowness of the tax base. Furthermore, the crisis led to a 15 per cent fall in the level of employment, which in addition to eroding the tax base, added to unemployment-related expenditures (transfer payments).

**FIGURE 1**    The Collapse in GDP, GNP and Employment 2008-2012
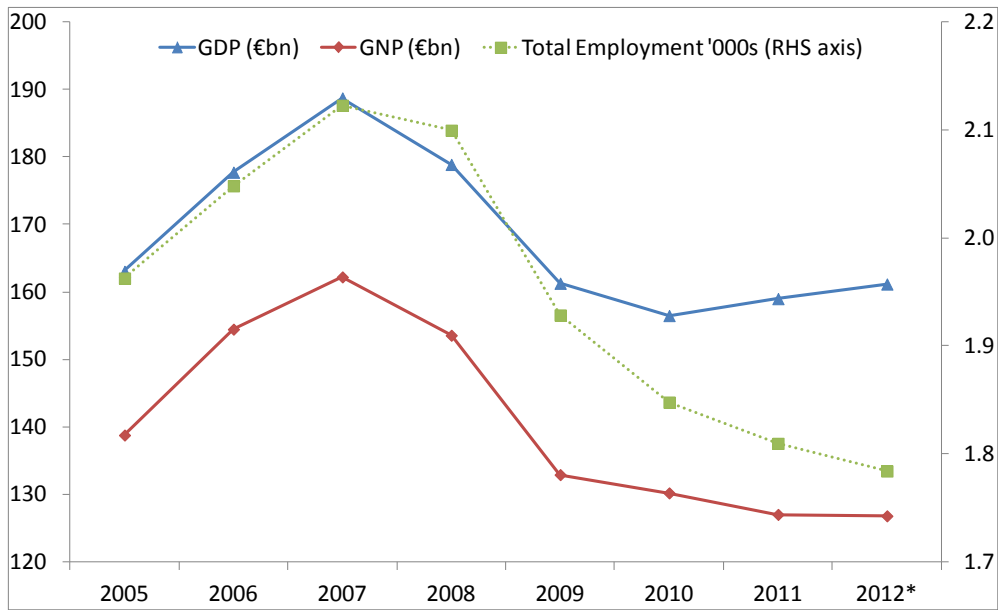


The government accounts were broadly in balance in 2007. However this masked the deep structural weakness in the underlying fiscal position that was revealed once the housing and banking crisis began. The gap between revenue and expenditure widened to a peak of almost €18.5 billion[2] in 2009 with the underlying deficit as a share of GDP reaching almost 12 per cent (Figure 2). It narrowed slightly to €17 billion in 2010, however, given that GDP was also falling, its share of GDP barely changed. In 2011 the deficit fell to €14 billion or 9 per cent of GDP, and it is projected to narrow to €13 billion in 2012.

**FIGURE 2**    General Government Deficit Net of Transfers to Banks



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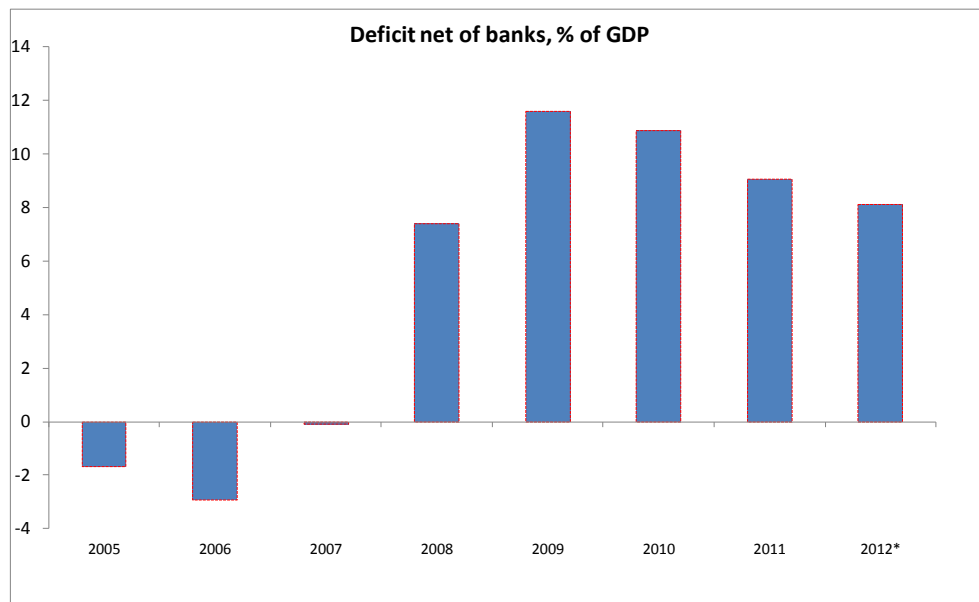
2    Excluding transfers to the banks.

Figure 3 shows the path of government expenditure and revenue since 2005.[3] It was in the years preceding 2007 that the property bubble and credit bubble were allowed to inflate (Bergin *et al.* 2011), with government revenues booming. In 2008 both bubbles burst and the public finance and bank funding crises emerged. Figure 1 shows the speed with which general government revenue collapsed from 2007 onwards, with total government revenue one-quarter or €16 billion lower in 2010 compared to 2007. By the end of 2012, after five years of fiscal consolidation, total tax revenue is forecast to be €13 billion lower than in 2007. It is this collapse in tax revenues, and in particular property-related taxes, which is the proximate cause of the public finance crisis in Ireland.

**FIGURE 3**     General Government Expenditure and Revenue, €billion
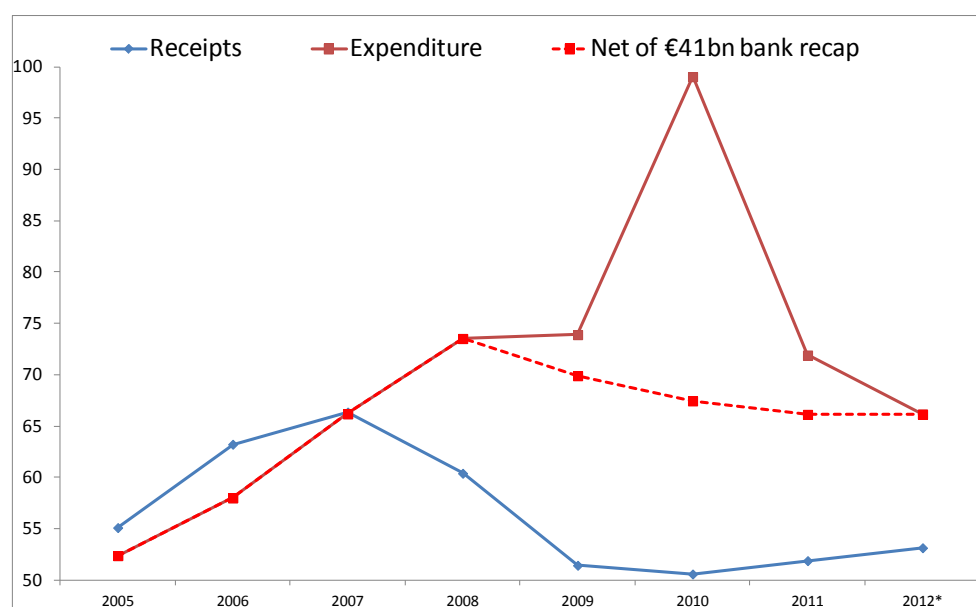


On the expenditure side, total government expenditure continued to increase in 2008 despite the crisis in revenues, rising by over €7 billion. From 2008 onwards total expenditure, excluding the cumulative €41 billion in monies transferred to the banks,[4] has been falling and is projected to return to 2007 levels by 2012.

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3   In this note we use detailed data for general government revenue and expenditure from the *National Income and Expenditure 2011, Tables 19-25.* For 2012 we use numbers supplied by the Department of Finance which are based on the *Stability Programme Update,* Department of Finance April 2012. This provides the most recent estimates for the official forecasts/targets for 2012 (2012 figures have an asterix to indicate forecast). See Appendix 2 for details.

4   By the end of 2011 the government had made direct transfers of almost €63 billion to the banking sector. This consisted of €34.7 billion provided to Anglo Irish Bank and INBS (IBRC) by way of promissory notes issued by the exchequer. A further €28 billion was provided by the NPRF and the exchequer consisting of €20.8 billion to AIB and EBS, €4.7 billion to Bank of Ireland and €2.7billion to ILP. At the time of writing, €5.8 billion of these bank recapitalisation monies are being treated as a capital transfer in the national accounts, and are included in the 2011 general government expenditure figures in Figure 2. The €31billion promissory note payment to IBRC in 2010 and the €4 billion exchequer payment in 2009 were already included in the general government expenditure figures in the national accounts in both these years. The total figure for capital transfers to the banks which is included in general government expenditure is thus €41 billion.

However the composition of total expenditure has changed significantly over that period, shifting from expenditure on goods and services (including capital expenditure) to transfer payments (see Table 1). Expenditure on current goods and services and capital expenditure are projected to have fallen by €8.8 billion between 2007 and 2012, while transfer payments are forecast to have increased by €9.0 billion, €4.5 billion related to personal transfer payments (unemployment benefit, pensions, other social welfare payments) and €4.5 billion of which relates to an increase in national debt interest payments to service the explosion in government debt.[5]

**TABLE 1**     Government Revenue and Expenditure 2007-2012

| Change 2007-2012 €bn | | | |
|---|---|---|---|
| Taxes on income and wealth | -3.0 | Expenditure: | -9.0 |
| Taxes on expenditure | -6.8 | Capital Expenditure | -6.4 |
| Taxes on capital | -2.4 | Current goods and services | -2.4 |
| Other receipts | -1.0 | Subsidies | -0.2 |
| | | Transfer payments: | 9.0 |
| | | National debt interest | 4.5 |
| | | Other | 4.5 |
| Total government receipts | -13.2 | Total expenditure | 0.0 |
| **General Government Balance** | **-13.0** | **% of 2012 GDP** | **8%** |

## 3.    Methodology

The actual budget balance reflects both cyclical developments and discretionary budgetary decisions. Fluctuations in economic activity significantly affect budget receipts and expenditure. During expansions tax receipts increase while some expenditures, such as unemployment benefits, decline and the reverse occurs in recessions. The movements in these budgetary categories are referred to as "automatic stabilisers" that operate to offset the effects of the economic cycle and lead to counter-cyclical movements in aggregate demand in the absence of any discretionary changes by the fiscal authorities.

However, the collapse in the economy that occurred between 2008 and 2011 is far from a "cyclical" event or a fluctuation in economic activity. The bursting of the housing and credit bubbles, and the collapse in economic activity, prices and employment, exposed a structural weakness in the public finances which swiftly led to double digit deficit ratios. Within the maelstrom of this collapse in the

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[5]    See FitzGerald and Kearney (2011) for details.

public finances, it is difficult to disentangle the effects of policy on the widening deficit.

The fiscal stance indicator is an attempt to capture in a single indicator the combined macroeconomic effects of all the various decisions taken in a budget in respect of public expenditure and taxation. The macroeconomic impact of a government's budget is typically judged on whether the fiscal stance is considered to be expansionary or contractionary in terms of either boosting or dampening aggregate demand in the domestic economy.

### 3.1    The *HERMES* Measure of Fiscal Stance

Our method of estimating fiscal stance is to use a macroeconomic model (the ESRI-*HERMES* model) to simulate the effects of an indexed budget, where indexation is based on assuming no policy change relative to the previous year's budget. The difference between the indexed budget balance and the actual budget balance is then a measure of fiscal stance. A positive (negative) difference indicates a loosening (tightening) of fiscal policy. This is based on an incremental approach and so can be cumulated over time. Using a macroeconomic model for estimation allows for the implementation of detailed indexation rules for different items of revenue and expenditure.

Effectively, the indexed budget is intended to simulate a "what if there were no policy changes" budget relative to the previous year. In practice average tax rates and average expenditure rates are held unchanged relative to the previous year, where detailed indexation rules are used for individual tax and expenditure items. Appendices 3 and 4 give details on the indexation rules employed.  We then compare this "indexed" outcome with the actual outturn in each year. The difference between the indexed and actual outcome provides an estimate of the fiscal stance.

The full indexed budget is computed assuming no change in average tax and expenditure rates from the previous year, and applying the actual growth rate to the revenue and expenditure base. The use of average tax and expenditure rates ensures full indexation of the tax and welfare system. There is one exception to these indexation rules. Indexation of non-cyclical expenditure assumes it grows at its "long-run" growth rate which we implement as a nine-year average growth rate. This is intended to capture a measure of indexation that is neutral with respect to the cycle.

The derivation of an indexed budget using the *HERMES* macroeconomic model can be illustrated in a simplified example as follows. Define T as total revenue, GTR as cyclical expenditure (transfers) and GO as non-cyclical expenditure, then the actual budget balance B in year t is:

$$B_t = T_t - GTR_t - GO_t$$

Define t as the average tax rate (T/Y), rtr as the average rate of cyclical expenditure (GC/Y), rgo as the average rate of non-cyclical expenditure (GO/Y). Then the budget balance can be expressed as a function of average tax and expenditure rates, which are discretionary policy instruments, times the base Y, where the base is determined by the rate of economic growth:

$$B_t = t_t Y_t - rtr_t Y_t - rgo_t Y_t$$

Now define $z_t$ as the actual growth rate of Y in year t and z* as the "long-run" growth rate in non-cyclical expenditure. The budget balance indexed on the previous year's budget is then:

$$\tilde{B}_t = t_{t-1} Y_{t-1}.z_t - rtr_{t-1} Y_{t-1}.z_t - rgo_{t-1} Y_{t-1}.z^*_t$$

where $z_t . Y_{t-1} = Y_t$. With some manipulation this can be derived as:

$$\tilde{B}_t - B_t = -\left( \Delta t_t - \Delta rtr_t - (rgo_t - rgo_{t-1}.\frac{z^*}{z}) \right).Y_t$$

From the formula we can see that increases in average tax rates will tighten fiscal stance while increases in average transfer rates will loosen fiscal stance. The last term implies that if non-cyclical expenditure grows faster than its long-run growth rate, this will loosen fiscal stance.[6]

### 3.1.1 Tax Indexation Rules

The main tax revenues are determined as the product of a tax "rate" by a "tax base":

$$T_{it} = t_{it} . BASE_{it}$$

For the purposes of indexation, there are detailed separate revenue categories identified. These include expenditure taxes (VAT receipts, customs taxes, excise

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[6]   This can be seen by rewriting this third term as follows:

$$rgo_t - rgo_{t-1}.\frac{z'}{z} = \frac{G_t - G_{t-1}.z'}{Y_t}$$

taxes, agricultural levies, motor vehicle duties, etc.) and income taxes (personal income taxes, social security contributions, corporate income taxes, DIRT taxes, agricultural income taxes, etc.). Appendix 3 and 4 give the detailed indexation rules applied for each category of revenue. Typically indexation to the previous year's budget is implemented by setting the tax rate equal to that of the previous year, as follows:

$$\tilde{T}_{it} = t_{it\text{-}1} . \text{BASE}_{it}$$

There are some exceptions to this rule built in to the model to ensure accurate indexation. For example, the rate of excise duty is indexed to the deflator of private consumption because excise duties are levied on volumes.

### 3.1.2 Expenditure Indexation Rules

The indexation of expenditure items is more complicated because not all items of expenditure are cyclical. For cyclical items the indexation rules used can be summarised as follows:

Unemployment transfers, GTRU, are modelled as the product of an unemployment transfer "rate" ru, applied to the "base" of total numbers unemployed, U:

$$\text{GTRU}_t = \text{ru}_t . U_t$$

Because numbers employed is a volume base, the rate must be indexed to the appropriate price. In the *HERMES* model indexation of the rate of transfer payments uses a weighted average of the private consumption deflator and the average wage rate as the price term:

$$\widetilde{GT}\tilde{R}\tilde{U}_t = \text{ru}_{t\text{-}1}.(\alpha\dot{P}_t + (1\text{-}\alpha)\dot{W}_t) . U_{it}$$

Indexation of other personal transfers applies a similar price adjustment. In addition, because these transfers are mainly to the elderly (pensions) and the young (children's allowance) there is a volume adjustment based on the growth in the dependency rate (the proportion of the population over 65 and under 14 years of age).

Indexation of subsidy payments imposes a growth rate equal to the growth in the relevant subsidy base. For example, agricultural subsidies are assumed to grow at the same rate as agricultural output.

For non-cyclical expenditure items, we assume no volume growth as a pure indexation rule. Indexed values of four categories of public investment, two categories of employment and public consumption were all computed on this basis.[7] In normal times such an indexation rule would be deflationary[8], however given the collapse in the economy, this no growth rule could in itself be regarded as having an expansionary bias in the years 2009 and 2010. To the extent that this is the case, our estimate of the fiscal stance in those years will in effect overstate the contractionary effect of fiscal policy. On balance we considered that a long-run no-growth indexation rule was the best approximation for a realistic no policy change stance over the period in question.

## 4. Empirical Results

### 4.1 The Official Austerity Package 2008-2012

In July 2008 the authorities began a policy of corrective action (see Appendix 2 for details) to help control the burgeoning deficit. Official estimates suggest that €24 billion in discretionary budgetary measures have been implemented since mid-2008. This is equivalent to 15 per cent of 2011 GDP or 19 per cent of 2011 GNP. These are nominal amounts which state the *ex ante* policy position, that is to say that they do not take account of the negative effects on employment, output and prices which reductions in expenditure and increases in taxation have on economic activity.

**TABLE 2**  *Ex Ante* and *Ex Post* Estimates of Austerity, €billion

| | 2008 | 2009 | 2010 | 2011 | 2012 | 2009-2012 |
|---|---|---|---|---|---|---|
| Estimated *Ex Ante* Measures Announced since mid-July 2008, €bn. | | | | | | |
| Revenue | 0.0 | -5.6 | 0.0 | -1.4 | -1.6 | -8.6 |
| Expenditure | -1.0 | -3.9 | -4.3 | -3.9 | -2.2 | -14.3 |
| of which capital: | 0.0 | -0.6 | -1.0 | -1.9 | -0.8 | -4.2 |
| Total | -1.0 | -9.4 | -4.3 | -5.3 | -3.8 | -22.9 |
| % of GDP | -0.6% | -5.9% | -2.7% | -3.4% | -2.4% | |
| Estimated *Ex Post* Effects of budgetary policy, €bn. | | | | | | |
| Revenue | 0.4 | -0.3 | -0.6 | -0.9 | -0.9 | -2.7 |
| Expenditure | 2.0 | -0.3 | -2.4 | -1.5 | -2.0 | -6.2 |
| of which capital: | 0.3 | -1.3 | -1.3 | -0.3 | -0.8 | -3.7 |
| Total | 2.4 | -0.6 | -3.0 | -2.3 | -2.9 | -8.8 |
| % of GDP | 1.3% | -0.4% | -1.9% | -1.5% | -1.8% | |

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[7]  These are investment in public administration, health and education, local authority housing and roads, water supply and sewerage; employment in public administration, and health and education; and government's purchases of goods and services. See Appendix 3 and 4 for details.

[8]  In Kearney *et al*. (2000) and Barrett *et al*. (2009) we used a long-run volume growth rate, estimated using a nine-period centred moving average as an indexation rule.

Our estimates of the fiscal stance suggest that the cumulative effect of the fiscal consolidation package 2009-2012 (excluding 2008 because it only partially covers the fiscal consolidation period) is estimated to be €8.8 billion for a package of €23 billion, just over one-third.[9] This is on the low side, typically we would expect the *ex post* outturn to be roughly half the original *ex ante* measure. This anomaly can be traced to the 2009 Budget which had a rather perverse outcome. Our results suggest that in 2009 *ex ante* current expenditure measures of €3.6 billion introduced in the budget had an *ex post* stimulatory effect equivalent to €1 billion. This highlights the difficulty of introducing austerity measures at a time of significant deflation.

### 4.2    Individual Year Estimates of the Fiscal Stance 2008-2012

Figure 4 shows the overall measure of fiscal stance based on the difference between an indexed and actual budget balance (GGB). A positive result implies an expansionary budget, a negative sign indicates a contractionary budget.

**FIGURE 4**    Estimate of Fiscal Stance
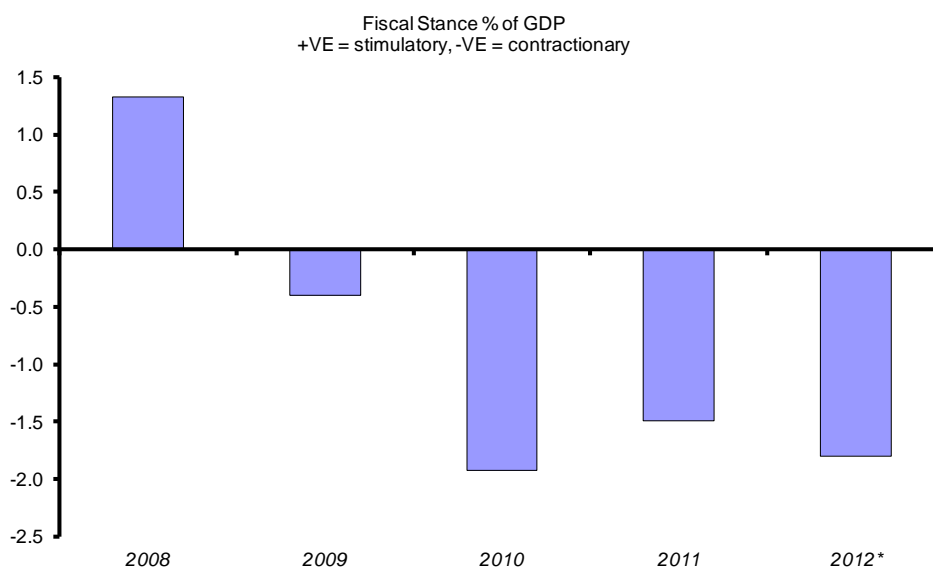


The results are interesting and instructive. At a first glance they suggest that it was not until 2010 that fiscal policy measures adopted began to have a significant impact on the deficit.

2008: We estimate a strongly stimulatory budgetary stance of 1.3 per cent of GDP. This is not a surprising result. The policy of fiscal consolidation began in July

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[9]    In comparing with the *ex ante* position we compare full-year effects. Indexation assumes policy changes are implemented as a full year effect, including all carryover effects.

2008 when the government introduced a package of cuts equivalent to €1 billion on a full-year basis. However, this was only a small part of the overall budgetary measures introduced in 2008, all of which are captured in the *HERMES* indexed budget.

2009: We estimate a mildly contractionary budgetary stance of -0.4 per cent of GDP. This is at first glance a very surprising result; given that the announced package of cuts is estimated to have been equivalent to almost 6 per cent of GDP. However, this occurred in the year when the economy was in freefall, and prices of consumer and investment goods both fell sharply. It points to the difficulties of implementing austerity cuts in a period of deflation.[10] This means that a policy of no change in nominal expenditure levels, which in "normal" times would imply a discretionary tightening of policy, in 2009 would on average have led to a real increase in expenditure. Our estimate of the fiscal stance for 2009 suggests that current expenditure had a stimulatory effect on the economy equivalent to 0.6 per cent of GDP (Figure 4).

2010: We estimate a highly contractionary budgetary stance of 1.9 per cent of GDP. This is lower than the announced package of €4.3 billion (2.7 per cent of GDP) however, allowing for the negative effects of austerity on growth and employment, and against a backdrop of continued deflation, this estimate looks consistent with the *ex ante* numbers.

2011: We estimate a strongly contractionary budgetary stance of 1.5 per cent of GDP. Again this is lower than the *ex ante* package of €5.3 billion or 3.4 per cent of GDP.

2012: We estimate a contractionary budgetary stance of 1.8 per cent of GDP. These figures are based on the latest official forecasts of the general government deficit from the Stability Programme Update, April 2012.

Figure 5 breaks down the composition of the fiscal stance measure among the main categories of expenditure. Scanning across the graph it is clear that changes in current expenditure have been the most discretionary element of recent budgetary policy. What is most noticeable is had current expenditure been fully indexed in 2009, the fiscal stance would have been significantly more contractionary than the actual outcome.

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[10]    For example during 2009 consumer prices as measured by the private consumption deflator fell by 7 per cent.

Composition of Fiscal Stance

Composition of Estimated Fiscal Stance €bn



■ Revenue    ■ Current expenditure    ▨ Capital expenditure
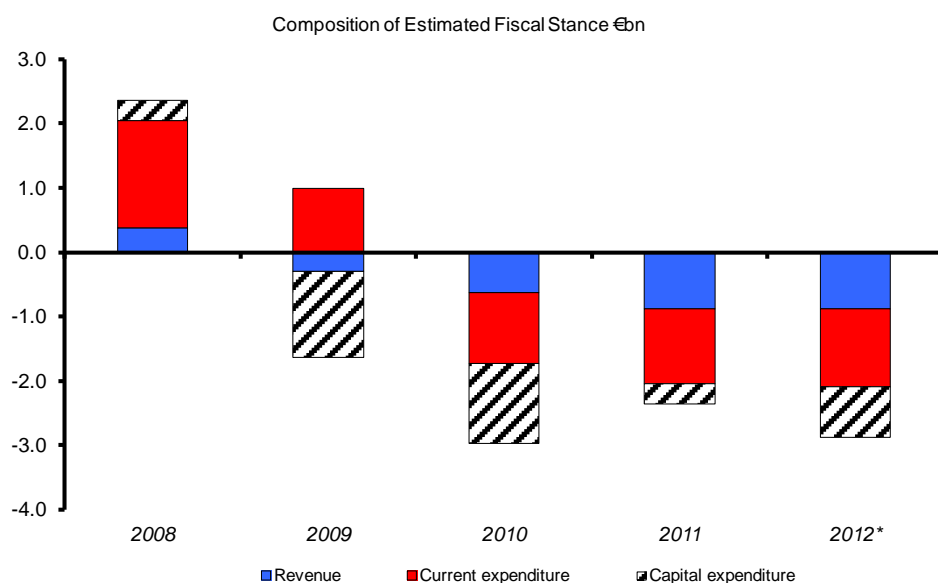
## 4.3    Comparison with Other Measures of Fiscal Stance

The standard approach is to estimate a cyclically adjusted or "structural" budget balance. This is referred to as the "gaps and elasticities" approach that involves estimating an output gap measure and then using this along with elasticity measures to adjust budgetary items. This measure is defined as what the budget balance would be were the economy operating at capacity, where capacity is typically defined as full employment output or trend output. Many international institutions, including the OECD, the European Commission and the IMF produce estimates of cyclically adjusted budget balances based on this definition.

Even in normal times there are a number of difficulties in interpreting the structural budget balance as an indicator of fiscal stance. First, there are methodological difficulties surrounding the definition and measurement of capacity output to generate the gap measure and the underlying elasticities in the measures favoured by the international agencies. These difficulties are significantly exacerbated following the sort of collapse in the economy that Ireland has just witnessed. Second, the structural budget balance (SBB) measures the total effects of discretionary policy, which is a cumulative measure, and does not measure the impact of the current year's budget relative to the previous year's budget. Because of these difficulties many institutions now use the change in the SBB as a measure of fiscal stance, which is an incremental measure. If the SBB increases (decreases) in a given year, this would imply a tightening (loosening) of fiscal policy in that year's budget. To arrive at an estimate of the total stance of discretionary fiscal policy over a number of years, these changes can be aggregated over time.

Figure 6 shows the estimated fiscal stance from *HERMES* together with estimates of changes in the structural budget balance (SBB) from the Department of Finance budget book, which are based on European Commission estimates, and the September 2012 IMF estimates. The Budget Book estimate shown here is the change in the cyclically adjusted budget balance or the structural budget balance published in successive budget book publications.[11]

The differences in individual years are striking. In 2009 all three measures agree that the very large package of measures introduced in that year had virtually no effect on the deficit. Similarly, all three measures are close in their assessment of the 2011 Budget, with the IMF estimating a reduction in the structural balance of 2.3 per cent of GDP compared to a Budget Book estimate of 1.7 and a *HERMES* estimate of 1.5. However, the results diverge sharply for 2010 and 2012. For 2010 the *HERMES* estimate suggests that the budgetary stance was strongly contractionary at 1.9 per cent of GDP. The IMF estimate for 2010 is significantly lower at 1.2 per cent of GDP but it still estimates a strong contractionary fiscal stance. By contrast the Budget Book estimate suggests that the 2010 Budget had no effect on the structural deficit.

**FIGURE 6**     Comparison with Official and IMF Estimates 2008-2012
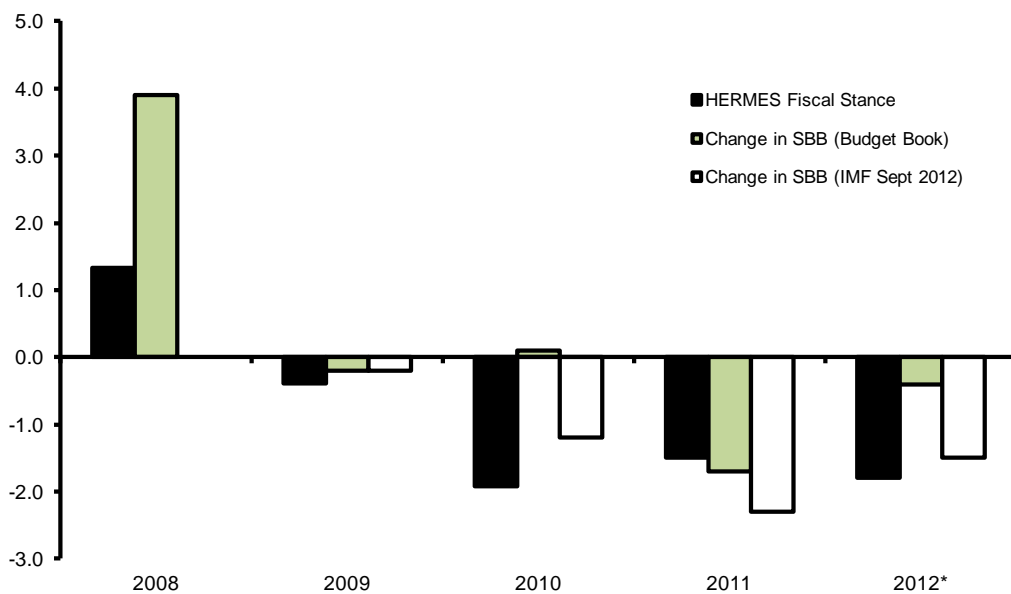


A similar divergence emerges for 2012 with the *HERMES* and IMF estimates much closer than the European Commission figures. The Budget Book estimate of the change in the SBB for 2012 is estimated at just 0.4 per cent of GDP. This is very

[11] In each case we take the most recently published estimate of the SBB. The 2008 and 2009 estimates are from *Budget 2009,* the 2010 estimate is from *Budget 2010,* the 2011 estimate from *Budget 2011.* The 2012 estimate is taken from Table A5 of the SPU, April 2012.

different to that estimated by the IMF which implies a change of 1.5 percentage points in the structural balance, much closer to the *HERMES* 1.8 estimate of fiscal stance.[12]

### 4.4 Fiscal Policy is Predominantly Pro-cyclical

Figure 7 shows our estimate of the fiscal stance from 1976 to 2012 cumulated over successive periods[13] of expansionary or contractionary budgetary stance. The graph also shows the average annual growth rate in those periods. At first glance it is clear that fiscal policy has been broadly pro-cyclical throughout the last three and a half decades, with the exception of the years 1987-1989 when the government introduced a successful fiscal consolidation during a period of positive growth.

The period 1977-1981 shows a cumulative expansionary effect, reflecting the strong expansion in current expenditure in that period. Following this, the budgets of the early and mid-1980s show up as mildly contractionary coupled with growth rates averaging just 0.7 per cent per annum. This was followed in the 1987-1989 period by a period of very sharp fiscal adjustment which occurred at a time of a strong recovery in growth in the Irish economy.

**FIGURE 7**    Fiscal Stance (LHS) and GDP Growth Rate (RHS), Annual Averages



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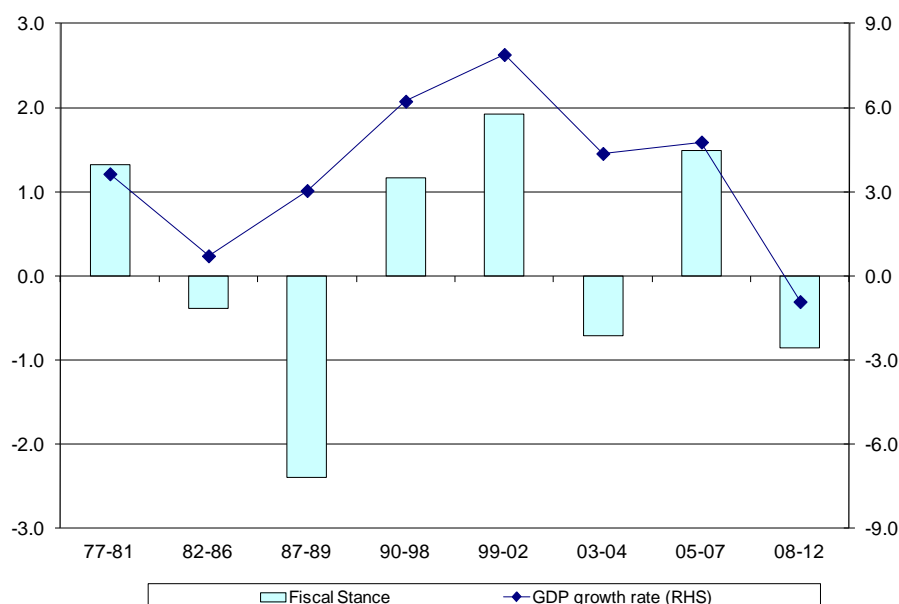
[12]    The Department of Finance have regularly expressed concerns that estimating the SBB using the EU common methodology is problematic for open economies such as Ireland. In the most recent 2012 Budget they again urged caution in interpreting the SBB figures.

[13]    These periods are chosen to correspond to distinct periods of fiscal policy stance. See Barrett *et al.* (2009) for details.

During the 1990s, as growth began to take off, the average fiscal stance was mildly expansionary, accelerating in the period 1999-2002 which shows a significant expansionary fiscal stance. There was some fiscal retrenchment in 2003-2004 following the dot-com recession before strong expansion in the years 2005-2007. What is interesting about the 2005-2007 period is the similarity in the growth rate and the magnitude of the fiscal stance to the earlier 1977-1981 period of expansion. By contrast, the subsequent fiscal consolidation of 2008-2012 has been deeper than that estimated in the period 1982-1986 when very little progress was made *ex post* in discretionary budgetary adjustments. In both cases, the austerity measures were introduced against a backdrop of low or negative growth and rapidly rising unemployment. The fiscal consolidation in the 1980s was only successfully completed in the latter part of the decade during a re-emergence of strong growth in external demand which helped to offset the very sharp fiscal contraction of the years 1987-1989.

## 5. Conclusions

In this paper we present estimates of the fiscal stance based on an analysis of the fiscal consolidation budget packages introduced over the period 2008-2012. Our results suggest that the *ex post* effects of austerity were initially quite modest. In particular we find that the 2009 Budget was broadly neutral despite a very large package of cuts. In the years 2010 through to 2012, we estimate that fiscal policy has had a significant effect on the deficit, with a cumulative reduction in the structural deficit of over 5 ½ percentage points.

While fiscal stance measures can be used to assess the likely expansionary or contractionary impact of budgetary policy on economic activity, they are silent on the appropriate stance of budgetary policy. Given the crisis that the Irish government faced in 2009 and 2010 with the precipitous collapse in its budget balance, the yawning pit of mounting bank losses all funded by the general government purse, and the sovereign's eventual inability to independently raise funding on financial markets, there was little choice but to commence an aggressive fiscal consolidation programme to bring the public finances under control. This austerity programme, pursued over the past five years, which served initially to stabilise and more recently to reduce the deficit on the public finances, has occurred against a backdrop of a very deep recession in terms of output, employment and incomes. As in the 1980s, the Irish authorities find themselves once again in a position where they are pursuing an aggressive austerity programme against the tide, with a deeply pro-cyclical fiscal stance.

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**APPENDIX 1**    The General Government Balance 2006-2012

| €million | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| **Current receipts** | | | | | | | |
| Taxes on income and wealth | 19,945 | 20,904 | 19,231 | 16,651 | 16,143 | 18,642 | 19,925 |
| Social Insurance contribution | 8,159 | 9,053 | 9,259 | 8,924 | 8,701 | 7,532 | 7,000 |
| Taxes on expenditure | 24,666 | 25,216 | 22,246 | 18,271 | 17,922 | 17,678 | 18,375 |
| Gross trading income | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Gross rental income | 536 | 568 | 676 | 495 | 535 | 524 | 475 |
| Investment income | 1,239 | 1,615 | 2,172 | 1,979 | 2,167 | 2,044 | 2,400 |
| Transfers from ROW* | 210 | 55 | 149 | 97 | 113 | 52 | 200 |
| Miscellaneous receipts | 2,906 | 2,933 | 3,058 | 3,418 | 4,180 | 3,991 | 3,400 |
| **Total receipts - current** | **57,661** | **60,345** | **56,792** | **49,835** | **49,759** | **50,464** | **51,775** |
| **Capital receipts** | | | | | | | |
| Taxes on capital | 3,442 | 3,488 | 1,767 | 801 | 582 | 1,123 | 1,113 |
| Transfers from ROW | 193 | 162 | 76 | 175 | 48 | 132 | 150 |
| Other receipts | 1,930 | 2,369 | 1,766 | 628 | 200 | 171 | 108 |
| **Total receipts - capital** | **5,566** | **6,019** | **3,609** | **1,604** | **831** | **1,426** | **1,371** |
| **Total receipts** | **63,227** | **66,364** | **60,400** | **51,438** | **50,590** | **51,890** | **53,146** |
| **Current expenditure** | | | | | | | |
| Subsidies | 775 | 870 | 939 | 893 | 879 | 639 | 625 |
| National debt interest | 1,828 | 1,957 | 2,376 | 3,246 | 4,937 | 5,143 | 6,450 |
| Transfer payments | 20,390 | 23,180 | 26,214 | 28,317 | 27,859 | 28,319 | 27,671 |
| Goods and services: | 26,813 | 29,530 | 31,167 | 30,273 | 28,026 | 27,111 | 27,149 |
| *Wages,salaries and pensions* | *18,106* | *19,838* | *21,136* | *20,468* | *19,050* | *18,854* | *19,174* |
| *Other* | *8,707* | *9,692* | *10,030* | *9,805* | *8,976* | *8,257* | *7,975* |
| **Total current expenditure** | **49,806** | **55,537** | **60,695** | **62,729** | **61,701** | **61,213** | **61,896** |
| **Capital expenditure** | | | | | | | |
| Grants to enterprises | 593 | 823 | 2,046 | 4,844 | 32,160 | 6,060 | 725 |
| *Recapitalisation of Financial Institutions* | | | | *4,000* | *31,575* | *5,777* | |
| Other transfer payments | 701 | 1,016 | 985 | 241 | -375 | 364 | 550 |
| Gross physical capital formation | 6,810 | 8,788 | 9,769 | 6,069 | 5,512 | 4,249 | 2,937 |
| Payments to the rest of the world | 105 | 35 | 31 | 18 | 27 | 27 | 50 |
| **Total capital expenditure** | **8,209** | **10,662** | **12,830** | **11,173** | **37,325** | **10,701** | **4,262** |
| **Total expenditure** | **58,014** | **66,198** | **73,525** | **73,901** | **99,025** | **71,913** | **66,158** |
| | | | | | | | |
| **Net lending / net borrowing** | **5,212** | **166** | **-13,125** | **-22,463** | **-48,435** | **-20,023** | **-13,012** |
| **General Government Balance** | **5,193** | **170** | **-13,129** | **-22,467** | **-48,426** | **-20,158** | **-13,012** |

*Source: National Income and Expenditure 2011 Table 21 for 2006-2011. Stability Programme Update (SPU) April 2012 background tables for 2012 as supplied by Department of Finance. The data for 2012 are directly comparable with Table 21 in the National Accounts and are slightly different to the published data in Table A1 in the SPU.*

*ROW= Rest of World.

**APPENDIX 2**     *Ex Ante* Discretionary Measures 2008-2012

| | Measure | Source | €bn |
|---|---|---|---|
| 2008 | Expenditure | July 2008 | €1.0 |
| 2009 | Revenue | Budget 2009 (Oct 2008) | €2.0 |
| | Expenditure | February 09 | €2.1 |
| | - Tax revenue | Supplementary Budget 2009 (Apr 2009) | €3.5 |
| | - Current Expenditure | Supplementary Budget 2009: Apr 2009 | €1.2 |
| | - Capital Expenditure | Supplementary Budget 2009: Apr 2009 | €0.6 |
| 2010 | - Current Expenditure | Budget 2010: Dec 2009 | €3.3 |
| | - Capital Expenditure | Budget 2010: Dec 2009 | €1.0 |
| 2011 | - Current Expenditure | Budget 2011: Dec 2010 | €2.1 |
| | - Capital Expenditure | Budget 2011: Dec 2010 | €1.9 |
| | Tax revenue | Budget 2011: Dec 2010 | €1.4 |
| 2012 | - Current Expenditure | Budget 2012: Dec 2011 | €1.5 |
| | - Capital Expenditure | Budget 2012: Dec 2011 | €0.8 |
| | Tax revenue | Budget 2012: Dec 2011 | €1.6 |
| 2008-2012 | TOTAL | | €23.9 |

*Source*: For 2008-2010 *Report of the Review Group on State Assets and Liabilities*. [Table 2.1: Budgetary Adjustments since mid-2008 – Planned Budgetary Impact.] For 2011 and 2012 *Budget 2011, Budget 2012, Medium Term Fiscal Statement,* November 2012 Table 2.1. The figures included show the full year effects, including carryover, and exclude once-off measures.

**APPENDIX 3**     Indexation Rules in Government Accounts in *HERMES*

| Item | Indexation Rule |
|---|---|
| **REVENUE** | |
| EXPENDITURE TAXES: | |
| Excise Tax | Previous year's average tax rate, indexed to personal consumption deflator |
| VAT | Previous year's average tax rate |
| Carbon Taxes | Previous year's average tax rate |
| Stamp Duties, Fees, etc. | Previous year's average tax rate, indexed to personal consumption deflator |
| Motor Vehicle Duties-Companies | Previous year's average tax rate, indexed to personal consumption deflator |
| Customs Duties | Previous year's average tax rate |
| Rates | Previous year's tax take indexed to growth in nominal GNP |
| Agricultural Levies | Previous year's tax take indexed to growth in agricultural output prices |
| Contribution to EC Budget (-) | Previous year's contribution indexed to growth in OECD GDP |
| TAXES ON INCOME: | |
| Personal Income Tax | Previous year's average tax rate |
| Social Insurance Contributions | Previous year's average rate for both employee and employer |
| Company Taxes: Corporation Tax | Previous year's average tax rate |
| Motor Vehicle Duties-Personal | Previous year's average tax rate, indexed to Personal consumption deflator |
| Farmers' Income Tax | Previous year's tax take indexed to growth in agricultural incomes |
| DIRT | Previous year's tax take indexed to growth in average deposit interest from GNP |
| NON-TAX INCOME | |
| Trading & Investment Income | Previous year's level indexed to growth in nominal GNP |
| Transfers From Abroad | Previous year's level indexed to growth in nominal GNP |
| Other Taxes | Previous year's level indexed to growth in nominal GNP |
| CAPITAL REVENUE | Previous year's level indexed to growth in GDP deflator |
| **CURRENT EXPENDITURE** | |
| PUBLIC CONSUMPTION | |
| Wage bill - Public Admin. | Long-run volume growth rate* times actual change in wages |
| Wage bill - Other | Long-run volume growth rate* times actual change in wages |
| Non-Pay | Long-run volume growth rate* times actual change in wages |
| Subsidies | |

| Item | Indexation Rule |
|---|---|
| Consumer | Split in two: transport subsidies indexed to growth in output in transport and communications sector, other consumer subsidies indexed to growth in nominal consumption. |
| Other Subsidies | |
|   Agricultural | Growth in gross output in agricultural sector |
|   Non-agricultural subsidies | Growth in nominal GDP at factor cost |
| PERSONAL TRANSFERS | |
|   Unemployment | Average rate indexed to either wages or prices (normally wages but in this paper prices) |
|   Pensions etc. | Previous year indexed to change in dependent population (under 14 and over 65) and growth in either wages or prices (in practice wages) |
| Debt Interest | |
| Transfers to Rest of World | Contribution to EU budget indexed to growth in OECD GDP; other government transfers indexed to growth in nominal GNP |
| **CAPITAL EXPENDITURE** | |
| INVESTMENT | |
|   Housing | Long-run volume growth rate* times actual change in price deflator |
|   Public Admin. | Long-run volume growth rate* times actual change in price deflator |
|   Health & Education | Long-run volume growth rate* times actual change in price deflator |
|   Other | Long-run volume growth rate* times actual change in price deflator |
| CAPITAL TRANSFERS | |
|   to Industry | Unchanged rate |
|   to Households | Unchanged rate |
| Other Capital expenditure | Long-run volume growth rate* times actual change in price deflator (GDP deflator) |

\*    The long-run volume growth rate in "normal times" is calculated as a nine-year centred moving average growth rate. This is intended to capture a measure of non-cyclical growth in each individual expenditure item, smoothing out cyclical changes.

| | Mnemonic | Base | Rate and Indexation Rule |
|---|---|---|---|
| **General Government Balance** | **GBR=GTTOT+GR-GC-GK** | | |
| **Total Current Revenue** | **GTTOT** | **GTTOT=GTE+GTY+GTTI+GTTABR+GTW** | |
| Excise Tax | GTEXT | Personal Consumption volume (C), Tourism Exports volume (XTO) and the personal consumption deflator (PC) | Rate Indexed to PC |
| VAT | GTEVAT | C, PC, Private Housing Investment (IHPV), Tourism Exports (XTOV) and Government Consumption of Goods and Services Non-Pay (GCGNPV) | Rate Unchanged |
| Carbon Taxes | GTECA | Carbon Emissions (CO2) | Rate Unchanged |
| Stamp Duties, Fees, etc. | GTEO | C, PC, and Building Investment (IBV) | Rate Indexed to PC |
| Motor Vehicle Duties-Companies | GTEMVDC | Stock of Cars (SCARS) | Indexed to PC |
| Customs Duties | GTECUSO | Imports of Goods and Services (MGSV) | Rate Unchanged |
| Rates | GTERATE | GNP in current prices (GNPV) | Indexed to GNPV |
| Agricultural Levies | GTAGLEV | Indexed to PQGA (Price deflator of Gross Agricultural Output) | |
| Contribution to EC Budget (-) | EECTG | GNP Price deflator and OECD GDP (PGNP*GDP_OECD) | Indexed to PGNP*GDP_OECD |
| Total Taxes on Expenditure | GTE | GTE=GTEXT +GTEVAT + GTECA+GTEO+GTEMVDC+GTECUSO+GTERATE+GTAGLEV -EECTG | |
| Personal Income Tax | GTYPER | Personal Disposable Income (YRPERT) | Rate Unchanged |
| Social Insurance Contributions | GTYSL | Wage Income (YWI + YWSM) | Rate Unchanged |
| Corporation Tax | GTYC | Non-Wage Income (YC) | Rate Unchanged |
| Motor Vehicle Duties-Personal | GTYMVDP | Stock of Cars (SCARS) | Indexed to PC |
| Farmers' Income Tax | GTYA | Agricutlural Income (YAG) | Indexed to YAG |
| DIRT | GTYDIRT | Indexed to RD*GNPV (RD=deposit interest rate) | |
| Total Taxes on Income | GTY | GTY=GTYPER+GTYSL+GTYC+GTYMVDP+GTYA+GTYDIRT | |
| Trading & Investment Income | GTTI | Indexed to GNPV | |
| Transfers From Abroad | GTTABR | Indexed to GNPV | |
| Other Taxes | GTW | Indexed to GNPV | |
| **Capital Revenue** | **GR** | **Indexed to GDP price deflator (PGDP)** | |
| **Current Expenditure:** | **GC** | **GC=GCGV+SUB-EECS+GCTPER+GCTNT+GCTABR** | |
| Public Consumption | GCGV | GCGV=OSNPV+GCGOWV+GCGNPV | |
| Wages - Public Admin. | OSNPV | Value added (OSNPV) equals wage bill (YWSNP) <br> Wage bill (YWSNP) = Employment (LSNP) times Wage (WSNP)P | Index WSNP to average wages WNA; LSNP unchanged |

| | Mnemonic | Base | Rate and Indexation Rule |
|---|---|---|---|
| Wages – Other | GCGOWV | GCGOWV=YWSNHE | |
| Wages – Health and Education | YWSNHE | YWSNHE=LSNHE*WSNHE | Index WSNHE to average wages WNA; LSNHE unchanged |
| Non-Pay | GCGNPV | Index to PGCGNP (price deflator) | |
| Subsidies | GCS | GCS=GCSC+GCSO | |
| Consumer Subsidies | GCSC | GCSC=GCSCO+GCSCT | |
| Transport | GCSCT | OSMTCV (Value added in Transport and Communications) | Index to OSMTCV |
| Other | GCSCO | Index to Personal Consumption (CV) | |
| Other Subsidies | GCSO | GCSO=GCSA+GCSONA | |
| Agricultural | GCSA | GCSA=GCSANS+GCSAS | |
| Sales | GCSAS | Gross Output in Agriculture (QGAV) | Index to QGAV |
| Non-Sales | GCSANS | Gross Output in Agriculture (QGAV) | Index to QGAV |
| Other Non-agricultural subsidies | GCSONA | GDP at factor cost in current prices (GDPFCV) | Index to GDPFCV |
| Personal Transfers | GCTPER | GCTPER=GCTU+GCTREST | |
| Unemployment | GCTU | Unemployment (U) | Index to weighted average of WNA and PC[1] |
| Pensions etc. | GCTREST | Index population aged under 14 and over 65 to weighted average of WNA and PC | |
| Debt Interest | GCTNT | | |
| Transfers to Rest of World | GCTABR | GCTABR=GCTAEO+GCTAO | |
| Non-tax contribution to EU budget | GCTAEO | GCTAEO = EECBUD-EECTG | |
| Contribution to EU budget | EECBUD | PGNP*GDP_OECD | Indexed to PGNP*GDP_OECD |
| Other govt transfers abroad | GCTAO | Indexed to GNPV | |
| **Capital Expenditure** | **GK** | **GK=IHGV+ISNPV+ISNHEV+ISMGV+GKTI+GKTH+GKREST** | |
| Housing | IHGV | Index to PIH | |
| Public Admin. | ISNPV | Index to PISNP | |
| Health & Education | ISNHEV | Index to PISNHE | |
| Other | ISMGV | Index to PISMG | |
| Capital Transfers to Industry | GKTI | Total Industrial Investment (IIV) | Rate Unchanged |
| Capital Transfers to Households | GKTH | Private Housing Investment (IHPV) | Rate Unchanged |
| Other Capital expenditure | GKREST | No Indexation, this is assumed unchanged | |

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[1] In the *HERMES* model there is an option to index unemployment transfer payments and other transfer payments (GCTREST) to either wages or prices or a weighted average of both. The default option is full indexation to wages.