Session 4

THE ROLE OF INDICATORS IN FISCAL POLICY

POLITICAL IMPLICATIONS
OF FISCAL PERFORMANCE IN OECD COUNTRIES

Adi Brender[*] and Allan Drazen[**]

While economists argue that lower budget deficits are required in the developed countries, there is a widely held perception that expansionary fiscal policy helps incumbents to get reelected, an assumption that underlies the view that political budget cycles are widespread. However, this view has not been subject to much empirical testing. We examine this argument in a sample of developed countries over the period 1960-2003 and find that increased deficits during an incumbent's term in office, especially in election years, reduce the probability that a leader is reelected. The effects we find are not only statistically significant, but also quite substantial quantitatively. We also find that voters do not have a systematic preference for expenditure cuts relative to tax hikes or vice versa.

1.   Introduction

The consolidation of fiscal positions has become an area of focus for policy makers in recent decades. In the developed countries demographic pressures, arising from the increasing share of the elderly in the population and the associated projected rise in pensions and health-care expenditure, highlight the need to reduce the public-debt burden and future debt-servicing costs. In many developing countries fiscal consolidation is needed to ensure the sustainability of public-sector financial positions, to attract much-needed foreign investment and to avoid crowding-out of the private sector from domestic financial markets.

Many studies have examined the contribution of sound fiscal policies and fiscal consolidations to financial stability, sustainable economic growth and productivity.[1] Surprisingly, the response of voters to fiscal prudence remains largely unexplored empirically. Some conventional wisdom suggests that fiscal austerity, especially in election years, may hurt an incumbent's chances of reelection (or more generally that fiscal consolidation may have a negative impact on a politician's fortunes), but hard econometric evidence to that effect is missing. Since democratically elected leaders are expected to reflect the preferences of their

electorates and are also likely to want to get reelected, voter approval of prudent fiscal policies may be a critical precondition for sustaining them, while voter disapproval may discourage politicians from adopting such policies.[2] Hence, if OECD countries are to successfully undertake policies of fiscal consolidation to address the fiscal implications of demographic changes (for example), voter response to these policies must be better understood.

The tests of the effect of fiscal performance on election outcomes of which we are aware are on the sub-national rather than the national level.[3] Peltzman (1992), Brender (2003), and Drazen and Eslava (2005a) examine the direct effect of fiscal performance on reelection at the state and local level in a single country (the United States, Israel, and Colombia respectively), and find that voters punish – rather than reward – loose fiscal policies. None of these country studies examines directly whether fiscal expansions at the *national* level help incumbents to get reelected. Since there may be important differences between the effects of fiscal expansions at the local and national levels – inter alia, due to the proportion of the fiscal effect that is spilled over outside the jurisdiction – applying these findings to the national level is not straightforward. Moreover, any empirical conclusions one might draw should, strictly speaking, be limited to these countries, rather than applicable to a broader group of countries.

In this study we look directly at the effects of fiscal performance on reelection in OECD countries. Using information on 164 election campaigns in 23 of these countries over 5 decades we examine whether voters reward or punish (or are largely indifferent to) prudent fiscal policies during an incumbent's term in office. Since we find that prudent fiscal policy in fact has a significant positive effect on reelection probabilities, we then look in more details at potential alternative explanations for the phenomenon.

The plan of the paper is as follows. In the next section we summarize some of the conceptual arguments on how fiscal performance may affect voting behavior *and the factors that may affect this relationship*. In Section 3, we describe the dataset and variable definitions. Section 4 sets out the basic empirical results on the effect of deficits on the probability of a leader's reelection. We find clear evidence that larger deficits during an incumbent's term decrease the probability of reelection, whether they reflect larger public expenditure or lower taxes. We also examine the robustness of these findings to various different specifications. In section 5 we consider some alternative explanations of our results. Section 6 contains conclusions.

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[2]   There is also a possibility that certain countries are simply in a position that does not require further consolidation, and in these countries voters are not expected to support further reductions in the deficit (or increases of the budget surplus). We return to this latter point in the empirical analysis below.

[3]   Alesina, Perotti and Tavares (1998) analyze the effects of fiscal adjustments in a cross section of OECD countries, but focus on cabinet changes and public opinion polls, rather than on election results.

2. Fiscal performance and reelection

There are two main (and contradictory) views of voter attitudes towards fiscal policies. One view is that voters support policies that generate larger deficits, or that the political structure is such that these policies would increase the probability of reelection. The other view is that voters dislike loose fiscal policies and would punish leaders who implement them.

A popular view, consistent with the first approach, is that voters like low taxes, which raise their disposable income, and high government expenditures – that provide them with either more and better public services or higher transfer payments; hence, they would vote for incumbents who provide them. Opportunistic incumbents can therefore use expansionary fiscal policy to increase the probability of reelection. According to that point-of-view voters are either short-sighted, or they do not care enough about the future implications of current deficits to change their votes.

However, this simple argument is inconsistent with the view that voters are rational, forward-looking individuals. There is the question of why such voters would "ignore" the government's intertemporal budget constraint in rewarding deficit-producing politicians. One set of responses to these arguments focus on various sorts of fiscal illusion. Rogoff (1990) and Rogoff and Siebert (1988) present models that rely on imperfectly informed, rational voters, who observe higher expenditures (or lower taxes) but believe that more competent policymakers can provide these without necessarily incurring higher deficits. Although Rogoff-type models focus on the short-term, their logic can be extended to voters who believe that competent policy-makers can apply expansionary fiscal policies that would result in future growth or efficiency gains that would restore fiscal soundness (e.g, Laffer (2004) type responses).

Another line of argument is based on more sophisticated models that focus on the role of interest groups in society. These models do not assume that voters are myopic, as in the first type of arguments mentioned above, or lack information, as in the second type (also suggested by Nordhaus, 1989). According to these models, competing interest groups in a society may be unable to agree on a first-best policy, even if they are all aware that an agreement may make all of them better off (Phelps, 1985, pp. 185-91, Alesina and Drazen, 1991). In an attempt to gain electoral support, politicians may try to satisfy demands of competing groups in order to retain support, even if such largesse would imply larger than optimal deficits. In countries where deficits are the result of such social constellations one might then observe that deficit-producing politicians get reelected. Special interest group politics may also be reflected in "pork barrel" spending – that is, spending targeted at specific groups.[4] There is a large literature investigating the use of such spending programs to gain votes and their effectiveness in doing so (as well as a large folk

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[4] For a detailed survey of this literature see Drazen (2000) and Drazen and Eslava (2005a).

wisdom about their extensive use).[5] This type of arguments also points to the importance of measuring the effect of fiscal performance on election results rather than only on popularity in opinion polls, as done by Alesina *et al.* (1998); if changes in fiscal policy are aimed at satisfying critical interest groups, opinion polls may not be able to capture their political consequences.

The alternative point-of-view is that there are a number of reasons to believe that loose fiscal policy need not help an incumbent's reelection chances and may actually harm them. If voters are rational and informed they would be aware of government budget constraints both at a point in time and intertemporally. Since current deficits imply non-smooth paths of taxes and government expenditures over time, rational voters are likely to view them as costly and welfare reducing. Therefore, they should dislike deficits, and punish rather than reward loose fiscal policies, especially in countries where there is a need to reduce the public debt, as is the case in most of the developed countries in recent decades. Moreover, Peltzman (1992), argues that voters are "fiscal conservatives", *i.e.*, they dislike larger government spending and punish incumbents that increase spending during their term, even if these expenditures were not accompanied by larger deficits.

To summarize, there are conceptual arguments on both sides. We believe that there are good arguments why fiscal manipulation will *not* work in most countries, while the arguments why it might *work* are reasonable only in some groups of countries where information is lacking or special social and political circumstances apply. There is no empirical work testing the connection between aggregate fiscal policies and an incumbent's reelection chances for a large cross-section of countries. Hence, there is a need to confront the different views with the data.

3.   Data and variable definitions

The dataset used in this study is based on information from several sources (see Table 6). Fiscal data are taken mostly from the IFS and are complemented by GFS data. National accounts data were extracted from the World Bank's World Development Indicators and the IFS, and information on the political structure of countries, their electoral system and additional political variables is constructed using the World Bank's database of Political Institutions (DPI). A detailed description of the data sources and the construction of the variables appears in Appendix I. The combination of sources allows us to use data for 23 developed countries (OECD economies) over the period 1960-2003. Overall we have useable information on 164 reelection campaigns that took place in periods where these countries were democratic. The countries and election campaigns are listed in Tables 7 and 8, respectively.

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5   Drazen and Eslava (2005b), present a formal model of political cycles in pork barrel spending in which a
      political expenditure cycle may exists even if a targeted group of voters know they are being targeted.

The key political variable REELECT is a binary variable with a value of 1 if the incumbent was reelected and 0 if he or she was not. Its construction was based on information from the "World Political Leaders 1945-2005" database of *Zárate's Political Collections (ZPC)* and from the "World Statesmen" encyclopedia. These data allowed us to follow the terms of individual leaders in office from appointment to termination, and to associate them with election dates. The decision whether the prime minister or the president is the leader is based on the DPI dataset classification, as described in Persson and Tabellini (2003). Information on election dates and results (presidential elections in presidential systems and parliamentary elections in parliamentary ones) is taken from the International Institute for Democracy and Electoral Assistance (IDEA) dataset "Voter Turnout Since 1945", from the International Foundation for Election Systems ELECTION GUIDE dataset and is supplemented by Binghamton University's Election Results archive.

We define REELECT to include only observations where the leader is running for reelection herself (either as the leader of her party in parliamentary elections or personally in presidential ones). We constrain the sample to observations of leaders who were in office for at least two fiscal years prior to the elections and were candidates in the elections or retired within the month before the elections (in which case we classify the leader as losing reelection, unless she was legally banned from running due to term-limits). The use of this definition has the advantage of focusing only on the cases where the same person who led the government before the elections is the one seeking reelection. The homogeneity of the resulting sample may reflect a clearer relationship between performance and reelection and avoids questions of the extent to which voters associate a new (substituting) candidate with the policies of his predecessor. Outcomes of the 164 reelection campaigns are pretty evenly split between successful and unsuccessful reelection attempts, with the leader reelected 86 times and not reelected 78 times.

Our key variable in examining fiscal performance – *BALCH_term* – reflects the *change* in the central government's *balance* (that is, budget surplus) to GDP ratio over the *term* in office by comparing the average balance/GDP ratio in the last 3 years of the term – including the election year – with the previous 3 years. Similarly, we examine the variable *BALCH_term_ex_ey* which compares the that ratio in the two years before the election year with that in the previous two years. We also use the variables *REVCH_term* and *EXPCH_term*, which are defined in the same way, to examine whether changes in the ratios of central government revenues and expenditures, respectively, affect the probability of reelection differently. Additionally, we calculate the variable *BALCH_ey* – the change in the balance/GDP ratio in the *election year* relative to the previous year – which we use later in the analysis as an indicator for election year fiscal expansions.[6] All these variables are calculated on the basis of IFS data, supplemented with GFS data, as

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[6]   While in some cases it is not clear which fiscal year should correspond to the election year, especially when the elections take place in the early part of the year, Brender and Drazen (2005b) and others (for example, Alesina, Perotti and Tavares, 1998) find that the relationship between fiscal policy and the timing of elections is not very sensitive to the definition used.

described in Brender and Drazen (2005a). All our data are adjusted to fiscal years (in 5 of the countries the fiscal year does not overlap the calendar year).[7]

The interpretation of changes in the fiscal aggregates and their potential effect on voter behavior should account for the possible effects of growth. High growth periods may be associated with a decline in the ratio of fiscal deficit to GDP which is not associated with government measures and policies. To account for these business cycle effects we include in all our equations an indicator for macroeconomic performance. This variable is *GDPPC_gr*, which is the average annual *growth rate* of real *GDP per capita* between the current and the previous election year. In cases where the leader assumed power after the previous elections, we calculate *GDPPC_gr* only over the period since his appointment. We also include, separately, in some of our equations, the real growth rate of GDP in the election year. Finally, we calculated the deviation of GDP from its long term trend (using a country-specific Hodrick-Prescott filter) for each country in each year, and used this variable in some of our equations as an additional control for the business cycle.

The electoral system in a country may affect the probability of reelection. Incumbents in countries that use the majoritarian electoral system may have a higher probability to be reelected, because of the larger stability that this system may generate (Persson and Tabellini, 2003). While a broad discussion of this possibility is beyond the scope of this paper, we control for this possibility by including in all the equations a binary variable for countries with a majoritarian system. Also, to account for the possibility that voters in "new democracies" (as defined in Brender and Drazen, 2005a) may prefer to avoid regime changes, we also include a binary variable for "new democracies".

4.   The effect of deficits on reelection

We begin with the basic results. In Table 1 we examine the effect of the change in the deficit during the incumbent's term on the probability of reelection using Probit estimation.[8] In column 1 we present a basic specification. The equation shows that voters are likely to punish persistent budget deficits over the term in office (a positive value of *BALCH_term* implies a decrease in the deficit to GDP ratio) rather than reward leaders who create them. As mentioned above, this effect is measured when the growth rate of real GDP is accounted for in the equation. The coefficient of the change in the deficit to GDP ratio over the term is positive and statistically significant, indicating that the probability of reelection is increasing when the fiscal balance improves during the leader's term in office.[9] We also find

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[7]   Of these five countries, Sweden changed its fiscal year to the calendar year in 1996.

[8]   Logit equations yielded very similar results.

[9]   Controlling for the level of GDP per capita, yielded insignificant results and did not affect qualitatively the coefficients of the other variables.

Table 1

**The Effect of Fiscal Balance Changes
during the Term on the Probability of Reelection**[1]

	(1)	(2)	(3)	(4)
BALCH_term[2]	14.402***	16.136***	14.737***	16.192***
	[0.003]	[0.006]	[0.003]	[0.002]
GDPPC_gr[2]	1.495	1.367	2.168	1.648
	[0.796]	[0.813]	[0.726]	[0.777]
GDPD_trend[3]			−1.216	
			[0.756]	
New Democracies	0.551	0.507	0.554	0.563
	[0.184]	[0.231]	[0.182]	[0.177]
Majoritarian Electoral System	0.466*	0.468*	0.472*	0.462*
	[0.078]	[0.077]	[0.075]	[0.081]
BALCH_term[(†)] *Def_Size*[4]		−0.578		
		[0.607]		
BALCH_term[(†)] *EU*[5]				−18.184
				[0.243]
Constant	−0.083	−0.066	−0.103	−0.077
	[0.675]	[0.742]	[0.621]	[0.699]
Pseudo *R*-squared	0.063	0.064	0.063	0.068
Akaike's criteria	222.77	224.51	224.68	223.44
Schwartz's criteria	238.27	243.11	243.28	242.04
Observations	164	164	164	164

[1] The figures in the table are probit coefficients and the figures in parantheses are *P*-values.

[2] *BALCH_term* – The change in the budget balance ratio to GDP during the leader's term, including the elections year. *GDPPC_gr* – The average growth rate of real per-capita GDP during the leader's term.

[3] GDPD_trend – The change in the deviation of real GDP from its trend, estimated using a Hodrick-Prescott filter, during the leader's term including the elections year.

[4] *BALCH_term** *Def_Size* – The change in the budget balance ratio to GDP during the leader's term including the elections year multiplied by the budget deficit ratio to GDP at the beginning of the leader's term.

[5] – A binary variable with the value of 1 for the 15 members of the European Union in the years 1992-2002. A cross [(†)] indicates multiplication by this variable.

* significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

that having a majoritarian electoral system increases the probability of reelection (though the significance is marginal). The negative effect of loose fiscal policies on the probability of reelection is not only statistically significant, but it is also quite large quantitatively: a reduction of 1 percentage point in the deficit to GDP ratio (controlling for the change in GDP) increases the probability of reelection by 5.7 percentage points.[10]

One possible explanation to the findings above is that voters' disapproval of loose fiscal policies is not a general phenomenon and reflects only the behavior of voters in countries with large initial deficits. In column 2 of Table 1 we examine the robustness of our findings to this possibility by adding to the equation an interaction between the size of the deficit at the beginning of the incumbent's term in office and the change in the deficit (BALCH_term). We find that there is no statistically significant effect of the initial *level* of the deficit to GDP ratio on the magnitude of the effect of *changes* in that ratio on the probability of reelection, although the coefficient has the expected sign. Moreover, the inclusion of this interaction does not reduce the significance of the effect of the change in the deficit on the probability of reelection

In column 3 we check whether the results are sensitive to the use of an alternative method of controlling for the business cycle. We do that by adding the change over the term in the deviation of GDP from its country specific long time trend, which is calculated using the Hodrick-Prescott filter. Again, none of the coefficients is affected qualitatively by this addition.

Another possible explanation for the finding of the positive effect of prudent fiscal policy on the probability of reelection in the developed countries is that it reflects only the experience of the EU countries after the Maastricht treaty in 1992, and the Stability and Growth Pact that followed it. To account for that possibility we add an interaction between a binary variable for the 15 EU countries starting from 1992 and the change in the deficit over the term in office.[11] We present these results in column 4 and find that there is no unique support for deficit reducing policies in the EU countries, nor do they account for the positive voter support for deficit reductions in the developed countries.

If voters dislike deficits, do they also care about the composition of the fiscal balance? In other words, do voters have preferences for expenditure cuts, as opposed to tax increases, as suggested for example by Peltzman (1992) with respect to American voters? Also, is it possible that by examining changes in the deficit we mix tax hikes with expenditure cuts, and by doing so "clouding" the voters' support for one type of policies? While an increase in the budget deficit, especially after accounting for the business cycle, raises concerns of intertemporal imbalances, the size of government and the tax burden depend to a larger extent on tastes. In that

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[10]   The probit coefficients cannot be used directly as elasticities or semi-elasticities. The effect of the variables is calculated at the average point for the developed countries.

[11]   Using, instead, a binary variable only for the countries that adopted the Euro had no effect on the results.

Table 2

**The Effects of Revenue and Expenditure Changes
during the Term on the Probability of Reelection**[1]

	(1)	(2)	(3)	(4)
REVCH_term[2]	15.143***	16.547***	15.701***	16.734***
	[0.003]	[0.007]	[0.003]	[0.002]
EXPCH_term[2]	−13.678***	−15.157**	−14.140***	−15.423***
	[0.005]	[0.011]	[0.005]	[0.003]
GDPPC_gr[2]	1.790	1.652	2.707	1.870
	[0.758]	[0.776]	[0.663]	[0.749]
GDPD_trend[3]			−1.645	
			[0.677]	
New Democracies	0.514	0.475	0.517	0.522
	[0.212]	[0.259]	[0.208]	[0.206]
Majoritarian Electoral System	0.477*	0.478*	0.486*	0.472*
	[0.072]	[0.071]	[0.068]	[0.075]
BALCH_term[(†)] *Def_Size*[4]		−0.482		
		[0.669]		
BALCH_term[(†)] *EU*[5]				−17.269
				[0.268]
Constant	−0.108	−0.093	−0.137	−0.099
	[0.589]	[0.650]	[0.520]	[0.622]
Pseudo *R*-squared	0.063	0.063	0.063	0.068
Akaike's criteria	224.77	226.58	226.59	225.57
Schwartz's criteria	243.37	248.28	248.29	247.27
Observations	164	164	164	164

[1] The figures in the table are probit coefficients and the figures in parantheses are *P*-values.
[2] *REVCH_term* – The change in the ratio of the government revenue to GDP during the leader's term, including the elections year. *EXPCH_term* – The change in the ratio of the government expenditure to GDP during the leader's term, including the elections year.
[3] *GDPD_trend* – The change in the deviation of real GDP from its trend, estimated using a Hodrick-Prescott filter, during the leader's term including the elections year.
[4] *BALCH_term* * *Def_Size* – The change in the budget balance ratio to GDP during the leader's term including the elections year multiplied by the budget deficit ratio to GDP at the beginning of the leader's term.
[5] *EU* – A binary variable with the value of 1 for the 15 members of the European Union in the years 1992-2002. A cross [(†)] indicates multiplication by this variable.
* significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

sense it is less clear whether voters in a cross-section of countries would have a stronger preference for one type of fiscal adjustment over the other. This is especially true when we examine a large number of countries, over a long period of time, rather then focus on countries that face a fiscal crisis and a need for an immediate and large consolidation, as examined by Alesina *et al.* (1998).[12]

In Table 2 we break the change in the fiscal balance over the term to two components, the change in the revenue to GDP ratio and the change in the expenditure to GDP ratio (for both variables an increase is presented as a positive change). We find that voters dislike both tax cuts, when the level of expenditure is given, and expenditure increases, given the tax to GDP ratio. Moreover, the size of the coefficients is very similar hence there is no indication that voters view one type of deficit reduction more favorably than the other. In columns 2-4 we show that these results are also robust to the same specification changes we presented in Table 1.

5.   **Alternative explanations**

Our main finding is that voters in developed countries do not like deficits and punish leaders that create them. The negative electoral effect of deficits in the developed countries seems quite clear. Are there alternative interpretations of our findings?

One possible argument is that reduced deficits over the term in office *per se* are not rewarded by voters, but that they allow the leaders who created them more room to engage in "election-year economics": that is, to use expansionary fiscal policies during the election year either to manipulate the macroeconomic environment and create fiscal-induced growth, to improve public services, or to target key lobbies or swing-voters. The phenomenon of "election year economics", its theoretical and empirical foundations, and their caveats are discussed in detail by Brender and Drazen (2005a).

In column 1 of Table 3 we test whether the effect of deficits in election years is distinct of that of deficits in earlier years. For that purpose we add the variable *BALCH_ey* which measures the change in the deficit to GDP ratio in the election year relative to the previous year. We then check whether the addition of that variable removes the significant effect of deficits over the term on reelection. The effect of deficit reduction over the term remains significant, but we also find an *additional* strong positive effect of deficit reduction in the election year. In other words, not only that election year deficits do not help reelection, but their negative effect is even larger than that of deficits over the term. The effects that we find are

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[12]   While Alesina *et al.* focus on the question whether a fiscal adjustment of a certain composition is more likely to lead to a sustained fiscal consolidation, here we examine the medium-term and whether, once a reduction in the deficit to GDP ratio was achieved, it matters to voters whether it was based on tax increases or on expenditure cuts.

Table 3

**Additional Effects of Fiscal Balance Changes
during the Election Year on the Probability of Reelection**[1]

	(1)	**(2)**	**(3)**
BALCH_term[2]	14.179***		
	[0.003]		
BALCH_term_ex_ey[2]		12.095**	12.799**
		[0.019]	[0.018]
BALCH_ey[2]	20.540***	24.101***	25.310***
	[0.003]	[0.002]	[0.002]
GDPPC_gr[2]	−5.287	−3.844	−4.176
	[0.405]	[0.632]	[0.605]
GDPPC_gr_ey[3]		0.443	0.579
		[0.945]	[0.928]
New Democracies	0.813*	0.740	0.754*
	[0.075]	[0.101]	[0.098]
Majoritarian Electoral System	0.420	0.414	0.410
	[0.115]	[0.118]	[0.123]
BALCH_term_ex_ey[(†)] *EU*[4]			−9.079
			[0.620]
BALCH_ey[(†)] *EU*[4]			−11.591
			[0.572]
Constant	0.121	0.063	0.074
	[0.571]	[0.768]	[0.732]
Pseudo *R*-squared	0.103	0.085	0.087
Akaike's criteria	215.63	221.65	225.24
Schwartz's criteria	234.23	243.35	253.14
Observations	164	164	164

[1] The figures in the table are probit coefficients and the figures in parantheses are *P*–values.

[2] *BALCH_term* – The change in the budget balance ratio to GDP during the leader's term, including the elections year. *BALCH_term_ex_ey* – The change in the ratio of the government deficit to GDP in the two years preceding the election year, relative to the two previous years. *BALCH_ey* –The change in the government deficit ratio to GDP In the election year, compared to the previous year. *GDPPC_gr* – The average growth rate of real per capita GDP during the leader's term.

[3] *GDPPC_gr_ey* – Per capita GDP growth in the last year of the leader's term.

[4] *EU* – A binary variable with the value of 1 for the 15 members of the European Union in the years 1992-2002. A cross [(†)] indicates multiplication by this variable.

* significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

also quite large quantitatively: a reduction of the deficit to GDP ratio by one percentage point during the term in office increases the probability of reelection by 5.6 percentage points, while a similar reduction in an election year increases that probability by 8.2 percent. These magnitudes are broadly in line with those reported in Brender (2003) for similar variables in the local elections in Israel.

In columns 2 and 3 we replace *BALCH_term* with *BALCH_term_ex_ey*, thus separating the effects of election year deficits and the change in the deficit over the rest of the term. We also include in these equations the change in real GDP per-capita during the elections year to account for the business cycle. We find that the effect of deficits over the term remains significant even when the election year, in which the effect is larger, is excluded (column 2). In column 3 we also control for EU membership after 1992 and find that the results are not affected by these observations. Therefore, it is not the ability to spend more during the election year that accounts for the effect of prudent fiscal behavior on the probability of reelection, neither is it the short-sightedness of voters who focus only on deficit reductions during the lections year.

One of the questions that may arise with respect to these findings is that of causality. It may be argued that strong leaders have the political power to conduct conservative fiscal policies (see, for example, Roubini and Sachs, 1989) and at the same time have a better chance to be reelected. In order to control, at least to some extent, for this possibility we collected data on the share of the votes received by each leader in the previous election and his party's strength in the legislature, taking into account various aspects of the nature of the electoral system. When the leader is elected directly,[13] the vote share he received in the previous election gives some indication of his popularity and thus his political strength.[14] In a parliamentary system, the percent of seats in the parliament held by the leader's party may, in a similar way, represent his popularity and indicate his ability to carry out his program. In column 2 of Table 4 we show that none of the relationships we identified above in the developed countries is affected by the inclusion of these variables.[15] These findings suggest that the effect of improved fiscal positions on reelection is not merely a reflection of the use of the leader's political power to better control fiscal developments.

Another explanation of our findings is that voters are not bothered so much by deficits *per se*, but by inflation which itself is often caused by deficit spending. Shiller (1996), Lewis-Beck (1988) and Alesina, Perotti, and Tavares (1998), among others, find evidence that voters in developed countries dislike inflation and punish

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[13]   There are only 10 observations of directly elected incumbents in our sample of developed countries.

[14]   In some of the countries that have a presidential system it is not trivial to match the president with a specific party, or even with a group of parties. We also tested the effects of the size of the coalition in the year before the elections and (jointly) the proportion of seats held by the leader's party within the coalition representation. This variable did not have a significant effect on the probability of reelection and did not affect any of the other coefficients.

[15]   We show in column 1 that the results are not affected by the decrease in the number of available observations due to the inclusion of this variable.

Table 4

Initial Electoral Support and Inflation as Alternative Explanations[1]

	(1)	**(2)**	**(3)**	**(4)**
BALCH_term_ex_ey[2]	12.384**	11.610**	11.224**	12.399**
	[0.017]	[0.026]	[0.037]	[0.020]
BALCH_ey[2]	23.848***	24.627***	24.637***	23.221***
	[0.002]	[0.002]	[0.003]	[0.004]
GDPPC_gr[2]	−3.370	−3.006	6.134	3.814
	[0.677]	[0.713]	[0.531]	[0.689]
GDPPC_gr_ey[3]	1.527	0.863	−4.346	−2.461
	[0.818]	[0.898]	[0.558]	[0.733]
New Democracies	0.557	0.543	1.344**	1.266**
	[0.234]	[0.253]	[0.041]	[0.048]
Majoritarian Electoral System	0.412	0.440	0.633**	0.535*
	[0.121]	[0.127]	[0.041]	[0.055]
PARTY[4]		1.204	1.585	
		[0.201]	[0.105]	
VOTES[5]		0.002	−0.199	
		[0.999]	[0.884]	
INFCH_ey[6]			−11.402**	−9.346**
			[0.021]	[0.046]
Average_INF[6]			−3.249**	−2.906**
			[0.025]	[0.039]
Constant	0.030	−0.442	−0.539	0.094
	[0.891]	[0.303]	[0.246]	[0.704]
Pseudo *R*-squared	0.087	0.099	0.144	0.124
Akaike's criteria	218.60	220.06	213.92	214.34
Schwartz's criteria	240.21	247.85	247.88	242.13
Observations	162	162	162	162

1 The figures in the table are probit coefficients and the figures in parantheses are *P*-values.

2 *BALCH_term_ex_ey* – The change in the ratio of the government deficit to GDP in the two years preceding the election year, relative to the two previous years. *BALCH_ey* – The change in the government deficit ratio to GDP In the election year, compared to the previous year. *GDPPC_gr* – The average growth rate of real per-capita GDP during the leader's term.

3 *GDPPC_gr_ey* – Per capita GDP growth in the last year of the leader's term.

4 *PARTY* – The percent of seats in the parliament held by the leader's party, receives the value 0 in a presidential system.

5 *VOTES* – The percent of the votes received by a leader in a presidential system in the first round of the previous elections.

6 *INFCH_ey* – The increase in the inflation rate from the year preceding the election year to the election year. *Average_INF* – The average rate of inflation rate during the leader's term.

* significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

Table 5

**The Separate Effect of Changes in Revenue and Expenditures
during the Term and in the Election Year**[1]

	(1)	(2)	(3)	(4)
$REVCH\_term\_ex\_ey$[2]	11.628**	10.905*	11.595**	10.448*
	[0.038]	[0.052]	[0.044]	[0.072]
$EXPCH\_term\_ex\_ey$[2]	−11.403**	−10.906**	−11.472**	−10.681*
	[0.034]	[0.043]	[0.040]	[0.056]
$REVCH\_ey$[2]	34.650***	34.798***	34.790***	35.292***
	[0.001]	[0.001]	[0.002]	[0.002]
$EXPCH\_ey$[2]	−22.014***	−22.987***	−20.969**	−22.740***
	[0.007]	[0.005]	[0.014]	[0.009]
$GDPPC\_gr$[2]	−6.858	−6.459	−0.393	2.000
	[0.417]	[0.451]	[0.968]	[0.846]
$GDPPC\_gr\_ey$[3]	4.292	3.548	0.857	−1.191
	[0.542]	[0.619]	[0.911]	[0.881]
New Democracies	0.452	0.465	1.218*	1.308*
	[0.344]	[0.334]	[0.063]	[0.050]
Majoritarian Electoral System	0.358	0.404	0.475*	0.590*
	[0.183]	[0.163]	[0.092]	[0.058]
$PARTY$[4]		1.022		1.404
		[0.285]		[0.159]
$VOTES$[5]		−0.247		−0.441
		[0.854]		[0.752]
$INFCH\_ey$[6]			−9.229**	−11.168**
			[0.050]	[0.024]
$Average\_INF$[6]			−3.091**	−3.389**
			[0.028]	[0.020]
Constant	0.040	−0.356	0.120	−0.436
	[0.858]	[0.417]	[0.641]	[0.360]
Pseudo R^2	0.097	0.107	0.134	0.152
Akaike's criteria	220.52	222.31	216.05	216.09
Schwartz's criteria	248.31	256.27	250.02	256.23
Observations	162	162	162	162

[1] The figures in the table are probit coefficients and the figures in parantheses are *P*-values.

[2] *REVCH_term_ex_ey* – The change in the ratio of the government revenue to GDP in the two years preceding the election year, relative to the two previous years. *EXPCH_term_ex_ey* – The change in the ratio of the government expenditure to GDP in the two years preceding the election year, relative to the two previous years. *REVCH_ey* – The change in the government revenue ratio to GDP In the election year, compared to the previous year. *EXPCH_ey* – The change in the government expenditure ratio to GDP In the election year, compared to the previous year. *GDPPC_gr* – The average growth rate of real per capita GDP during the leader's current term.

[3] *GDPPC_gr_ey* – Per-capita GDP growth in the last year of the leader's term.

[4] *PARTY* – The percent of seats in the parliament held by the leaders party, receives the value 0 in a presidential system.

[5] *VOTES* – The percent of the votes received by a leader in a presidential system in the first round of the previous elections.

[6] *INFCH_ey* – The increase in the inflation rate from the year preceding the election year to the election year. *Average_INF* – The average rate of inflation rate during the leader's current term.

* significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

governments that create it. To control for this possibility we added in columns 3 and 4 the average inflation rate during the leader's term in office and the change in the inflation rate in the election year. We find that these variables have a statistically significant negative effect on the probability of reelection. However, the inclusion of these variables does not affect the significant relationship between the change in the deficit and the probability of reelection. That is, our finding of dislike of deficits reflects more than dislike of inflation

In Table 5 we revisit our findings of voters' dislike of deficits, regardless of whether they result from reductions in revenues of increased expenditures. We find that this dislike holds both in election years and during the rest of the term, and that this result is robust to the alternative explanations mentioned above.

6.   Conclusions

In this paper we examine whether voters in developed countries reward loose fiscal policies that provide them with larger transfer payments and more public goods while postponing the payments to the future. We find no evidence for such a preference. In fact, we find that it is prudent fiscal policies that are rewarded at the polls. Moreover, we find that increasing the deficit in an election year is particularly harmful to reelection. These findings are consistent with the view that voters in the developed countries, are rational forward looking individuals who do not fall for "fiscal illusions" of better services and lower taxes, being aware that eventually they are the ones who will have to pay the bill.

Moreover, the effects we find are not only statistically significant, but also quite substantial quantitatively. An increase of 1 percentage point in the central government surplus ratio to GDP (controlling for the business cycle) over an incumbent's term in office can increase the probability of reelection by almost six percentage points, and by more than eight percentage points if it takes place during an election year.

We also examined the argument that voters are "fiscal conservatives" in the sense that they prefer a smaller government and expenditure cuts over tax hikes, as suggested by Peltzman (1992). We find no support for this view in our analysis. The magnitude of the coefficient of the change in the ratio of government revenue to GDP is very similar to that of changes in the public expenditure to GDP ratio. It appears that Peltzman's findings are unique to the US while in the other developed countries voter preferences may be different.

DATA APPENDIX

The data used in this study were collected from several sources covering economic, fiscal and political data. We also used information on institutional characteristics of countries, the timing of elections and data related to the party association and career circumstances of country leaders. The data sources which were used in this study are listed in Table 6.

The Sample

The fiscal and economic data from the *IFS* and *GFS* are available for the years 1960-2003, and for some countries the period covered is shorter. We therefore restrict our sample to that period, even though election years and election results data are available for a longer period.

To restrict our sample only to democracies, we include only the years in which the country has a non-negative score in the *POLITY* democracy index. That index is calculated as the sum of the scores that each country receives in each year on two scales: the degree of democracy (a 0 to 10 scale) and the degree of autocracy (a 0 to −10 scale).

Our final sample, used for the estimation, consists only of election years in the sample period. The information on election dates were collected from the IDEA dataset "Voter Turnout Since 1945" and complemented by data from the CDP, IFES and the CIA's "World Factbook".[16] In Presidential systems, we used only presidential elections and in Parliamentary systems only parliamentary ones. The identification of the political system was according to whether the chief executive responsible for economic policy is elected directly by the public (presidential) or by parliament (*Parliamentary)*, as in Persson and Tabellini (2003). For example, France is defined as parliamentary since it is the government and the prime-minister − elected by the legislature − which are dominant in determining economic policy, rather than the president. These definitions are based on the variable SYSTEM in the *DPI* dataset. All the election years in the sample are listed in Table 8.

Fiscal Years

In those countries in which the fiscal years are not the calendar years, we adjusted all the data to the fit the fiscal years. For example, in Canada the fiscal year starts on April 1st and ends at March 31st the following year. Hence, elections on March 2009 will be in the 2008 fiscal year. Data about fiscal years are from the *IFS*, supplemented by GFS data when information is missing in the IFS data.

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[16]   Additional sources that were used to complement the data on election dates were: Wikipedia, the free encyclopedia (www.wikipedia.org); and Lijphart Elections Archive, in University of California, San Diego (http://dodgson.ucsd.edu/lij).

Table 6

Data Sources

Source Name	Code	Dataset Producer	Date	Variables	Available Years
International Financial Statistics	IFS	International Monetary Fund	2003	central government total expenditure and total revenue and grants; nominal GDP	1960-2003
Government Financial Statistics	GFS	International Monetary Fund	2003	central government total expenditure and total revenue and grants	1960-2003
World Development Indicators	WDI	The World Bank	2003	GDP per capita in constant 1995 US$, GDP in constant 1995 US$	1960-2003
POLITY IV	POLITY	University of Maryland	2003	Level of Democracy index	1800-2003
Database of Political Institutions	DPI	The World Bank	2000	political system, term limits, election results and the allocation of seats in parliament, election system.	1975-2000
Voter Turnout Since 1945 to Date	IDEA	Institute for Democracy and Electoral Assistance	Current	election years, election results	1945-2001
The Center on Democratic Performance	CDP	Binghamton University	Current	election years, election results, election dates	1974-2000
Electionguide.org	IFES	International Foundation for Electoral Systems	Current	election dates	1998-2005
World Political Leaders	ZPC	Zárate's Political Collections	Current	leaders' names and their party association	1945-2005
The World Factbook	CIA	Central Intelligence Agency	Current	election dates, frequency of elections in a country, political system	1960-2005

The Reelection Variable

The dependent variable is *Reelect* – A binary variable receiving the value 1 if an incumbent leader is reelected in the elections. Data on the names of leaders and their party association were primarily based on ZPC data. The DPI provides data on the term of the leader in office, which allowed us to identify points of change in the leadership of the country, and whether those were election dates or not.

The Sample includes observations in which:

- The leader has been in office, at least, in the two budgetary years preceding the election year;
- The leader stayed in office at least until one month before the elections; if he quits within the month before the elections *Reelect* receives the value 0;
- There is no legal *limit* on the leader's term (based on the variable *MULTPL* in the DPI),[17] otherwise the observation is excluded. Data on legal limits on leaders' term in office are taken from the DPI.

Fiscal Policy Variables

The fiscal policy variables are calculated on the basis of *IFS* variables, supplemented by GFS data when needed. In some cases we used alternative sources, as detailed in Brender and Drazen (2005b) Table A-I-1.

Balance is the difference between the central government's *Total Revenue & Grants* and *Total Expenditure* (*i.e.*, the fiscal surplus) for each country in each year. All these variables are presented as a percentage of *GDP* which is also taken from the IFS.

Using *Balance* we calculated *BALCH_term*, *BALCH_ey* and *BALCH_term_ex_ey* in the following way:

BAL_0 is the value of *Balance* in the election year and BAL_{-i} is the value of *Balance* i years before the elections.

- $BALCH\_term = \frac{1}{3} * (BAL_0 + BAL_{-1} + BAL_{-2}) - \frac{1}{3} * (BAL_{-3} + BAL_{-4} + BAL_{-5})$; which is the change in the average balance to GDP ratio in the last 3 years of the term, including the elections year, compared to the previous 3 years.

  - If there are no data on BAL_{-3}, BAL_{-4} and BAL_{-5} then:
$$BALCH\_term = \frac{1}{2} * (BAL_0 + BAL_{-1}) - BAL_{-2}$$

- $BALCH\_term\_ex\_ey = \frac{1}{2} * (BAL_{-1} + BAL_{-2}) - \frac{1}{2} * (BAL_{-3} + BAL_{-4})$; which is the change in the average central government balance in the two years preceding the elections (not including the election year) compared to the previous two years.

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[17] For missing years we assumed that the legal limit remained as in the closest year in the sample.

- *Where there are no data on* BAL_{-3} *and* BAL_{-4} *then:* $BALCH\_term = BAL_{-1} - BAL_{-2}$

• $BALCH\_ey = BAL_0 - BAL_{-1}$; which is the change in the balance in the election year relative to the previous year.

Economic Control Variables

The economic growth calculation is based on: *GDPPC,* real per-capita GDP for each country in each year, which is taken from the WDI dataset of the World Bank.

Using *GDPPC* we calculate: *GDPPC_gr* and *GDPPC_gr_ey* in the following way:

$GDPPC_0$ is the value of *GDPPC* in the election year, $GDPPC_{-1}$ is the value of *GDPPC* in the previous year and $GDPPC_{-x}$ is the value of *GDPPC* in the year in which the leader assumed his office (usually the previous election year), where x is the number of years in office:

$$GDPPC\_gr = 100 \bullet \left(\sqrt[x]{\left(\frac{GDPPC_0}{GDPPC_{-X}} \right)} - 1 \right)$$

$$GDPPC\_gr\_ey = 100 \bullet \left(\frac{GDPPC_0}{GDPPC_{-1}} - 1 \right)$$

GDP_trend is the trend of real GDP (country specific) which was computed using the Hodrick-Prescott filter on the "GDP in constant 1995 US$" series of the WDI. Using this variable we calculated for each country in every year the deviation of real GDP from its trend, and used it in the following way to compute the change in this deviation in the election year:

GDP_0 and GDP_trend_0 are the values of *GDP* and *GDP_trend* in the election year, and GDP_{-1} and GDP_trend_{-1} are the values of these variables in the year preceding the election year**:**

$$GDPD\_trend\_ey = \left(\frac{GDP_0}{GDP\_trend_0} - \frac{GDP_{-1}}{GDP\_trend_{-1}} \right)$$

INF is the inflation rate for each country in each year, which is taken from the WDI dataset of the World Bank, supplemented by IFS data when needed.

Using *INF* we calculated *INFCH_ey* and *Average_INF* in the following way: INF_0 is the value of *INF* in the election year, INF_{-i} is the value of *INF* i years before the elections and INF_{-x} s the value of *INF* in the year in which the

leader assumed his office (usually the previous election year), where x is the number of years in office:

$$INFCH\_ey = INF_0 - INF_{-1}$$

which is the change in the inflation rate in the election year relative to the previous year;

$$Average\_INF = 100 \bullet \left(\sqrt[x]{\left[\prod_{i=-X+1}^{0} \left(1 + \frac{INF_i}{100} \right) \right]} - 1 \right)$$

which is the average inflation rate during the leader's term.

In the final dataset we truncated the extreme values of *INFCH_ey*, and gave all values above the truncation point of a variable the value of the truncation point. The truncation point is 60 per cent.

In those cases where the inflation variable was truncated we added a binary variable with a value of 1 in the countries with high inflation. However, since this variable turned out not to be significant and not to affect the other coefficients, we dropped it from the final specification.

Political Strength Control Variables

The political strength variables for each country in each election year are mainly based on DPI data about the number of seats that the leader's party holds in parliament and the percent of votes that the president received in the previous elections (both in the first and the last rounds). These variables (*GOVSEAT*, *OPPSEAT*, *PERCENT1*, *PERCENTL* in *DPI*) are available for the period 1975-2000. For the other years: 1961-1975 and 2001-2003, we used data from IDEA and completed missing information from *CDP*:

PARTY: the percent of seats in the parliament held by the leader's party in the year preceding the election year. It receives the value 0 in a presidential system (in cases where data are from IDEA it is the proportion of the public's votes received by the party).

VOTES: the percent of votes for the leader in a presidential system in the first round of the previous elections; receives the value 0 in a parliamentary system.

New vs. Old Democracies

New_Democracy: A binary variable, for each country in each election year, receiving the value 1 for the period of the first four elections after a country with a negative *polity* value in the *POLITY IV* dataset shifted to non-negative values, not counting the elections in the transition year. Otherwise, the country is defined as an

Old Democracy and the variable receives a value of 0. The years in which countries are defined as *New Democracies* are listed in Table 7.

Presidential vs. Parliamentary Constitutional Rules

The constitutional rules of the various countries are listed in Table 7.

Proportional vs. Majoritarian Electoral Rules

The DPI provides information, in each country and in each election year, whether candidates for presidency or parliament are elected based on the total share of votes received by their party or on the majority of votes in each voting zone (e.g., district). In the former case the electoral system is defined in the DPI as *Proportional* representation (PR in the DPI) and in the latter as *Majoritarian* representation.

Majoritarian: A binary variable, for each country in each election year, receiving the value 1 in a country with a *Majoritarian* electoral system, and 0 otherwise.

The electoral systems of the countries are listed in Table 7.

Table 7

Sample Characteristics

No.	Country	Years Included in the Sample	Elections in the sample[1]	Parliamentary System	Proportional System	Years as a New Democracy in the Sample
1	Australia	1961-2002	13	X	X	
2	Austria	1960-1999	7	X	X	
3	Belgium	1960-1998	8	X	X	
4	Canada	1965-2001	7	X		
5	Denmark	1960-2000	11	X	X	
6	Finland	1960-1998	7	X	X	
7	France	1972-1997	5	X	X[+]	
8	Germany	1971-1998	6	X	X	
9	Greece	1960-1966, 1975-1999	4 (2)	X[*]	X	1975-1989
10	Iceland	1972-2003	8	X	X	
11	Ireland	1960-2002	10	X	X	
12	Italy	1960-1998	6	X	X	
13	Japan	1970-1993	5	X	X	
14	Luxembourg	1970-1974, 1976-1997	5	X	X	
15	Netherlands	1960-1998	7	X	X	
16	New Zealand	1960-1988, 1990-2001	10	X	X[+]	
17	Norway	1960-2003	5	X	X	
18	Portugal	1976-1998	5 (3)	X[*]	X	1976-1987
19	Spain	1978-2003	5 (2)	X	X	1978-1989
20	Sweden	1961-2000	10	X	X	
21	Turkey	1976-1979, 1983-2001	5 (4)	X	X	1976-1979, 1983-1995
22	United Kingdom	1960-1999	8	X		
23	United States	1960-2003	7			

[1] The number in the parentheses indicates the number of elections that took place in a country during the years it is defined as a "new democracy".
[*] Some of the Elections are in a Presidential System.
[+] Some of the Elections are in a Majoritarian System.

Table 8

Detailed Sample and Data Characteristics

No.	Country	Election Years in the Sample	Cases in Which the Leader was Reelected[1]	Budget Bilance [2]	BALCH_ey [3]
1	Australia	1964, 1970, 1973, 1976, 1978, 1981, 1983, 1985, 1988, 1990, 1996, 1999, 2002	9 / 13	–0.8	0.0
2	Austria	1966, 1970, 1979, 1983, 1990, 1994, 1999	4 / 7	–4.3	0.2
3	Belgium	1965, 1968, 1971, 1977, 1985, 1987, 1991, 1995	6 / 8	–5.3	–0.2
4	Canada	1968, 1972, 1974, 1979, 1988, 1997, 2000	6 / 7	–1.8	0.2
5	Denmark	1964, 1966, 1968, 1971, 1975, 1977, 1979, 1984, 1987, 1990, 1998	8 / 11	0.7	–0.2
6	Finland	1966, 1970, 1975, 1979, 1987, 1991, 1995	0 / 7	–0.6	–1.3
7	France	1978, 1981, 1986, 1988, 1997	1 / 5	–1.8	–0.3
8	Germany	1976, 1980, 1987, 1990, 1994, 1998	4 / 6	–1.1	0.1
9	Greece	1963, 1985, 1989, 1993	1 / 4	–5.8	–1.8
10	Iceland	1974, 1978, 1983, 1987, 1991, 1995, 1999, 2003	3 / 8	–1.1	–0.4
11	Ireland	1965, 1969, 1973, 1977, 1981, 1987, 1989, 1992, 1997, 2002	4 / 10	–5.8	–0.3
12	Italy	1963, 1967, 1972, 1979, 1987, 1992	1 / 6	–6.0	0.5
13	Japan	1972, 1976, 1986, 1989, 1993	1 / 5	–3.4	–0.7
14	Luxembourg	1974, 1979, 1984, 1989, 1994	1 / 5	2.7	0.8
15	Netherlands	1971, 1977, 1981, 1986, 1989, 1994, 1998	4 / 7	–2.0	0.2
16	New Zealand	1963, 1966, 1969, 1978, 1981, 1984, 1987, 1994, 1997, 2000	8 / 10	–1.3	–0.4
17	Norway	1965, 1969, 1985, 1989, 1993	3 / 5	2.9	0.6
18	Portugal	1980, 1985, 1987, 1991, 1995	3 / 5	–6.1	–0.7
19	Spain	1986, 1989, 1993, 1996, 2000	4 / 5	–3.6	0.6
20	Sweden	1965, 1969, 1974, 1977, 1983, 1986, 1989, 1992, 1994, 1998	6 / 10	0.0	0.0
21	Turkey	1977, 1987, 1991, 1995, 1999	2 / 5	–5.8	–2.1
22	United Kingdom	1966, 1970, 1974, 1979, 1983, 1987, 1992, 1997	4 / 8	–1.0	0.0
23	United States	1968, 1972, 1976, 1980, 1984, 1992, 1996	3 / 7	–2.0	0.2

[1] The figure on the left hand side is the number of elections where the leader was reelected. The figure on the right hand side is the total number of elections.
[2] Average for all the years included in the sample.
[3] *BALCH_ey* is the average change in the government deficit ratio to GDP in the election year, compared to the previous year.

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HOW CREDIBLE ARE
MULTIANNUAL BUDGETARY PLANS IN THE EU?

Laurent Moulin[*] and Peter Wierts[**]

We investigate the track record of multiannual budgetary plans of EU Member States formulated in the Stability and Convergence Programmes and updates. The study is based on the analysis of an original database summarising the main macroeconomic and budgetary variables projected by the Member States in their Programmes under the original SGP. Results show that the failure to achieve the projected reductions in the general government deficit reflects primarily difficulties to adhere to expenditure plans in nominal terms. This does not seem to be due to particularly unfavourable macroeconomic developments, but rather to the difficulties of EU countries to implement the reforms which would have been necessary to respect the ambitious expenditure targets. On the revenue side, negative growth surprises have been relevant, but the effect is less important. Overall, conclusions point to a need for strengthening expenditure control mechanisms in most of the EU Member States.

1. Introduction

Over the years, the process of fiscal surveillance in the EU has provided a wealth of data on the short- to medium-term budgetary plans formulated by the EU countries. It is today well-known that there has been a divergence between budgetary commitments taken by Member States in their Stability and Convergence Programme (SP-CP) and implementation, so that the planned date for achieving the objective laid down in the original Stability and Growth Pact (SGP) of a medium-term budgetary position of "close-to-balance or in surplus" became a moving target (European Commission, 2002). Several attempts have been made to explain the divergence between plans and outcomes, focusing mostly on the role of the cycle and national budgetary institutions as explanatory factors. Strauch *et al.* (2004) have linked forecast biases for the budget balance to the cyclical position and differences in forms of fiscal governance across countries. Jonung and Larch (2004) have pointed to the role of optimistic growth forecast in explaining budgetary slippages – and hence made the case for delegating the preparation of macroeconomic forecasts underlying budgetary projections to independent institutions. European Commission (2005) showed that the difficulties to adhere to government balance objectives set in the SP-CPs were associated to the inability to achieve the projected decline in the government expenditure-to-GDP ratio.

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[*]   European Commission, DG ECFIN.
[**]   De Nederlandsche Bank, Economics and Research Division.
       The views expressed in the paper are those of the authors and do not represent the views of the European Commission or De Nederlandsche Bank.

The existing literature has not yet addressed a crucial question: which part of the budgetary slippages can be attributed to a lack of implementation of planned measures and which part is due to forecast biases in economic growth.[1] This paper intends to go a step forward in the analysis of the sources of budgetary slippages. To this aim, we constructed a database summarising the main variables projected by the Member States in their SP-CP under the original SGP, *i.e.* from 1998 until 2007. These programmes have a medium-term perspective, so that programmes submitted in year t contain projections for the years $t + 1$, $t + 2$, $t + 3$.[2] Our database contains figures on the macroeconomic assumptions (nominal and real GDP growth) underlying the projections, and on the expenditure plans and outcomes expressed in terms of percentage of GDP, but also in nominal terms. This allows to assess the reasons for the failure to respect the budgetary targets.

The medium-term focus of the analysis also allows to highlight some structural patterns in fiscal behaviour that are less visible in year-to-year developments. It permits to assess whether the expected benefits from the implementation of multiannual budgetary frameworks, *i.e.* allowing compensation across years of possible budgetary slippage or overspending in a given year, did effectively materialise in the EU. The study also looks at the performance of individual Member States, and shows that there are considerable differences across countries as to the size and origins of the deviations from initial budgetary plans. The remainder of this paper is organised as follows. Section 2 briefly summarises the role of the SP-CP in the process of EU fiscal surveillance. Section 3 shows that Member States have typically planned expenditure-based consolidations in their SP-CP. Section 4 focuses on the magnitude and decomposition of the budgetary slippage (*i.e.* the difference between plans and outcomes). Section 5 extends the analysis to individual countries. Section 6 concludes.

2.   What are Stability and Convergence Programmes?

In order to ensure that countries achieve or maintain sustainable budgetary positions, and to avoid the occurrence of excessive deficits, the Stability and Growth Pact (SGP) follows a strategy based on preventive and corrective elements. The corrective part consists of the excessive deficit procedure, governed by Article 104 of the Maastricht Treaty. The preventive arm of the Pact, based on Article 99 of the Treaty, is codified in Council Regulation (EC) No 1466/97 as amended by Council Regulation (EC) No 1055/05. This Regulation stipulates that EU Member States have to submit to the Council and the Commission Stability or Convergence

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[1]   Note that the usual approach in research on the link between budgetary institutions and budgetary outcomes is to start the analysis from the perspective of a particular institution (e.g. forms of fiscal governance, expenditure rules, independent growth forecast, etc.) and then to demonstrate that this particular institution matters for fiscal outcomes. In this paper, we take the opposite approach: we first investigate the main sources of budgetary slippage, and then ask which type of institution could help to address the problem.

[2]   Some programmes also provide data for the year $t + 4$.

Programmes (and annual updates), in which they set out their national medium-term budgetary strategy and objectives. Member States of the euro area submit (updated) Stability Programmes; Member States outside the euro area submit (updated) Convergence Programmes. Such Programmes have been prepared by Member States for the first time in 1998 and have been updated annually. The SGP foresees that the Council has to deliver an Opinion on these Programmes, on the basis of a recommendation from the Commission and after consultation of the Economic and Financial Committee.

The original SGP, which was in force up to the 2005 reform (the revised SGP entered into force in July 2005), stated that Member States should target in their SP-CP the attainment of a budgetary position close to balance or in surplus. This was notably intended to enable Member States to respect the 3 per cent of GDP ceiling in all circumstances, apart from unusually severe economic downturns or other exceptional conditions, and to ensure a rapid decline in debt ratios. In practice, Stability and Convergence Programmes under the original Pact presented information on the adjustment path towards a budgetary position close-to-balance or in surplus and the expected path of the general government debt ratio. They also provided information on the main assumptions about expected economic developments (growth, employment, inflation and other important economic variables) and a description of budgetary and other economic policy measures being taken and/or proposed to achieve the objectives of the Programme.[3]

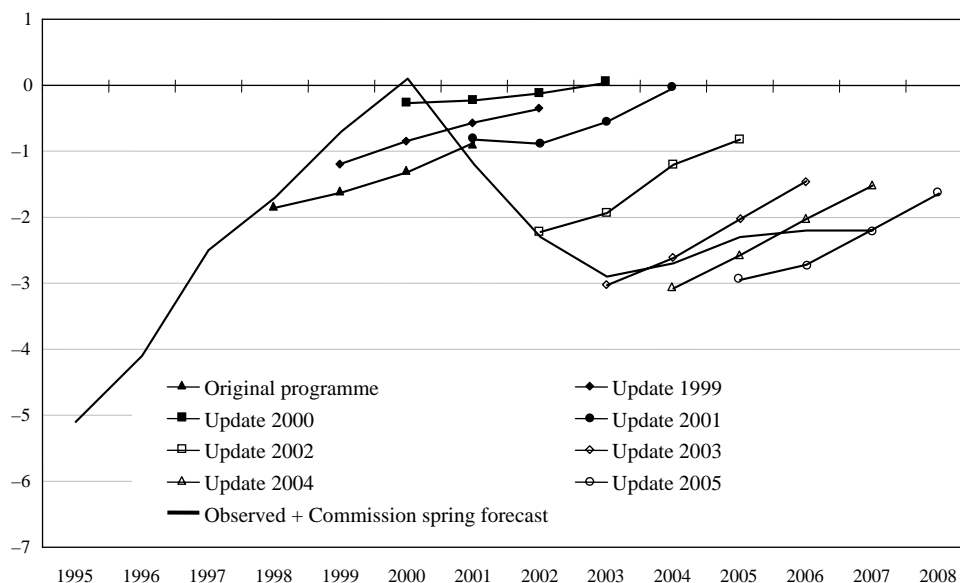## 3. Stability and Convergence Programme have typically planned expenditure-based fiscal consolidations

Figure 1 overleaf illustrates the developments in the general government balance in the EU-15 as well as the budgetary projections for the successive SP-CP updates (the dotted lines). The first vintage was submitted in December 1998 and included budgetary projections for the period 1999-2001; the 8th vintage, submitted in December 2005, covered the period 2006-08. This figure shows that SP-CP have on average projected a convergence towards the achievement of a budgetary position of close to balance or in surplus. It also shows that, due to consistent sizeable deviations from planned adjustment paths, the date at which the target was to be achieved was repeatedly postponed. In subsequent Stability Programmes, the adjustment path gradually shifted and on average no progress was made.[4]

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[3] Convergence Programmes also present the medium-term monetary policy objectives and the relationship of those objectives to price and exchange rate Stability.

[4] The disappointing results of the preventive arm of the Stability and Growth Pact over the period 1998-2004 was one of the motivations for the reform of the Pact of March 2005. This reform introduced several changes to the preventive arm of the pact, with the aim of improving its economic rationale. Notably medium-term budgetary objectives (MTOs) were differentiated for all countries taking into account the specificities of individual Member States and the introduction of provisions designed to ensure economically sound adjustment paths towards the MTOs and a better adherence to these paths (minimal fiscal effort of 0.5 per cent in structural terms, commitment to achieve larger effort in good economic

(continues)

Figure 1

**Medium-term Budgetary Plans for the General Government
Balance in the Stability and Convergence Programmes
Weighted Average for the EU-15 Member States Considered**
(percent of GDP)

Source: SP-CP and European Commission, Ameco Database.

In this section, we look at the budgetary projections of Member States in their respective Stability and Convergence Programmes. The database covers all EU-15 Member States, except for Luxembourg (problems of data availability) and the UK that could not be included in the analysis given that its yearly budgetary cycle differs from that of the rest of the EU. In theory, the database could therefore consist of 312 observations for every variable, *i.e.* 13 countries times 8 Programmes times three-year time horizon. In practice, however, there are 277 observations in total. This is due to the fact that some programmes do not include all the variables necessary for the analysis. All in all, there are 103 observations for the budgetary plans of Member States for the year $t + 1$, 101 for $t + 2$ and 73 for $t + 3$.[5]

Table 1 opposite shows the "average" medium term budgetary plans formulated by EU Member States for the main budgetary aggregates, *i.e.* the budget

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times and possibility to do less in bad times, possibility to deviate from the adjustment path in case of the implementation of major structural reforms).

[5] A general caveat of the study is that the period under investigation is relatively short. The findings should therefore not be given a general interpretation beyond the period under investigation.

Table 1

**Magnitude and Composition of the Budgetary Adjustment Planned by Member
States in their Stability and Convergence Programmes
Unweighted Averages over the Period 1998-2005**

All Member States and Programmes

Percentage point of GDP	$T - T+1$	$T - T+2$	$T - T+3$
Planned change in the government balance ratio	0.2 (0.15) (0.0; 0.3)	0.5 (0.2; 0.7)	0.8 (0.5; 1.1)
Planned change in the expenditure ratio	–0.5 (–0.7; –0.4)	–1.2 (–1.4; –1.0)	–1.9 (–2.2; –1.6)
Planned change in the revenue ratio	–0.4 (–0.6; –0.2)	–0.8 (–1.0; –0.5)	–1.1 (–1.4; –0.8)

Only Member States in Deficit (Starting Point for the Deficit above 2% of GDP)

Percentage point of GDP	$T - T+1$	$T - T+2$	$T - T+3$
Planned change in the government balance ratio	0.5 (0.3; 0.7)	1.1 (0.8; 1.5)	1.6 (1.3; 1.9)
Planned change in the expenditure ratio	–0.6 (–0.9; –0.4)	–1.4 (–1.7;–1.2)	–2.2 (–2.6; –1.8)
Planned change in the revenue ratio	–0.1 (–0.3; 0.1)	–0.3 (–0.6; 0.0)	–0.6 (–0.9; –0.3)

Note: figures reported are unweighted averages for all Member States for which data were available. The figures in brackets are 95 per cent confidence intervals around the averages.

Source: SC-CP and European Commission, Ameco Database.

balance, revenue and expenditure to GDP ratios. In order to neutralise base effects and the influence of statistical revisions, the analysis focuses on the projected *changes* in the budgetary aggregates over different time-horizons ($T - T+1$; $T - T+2$; $T - T+3$). The first part of the Table covers all Member States; the second part shows the data for the subgroup of countries that recorded significant budget deficits at the moment of the projections (general government deficit estimated above 2 per cent of GDP in the year of submission of the programme), considering that the starting point of a deficit and the impact of the EU fiscal rules may have implied a different budgetary pattern. The figures in brackets report the 95 per cent confidence intervals around the averages.

The data show that Member States have on average projected in their Stability and Convergence Programmes an improvement in the general government balance by about ¼ per cent of GDP per year until year $t + 3$. As expected, Member

States with large initial deficits have projected larger reductions in the deficit, of the order of ½ per cent of GDP per year. As regards the composition of the adjustment, countries have typically planned expenditure-based fiscal consolidations. On average, Member States have projected a decline in the expenditure-to-GDP ratio of about 0.6 percentage point per year. The budgetary margins thus generated have been planned to be allocated to an improvement in the government balance and a reduction in the government revenue-to-GDP ratio. Member States with high initial deficits have on average planned comparable reductions in the expenditure-to-GDP ratio than those with small initial deficits, but have allocated a smaller proportion of the margins thus created to tax cuts. Incidentally, only in about 10 per cent of cases the projected improvement for the budget balance was also planned to be achieved through an increase in the revenue ratio.

When looking at the 95 per cent confidence intervals around the average planned budgetary adjustment (*i.e.* the figures in brackets in Table 1), it can be remarked that there is a relatively large stability in the plans formulated by different Member States since 1998.[6] A more detailed analysis – figures are not reported here – shows that projections submitted in the original programmes or the first update were very similar to those submitted at the end of the period considered.

Another interesting message is that there is a tendency to backload the reduction in the deficit. The adjustment planned in the year $t + 1$, which is the year covered by the Budget Law, has on average been somewhat lower than that planned in the subsequent years, which are part of a generally less binding medium-term projection. This tendency seems to be less pronounced for Member States with relatively high deficits in the year of submission of the programme. This may reflect the fact that some of these Member States have faced excessive deficit procedures and were therefore subject to the obligation to bring their government deficit below 3 per cent of GDP within short deadlines. Finally, it appears that Member States have based their SP-CP on relatively ambitious macroeconomic assumptions. On average, growth was projected to average 2.75 per cent over the horizon of the SP-CPs, significantly higher than the average of the 90s (over the period 1991-2000, average yearly growth in EU-15 was 2.2 per cent).

Overall, Member States have generally planned "textbook-type" fiscal consolidations, based on large decreases in the expenditure-to-GDP ratios. Economic literature suggests that fiscal consolidations based on expenditure cuts, as compared to those based on revenue increases, are more likely to be permanent and to have medium-term expansionary effects (see for example Alesina and Ardagna, 1998). It can be noted at this stage that, while curbing the expenditure dynamics in the short run can be achieved through the implementation of selective cost-saving

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[6]   The 95 per cent confidence interval is calculated as a two-sided interval around the mean given that (at least theoretically) the forecast errors can be positive as well as negative: $\bar{x} \pm 1.96 \left(\dfrac{\sigma}{\sqrt{n}} \right)$ where $\bar{x}$ is the average expenditure error, σ is the standard deviation and n the number of observations.

Table 2

Main Budgetary Aggregates, EU-15, General Government Sector (GG), 1998-2005
(percent of GDP)

	1998	1999	2000	2001	2002	2003	2004	2005
Total GG expenditure	47.6	47.1	45.1	46.6	47.0	47.8	47.3	47.5
Total GG revenues	45.9	46.4	46.1	45.4	44.7	44.8	44.6	45.2
Net borrowing (–)	–1.7	–0.7	–0.3	–1.2	–2.2	–2.9	–2.6	–2.3

Source: European Commission, Ameco. Data exclude revenues associated with the sale of UMTS licenses.

measures, ensuring a lasting slowdown appears difficult without the implementation of ambitious reforms conducive, for instance, to permanent efficiency gains in the public sector.[7] It could also be noted that the Commission and the Council have repeatedly stressed in their assessments and opinions on Stability and Convergence Programmes the lack of sufficiently detailed information on the measures envisaged to respect the targets laid down by Member States in their Programmes.

4.   Why were the objectives missed?

4.1   A first look at the data

Table 2 shows the developments of the ratio of general government expenditure, revenue and balance to GDP for the EU-15 as a whole over the period considered. Contrasting with the large decreases projected in the Stability and Convergence Programmes, the share of expenditure over GDP has overall remained remarkably stable over the last 8 years in the EU-15. The decline in the revenue ratio has been less pronounced than expected. This preliminary look at the data suggests that a part of the difficulties to adhere to budget balance targets set in the Programmes reflects the inability to cut government expenditure in line with initial plans.

Table 3 provides elements on the reasons for the difficulties to stick to budgetary plans formulated in the SP-CPs. The first line of the table reports the difference between the projected and observed change in the government balance-to-GDP ratio. The second and third lines report the difference between the projected and observed changes in the ratios of general government expenditure and revenue to GDP. The data confirm that the main source for the failure to achieve the envisaged improvement in the general government balance is the inability to achieve the targeted decline in the expenditure-to-GDP ratio. While Member States had on

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[7]   Hauptmeier *et al.* (2006) find that expenditure retrenchment is typically associated with comprehensive reform packages including improvements in institutions as well as structural and macroeconomic reforms.

Table 3

**Decomposition of the Gap between the Planned and Observed Change
in the General Government Deficit, Expenditure and Revenue Ratios
Unweighted Averages over the Period 1998-2005**
(percent of GDP)

All Member States and Programmes

	$T - T+1$	$T - T+2$	$T - T+3$
Gap between the planned and observed change in the balance-to-GDP ratio	–0.1 (–0.4; 0.2)	–0.4 (–0.8; 0.0)	–1.1 (–1.7; –0.4)
Gap between the planned and observed change in the expenditure-to-GDP ratio	–0.4 (–0.6; –0.1)	–0.8 (–1.1; –0.5)	–1.6 (–2.0; –1.0)
Gap between the planned and observed change in the revenue-to-GDP ratio	0.2 (0.0; 0.5)	0.4 (0.0; 0.7)	0.5 (0.1; 0.9)

Only Member States in Deficit (Starting Point for the Deficit above 2% of GDP)

	$T - T+1$	$T - T+2$	$T - T+3$
Gap between the planned and observed change in the balance-to-GDP ratio	–0.2 (–0.6; 0.2)	–0.8 (–1.4; –0.2)	–1.7 (–2.6; –0.7)
Gap between the planned and observed change in the expenditure-to-GDP ratio	–0.5 (–0.8; –0.1)	–1.3 (–1.9; –0.7)	–2.3 (–3.2; –1.3)
Gap between the planned and observed change in the revenue-to-GDP ratio	0.3 (0.0; 0.6)	0.5 (0.0; 1.0)	0.6 (–0.2; 1.4)

Note: Figures reported are unweighted averages for all Member States for which data were available. The figures in brackets are 95 per cent confidence intervals around the averages.

Source: calculations by the authors on the basis of SC-CP and European Commission, Ameco Database.

average projected a decline in the expenditure-to-GDP ratio by about 2.0 percentage points of GDP over a 3-year horizon, less than one-fourth of the targeted reduction has actually been observed. The discrepancy between the projected and observed change in the expenditure-to-GDP ratio has moreover had a tendency to increase steadily with the time-horizon considered. The difficulties to achieve the envisaged reductions in the expenditure-to-GDP ratio seem even more pronounced for the group of high deficit countries.

Table 4

**Differences between Projected and Observed Real and Nominal GDP Growth
Unweighted Averages over the Period 1998-2005**
(percent of GDP)

All Member States and Programmes

	$T - T+1$	$T - T+2$	$T - T+3$
Cumulated shortfall in real GDP growth	–0.2 (–0.5; 0.1)	–0.6 (–1.2; 0.0)	–1.5 (–2.6; –0.6)
Cumulated shortfall in nominal GDP growth	0.1 (–0.3; 0.5)	0.1 (–0.6; 0.9)	0.0 (–1.5; 1.5)
Cumulated shortfall in real GDP growth (excl. IE, SP, GR)	–0.4 (–0.8; –0.1)	–1.0 (–1.6; –0.3)	–2.3 (–3.4; –1.2)
Cumulated shortfall in nominal GDP growth (excl. IE, SP, GR)	–0.2 (–0.6; 0.1)	–0.6 (–1.3; 0.1)	–1.6 (–2.8; –0.4)

Only Member States in Deficit (Starting Point for the Deficit above 2% of GDP)

	$T - T+1$	$T - T+2$	$T - T+3$
Cumulated shortfall in real GDP growth	–0.6 (–1.1; –0.1)	–1.5 (–2.4; –0.6)	–3.1 (–4.9; –1.3)

Note: figures reported are unweighted averages for all Member States for which data were available. The figures in brackets are 95 per cent confidence intervals around the averages.

Source: calculations by the authors on the basis of SC-CP and European Commission, Ameco Database.

Interestingly, developments in the ratio of general government revenue to GDP have on average limited the consequences of the failure to achieve the reductions in the expenditure ratio for the developments in the general government balance. The declines in the revenue-to-GDP ratios have, on average over the three-year periods considered, been about half of what was initially planned.

Table 4 below reports the average cumulated differences between the projected and observed changes in real and nominal GDP growth, for the whole sample and for countries with high initial deficits. The table shows that real GDP growth has on average been significantly overestimated, especially for the latest years covered by the programmes. Interestingly, the negative surprises concerning real GDP growth forecasts were more pronounced for Member States with high initial deficits than for the other Member States. Another remarkable element is that inflation, measured as the change in the GDP deflator, was significantly underestimated, notably in some high-growth Member States.

4.2   Decomposing the shortfall: negative growth surprises versus higher-than-planned expenditure

In this section, we investigate the reasons for the non-achievement of the projected decline in the general government balance in more detail. We focus on the causes behind the failure to achieve the projected reductions in the expenditure-to-GDP ratio, for which our database allows us to present new elements. We then say a word on developments in the revenue-to-GDP ratio for which conclusions are more tentative due to a lack of information on the tax policy measures implemented by the governments over the period considered.

A failure to achieve a planned reduction in the expenditure-to-GDP ratio can result from two effects. Firstly, it can be due to the fact that expenditure in nominal terms was higher than planned (the numerator effect). Secondly, it can be the result of a shortfall in nominal GDP growth. In this case, the expenditure ratio turns out to be higher than expected even if expenditure targets in nominal terms (in level) are fully adhered to (the denominator effect). Policy recommendations for ensuring the adherence to plans formulated in the SP-CP may differ depending on the underlying source of slippage.[8] In order to examine the extent to which the failure to achieve the planned reduction in the expenditure-to-GDP ratio is due to developments in nominal expenditure or to a growth shortfall, the following decomposition is made, with B the general government balance, G nominal general government expenditure, R nominal revenues and Y nominal GDP. Subscript t is for time measured in years and n for planning horizon $(n = 0 \ldots 3)$:

$$\left(\frac{B_{t+n}}{Y_{t+n}} - \frac{B_t}{Y_t} \right) = \left(\frac{R_{t+n}}{Y_{t+n}} - \frac{R_t}{Y_t} \right) - \left(\frac{G_{t+n}}{Y_{t+n}} - \frac{G_t}{Y_t} \right) \tag{1}$$

The second term on the right hand side of the equation, corresponding to the change in the expenditure ratio, is decomposed as follows:[9]

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[8]   The political economy literature has provided explanations for both sources of budgetary slippages. A comprehensive review of this literature is outside the scope of this paper, but still we would like to recall a few possible explanations that fit with the distinction presented here. A lack of implementation of planned expenditure cuts may be explained by resistance from special interest groups, political inaction due to conflicts of interest inside the cabinet, or to common pool problems in which individual spending ministers fail to internalise the costs for the taxpaying population at large. Regarding the role of growth assumptions, Milesi-Feretti and Moriyama (2004) argued that opportunistic governments may try to avoid the costs of improving budgetary positions by using more favourable growth assumptions. Corrective measures can then be avoided *ex ante* due to a favourable denominator-effect of GDP growth, while ex post the expenditure to GDP ratio will turn out to be higher than expected as growth turns out to be lower than forecasted. The resulting deficit bias is then usually blamed on bad luck, even if it results from a forecast bias in growth projections.

[9]   The formula is derived as follows:

$$\frac{G_{t+n}}{Y_{t+n}} - \frac{G_t}{Y_t} = \frac{G_{t+n}Y_t - G_tY_{t+n}}{Y_{t+n}Y_t} = \frac{G_{t+n}Y_t - G_tY_{t+n} + G_tY_t - G_tY_t}{Y_{t+n}Y_t} =$$

$$\frac{(G_{t+n} - G_t)Y_t + G_tY_t - G_tY_{t+n}}{Y_{t+n}Y_t} = \frac{G_{t+n} - G_t}{Y_{t+n}} - \frac{G_t(Y_{t+n} - Y_t)}{Y_{t+n}Y_t}$$

$$\left(\frac{G_{t+n}}{Y_{t+n}} - \frac{G_t}{Y_t}\right) = \left(\frac{G_{t+n} - G_t}{Y_{t+n}}\right) - \left(\frac{G_t}{Y_{t+n}}\right)\left(\frac{Y_{t+n} - Y_t}{Y_t}\right) \tag{2}$$

The first term on the right hand side of (2) represents the increase in nominal expenditure between year t and year $t + n$, expressed as a percent of the observed nominal GDP at the end of the period considered. The second term is the denominator effect on the government expenditure ratio. By applying the same decomposition to budgetary plans, expressed as a percentage of the observed GDP at the end of the period, the failure to respect plans can be attributed to both sources of slippage.[10]

The message emerging from the data is that the failure to achieve the planned decline in the expenditure-to-GDP ratio is mostly due to the inability to reach nominal expenditure targets. Over a three-year horizon, this effect explains the discrepancy between the planned and observed change in the expenditure-to-GDP ratio. The "denominator" effect of lower-than-projected nominal growth is particularly relevant for Member States with high initial deficits,[11] but smaller than the contribution of developments in nominal expenditure. Given that negative growth surprises have often been mentioned as the main explanatory variable for the failure to implement fiscal policy according to plans (*i.e.* blaming the outcome on bad luck), this can be seen as a remarkable result.

The results above constitute *prima facie* evidence that the failure by Member States to achieve the envisaged budgetary consolidation reflects difficulties to control general government expenditure. Although government expenditure is largely under the control of the government, it should be taken into account in the analysis that developments in nominal general government expenditure can be affected by macroeconomic developments (outside the control of the government): lower-than-expected real GDP growth generally triggers larger increases in cyclically-sensitive expenditure items (e.g. unemployment and some categories of social benefits); higher interest rates imply, *ceteris paribus*, a larger increase in interest payments; finally, higher-than-expected inflation can be expected to put pressure on nominal expenditure, since in most Member States social benefits and wages of public employees are indexed on prices.

Our database allows to control, albeit in an imperfect way, for these factors. First, it contains data on projected and observed interest payments. We can therefore calculate the contribution of unforeseen developments in interest payments to the

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[10] It should be noted that expenditure slippages reported in Tables 5 to 9 are an approximation. This results from the fact that subtracting data for plans and outcomes requires that they are expressed in terms of a common denominator, *i.e.* observed GDP for *t+n* for both plans and outcomes. The approximation reflects that the decomposition of the change in the planned expenditure ratio according to (1) and (2) uses planned GDP for *t+n* in the numerator. Overall differences are relatively small and do not affect the conclusions of the analysis.

[11] This is in line with Table 4 that shows that the growth shortfall has been higher for Member States with high initial deficits.

Table 5

Decomposition of Slippages in Expenditure
Unweighted Averages over the Period 1998-2005
(percent of GDP)

All Member States and Programmes

	T – T+1	*T – T+2*	*T – T+3*
Gap between the planned and observed change in the expenditure-to-GDP ratio	–0.4 (–0.6; –0.1)	–0.8 (–1.1; –0.5)	–1.6 (–2.0; –1.0)
Effect of larger-than-planned increase in nominal expenditure	–0.4 (–0.7; –0.2)	–1.0 (–1.3; –0.7)	–1.5 (–2.2; –1.0)
Denominator effect	0.0 (–0.2; 0.2)	0.0 (–0.3; 0.4)	–0.1 (–0.7; 0.6)

Only Member States in Deficit (Starting Point for the Deficit above 2% of GDP)

	T – T+1	*T – T+2*	*T – T+3*
Gap between the planned and observed change in the expenditure-to-GDP ratio	–0.5 (–0.8; –0.1)	–1.3 (–1.9; –0.7)	–2.3 (–3.2; –1.3)
Effect of larger-than-planned increase in nominal expenditure	–0.3 (–0.6; –0.1)	–1.0 (–1.5; –0.4)	–1.3 (–2.4; –0.3)
Denominator effect	–0.3 (–0.5; –0.1)	–0.6 (–0.8; 0.5)	–1.2 (–2.3; –0.2)

Note: figures do not add up due to rounding and to the fact that the decomposition of the change in the planned expenditure ratio according to equations (1) and (2) uses planned GDP for $t + n$ in the numerator.

Source: calculations by the Authors on the basis of SC-CP and European Commission, Ameco Database.

discrepancy between the planned and observed change in nominal expenditure. Second, it contains information on projected and observed real GDP growth. Using the standard budgetary semi-elasticity of government expenditure to the cycle, it is possible to calculate a proxy for the effect of real GDP growth shortfalls on government expenditure.[12] Third, since our database contains information on the

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[12] In the calculation, we are using the sensitivity of government expenditure to cyclical fluctuations, which is used by the Commission for the calculation of the cyclical component of the general government budget balance. The cyclically-adjusted balance (CAB) is obtained by subtracting the cyclical component from
(continues)

Table 6

Further Decomposing Slippages in Nominal Expenditure
Unweighted Averages over the Period 1998-2007
(percent of GDP)
All Member States and Programmes

	T – T+1	*T – T+2*	*T – T+3*
Effect of larger-than-planned increase in nominal expenditure	–0.4 (–0.7; –0.2)	–1.0 (–1.3; –0.7)	–1.5 (–2.2; –1.0)
(1) Contribution of lower-than-expected interest payments	0.1 (0.0; 0.1)	0.1 (0.0; 0.2)	0.2 (0.1; 0.3)
(2) Contribution of lower-than-expected real GDP growth	0.0 (–0.1; 0.1)	0.0 (–0.1; 0.1)	–0.1 (–0.2; 0.0)
(3) Contribution of higher-than-expected inflation (full indexation)	–0.1 (–0.2; 0.0)	–0.3 (–0.4; –0.2)	–0.5 (–0.7; –0.2)
P.m. shortfall in the deficit-to-GDP ratio	–0.1 (–0.4; 0.2)	–0.4 (–0.8; 0.0)	–1.0 (–1.7; –0.4)

Note: figures reported are unweighted averages for all Member States for which data were available. The figures in brackets are 95 per cent confidence intervals around the averages.

Source: calculations by the authors on the basis of SC-CP and European Commission, Ameco Database (see footnote 1).

planned and observed changes in GDP deflators, it is possible to estimate the possible contribution of unexpected changes in prices for developments in general government expenditure. In this respect, we make the assumption of a full (and immediate) indexation of government expenditure on prices.

The results of the analysis are summarised in Table 6 above. As expected, they show that developments in interest expenditure have contributed to a lower-than-planned increase in general government expenditure, and therefore to

the budget balance to GDP ratio. The calculation of the cyclical component requires a measure of the link between the budget and the cyclical position of the economy. This measure is referred to as a "budgetary sensitivity" parameter. It provides a proxy of the effect on the budget associated of a given change in *cyclical* conditions, as measured by the output gap. The budget sensitivity is given by the difference between the sensitivities of revenues and of expenditures. Note that in our calculation, we apply the budgetary sensitivity of expenditure not to an indicator measuring the cyclical position of the economy (the output gap), but to a shortfall in real GDP growth. We therefore implicitly make the assumption that a shortfall in real GDP growth does not affect potential growth. Although experience has shown that potential growth is sensitive to actual growth developments, we considered that our calculation could still be considered a reasonable proxy of the effect of growth surprises on nominal expenditure.

limit the discrepancy between planned and observed increases in nominal expenditure. The two other factors play in the opposite direction. The contribution of negative real GDP growth surprises is marginal, reflecting the low sensitivity of government expenditure to cyclical developments (about 0.1 on average in the EU). The contribution of inflation is slightly more important (this partly reflects the assumption of a full and immediate indexation of expenditure on prices). On average over a three-year horizon and in the countries considered, the discrepancy between planned and observed increases in nominal expenditure would have been about 15 per cent larger without the decline in interest expenditure. It could have been about 5 per cent lower if macroeconomic developments had been in line with plans, and, assuming full and immediate indexation of government expenditure on prices, about one quarter lower if inflation developments had been in line with plans.

Overall, the analysis confirms that the failure to adhere to expenditure plans in nominal terms does not reflect the impact particularly unfavourable economic developments (interest rates, growth and inflation).

As regards developments in the general government revenue ratio, the basic result that slippages are smaller than those observed on the expenditure side is consistent with the fact that the elasticity of government revenue to output is generally estimated to be close to one. Hence, surprises in the development in economic growth translate into proportionate changes in revenues, so that the ratio is unaffected.

Against this background, the fact that the decline in the revenue-to-GDP ratio was on average lower-than-projected over the periods covered by the Stability and Convergence Programmes (½ percentage point of GDP over a three-year horizon instead of a planned decline by 1 percentage point) calls for an explanation. The higher-than-expected inflation probably played a role in stimulating government revenues (reflecting the progressivity of tax systems). However, it cannot explain that general government revenue in nominal terms increased broadly in line with plans despite the important shortfall in nominal GDP growth. Another reason may be that the failure to bring down expenditure in line with plans partly spills over to the revenue side even if tax rates remain constant. This effect may occur given that lower government expenditure implies lower revenues, e.g. given that lower government wages imply lower revenues from the income tax or given that lower government consumptions implies lower VAT revenue. Finally, although we cannot be fully conclusive on the reasons for such developments due to a lack of data on the tax policy measures implemented by the governments over the period considered, our preferred explanation is that since there were difficulties with the achievement of expenditure objectives, tax rates were not allowed to decline as planned.[13]

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[13] Other possible explanations are that the composition of GDP growth was more favourable than expected (tax-rich components grew faster than others) and that elasticities of tax revenues to their basis were higher than anticipated.

4.3 Main conclusions

The following conclusions can be made from the previous analysis:

- In their SP-CP, Member States have generally planned standard "textbook type" fiscal consolidations, based on large decreases in the expenditure-to-GDP ratios. A large part of the budgetary margins thus created were planned to be allocated to a reduction in the tax burden.

- The planned reductions in the deficit were not achieved. This reflects the difficulties of Member States to adhere to their medium-term expenditure plans, in nominal terms.[14] These difficulties are not due to particularly unfavourable economic developments.

- The gap between deficit and expenditure projections and outcomes widened with the time horizon considered. One of the main advantages to place fiscal policy in a medium-term perspective, *i.e.* to ensure compensation over the medium-term of possible slippages or overspending in a given year, did not materialise in the EU.

- The fact that real GDP growth was projected too high contributed to a widening of the gap between budgetary plans and outcomes. The tendency to overestimate real GDP growth has been more pronounced in Member States with high initial deficits. The discrepancy between projected and observed increases in nominal GDP is much lower than that observed for real GDP, due to a significant underestimation of inflation in the Programmes.

- There is evidence that the ambitious tax reductions programmes embedded in the Stability and Convergence Programmes were not (fully) implemented. This contributed to limit the gap between the planned and observed changes in the government deficit ratio.

5. Country-specific analysis

5.1 Planned and observed changes in the main budgetary aggregates

In this section, we extend the analysis to individual countries. Table 7 below provides a comparison, for a number of EU-15 countries, between the average projected change in the main budgetary aggregates over a three-year horizon and the outcome over the same period.[15] The focus is on the medium-term (*i.e. T*+3) in order to highlight trends that could be less visible when monitoring budgetary developments on a year-by-year basis. The table shows that the discrepancy between the average planned and observed change in the government balance to GDP ratio was particularly large in Germany, Portugal, Italy, Greece and France. All these

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[14] It can be estimated that, despite the shortfall in growth, if nominal expenditure targets had been met (over a three-year horizon), the targeted improvement in the deficit ratios would have been respected.

[15] Apart from Luxembourg and the UK, Ireland and the Netherlands could also not be included due to a lack of detailed data on expenditure plans in some SP-CP updates.

Member States are currently subject to an excessive deficit procedure.[16] The gap is more limited for Finland, Belgium and Austria. Spain and Denmark on average respected the planned reductions in the deficit, or even did slightly better.

Box 1
Stability and Convergence Programmes before and after the 2005 reform

The disappointing results of the preventive arm of the Stability and Growth Pact over the period 1998-2004 were one of the motivations for the reform of the Pact of March 2005. This reform strengthened the preventive arm of the pact (see Commission (2005) for details on the reform). This box, prepared by Diana González Hernández (stagiaire in the DG Ecfin of the European Commission), assesses whether the reform had an influence on the typical medium-term budgetary plans formulated by Member States in their Stability and Convergence Programmes. The table below summarises the budgetary plans of 13 countries of the former EU-15 (the UK and Luxembourg are not included due to data availability) before and after the reform. In general, it seems that the reform of the SGP did not change the size or the structure of the fiscal consolidation. There seems however to be an evolution towards more reasonable objectives regarding expenditure restraint and more realistic macroeconomic forecasts. When going into the detail, the following conclusions emerge:

- First, it seems that the size of the fiscal consolidation, measured as the change in the general government deficit over a three-year period has remained the same since the reform (a 0.8-0.9 cumulated improvement). In terms of the composition of the planned adjustment, there is little change compared to the years before the reform. The envisaged deficit reduction is still based on a planned decline of the expenditure-to-GDP ratio. Interestingly, however, the planned decline in the expenditure ratio is less pronounced in the recent update than it used to be in the past. About one-third of the budgetary margins thus created are foreseen to be allocated to tax cuts, which is a lower proportion than before the reform.

- Second, there seems to be a tendency to base budgetary projections on more cautious macroeconomic scenarios. The average planned annual real GDP growth has moved from about 2¾ per cent under the original SGP to about 2.5 per cent under the revised SGP. This remark applies to all the time horizons considered.

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[16]   The gap is also relatively large for Sweden and Ireland. Note however that the Convergence Programmes of Sweden and Ireland had, on average, a starting point for the general government balance equivalent to a *surplus* of respectively 2.5 and 2.8 per cent of GDP. Average starting points for Germany, Greece, France, Italy and Portugal were *deficits* of respectively 2.5, 1.2, 2.4, 1.9 and 2.3 per cent of GDP.

Table 1

**Magnitude and Composition of the Budgetary Adjustment Planned
by Member States in their Stability and Convergence Programmes
Original SGP**

(unweighted averages; percent of GDP)

	T – T+1	T – T+2	T – T+3
Planned change in the government balance ratio	0.2	0.5	0.8
Planned change in the expenditure ratio	–0.5	–1.2	–1.9
Planned change in the revenue ratio	–0.4	–0.8	–1.1
Planned change in real GDP	2.8	5.8	9.0

Revised SGP

	T – T+1	T – T+2	T – T+3
Planned change in the government balance ratio	0.2	0.4	0.8
Planned change in the expenditure ratio	–0.3	–0.7	–1.2
Planned change in the revenue ratio	–0.1	–0.3	–0.4
Planned change in real GDP	2.5	5.1	7.8

Source: calculations by the authors on the basis of SC-CPs.

The largest discrepancies between the projected and observed changes in the expenditure-to-GDP ratios were recorded in Portugal, France, Italy and Germany. As regards developments in the revenue-to-GDP ratios, large surprises were observed in Finland, Portugal, Belgium and Greece. In the first three countries, developments in the revenue-to-GDP ratio compared to plans contributed to positive surprises on the deficit ratio. In the case of Greece, the average decline in the revenue-to-GDP ratio was more pronounced than expected. Note that our database does not allow to assess whether the unexpected developments on the revenue side reflected the effect of the composition of growth, fluctuations in tax elasticities or policy measures.

Table 7

**Planned and Observed Changes in the Main Budgetary Aggregates
over a 3-Year Horizon – Average over the Period 1998-2005**
(percent of GDP)

Country	Projected change in the GG balance ratio	Observed change in the GG balance ratio	Difference between the projected and observed change in the balance ratio	Difference between the projected and observed change in the expenditure to GDP ratio	Difference between the projected and observed change in the revenue to GDP ratio
Portugal	1.4	–0.9	–2.3	–3.4	1.1
France	1.2	–0.6	–1.8	–2.6	0.7
Italy	1.6	–0.7	–2.3	–2.3	0.1
Germany	1.6	–0.8	–2.4	–2.2	–0.1
Finland	–0.1	–0.5	–0.4	–1.5	1.2
Sweden	0.2	–1.2	–1.4	–1.3	–0.1
Belgium	0.5	0.1	–0.4	–1.2	0.9
Greece	1.7	–0.4	–2.0	–0.4	–1.6
Austria	0.4	0.2	–0.1	–0.4	0.2
Denmark	0.3	0.8	0.4	–0.4	0.8
Spain	0.6	1.1	0.5	–0.2	0.7

Source: calculations by the authors on the basis of SC-CP and European Commission, Ameco Database.

5.2   Decomposing expenditure slippages: individual countries

Table 8 provides the decomposition of expenditure slippages (the method is the same as that followed in section 4.2) for countries for which sufficient data are available. As seen above, large discrepancies between the projected and observed changes in the expenditure-to-GDP ratios were recorded in Portugal, France, Italy, and Germany.[17]

The underlying causes differ, however. For France, Italy and to a lesser extent for Portugal most of the slippage can be attributed to slippages in nominal

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[17]   It should be noted that most of the stability programmes as submitted by Italy contain a line with unspecified "future measure effects", which are not attributed to developments on the revenue or expenditure side of the budget. For the purposes of this paper, it was assumed that such measures are equally divided between revenues and expenditure.

Table 8

Decomposition of Expenditure Slippages for Individual Countries over a 3-Year Horizon
Average over the Period 1998-2005
(percent of GDP)

Country	Difference between the planned and observed change in the expenditure to GDP ratio	Contribution of a higher (–) or lower (+) than planned increase in nominal expenditure	Effect of lower or higher real GDP growth (country-specific expenditure sensitivity)	Possible effect of higher (+) or lower (–) than expected inflation (assuming full indexation)	Contribution of a higher (–) or lower (+) than planned increase in interest expenditure	Denominator effect (impact of the surprise in nominal growth on the expenditure ratio)
Portugal	–3.4	–1.8	–0.2	–0.5	0.1	–1.6
France	–2.6	–2.2	–0.2	–0.4	0.1	–0.5
Italy	–2.3	–1.5	–0.2	–1.1	0.4	–1.0
Germany	–2.2	0.1	–0.1	0.7	0.3	–2.3
Finland	–1.5	–1.3	–0.0	0.2	0.2	–0.4
Sweden	–1.3	–1.5	0.1	0.4	0.4	0.0
Belgium	–1.2	–1.4	–0.1	–0.4	0.3	0.0
Greece	–0.4	–2.1	0.0	–0.9	0.1	1.5
Austria	–0.4	0.0	0.0	–0.3	0.1	–0.5
Denmark	–0.4	–0.6	–0.2	–0.3	0.1	–0.1
Spain	–0.2	–2.4	0.0	–1.6	0.5	2.4

Source: calculations by the authors on the basis of SC-CP and European Commission, Ameco Database.

expenditure. In Germany the slippage in nominal expenditure is limited and the contribution of growth lower-than-projected is the dominant factor. To the extent that this reflects genuine negative growth surprises instead of projections that have been deliberately optimistic (see next paragraph), these data suggest that the budgetary problems are more directly linked to the weak economic situation of the last years than in the other Member States.

A key question is therefore why growth turned out to be lower than projected and whether growth forecasts were really over-optimistic. Note also the large slippage in nominal expenditure observed in Greece and Spain. In these two countries, higher-than-expected economic growth has partly compensated slippages in nominal expenditure (which, to some extent, can be explained by higher-than-expected inflation). A key question is how these two countries will perform in case their economy would slow down.[18]

5.3   *Analysing the growth shortfall: negative growth surprises versus deliberately optimistic projections*

If official growth forecasts were unbiased (*i.e.* on average the projection does not differ from the observed value), the effect of over- or under-estimating economic growth on the budget balance target would have to be accepted as the price of uncertainty. However, a different conclusion would be warranted if official growth forecasts suffer from some sort of structural optimism, systematically overrating the underlying rate of the economy. Recent analysis on the role of growth forecasts over the period 1987-2003 shows a forecast bias in three out of four large EU Member States and a significant negative impact on budgetary outcomes (Larch and Salto, 2003). The findings in this note tend to confirm the view that unbiased growth forecasts matter, even if they have not been the dominant source of budgetary slippage. A specific aspect of the period under consideration (1998-2005) is that, since 2000, growth has genuinely been lower than expected. In order to shed some light on the extent to which growth forecast have been *deliberately* optimistic, we therefore use the European Commission Autumn 2005 Forecast as a benchmark for comparing growth forecasts in the SP-CP. In doing so, we rely on Keereman (1999) who showed that the Autumn Forecasts are unbiased.

Results for average yearly growth rates for the years $T+1$ and $T+2$[19] are reported in Table 9. They confirm that the difference between realised and planned average yearly growth is statistically significant for the sample as a whole. Regarding individual countries, growth lower than planned is statistically significant for Italy, Portugal and Germany, while Spain benefited from higher-than-projected growth. A more diversified picture emerges when national projections are compared

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[18]   It can also be noted that Austria is the only country that has compensated a shortfall in economic growth by a lower than projected increase in nominal expenditure.

[19]   The focus is here on years $T+1$ and $T+2$, and not on $T+3$ as previously, given that the Commission forecasts do not cover year $T+3$.

Table 9

Negative Growth Surprises or Deliberately Optimistic Projections?

Country	SP–CP (1)	Autumn 2005 Forecasts (2)	Realised (3)	(2)–(1)	(3)–(1)
IT	2.6	2.2	1.3	–0.4***	–1.3***
PT	2.7	2.5	1.4	–0.2**	–1.2**
EL	4.1	3.9	4.1	–0.2**	0.0
ES	3.2	3.2	3.6	0.0	0.4*
FR	2.5	2.5	2.1	0.0	–0.4
DE	2.1	2.2	1.2	0.1	–0.9**
AT	2.3	2.4	1.9	0.1	–0.4
BE	2.4	2.5	2.0	0.2	–0.3
SE	2.5	2.7	2.7	0.2	0.1
DK	1.9	2.1	1.7	0.2**	–0.3
FI	3.0	3.2	2.8	0.2	–0.2
UK	2.4	2.7	2.7	0.2	0.3
NL	2.2	2.5	1.5	0.3	–0.7
IE	5.6	6.0	6.3	0.4	0.7
Average	2.8	2.9	2.5	0.1*	–0.3***

Note: the comparison is for average yearly real growth rates for $t + 1$ and $t + 2$.
*, **, *** indicate statistical significance at 10, 5 and 1 per cent level.
The last projections that could be included are those of 2003 for 2004 and 2005. As a result, there are 12 observations for individual countries and 168 observations in total.

Source: SC-CP, Autumn Forecasts and Ameco.

with those of the Commission autumn forecasts. Regarding the sample as a whole, the autumn Forecasts show slightly *higher* real growth forecasts than the Programmes (2.9 versus 2.8 per cent). For several countries (e.g. BE, DK, FI, NL) growth turned out to be lower than projected, even though the national projections in the SP-CP had been more *cautious* than those of the Commission (although the

difference is not statistically significant).[20] At the same time, there are two countries (Italy and Portugal) for which growth was lower than projected in the SP-CP *and* for which growth projections have been significantly more optimistic than those of the Commission. Given that growth lower than projected explains a large part of the budgetary slippages for these countries (Table 6), we conclude that the need for improving the checks and balances in the process of producing the forecasts is particularly strong for these countries.[21]

6.   Conclusions

        This paper analyses the track record of multi-annual budgetary plans of the SP-CP. Its main finding is that the divergence between budgetary plans and outcomes can largely be explained by the fact that planned ambitious restraint in *nominal* general government expenditure has not been implemented, thereby also limiting the scope for implementing planned tax cuts. This analysis calls for the setting by Member States of realistic targets for developments in general government expenditure and a more detailed specification (ex ante) of the measures and reforms envisaged to attain the objectives. It also calls for the implementation of effective and consistent systems of medium-term expenditure management in most Member States. At the same time, results also confirm the relevance of forecast errors in the growth rate for explaining budgetary slippages, although the effect is smaller than the former effect. We find evidence of deliberately optimistic projections for some countries. We hope that our analysis contributes to the development of fiscal surveillance in the preventive arm of the pact, which has recently been given more economic rationale with the 2005 reform of the Stability and Growth Pact.

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[20]   Results are consistent with the existence of an independent forecasting institute in Austria, Belgium and the Netherlands and a tradition of cautious forecasting in the Nordics (see European Commission, 2005, for an overview of the characteristics of forecasting institutions in EU Member States).

[21]   As indicated in Box 1, there seems to be a tendency to use more cautious macroeconomic scenario's in the latest round of Stability and Convergence Programmes.

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FROM DEFICITS TO DEBT AND BACK:
POLITICAL INCENTIVES UNDER NUMERICAL FISCAL RULES

Marco Buti, João Nogueira Martins and Alessandro Turrini[*]

"European governments are hiring private sector banks to help them disguise the scale of budget deficits, Joaquin Almunia, European Union monetary affairs commissioner, claims ... Mr. Almunia says that some banks recommend the same budgetary dodges to different governments, making it hard to police the EU's budgetary rules that underpin the single currency". (*Financial Times*, 5 October 2005)

Under numerical fiscal rules, such as those underpinning EMU, governments have strong temptations to use accounting tricks to meet the fiscal constraints. Given these political incentives, fiscal variables that in the past were regarded as a mere residual acquire a strategic role. This is the case of the so-called stock-flow adjustment (SFA) which reconciles deficit and debt developments. We develop a simple theoretical model where deficits and two distinct SFA components (one that could be used to reduce the deficit figures and the other to impact debt figures instead) are determined as a result of a constrained optimization by fiscal authorities. Econometric evidence provides results consistent with the model findings. The SFA component related to the purpose to hide deficits rises with the recorded deficit, while the sales of financial assets designed to keep the debt under control rise with debt and deficit. Such practices have greatly contributed to the loss of credibility of EMU's fiscal rules. If properly implemented, the reformed Pact, which stresses durable adjustment and long-run sustainability, should help curb such perverse incentives.

1.   Introduction

Europe's Economic and Monetary Union (EMU) is built on strong fiscal discipline foundations. The budgetary autonomy of the members of the euro area is subject to the numerical constraints of the Maastricht Treaty and the Stability and Growth Pact (SGP). The Treaty prescribes that budget deficits should not exceed 3 per cent of GDP, unless exceptional circumstances occur and, even in this case, the

excess should remain limited and temporary. Public debt should not exceed 60 per cent of GDP or, if this is the case, it should be maintained on a downward trend. While the numerical parameters of the Treaty were seen as a screening device to select the members of the euro area, the goal of the SGP – which set medium-term objectives of close-to-balance for EU member states – was to make fiscal discipline a permanent feature of EMU.

Such rules triggered a strong fiscal adjustment in the run up to EMU: the average budget deficit of the euro area was reduced from a peak of 6 per cent of GDP in 1993 to less than 1 per cent at the turn of the century. Public debt, which registered a quasi continuous increase from about 30 per cent of GDP in the mid 1970s, reached about 70 per cent of GDP in mid-1990s and started to decrease, albeit very slowly, thereafter. While both variables however went into reverse in the last few years under the effect of poor economic growth and "adjustment fatigue", the threat of going back to the reckless behaviour of the pre-Maastricht era has not materialised.

A dark side of EMU's fiscal rules, however, quickly emerged. Accounting tricks, one-off operations, exotic transactions and legally dubious data manipulations to circumvent the constraints on deficits and debt became frequent. The political incentives in evading real adjustment was recognised in the early days of the new Treaty: "Maastricht encourages financial engineering to avoid underlying fiscal adjustment. Even when privatisation is desirable for efficiency reasons, it is bad economic policy to do the right (structural) thing for the wrong (financing) reasons" (Buiter *et al.*, 1993).[1]

In spite of indications that window-dressing activities associated with fiscal rules could be sizable and anecdotal evidence piled up, a major difficulty in carrying out empirical research has been the lack of systematic information. One way to overcome this difficulty is a "bottom up" estimation obtained summing up the value of the operations, which have been identified as falling under the category of creative accounting. This is the route that followed Dafflon and Rossi (1999) and, more recently, Koen and Van den Noord (2006). The latter construct measures of "fiscal gimmickry" taking into account both one-off measures improving budget balances and creative accounting operations and find that the probability of fiscal gimmickry increases with the level of deficits in EU countries. Of course, the limitation of this approach is that it cannot be exhaustive: many operations aimed at strategically manipulate the statistical definition of deficits will not be captured.

A second option is the one followed by Easterly (1999) and Milesi-Ferretti and Moriyama (2004) who take a "balance sheet approach" to analyse fiscal

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[1]   This is obviously not a wholly new or EMU-specific phenomenon. Actually, most of the empirical evidence comes from the fiscal behaviour of the States in the US. Von Hagen (1991) and Bunch (1991) show that borrowing constraints imposed on US states have led to the substitution of non-constrained for constrained debt instruments. Strauch (1998) shows that expenditure ceilings at US state level have induced a shift from the constrained current budget to investment expenditure which is unconstrained. See also Bunch (1991) and Sbragia (1996).

adjustment.[2] If a government has not embraced fiscal adjustment in earnest (via a lowering of its discount rate), it will respond to a budgetary constraint by reducing its asset accumulation or increase its hidden liabilities by an equal amount, leaving net worth unchanged. Hence, the improvement in the fiscal balance or the reduction in the debt ratio do not reduce the need for future higher taxes. Looking at EU countries in the 1990s, Easterly (1999) notices that privatisation in the original eleven countries of the euro area after Maastricht (*i.e.*, after 1991) more than quadrupled while it fell in the UK, Sweden and Denmark. He concludes that the combination of basically unchanged public expenditure growth, one-off measures, the proliferation of privatisation and public investment reduction suggests that at least part of the fiscal retrenchment in response to the Maastricht constraint was illusory. Milesi-Ferretti and Moriyama (2004) find that during the run-up to EMU, the change in the stock of debt is positively correlated with changes in government assets during the same period while it is weakly correlated with changes in net worth. Despite a fall in the stock of public assets, net worth deteriorated between 1992 and 1997 in almost all EU countries. By contrast, in the period 1998-2002, net worth improved notwithstanding declining government assets. The authors interpret this as due to a lower pressure to use non-structural measures arising from the lower penalties for missing the fiscal targets once in the euro area.

In this paper, we choose a largely complementary approach by studying in detail the so-called stock-flow adjustment (SFA), namely the discrepancy between the accounting value of deficit and the change in debt. This option is all the more relevant in the EU context as the relative attention to the two criteria of the Treaty has changed over time and, since the introduction of the SGP, the focus has increasingly shifted on the deficit criterion which has been the only one to receive serious attention in the public debate.

In the literature on public debt accumulation, the SFA is usually disregarded or treated as a mere residual. Such a shortcut is acceptable only to the extent that the SFA is small and cancels out over time. This is what one would expect from a composite residual variable made up of several items moving in opposite directions. However, if one tried to reconstruct the debt series for years 1991 to 2005, disregarding the SFA, the cumulated error would exceed 4 per cent of GDP for the euro area as whole. More importantly, for a number of member states, the difference is much larger and may reach 10 per cent of GDP in single specific years, or above 40 per cent of GDP cumulated over the above indicated period. The non-weighted average of yearly SFA-to GDP ratios from 1991 to 2005 is 0.8 per cent of GDP and the absolute average is 1.8 per cent of GDP.[3]

Economic analysis has started only recently to pay attention to the behaviour of the SFA. In a seminal paper, von Hagen and Wolff (2005), building on the theoretical model by Milesi-Ferretti (2003), show that under the SGP where greater

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[2]   For an early suggestion of a balance sheet approach, see Buiter (1985).

[3]   See also European Commission (2005) for an illustration of recent developments in the SFA in EU countries.

attention is paid to the deficit, governments tended to shift expenditure to below the line thus increasing the SFA. The authors find a systematic relationship between SFA and deficit after the introduction of the SGP. Under such a fiscal rule, where the deficit criterion receives considerable more attention than the debt (or than the yearly debt developments), governments do have an incentive in underreporting their deficits or in packaging or describing their transactions in such a way that the gap between deficit and debt widens.

However, von Hagen and Wolff (2005) use an aggregate measure of the SFA. This does not allow to capture the different political incentives in an environment in which the degree of stringency of the deficit and debt criteria may vary across time and countries, and the costs associated to SFA also vary among its components. In particular, first, there may be very good reasons for persistently positive and even large value of SFA: as shown by the authors themselves (see their Table 1), amongst the largest values of the SFA over the last two decades are found in Finland, Denmark and Luxembourg, all countries where the fiscal constraints did not bite (apart from a short period at the beginning of the 1990s in the two Nordic countries. Second, low total SFA – as in Italy or Portugal – may be the result of hidden expenditure offset by sales of financial assets (privatisations).

In this paper, we identify distinct SFA components that are associable with accounting gimmicks aimed at embellishing the deficit and at reducing the debt. We develop a simple theoretical where deficits and two distinct SFA components (one that could be used to hide part of the deficit and the other to reduce the debt figures instead) are determined as a result of a constrained optimization by fiscal authorities. We then provide econometric evidence on the strategic use of the SFA components by fiscal authorities.

The remainder of the paper is structured as follows. Section 2 presents a descriptive analysis of the SFA by focussing on size, composition and the ability of fiscal authorities to strategically use them. Section 3 develops a simple model of a government with short-term growth objectives, but with its room for manoeuvre thwarted by fiscal constraints akin to those of EMU. Section 4 provides empirical evidence on the determinants of government operations that affect the SFA in an environment in which the budget criteria of Maastricht and the SGP constraint fiscal behaviour. The final section summarises our finding, provides some considerations on how the reform of the SGP will affect such perverse political incentives and suggests further work.

2.   The stock-flow adjustment: why does it exist?

2.1   *A composite entity: the main components of the SFA*

This section describes the components of the SFA; by doing so, it also explains why the variable exists in the first place. It elaborates on each of the components and reports on the available data. It then discusses on their

manipulability by government with the aim of painting their deficit and debt figures – especially the former – in rosier tones.

The SFA can be broken down in several different ways. We have found useful to break it down into three components. Two components reflect basic differences in the accounting basis for the deficit and the debt, while the third category gathers residual adjustments.

(a) *Differences between the accrual and cash bases of recording transactions*

The government expenditure and revenue are recorded on an accrual basis, that is at the time of the underlying transaction irrespective of effective cash payments and receipts. In contrast, the debt is a cash concept; it increases or decreases with effective debt issuance or redemptions. These ultimately depend on effective cash payments and cash receipts, not on the underlying revenue and expenditure.

The transactions that have been recorded as expenditure or revenue – and therefore have contributed to increase or reduce the deficit, but for which the effective cash payment or receipt has not yet taken place, are accounts receivable or payable.[4] Therefore, the issuance of zero-coupon bonds, the reimbursement of bonds that do not regularly pay coupons, the accumulation of revenue arrears, the settlement of payment arrears and the payment of expenditure in advance, the reimbursement of taxes, etc. result in positive SFAs (debt increase by more than the deficit in a specific period). Symmetrically, interest accrued by zero-coupon bonds, or by other bonds that do not regularly pay coupons, the accumulation of payment arrears, the collection of revenue in arrears, and the collection of excessive taxes that will need to be reimbursed, etc. lead to negative SFAs.[5]
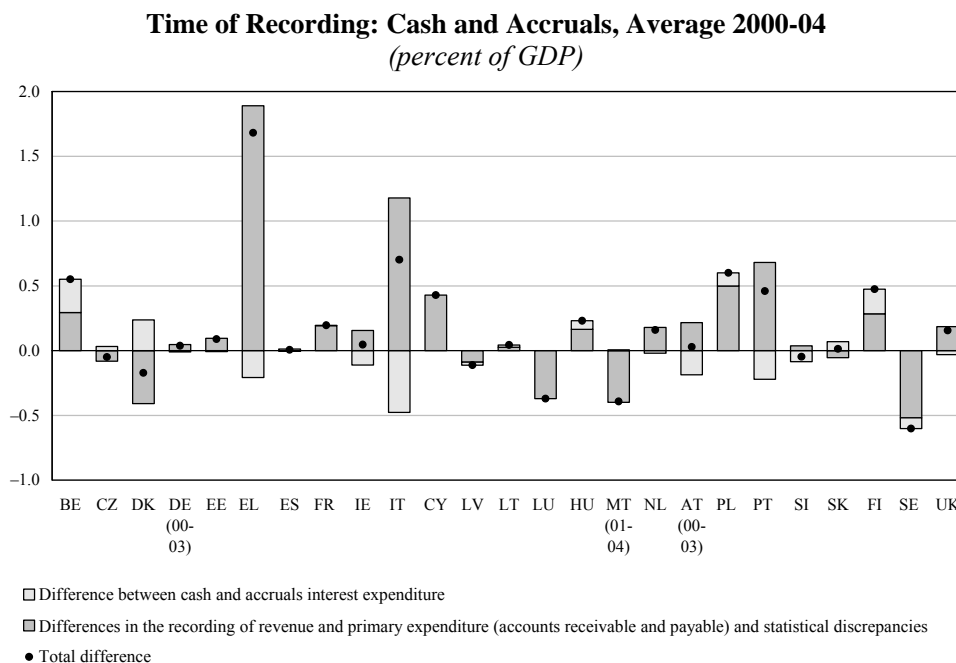
It needs stressing that the differences between cash and accruals accounting should cancel out over the years. In the medium-term (let us say five years), the cumulated flows of accounts receivable and payable should converge to zero, or simply reflect nominal growth.

Figure 1 shows data on the cash and accrual discrepancies for each of the EU member states. Cash and accrual discrepancies for interest and other revenue and expenditure items are shown separately. The difference between cash and accruals appear relatively small for most countries. However, the data for Greece, Italy and, to an extent, Portugal stand out: even over a 5-year period during which plus and minuses should cancel out, the cumulated discrepancy is positive and large. Taking into account that these three countries were under

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[4]   Accounts payable usually refer to expenditure, and accounts receivable to revenue, but the reverse is also possible: there are also accounts payable in relation to revenue (e.g. taxes to be reimbursed), and accounts receivable in relation to expenditure (e.g. cash payments in advance of deliveries). Accounts payable are government liabilities, and statisticians do recognise them as such. However, they are not considered in the government debt for EDP purposes.

[5]   We have merged statistical discrepancies in the member states' financial accounts into accounts receivable and payable. This is because experience suggests that most statistical discrepancies (that is, differences between deficit and debt figures that statisticians are unable to attribute to any specific SFA component) are the result of the intricacies of accrual accounting. Moreover, in a number of countries, statistical discrepancies between financial and non-financial accounts are not specifically identified in their accounts but merged under accounts receivable and payable.

Figure 1

Time of Recording: Cash and Accruals, Average 2000-04
(percent of GDP)

□ Difference between cash and accruals interest expenditure

▨ Differences in the recording of revenue and primary expenditure (accounts receivable and payable) and statistical discrepancies

● Total difference

pressure to avoid excessive deficits and, the first two have a large stock of debt, the political incentives to hide budget deficits may have been at work.[6]

(b) *Differences between the net and gross recording in relation to financial transactions*

A second major difference between deficit and debt accounting – in fact the one that has the largest impact on data – concerns the accumulation (or decumulation) of financial assets.

The government deficit is a net concept. It is defined as government *net* borrowing. This means that it corresponds to the difference between revenue and expenditure excluding financial transactions. In contrast with the deficit, the debt is measured in gross terms. No government assets are netted from the government liabilities when compiling the debt. When the government accumulates financial assets and therefore needs to finance their acquisition, the gross debt increases even if the government deficit and net worth would remain

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[6]   It should be noted also that, since the extraction of the data for this paper in spring 2005, there have been significant revisions in the accounts of a these three countries which led to smaller differences between cash and accrual data by reclassifying items from below to above the line, thereby increasing the budget deficit.

Figure 2

Accumulation of Financial Assets, Average 2000-04
(percent of GDP)
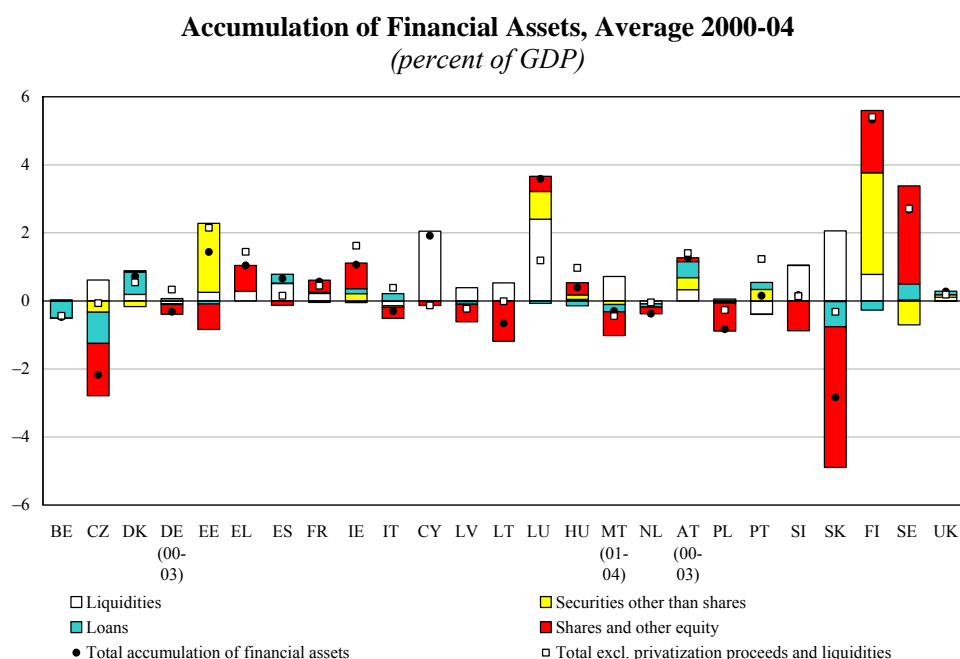
unchanged. Therefore, the accumulation of financial assets leads to positive SFA, and the decumulation of financial assets (e.g. privatisation) implies a negative SFA.

Data available allow distinguishing the net accumulation of financial assets in four categories: liquidities, loans, securities other than shares (that is, private-issued bonds traded in the stock exchanges) and shares and other equity. Data on these components are shown in Figure 2.

The member states that have registered the largest accumulation of financial assets are those that have been in surplus and have relatively small debts, such as Denmark, Estonia, Luxembourg, Finland and Sweden. Given that the government gross debt in these countries is low or very low, the accumulation of assets is preferable to redemption of debt.

(c) *Valuation effects and other statistical adjustments*

The third component of the SFA concern valuation changes, reclassifications and other technicalities. Figure 3 shows data on this SFA category. The adjustments because of exchange rate movements are now very small in almost all member states. They used to be much larger in several countries before the creation of the euro area. Concerning early reimbursements, the two more interesting cases concern Italy (the replacement of a low-interest bond with a high interest bond

Figure 3

Valuation Effects and Residual Adjustments, Average 2000-04
(percent of GDP)
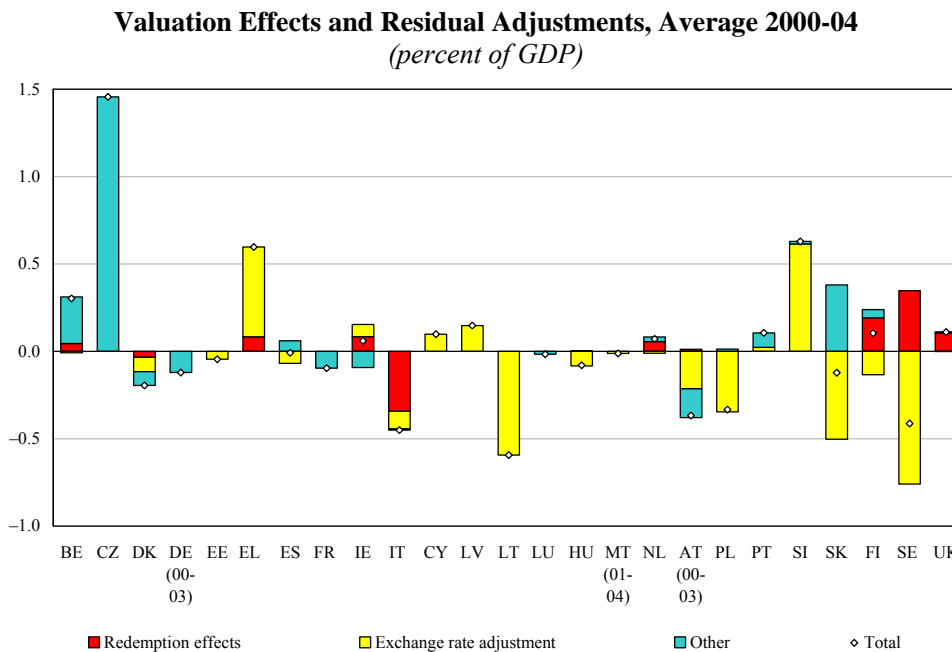
and lower face value at the end of 2002) and Sweden (the reverse transaction in 2000). Concerning the residual "other", it is worth to refer to large reclassifications into government of liabilities in connection with banking restructuring in the Czech Republic and Slovakia.

2.2   *Not so much a residual: the strategic use of the SFA*

The basic question this paper addresses is whether and how the SFA can be used strategically by a government that bears political costs when the deficits violate some numerical constraint, while at the same time it is wishes to increase public spending and reduce taxes to stimulate economic activity or please the electorate.

As the previous section has shown, the SFA is the result of many different developments. A large SFA that depends predominantly on the accumulation of assets quoted in the stock exchange by a government in surplus has a considerably different nature from a large positive SFA because of the increase in the share capital of distressed public enterprises, a depreciation of national currency, because the government had to settle a large stock of spending arrears or simply because cash and accrual statistics do not match. Which of the SFA components can then be used as strategic variables to disguise its deficits? We propose here two alternative decompositions of the SFA that permit to isolate the elements that are more likely to

be subject to a strategic use by fiscal authorities to reduce deficits. To simplify language, in the remainder of the paper we will refer to the set of these SFA items as "hidden deficits", "disguised deficits", or "accounting gimmicks".

Irrespective of the approach chosen to measure the hidden deficit, the "valuation effects and other statistical adjustments" component of the SFA are disregarded. Because of the heterogeneous and erratic nature of this variable, it is likely to depend mainly on events outside government control. Moreover, it is likely to be small or negligible for most EU countries under normal circumstances.[7]

(i) *A conservative measure of hidden deficits: difference between cash and accrual measures of deficit*

In an economy with liquidity restrictions, one may expect that cash receipts and payments could be of a more direct use to appease the electorate and accelerate economic activity than government revenues and expenditure. However, since the latter are those that are relevant in the EU budgetary surveillance, governments have an interest in reducing the deficit in accruals and increasing the cash deficits, by increasing the effective revenue collection lags and reducing the cash payment lags. In principle, one could expect that this strategy would only be used in specific critical moment, such as immediately before an election or in the vicinity of a commitment related with fiscal discipline frameworks like the Stability and Growth Pact, as the difference between cash and accrual accounting is just a matter of timing. Yet, the message conveyed by Figure 1 above is at variance with these considerations. The differences between accruals and cash in the accounting of revenue and expenditure for a few countries – with specific budgetary concerns – seems to be persistent. This suggests that government might also try to minimise their deficits via inconsistent cash and accrual statistics.[8]

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[7] Note, however, that in some specific circumstances, member states may also put in place a number of deficit- or debt minimising strategies, which would be reflected in this category. A case in point is the issuance of foreign debt. Assuming covered interest parity, it should be invariant to issue debt in low-yield currencies for which there is an expectation of appreciation or in high-yield currencies for which there is an expectation of depreciation. The expected revaluation of foreign debt is a cost similar to interest expenditure, as it will imply a reimbursement by amount which is higher (in national currency) that received at issuance. However, costs stemming from the revaluation of foreign currency denominated debt are booked below the line (as SFA) and not in the deficit. This means that governments that wish to minimise the deficits could have an interest in issuing debt in low-yield currencies even if this would increase their exchange-rate risk. Another example concerns the early redemption of government debt; Italy has provided an example in 2002 when it replaced a low-interest bond with a high interest bond and lower face value with the aim of artificially accelerating the reduction in Maastricht debt. Some reclassification of units (e.g. indebted public enterprises that are reclassified from the corporate sector to government) may also be the result of the hiding-deficit strategies; however, the fundamentals (accumulation of losses in public enterprises) are not directly connected with the timing of the reclassification.

[8] This means that governments have an interest in keeping low quality statistical systems if this results in a minimisation of their deficits.

(ii) *A comprehensive measure of hidden deficits: taking into account disguised government subsidies*

The above measure of hidden deficits can be made more comprehensive. Indeed, there is a number of transactions in financial assets that may also take place first and foremost with the aim of hiding deficits.

Not all assets are equal. The purchase of blue-chip shares by social security investing its surpluses is not of the same nature of an injection in the share capital of a loss-making public enterprise by central government. Therefore, it would be useful to distinguish between high-quality assets and low-quality assets. The former are the financial investments which take place at market conditions and which would be accepted by a profit-maximising private investor. The latter are those which the government enters into for public policy purpose, in particular those that replace deficit-increasing subsidisation and may be determined by the wish of hiding some expenditure.

We believe that the variables "liquidities and securities" can be safely classified in the first group as high-quality financial investments, as the private also do the same financial investments. Loans are a less clear case. For a government which attempts to minimise its deficit, it may be preferable from an accounting viewpoint to grant a loan than to directly provide a subsidy. In some cases, given national budgetary rules, it may also be easier to grant loans rather than to provide direct subsidisation. Ultimately, one would have to distinguish loans granted by government according to beneficiaries' rating, and the specific conditions of each loan. However, as this information is not available, we will assume that loans granted by government do contain an element of hidden expenditure.

In relation to shares, the distinction between good and bad assets could be attempted by separating the shares which are quoted in the stock exchange and the non-quoted shares, in particular in enterprises which are controlled by government. However, in this case there is also a severe data-availability problem.[9] On the basis of the available data, we found useful to distinguish three categories, namely, transactions in shares by social security (which we presume to correspond to a profit-maximising behaviour of investing surpluses in high-quality assets), other transactions in shares (where we assume on the basis of anecdotal evidence that the low-quality shares predominate), and privatisation (that is large sales of government-owned shares, which ultimately lead to shift the control of a public firm to private hands).

3. Political incentives under numerical rules: a simple model

As pointed out above, numerical rules for deficit and debt provide incentives for creative accounting. To analyse formally how such incentives affect budgetary

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[9] The ESA95 rules and nomenclature does distinguish between quoted and non-quoted shares, and according to who controls the enterprise. However, most countries do not publish data with this detail.

behaviour, we develop a simple model of a government subject to numerical deficit and debt constraints. In spite of its evident limitations, the model helps capturing relevant aspects of the trade-off faced by policy makers in devising budgetary policies and schemes to embellish the budgetary position.

The idea underlying the model is simple. Fiscal authorities use fiscal policy to achieve short-term growth objectives. However, because of the operation of the EU fiscal rules, budget deficits as well as debt developments diverging from those compatible with the EU Treaty are perceived as costly. SFA operations may alleviate the perceived cost of deficits and debt, by permitting to improve the figures which are used in EU budgetary surveillance, at least temporarily. Such operations, however, may also entail a cost, associated mainly with reduced transparency (accounting gimmicks are badly perceived by the public opinion and EU institutions) and distortions in the composition of government balance sheets. Under these conditions, governments will trade off the benefits of higher deficits (short-run boost to growth) with their cost (the formal and informal sanctions of the EU fiscal framework). Analogously, the marginal gains from undertaking SFA operations will be equated to their marginal costs.

The model permits to derive some testable predictions concerning the relation of SFA and its components with deficits, debt, rules for fiscal discipline, and factors affecting government preferences, like elections.

3.1   Model set-up

The first relation in the model links deficits and short-run growth. In the short-run, prices are sticky, so that output is demand-determined. It follows that fiscal policies that increase deficits by cutting government receipts or by raising payments contribute positively to short-run growth. Assuming for ease of notation an initial deficit equal to zero, we write:

$$y = \phi d \tag{1}$$

where y is real output growth, d is the deficit as a share of output, and ϕ is the fiscal multiplier. A key assumption is that economic activity is influenced by this notion of "true" deficit in cash terms.[10] As in the EU fiscal rules, however, the numerical constraint applies not to the true deficit in cash terms, d, but to the national accounts, accrual-based definition, of budget deficit, d^M (where the superscript M stands for Maastricht):

$$d^M = d - x \tag{2}$$

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[10]   This measure of deficit overlaps only partly with that advocated by Balassone and Monacelli (2000) and Balassone *et al.* (2004) as the most correct indicator of annual budgetary behaviour. In those definitions most SFA components enters the deficit. Our definition of deficit also overlaps only partly with the "bare" deficit as defined by Koen and van den Noord (2006) who strip out of the Maastricht deficit also one-off operations.

where x corresponds to the hidden deficit, namely the SFA component that may be "manipulated" by fiscal authorities with the specific aim of affecting the Maastricht deficit (see Section 2.2 above).

The debt accumulation identity, disregarding inflation, can be approximated as follows:

$$\dot{b} = d - y\,b - z \tag{3}$$

where b is the debt/output ratio, $\dot{b}$ is the time change in this ratio, and z denotes financial operations carried out by governments that do not affect the deficit but reduce the debt (*i.e.*, sales of financial assets).[11]

The numerical rule on public debt states that the debt to GDP ratio, b, as long as it is above a given value, $\bar{b}$, should preferably be reduced at a speed α, implying that the distance of the debt from its target value should be reduced by α points a year:

$$\dot{b} = \alpha\left(\bar{b} - b\right) \tag{4}$$

Equation (4) formalises the Treaty requirement that the debt, until it is above the reference value of 60 per cent of GDP, should be reduced at a satisfactory pace.[12]

We postulate that the government aims at attaining a given level of output growth, call it $\hat{y}$. The government has three instruments at its disposal: its effective cash receipts and payments which lead to the "true deficit" in cash terms (d); the hidden deficit (x), and transactions in financial assets which contribute to reduce the government debt (z). Fiscal authorities need to respect as far as possible constraints on deficit and debt similar to those in the EU. Accounting gimmicks (x) can be used to limit the deviation from the deficit objective, but they are assumed to carry a political cost as such operations trigger enhanced surveillance due to the suspicion that the government may be engaged in unlawful accounting practices. Similarly, financial operations (z) permit the government to come closer to the objective for the debt path, but also these measures carry a cost, related in this case to the possibility of a sub-optimal composition of government balance sheets.[13]

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[11]   From (2) and (3), it emerges that the SFA, net of valuation effects and residual statistical adjustments (which to simplify are assumed to be purely erratic), equals $x - z$.

[12]   Such an expression has been used to represent the debt Maastricht rule by e.g. and Buti *et al.* (1998). Gros (2003) shows arithmetically that with constant 5 per cent nominal growth of GDP, a constant budget deficit of 3 per cent of GDP ensures a speed of reduction of the debt in excess of 60 per cent of GDP of 5 per cent a year.

[13]   For instance, a privatisation programme pursued during times of weak demand by financial markets may lead to undervaluation of the assets previously held by the government and to a reduction in the government net worth.

The following government loss function attempts to capture in a simplified fashion the objectives of and constraints on government budgetary behaviour:

$$L = (y - \hat{y})^2 + \theta_1(d - x)^2 + \theta_2[\dot{b} - \alpha(\bar{b} - b)]^2 + \theta_3 x^2 + \theta_4 z^2$$

For convenience, and without an impact on qualitative results, it is assumed that the objective value of d^M is zero for each country and at each period. The government minimises the L with respect to d, x and z.

3.2   Model solution

The solution of the optimisation problem for x and z can be expressed as a function of the true deficit level as follows:[14]

$$x^* = \frac{\theta_1 d^*}{\theta_1 + \theta_3} \tag{6}$$

$$z^* = \frac{\theta_2[(\alpha(b - \bar{b}) + d^*(1 - \phi b)]}{\theta_2 + \theta_4} \tag{7}$$

As for the solution of the true deficit, it is determined in the following way:

$$d^* = \frac{\phi\,\hat{y} - (1 - \phi b)[\alpha(b - \bar{b})](\theta_2\theta_4)/(\theta_2 + \theta_4)}{\phi^2 + (1 - \phi b)^2(\theta_2\theta_4)/(\theta_2 + \theta_4) + (\theta_1\theta_3)/(\theta_1 + \theta_3)} \tag{8}$$

The above solutions hold as long as $b > \bar{b}$ (in the opposite case, it is assumed that $z^* = 0$ and $d^* = \dfrac{\phi\,\hat{y}}{\phi^2 + (\theta_1\theta_3)/(\theta_1 + \theta_3)}$). In addition, we suppose that $\phi b < 1$, which guarantees that that higher deficits lead to an increase in the debt/output ratio, namely, $\partial\dot{b}/\partial d > 0$. This amounts to assuming that the impact of deficits on the numerator of the debt/output ratio prevails over the denominator effect: a condition that is likely to hold in reality and consistent with the dynamic efficiency of economies. In our case, this condition also guarantees $\dot{b} > 0$ whenever $d > 0$, so that the minimum rate of debt reduction is always binding when $b > \bar{b}$.

Accounting gimmicks, x, depend positively on the deficit. This result follows from the fact that the model permits to analyse the interaction the determination of

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[14]   The solution for x and z could equally be expressed as a function of the Maastricht deficit, noting that:
$$d^{M*} = d^* - x^* = [\theta_3/(\theta_1 + \theta_3)]d^*$$

deficits and that of SFA components. If fiscal authorities find it optimal to run high deficits, they will also have more incentives to hide such deficit and avoid that d^M exceeds a given threshold. It is to notice that such result differs from that in Von Hagen and Wolff (2005), who take the desired change in the debt/output ratio as exogenous. In such setting, deviating by the desired debt path entails a cost, but it is also costly violating deficit limits, with the cost increasing with the square of the distance with respect to the deficit ceiling. In this set up, when deficit ceilings become binding the expected relation between deficits and the SFA is negative, because the SFA will be used to accommodate the difference between the targeted change in debt and the deficit threshold.

Financial operations z depend *directly* both on the debt and the deficit. Under the assumption $\phi b < 1$, and $b > \bar{b}$ there is more decumulation of assets by the government if deficits increase (e.g., privatisations, becomes more likely and accumulation of assets less likely). To meet the target rate of debt reduction, fiscal authorities need to compensate via the SFA the increase in the debt/output ratio implied by higher deficits. The impact of the standard debt level (at *given* deficit) on government financial operations is *a priori* ambiguous, and depends on parameter values. There are two contrasting effects at play. On the one hand, if the debt/output ratio is high, a stronger reduction in debt is necessary to comply with the target debt-reduction rate, and this leads to more sales of financial assets. On the other hand, a higher speed of debt reduction can be achieved, via the denominator of the debt/output ratio, by an expansionary budgetary policy; hence, ceteris paribus a lower z would suffice. This second effect is stronger the higher the starting level of debt, so, a lower decumulation of asset would be sufficient to achieve a given rate of debt reduction the higher the starting level of debt. This simply reflects the well-known result according to which an acceleration in economic activity leads to a faster fall in the debt ratio for the more indebted countries. The prevalence of the first effect requires $\alpha > \phi d^*$, *i.e.*, that the target reduction rate of debt is relatively high compared with the equilibrium level of the deficit. Under the conditions prevailing in the EU and in light of the prescriptions of the EU fiscal framework, the above assumption is likely to be satisfied, so that we should expect higher debt ratios going hand in hand with larger debt-decreasing financial operations.[15]

Finally, concerning the equilibrium level of the deficit *d*, it is to note the ambiguous impact of the debt. On the one hand, the higher the debt, the lower the deficit compatible with the respect of the debt rule. This effect is reflected at the

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[15]   Parameter α is not spelled out in the EU fiscal framework. However, a lower bound for such a parameter could be inferred from the path for convergence of the debt ratio towards 60 per cent of GDP consistent with a deficit of 3 per cent of GDP, nominal GDP growth of 5 per cent and disregarding SFA. (Such a benchmark has been used by the European Commission since 2004 in the assessment of stability and convergence programmes). In this case, α would be 5 per cent. Such a value for α would most likely satisfy the condition:

$$\alpha > \phi d$$

Figure 4

The Equilibrium Relation between Stock-flow Adjustment Components
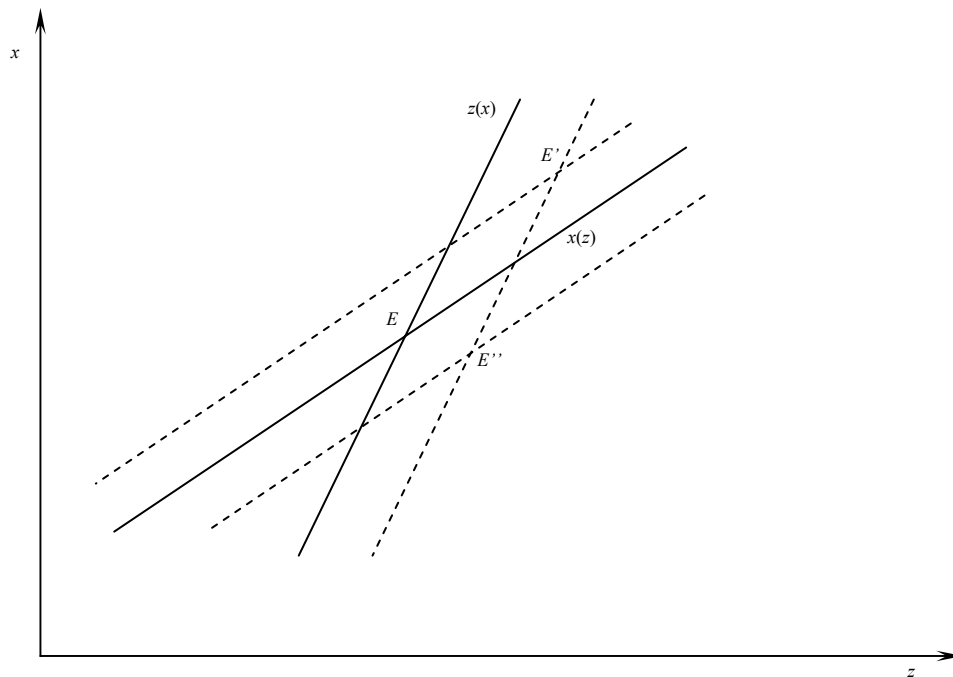
numerator of equation (8). On the other hand, a higher level of debt implies a higher sensitivity of debt developments to growth, and therefore a higher incentive to put in place expansionary budgetary policies. This effect is visible both at the numerator and at the denominator of equation (8). Which effect prevails depends upon the parameters of the model. In particular, a high (low) value of α implies that the first (second) effect prevails, so that the equilibrium deficit falls as the debt/output ratio grows.

The impact of more ambitious growth objectives ($\hat{y}$ rises) moves the equilibrium from E to E'. More stringent debt development requirements (α rises or $\bar{b}$ falls) shots the equilibrium from E to E''.

3.3   Comparative statics

The full solution of the model for what concerns the SFA components considered in our analysis can be characterized in the (x, z) space as illustrated in Figure 4. Both the $x(z)$ locus and the $z(x)$ locus are upward-sloping (see Appendix 1). More financial operations reducing the debt (z) permit to run higher

deficits, which need in turn to be accompanied by accounting gimmicks that reduce "Maastricht" deficits. If more accounting gimmicks (x) are put in place, deficits can be higher, and therefore more sales of financial assets are needed to avoid an excessive growth in the debt/output ratio.

The equilibrium solution is represented by point E in Figure 4. There are parameters in the model that produce a parallel shift in the $z(x)$ and $x(z)$ loci. This is the case for the growth objective $\hat{y}$, the stringency of the debt-reduction rule, α, and the degree of ambition of the debt target, inversely measured by $\overline{b}$.

An increase in $\hat{y}$ implies a higher desired deficit and therefore an upward shift in $x(z)$ and a downward shift in $z(x)$, thus leading to a new equilibrium (E' in Figure 4) with both more accounting gimmicks and more sales of financial assets.[16] Note that the overall impact on the overall SFA is uncertain, since while x increases the SFA, z reduces it.

A debt rule that becomes more stringent (higher α) or a debt target that becomes more ambitious (lower $\overline{b}$) lead instead to less accounting gimmicks aimed at hiding the deficit and to more sales of financial assets (see Appendix 1 and 2). In this case, the overall SFA unambiguously falls: there is less deficit, less hidden deficit and more sales of financial assets that contribute to reduce the debt. The new equilibrium is represented by point E''. Clearly focussing on the total SFA would not allow to capture such effects.

The other parameters of the model induce both a shift and a tilt in the schedules so that comparative statics by means of graphical analysis becomes less straightforward. Appendix 2 illustrates some comparative statics results obtained via differentiation of the analytical solutions of the model. The debt/output ratio in particular has an ambiguous impact on the deficit and therefore also on x and z.

Parameter θ_1, the weight given in the government loss function to the deficit objective, has two opposing effects on accounting gimmicks. On the one hand, a higher θ_1 rises x given the deficit; that is the difference between the "true" deficit and the "Maastricht" deficit rises. On the other hand, d, the deficits before accounting gimmicks falls, and this entails a lower value for x at equilibrium. It can be shown that the first effect always prevails, so that a higher weight given to the deficit objective unambiguously leads to more hidden deficits. As for the impact of θ_1 on z, it only comes through d, and is unambiguously negative. Overall, a more stringent rule (or a stronger perception of its relevance) leads to more SFA: more hidden expenditure to embellish the deficit figures used in budgetary surveillance as well as less accumulation of financial assets to avoid an excessive growth in the debt/output ratio.

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[16]   This result is in line with that of Milesi-Ferretti (2003) who shows that fiscal rules interfering with the cyclical stabilisation function of fiscal policy give rise to creative accounting in periods of cyclical slumps.

The effect of θ_2 on d is negative if the latter is positive (*i.e.*, if the "true" budget balance records a deficit, as it has been most often the case in EU countries in the recent past). The impact of θ_2 on x s negative because less accounting gimmicks help ensuring faster debt reduction. However the effect of θ_2 on z would be ambiguous instead, due to two opposite effects: the direct one, which raises z, and indirect one, via a lower d. With reasonable parameters, one should expect z to increase as θ_2 rises. Under the same condition, a reduction in the deficit and in both x and z would follow from an increase in θ_3 and θ_4, the parameters capturing the reputation cost that the hidden expenditure will be revealed and the costs connected with the sale of financial assets.[17]

4.   Empirical evidence

Inspired by the model illustrated in the previous section, we provide in this section empirical evidence on the determinants of government operations that affect the SFA. Two basic messages emerge from the above analysis. First, the different components of the SFA are explained by different type of determinants. In this respect, the model permits to identify a limited number of variables that are likely to affect the SFA, and to form an *a priori* on the expected sign of explanatory variables in regression analysis. Second, deficits, hidden deficits and sales of financial assets are determined simultaneously: the deficit is not independent on the government choices affecting the SFA. This means that, if included among the regressors, deficits need to be instrumented with other variables to overcome simultaneity problems.

The sample we use consists of observations on all EU 25 countries over the period 1994-2004. For the ten new member states, the sample is shorter.[18] The source of the data is Eurostat, and, for what concerns SFA data prior to 2001, the ECB.[19] We perform fixed effect panel regressions over this sample to analyse the determinants of the SFA and its different components. The estimation method is

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[17]   The recent attempts to reinforce the capacity of Eurostat to scrutinise the government accounts can be interpreted as an increase in θ_3.

[18]   The sample for the ten new member states starts in 2000; there are severe data quality problems for earlier years. We assume that these countries started behaving strategically in a similar way to member states in the years immediately before accession. Though they were formally subject to the Stability and Growth Pact from 2004 only, they were already reporting their data to the European Commission – under the same format of EU member states – under the pre-accession fiscal reporting. Moreover, the European Commission assessed their fiscal policies in the framework of the pre-accession economic programmes.

[19]   The Eurostata data on fiscal and macroeconomic variables used in the analysis were those available in the AMECO database of European Commission's DG ECFIN after the release of the Commission services' Economic Forecast of Spring 2005. All data are according ESA95 accounting rules including for the years prior to 2000, when the accounting standard was the old ESA79 system.

Table 1

SFA Components Used in Regression Analysis. Some Summary Statistics

		Whole sample (EU-25, 1994-2004)	EU-12, 1994-2004	EU-25, 1999-2004	EU-12, 1999-2004
Number of observations		194	112	135	68
Total SFA	Mean (% GDP)	0.41	0.74	0.72	1.2
	Standard dev.	2.14	2.1	2.2	2
"Hidden deficit" SFA (difference between cash and accrual measures of deficit)	Mean (% GDP)	0.23	0.31	0.18	0.33
	Standard dev.	0.96	1.02	0.94	0.96
"Hidden deficit" SFA (accumulation of government loans and shares and equity except for privatisations or if held by social security)	Mean (% GDP)	0.16	0.28	0.21	0.43
	Standard dev.	1.00	0.94	1.01	1.03
SFA related with accumulation of assets	Mean (% GDP)	0.17	0.42	0.53	0.89
	Standard dev.	2.01	1.92	2.1	2.00

two-stage least squares. The standard errors of the regression coefficients are robust with respect to the possible correlation of the disturbances within countries.

We use three alternative measures of the SFA as dependent variable. The first is total SFA excluding the "valuation effects and other residual adjustments" component, which is most often outside the control of fiscal authorities. This measure is akin to that used in Von Hagen and Wolff (2005). The second measure isolates the SFA components which are more susceptible of representing the hidden deficit. These are the SFA components associated with the difference in the time of recording of transactions according to the cash and accrual principle. As illustrated in Section 2.2. of the paper, this subset of the SFA can be seen as a conservative measure of the hidden deficit, and is chosen to provide an empirical counterpart to variable x in the model presented previously. In a later section we will also test a more comprehensive indicator of the hidden which also includes the accumulation of assets that could correspond to disguised government subsidies as discussed in Section 2.2. The third measure of the SFA is the accumulation of financial assets by the government. This corresponds to z in our model taken with minus sign.

Table 1 reports some summary statistics for the different SFA components used in the empirical analysis below as dependent variables. Data on two SFA

Table 2

Correlation among SFA Components – EU-25, 1994-2004

	Total SFA	"Hidden deficit" SFA (difference between cash and accrual measures of deficit)	"Hidden deficit" SFA (difference between cash and accrual measures of deficit)	"Hidden deficit" SFA (accumulation of government loans and shares and equity except for privatisations or if held by social security)
Total SFA	1			
"Hidden deficit" SFA (difference between cash and accrual measures of deficit)	0.23	1		
"Hidden deficit" SFA (accumulation of government loans and shares and equity except for privatisations or if held by social security)	0.16	–0.14	1	
SFA related with accumulation of assets	0.92	–0.14	0.21	1

components associable with "hidden deficits" are reported: the difference between cash and accrual (the conservative proxy for SFA discussed in Section 2.2). and the sum of government loans and shares and equities non related with privatisation and non held by the social security sector (which are a proxy of disguised government subsidies). the sum of these two components yields the comprehensive measure of "hidden deficit discussed in Section 2.2.

Over the whole sample, the SFA is on average 0.4 per cent of GDP per year, split roughly equally between the component related to difference between cash and accrual and the one associated with the accumulation of financial assets by the government. For euro area countries, the SFA is on average higher (above 0.7 per cent of GDP). The SFA is also higher on average in the years after 1998, *i.e.*, after the introduction of the SGP (above 0.7 per cent of GDP). Euro area countries record slightly higher SFA related with difference between cash and accrual after 1998 and considerably higher SFA related with financial assets, including the component attributable to disguised government subsidies. Standard deviation figures show that the SFA component related with differences between cash and accrual is much less volatile than the SFA related with the accumulation of assets.

Table 2 reports correlations coefficients among the various SFA components. The SFA component stemming from differences between cash and accrual is

negatively correlated with that related with asset accumulation, both with the measure of total asset accumulation and with the accumulation of assets that proxy disguised government subsidies.

4.1   Baseline specifications

Table 3 presents the results from the baseline specifications. The explanatory variables considered are the lagged debt/GDP ratio and the ratio of the Maastricht deficit over GDP. This second variable, is instrumented with its own lag, the lagged debt/GDP ratio and the lagged real GDP growth rate. Choosing the Maastricht deficit d^{M*} rather than the "true deficit" d^* as a regressor permits not to lose observations when instrumenting, since data on Maastricht deficits are available over longer series compared with SFA data. Our model suggests that this choice should not pose problems in terms of the interpretation of the sign of the regression coefficient since $d^* = ((\theta_1 + \theta_3)/\theta_3)d^{M*}$, with both θ_1 and θ_3 positive. Finally, we introduce a dummy taking value 1 for euro-area countries starting from 1998, the first year after the signing of the SGP (SGP dummy). The aim of the dummy is to capture whether the modification of the fiscal framework associated with the creation of the economic and monetary union and the establishment of the Stability and Growth Pact led to a different behaviour of government as far as the operations affecting the SFA are concerned.

Two specifications are considered. Specification (1) in Table 3 considers the SGP dummy affecting only the constant term. The idea is to understand whether the introduction of the SGP increased or reduced the SFA taking the other explanatory factors constant. Specification (2) additionally allows the coefficient for the deficit to vary as a result of the introduction of the SGP. This is what the model presented in the previous section would predict. The table therefore presents two entries for the deficit coefficient. The first is the value of the coefficient in absence of the SGP. The second is the deficit interacted with the SGP dummy, which captures by how much the coefficient of the deficit changes as a result of the SGP.

Consider first specification (1).[20] Looking at the determinants of overall SFA, it turns out that operations that increase (reduce) debt ratios via the SFA are less (more) likely the higher the starting level of debt and the higher the Maastricht deficit. Moreover, looking at the insignificant coefficient of the SGP dummy, it appears that the introduction of the SGP did not have a significant impact on the level of aggregate SFA. Results change when looking separately at the alternative components of the SFA. In the case of the SFA component that proxies accounting gimmicks (x in the model), the impact of debt is not significant, while the level of the deficit has a positive and significant effect. Each percentage point of GDP of

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[20]   The instruments chosen explain a large share of the variance of the deficit variable in all specifications estimated in the paper (R^2 above 0.75 in all cases). In the specifications in Table 1, Hausman tests accept the hypothesis of endogeneity for the "hidden deficit" SFA at the 90 per cent level.

Table 3

**The Determinants of the Stock-flow Adjustment:
Evidence from Regression Analysis. Baseline Specifications – EU-25, 1994-2004**

Dependent variables / Explanatory variables	Total SFA	"Hidden deficit" SFA (Differences between cash and accrual measures of deficit)	SFA related with accumulation of financial assets	Total SFA	"Hidden deficit" SFA Differences between cash and accrual measures of deficit	SFA related with accumulation of financial assets
Specification		(1)			(2)	
Lagged debt *(percent of GDP)*	−0.072***	0.018	−0.0918***	−0.063**	0.023	−0.086**
	(0.02)	(0.01)	(0.11)	(0.03)	(0.01)	(0.03)
Maastricht deficit *(percent of GDP)*	−0.223*	0.093**	−0.318***			
	(0.11)	(0.04)	(0.11)			
Maastricht deficit *(percent of GDP)*, if no SGP				−0.149	0.127***	−0.279**
				(0.10)	(0.04)	(0.10)
Maastricht deficit *(percent of GDP)*, Δ if SGP				−0.413**	−0.195***	−0.218
				(0.19)	(0.05)	(0.21)
Dummy SGP	−0.123	0.505**	−0.628	0.665	0.879***	−0.209
	(0.45)	(0.18)	(0.44)	(0.64)	(0.18)	(0.69)
Number of observations	191	191	191	191	191	191
R^2	0.50	0.21	0.53	0.50	0.28	0.52

Estimation method: two-stage least squares, fixed-effects panel. Hausman tests accept the hypothesis of endogeneity for the "hidden deficit" SFA component at the 90 per cent level. Standard errors are robust with respect to within-panels error correlation. The Maastricht deficit is instrumented with its own lag, the lagged debt, and the lagged real GDP growth rate.

Coefficient standard errors are reported in parentheses. *, **, *** denote, respectively, statistics significant at the 90 per cent, 95 per cent and 99 per cent level.

The coefficients for the fixed effects and the constant term are not reported. The SGP dummy takes value 1 for euro-area countries after 1998. The change in the Maastricht deficit coefficient due to the SGP is computed as the coefficient of the Maastricht deficit times the SGP dummy.

additional deficit increases the hidden deficit by about 0.1 per cent of GDP. These results are in line with the predictions of the model. Furthermore, the SGP dummy is positive and statistically significant: the introduction of the SGP produces an increase in hidden deficits by about 0.5 per cent of GDP. Finally, regarding sales of financial assets, these are negatively and significantly affected both by the debt and by the deficit, a result consistent with the predictions of our model. No significant impact for the SGP dummy is found instead.

Looking at specification (2), the coefficient for the debt variable is substantially unchanged, for all measures of the SFA, compared to specification (1). For the total SFA, the coefficient of the deficit becomes more negative as a result of the SGP as in Von Hagen and Wolff (2005). By considering separately the two SFA components, it turns out that the reduction in the coefficient of the deficit is mostly associated with hidden deficits. This means that in absence of the SGP, accounting gimmicks would normally lead to an increase in the SFA slightly above 0.1 per cent of GDP as the deficit rises by 1 per cent of GDP, while the impact of additional deficits on SFA is almost negligible with the SGP. This evidence can be explained with less cases of countries with deficits above the 3 per cent Maastricht reference value before the entering into force of the SGP and outside the euro area. The evidence reported in Table 5 supports this interpretation. Again, it is confirmed the positive and significant SGP dummy in the case of the hidden deficit variable. The impact of the SGP on the reaction of financial operations aimed at reducing the debt to the level of deficits turns out instead being non-significant.

Several robustness checks have been performed starting from the baseline equations illustrated above which are not reported. First, alternative specifications including also the lagged dependent variable as a regressor to check for a richer dynamic structure have been tried. Results show that the lagged dependent variable is never statistically significant.[21] Second, regressions have also been run including only the countries with a debt/output ratio below 60 per cent. For these countries, the debt-reduction rule does not apply, and the results from the model presented in the previous sections could not be extended. The estimates indeed perform less well. Third, results have been checked with respect to the exclusions from the sample of Luxemburg, Finland and Sweden: countries in which the respective governments have been constantly engaged in substantial accumulation of financial assets because of the large surpluses recorded by social security. Qualitative results are unchanged. Fourth, the same specifications as in Table 3 were tried using the primary cyclically-adjusted (Maastricht) deficit instead as a measure for the (Maastricht) deficit. The most relevant difference compared with the results shown in Table 3 concerns the determinants of the proxy for hidden deficit: the estimated impact of the primary cyclically-adjusted deficit is smaller (in absolute value) and not statistically significant. This result confirms the findings in Von Hagen and Wolff (2005): it seems that the component of deficits that is mostly offset by accounting gimmicks

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[21]   Dickey-Fuller tests indicate that the SFA/GDP series used as dependent variables are stationary in a number of countries (about 1/3 of the cases as afar as the overall SFA is concerned).

operations is the cyclical component (as suggested in theory by Milesi Ferretti, 2003).

Alternative specifications have also been tested. Results are discussed in the sections that follow.

4.2   *Focus on euro-area countries and the impact of elections*

Political incentives to circumvent EU fiscal constraints are likely to be particularly strong in electoral periods. As shown in Buti and van den Noord (2004), fiscal policies had an expansionary bias in correspondence to political elections in the early years of EMU. This seems to indicate that the objective of boosting growth via fiscal policy dominated over other objectives, in line with the literature on electoral budget cycles (see references therein).

Table 4 reports the results from two alternative specifications compared with the baseline case. First, the same equations as in specification (2) in Table 3 (allowing for a coefficient for the debt that may change as a result of the SGP) is estimated restricting the sample to euro-area countries only (specification (1) in Table 4). This permits to disentangle to what extent the impact of the SGP is associated with a different behaviour of fiscal authorities to countries outside the euro-area (and therefore not subject to the SGP sanctions) or whether it is rather the result of a changed behaviour in euro-area countries after the introduction of the SGP. A second specification (specification (2) in Table 4) extends the empirical model by introducing an election variable.[22] It is not *a priori* obvious whether the SFA should be larger or smaller in the presence of elections. A first interpretation, in line with electoral cycle theories, is that under elections incumbent governments set more ambitious growth objectives ($\hat{y}$ in terms of the model presented in the previous section). According to this hypothesis, as illustrated in Figure 4, one would expect a positive coefficient for the election variable in the case of hidden deficits, while the coefficient is expected to be negative in the case of financial operations (a slower accumulation of financial assets under elections). However, there are also reasons why one may expect instead that the pace of accumulation of financial assets by the government increases during elections. Under elections, governments may want to keep a high degree of control on economic activities and have therefore lower incentives to carry out privatisation programmes, or may be more prone to bail out private or public corporations via the acquisition of share capital.

Repeating the baseline regressions to a sample of euro-area countries only (specification (1) in Table 4) broadly confirm those obtained considering EU 25 countries. However, there are some noteworthy differences. The sign for the debt variable is as expected, but the coefficient is smaller and not significantly different

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[22]   A dummy variable taking value 1 if general elections took place in that particular country, in that particular year.

Table 4

The Determinants of Stock-flow Adjustment: Evidence from Regression Analysis. Euro Area Countries – EU-12, 1994-2004

Dependent variables Explanatory variables	Total SFA	"Hidden deficit" SFA (Differences between cash and accruals measures of deficit)	SFA related with accumulation of financial assets	Total SFA	"Hidden deficit" SFA Differences between cash and accruals measures of deficit	SFA related with accumulation of financial assets
Specification		(1)			(2)	
Lagged debt *(percent of GDP)*	−0.0005	0.024	−0.024	0.009	0.026	−0.016
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Maastricht deficit *(percent of GDP)*, if no SGP	0.100	0.152**	−0.048	0.064	0.146**	−0.078
	(0.21)	(0.05)	(0.21)	(0.20)	(0.04)	(0.21)
Maastricht deficit *(percent of GDP)*, Δ if SGP	−0.597***	−0.208**	−0.393*	−0.628**	−0.217**	−0.415**
	(0.19)	(0.07)	(0.20)	(0.16)	(0.07)	(0.17)
Dummy SGP	2.043**	0.966**	1.102	2.103**	0.986**	1.143
	(0.80)	(0.32)	(0.81)	(0.69)	(0.32)	(0.72)
Election dummy				0.701*	0.136	0.572*
				(0.33)	(0.09)	(0.28)
Number of observations	110	110	110	110	110	110
R^2	0.52	0.32	0.51	0.54	0.32	0.53

Estimation method: two-stage least squares, fixed-effects panel. Standard errors are robust with respect to within-panels error correlation. The reported adjusted R square pertains to second-stage regressions. The Maastricht deficit is instrumented with its own lag, the lagged debt, and the lagged real GDP growth rate.
Coefficient standard errors are reported in parentheses. *, **, *** denote, respectively, statistics significant at the 90 per cent, 95 per cent and 99 per cent level.
The coefficients for the fixed effects and the constant term are not reported. The SGP dummy takes value 1 after 1998. The change in the Maastricht deficit coefficient due to the SGP is computed as the coefficient of the Maastricht deficit times the SGP dummy. The election dummy takes value 1 in years where general elections take place.

from zero. The deficit variable instead becomes significantly more negative after the introduction of the SGP. Again, in the case of the SFA component that we assumed to indicate hidden deficits, the coefficient turns from positive to negative. In the case of financial operations the coefficient of the deficit becomes much more negative after the SGP. The SGP dummy affects the constant term much more significantly compared with the baseline case. The overall SFA increases by more than 2 per cent of GDP after the introduction of the SGP, with an almost equal contribution of its two components. Overall, restricting the analysis to euro-area countries, the upward jump in the SFA after the SGP appears more evident.

Specification (2) includes the election dummy among the explanatory factors. The dummy is positive and significant when the dependent variable is the overall SFA. Elections increase the SFA by more than 0.7 percentage points of GDP. The election dummy is positive for both SFA components, with the coefficient only barely significant in the case of the SFA component associated with disguised deficits. This evidence seems to indicate that, consistently with electoral cycle arguments, in the presence of elections the pressure to embellish deficit figures increases, while the accumulation of financial assets by government increases for the possible reasons listed above.

4.3 The impact of excessive deficits

Which impact had the occurrence of deficits in excess of the 3 per cent Maastricht reference value on the SFA? We investigate this issue in the specifications presented in Table 5a and 5b. Specification (1) in Table 5a adds a constant dummy that takes value 1 when the Maastricht deficit is in excess of the reference value. Specification (2) in the same table also admits a different coefficient for the deficit depending on whether the recorded Maastricht deficit is above or below 3 per cent of GDP. In order to overcome endogeneity issues (*i.e.*, the fact that the deficit is above or below 3 per cent may depend on the SFA dependent variable) the 3 per cent dummy is constructed using the lagged value of the deficit. The variable captures therefore those cases for which, in the preceding year, the deficit is above the Maastricht reference value.

Results from specification (1) in Table 5a indicate that the fact that the deficit is above the reference value does not affect per se the overall level of the SFA. The dummy is never significant, for any SFA component. It is confirmed instead that the SGP raises significantly the SFA component associated with hidden deficits.

When the coefficient of the deficit variable is allowed to vary when deficits are "excessive" (specification (2) in Table 5a), results change quite considerably. In the case of the regression concerning the overall SFA, the deficit coefficient is significantly negative when deficits are below 3 per cent and rises significantly when the coefficient becomes "excessive". Looking at the regression for the component capturing accounting gimmicks, it turns out that the deficit coefficient is

Table 5a

The Determinants of Stock-flow Adjustment: Evidence from Regression Analysis
The Impact of Excessive Deficits – EU-25, 1994-2004

Dependent variables Explanatory variables	Total SFA	"Hidden deficit" SFA (Differences between cash and accruals measures of deficit)	SFA related with accumulation of financial assets	Total SFA	"Hidden deficit" SFA (Differences between cash and accruals measures of deficit)	SFA related with accumulation of financial assets
Specification		(1)			(2)	
Lagged debt *(percent of GDP)*	−0.073** (0.03)	0.019 (0.02)	−0.092** (0.03)	−0.060*** (0.02)	0.021 (0.01)	−0.081** (0.02)
Maastricht deficit *(percent of GDP)*	−0.322 (0.16)	0.117 (0.05)	−0.442** (0.13)			
Maastricht deficit *(percent of GDP)*, if deficit < 3%				−0.703*** (0.16	−0.038 (0.07)	−0.744*** (0.15)
Maastricht deficit *(percent of GDP)*, ∆ if deficit ≥ 3%				0.809*** (0.21	0.168* (0.08)	0.641*** (0.23)
Dummy SGP	−0.007 (0.49)	0.477 (0.19)	−0.483 (0.49)	0.193 (0.41)	0.519*** (0.17)	−0.324 (0.44)
Dummy deficit ≥ 3%	0.75* (0.38)	−0.184 (0.23)	0.942** (0.31)	−1.219* (0.7)	−0.594*** (0.15)	−0.621 (0.67)
Number of observations	191	191	191	191	191	191
R^2	0.48	0.24	0.52	0.54	0.26	0.57

Estimation method: two-stage least squares, fixed-effects panel. Standard errors are robust with respect to within-panels error correlation. The reported adjusted R square pertains to second-stage regressions. The Maastricht deficit is instrumented with its own lag, the lagged debt, and the lagged real GDP growth rate.

Coefficient standard errors are reported in parentheses. *, **, *** denote, respectively, statistics significant at the 90 per cent, 95 per cent and 99 per cent level.

The coefficients for the fixed effects and the constant term are not reported. The SGP dummy takes value 1 for euro-area countries after 1998. The 3 per cent dummy takes value 1 if the lagged value of the Maastricht deficit is above 3 per cent of GDP. The change in the Maastricht deficit coefficient due to deficits being above 3 per cent is computed as the coefficient of the Maastricht deficit times the 3 per cent dummy.

The Determinants of the Stock-flow Adjustment: Evidence from Regression Analysis
The Impact of Excessive Deficits – EU-25, 1994-2004

Dependent variables / Explanatory variables	Total SFA	"Hidden deficit" SFA (Differences between cash and accruals measures of deficit)	SFA related with accumulation of financial assets	"Hidden deficit" SFA (Differences between cash and accruals measures of deficit)	
Specification	(1) Euro area, 1994-2004			(2) EU-25, 1994-2004, if lagged Maastricht deficit < 3%	(3) EU-25, 1994-2004, if lagged Maastricht deficit ≥ 3%
Lagged debt	−0.014	0.017	−0.030	0.038[*]	0.0008
(percent of GDP)	(0.01)	(.0.2)	(0.02)	(0.02)	(0.014)
Maastricht deficit (percent of GDP), if deficit < 3%	−0.728[***]	−0.036	−0.690[**]		
	(0.22)	(0.09)	(0.24)		
Maastricht deficit (percent of GDP), Δ if deficit ≥ 3%	1.040[***]	0.209[*]	0.828[**]		
	(0.25)	(0.11)	(0.29)		
Maastricht deficit (percent of GDP), if no SGP				0.072	0.315[***]
				(0.14)	(0.109)
Maastricht deficit (percent of GDP), Δ if SGP				−0.201[*]	−0.001
				(0.11)	(0.11)
Dummy SGP	0.838	0.420[*]	0.429	1.063[***]	0.333
	(0.60)	(0.22)	(0.55)	(0.26)	(0.38)
Dummy deficit ≥ 3%	−1.731[*]	−0.552[*]	−1.171		
	(0.886)	(0.26)	(0.909)		
Number of observations	110	110	110	106	85
R^2	0.57	0.29	0.58	0.28	0.38

Estimation method: two-stage least squares, fixed-effects panel. Standard errors are robust with respect to within-panels error correlation. The reported adjusted R square pertains to second-stage regressions. The Maastricht deficit is instrumented with its own lag, the lagged debt, and the lagged real GDP growth rate.
Coefficient standard errors are reported in parentheses. [*], [**], [***] denote, respectively, statistics significant at the 90 per cent, 95 per cent and 99 per cent level.
The coefficients for the fixed effects and the constant term are not reported. The SGP dummy takes value 1 for euro-area countries after 1998. The 3 per cent dummy takes value 1 if the lagged value of the Maastricht deficit is above 3 per cent of GDP. The change in the Maastricht deficit coefficient due to deficits being above 3 per cent is computed as the coefficient of the Maastricht deficit times the 3 per cent dummy.

roughly nil if the deficit is below the Maastricht reference value, while it is significantly positive when the deficit is above. This finding reconciles the empirical evidence in Table 3 with the predictions from the model. On average, over the sample the deficit is equal to 3.6 per cent of GDP when the SGP variable is equal to zero (*i.e.*, before the SGP entered into force and for non-euro area countries) while the average value of the deficit when the SGP dummy equals 1 is 0.8 per cent. It would be enough to suppose that the weight give by fiscal authorities to the deficit objective (parameter θ_1) is larger when deficits are in excess of the Maastricht reference to explain both why the sensitivity of fiscal gimmicks to deficit is larger when deficits are above 3 per cent of GDP (Table 5a) and why when the SGP dummy takes value 1 the sensitivity of fiscal gimmicks is instead reduced (Table 3).

Table 5a also shows that the SFA associated with the accumulation of financial assets become less sensitive to the (lagged) deficit when deficits exceed 3 per cent of GDP. This finding could indicate that, when the priority for governments is to correct deficits in excess of the 3 per cent Maastricht reference value, less weight is given by fiscal authorities to the debt reduction objective per se (a lower parameter θ_2).

Further regression results confirming the above interpretation are displayed in Table 5b. Specification (1) repeats the same analysis as in Table 5a but limiting the sample to euro-area countries. The aim is disentangling whether it is mainly the behaviour of euro area countries during the run up to EMU that affects the result in Table 5a or rather that of non-euro area countries, and notably that of the countries that acceded to the EU in 2004. In specifications (2) and (3) the same estimates for the accounting gimmicks determinants as in specification (2) of Table 3 are repeated limiting the sample to observations for which the 3 per cent dummy is, respectively, 0 and 1. The objective in this case is controlling whether the fact that deficits are above or below the 3 per cent Maastricht ceiling actually contribute to explain the results for the basic specifications illustrated in Table 3 regarding the impact of the SGP on the sensitivity of accounting gimmicks with respect to deficits.

The estimates in Table 5b indicate that when limiting the analysis to euro area countries the results in Table 5a turn out being broadly confirmed. The evidence for euro-area countries does not appear to be radically different compared with that referring the sample of all EU25 countries. Results in specification (2) and (3) reveal that when deficits are in excess of the 3 per cent of GDP reference value the SGP does not affect the link between accounting gimmicks and the deficit, while this relation weakens with the SGP if deficits are below the Maastricht ceiling.

Overall, an interpretation of the interplay between the evolution of the EU fiscal framework and the incentives to carry out accounting gimmicks could be as follows: During the run-up to EMU and before the SGP entered into force, governments had an incentive to disguise their deficits only as long as their deficits exceeded the 3 per cent of GDP threshold, as their main endeavour was to qualify to the euro. A similar reasoning applies currently to the countries that acceded in 2004. Our econometric results show, consistently, that it is when deficit are above 3 per

cent that accounting gimmicks become sensitive to the size of the deficit. With the SGP, the respect of the 3 per cent reference value remains, but rather as an upper ceiling than a target. Since the frequency of deficits well above 3 per cent is lower after the introduction of the SGP, the link between fiscal gimmicks and deficit could be expected to weaken, as shown in our baseline results. However, our estimates also show that after the SGP there is a higher amount of SFA associable with accounting gimmicks, irrespective of the size of the deficit. This result could be explained by the medium-term commitment to reach a budgetary position of close to balance introduced with the SGP, which applies both to cases where the deficit is above or below the 3 per cent deficit threshold.

4.4   *An alternative breakdown for the SFA*

The results illustrated so far use a breakdown of the SFA which provides a comprehensive measure of financial operations but a rather partial measure of accounting gimmicks aimed at reducing the deficit. We therefore repeat the regressions presented in the baseline specifications using the comprehensive measure for hidden deficits discussed in Section 2.2. In this case, the financial operations that could be carried out by the government as an alternative to the provision of subsidies (*i.e.*, via loans and shares or other equities non-held by social security and unrelated to privatisation) are moved from financial operations which contribute to reduce the debt into the hidden deficit component. This finer decomposition has a large cost in terms of reduced data availability but permits to countercheck our main results.

Table 6 displays the results for regressions relating to the same baseline specifications as presented in Table 3. Although the loss of observations translates into a reduction in the degree of significance of the estimates the sign of the coefficients is the expected one and the results are qualitatively the same as those obtained with the breakdown adopted in the previous regressions. In particular, it is confirmed that the SFA components associable with hidden deficits increases significantly after the introduction of the SGP, while this is not the case for the remaining SFA. The comprehensive measure of "hidden deficits" used in the regressions in Table 6 is the sum of differences between cash and accrual and of accumulation of assets that could represent disguised government subsidies. By repeating the analysis using only this second component as dependent variable, regression coefficients appear largely statistically insignificant. This suggests that the results obtained with the comprehensive measure of "hidden deficits" are mainly due to the difference between cash and accrual.

4.5   *Summarising the empirical results*

The main messages from the empirical results presented above can be summarised as follows.

Table 6

The Determinants of the Stock-flow Adjustment: Evidence from Regression Analysis
An Alternative Breakdown of SFA, Baseline Specifications – EU-25, 1994-2004

Dependent variables / Explanatory variables	Total SFA	"Hidden deficit" SFA, comprehensive proxy (A)	"Hidden deficit" SFA unrelated with differences between cash and accrual (B)	SFA related with accumulation of other financial assets (C)	Total SFA	"Hidden deficit" SFA, comprehensive proxy (A)	"Hidden deficit" SFA unrelated with differences between cash and accrual (B)	SFA related with accumulation of other financial assets (C)
Specification		(1)				(2)		
Lagged debt	-0.079^{**}	0.002	-0.005	-0.082^{*}	-0.081^{**}	0.002	-0.005	-0.083^{*}
(percent of GDP)	(0.02)	(0.01)	(0.018)	(0.04)	(0.03)	(0.19)	(0.017)	(0.04)
Maastricht deficit	-0.182	0.058	-0.045	-0.241				
(percent of GDP)	(0.17)	(0.08)	(0.10)	(0.15)				
Maastricht deficit *(percent of GDP)*, without SGP					-0.010	0.117	-0.062	-0.127
					(0.13)	(0.09)	(0.09)	(0.14)
Maastricht deficit *(percent of GDP)* change due to SGP					0.447^{*}	-0.152	0.023	-0.295
					(0.25)	(0.11)	(0.28)	(0.20)
Dummy SGP	0.234	0.618^{**}	0.102	-0.383	1.031	0.889^{**}	0.023	0.142
	(0.56)	(0.28)	(0.91)	(0.56)	(0.79)	(0.28)	(0.28)	(0.75)
Number of observations	166	166	166	166	166	166	166	166
R^2	0.50	0.33	0.24	0.52	0.52	0.34	0.25	0.53

Estimation method: two-stage least squares, fixed-effects panel. Standard errors are robust with respect to within-panels error correlation. The Maastricht deficit is instrumented with its own lag, the lagged debt, and the lagged real GDP growth rate.

Coefficient standard errors are reported in parentheses. *, **, *** denote, respectively, statistics significant at the 90 per cent, 95 per cent and 99 per cent level. The coefficients for the fixed effects and the constant term are not reported. The SGP dummy takes value 1 for euro-area countries after 1997. The change in the Maastricht deficit coefficient due to the SGP is computed as the coefficient of the Maastricht deficit times the SGP dummy.

(A) = sum of (i): differences in the recording of revenue and primary expenditure (accounts receivable and payable) and statistical discrepancies; (ii) accumulation of government loans; (iii) accumulation of shares and other equities not held by social security and non related to privatisations.
(B) = (A) – (ii) – (iii)
(C) = accumulation of following assets by government: (i) liquidities; (ii) securities other than shares; (iii) shares held by social security; (iv) shares related to privatisation.

i) The overall SFA appears to be negatively related (yet not significantly) to deficits. However, the aggregate SFA masks relevant differences for different SFA components. While the relation is positive for the hidden deficit component, it is negative for financial operations.

ii) The level of the debt has also a different impact on different SFA components: not significant for hidden deficits, negative for the accumulation of financial assets.

iii) The introduction of the SGP raises significantly the accounting gimmicks components of the SFA. However, the relation between accounting gimmicks and deficits appears to get weaker after the SGP.

iv) Accounting gimmicks are unaffected by deficits below the 3 per cent ceiling, but increase strongly with deficits when these are above the Maastricht threshold.

v) Elections affect positively all SFA components.

Result *i* permits to better qualify findings already reported in Von Hagen and Wolff (2005). The authors attribute the negative relation of the SFA to deficits mainly to creative accounting related to a strategic use of financial operations (e.g., disguised subsidies accounted for as stock acquisitions by government). Our analysis permit to disentangle different SFA components and indicates that the negative relation between the SFA and deficits can be mainly associated with financial operations, while the relation between deficits and the SFA component more strictly associable with hidden deficits is on average positive. The model presented in this paper can provide an explanation to these findings. The hidden deficits are positively related to deficits because the higher the deficit, the stronger the incentive to engage in creative accounting. Financial operations are instead negatively related because their purpose is to contain the growth of the debt. The same qualitative result is obtained by using a finer breakdown of the SFA which recognises that a number of financial transactions (e.g., hidden subsidies) may also be used to hide expenditure.

The presence of the SGP is associated with significantly more hidden deficits irrespective of the deficit level (as reflected in the significant value of the SGP dummy both in the regressions for EU 25 and EU 12 countries), while the presence of excessive deficits increases the sensitivity of accounting gimmicks to deficits (results *iii* and *iv*). These results are consistent with existing findings pointing to a positive effect of deficits above the Maastricht threshold on the probability of carrying out accounting tricks and one-off operations (Koen and Van den Noord, 2006).

Finally, we learn from result *v* that elections matter for the SFA, controlling for other determinants. The fact that in the current year general elections take place affects positively all SFA components. The positive coefficient for hidden deficits fits with the interpretation that creative accounting and a lower degree of fiscal transparency enhance the capacity of governments to put in place electoral cycles, as for instance recently highlighted empirically in Alt and Lassen (2005). On the other hand, the positive and significant coefficient in the case of financial operations is of

a less obvious reading. Among the interpretation there is that under elections governments have less incentives to prepare large privatisations.

5.   Conclusions

The aim of this paper was to study how the budgetary rules of EMU give rise to political incentives for manipulating fiscal variables with the purpose of hiding deficits and reduce gross debt. We show both theoretically and empirically that such powerful incentives were at work during the run-up and in the early years of EMU. Governments used a number of operations to conceal the true size of their deficits and put in place financial operations to stem the increase in the public debt. The former increased in importance after the advent of the SGP, which shifted the focus of policy surveillance on deficits with initially scant attention to the means used to ensure the respect of the deficit rule and little weight to the debt rule. As predicted by our model, increased weight to the deficit criterion in EU surveillance resulted into lower Maastricht deficits but also into a higher incidence of stock-flow adjustments potentially connected with accounting tricks to keep Maastricht deficits low. We show that such incentives were reinforced in electoral periods.

In the recent reform of the Stability and Growth Pact, more emphasis is put on the debt rule and, more generally, on long-term sustainability, and on the need to ensure a durable correction in the excessive deficit via structural adjustment. In our analysis, a stronger emphasis on the debt would reduce deficits under most likely conditions.[23] However, such shift in focus may induce governments to carry out more sales of financial assets. To prevent this, as suggested, for instance, by Easterly (1999) and Coeuré and Pisany-Ferry (2005), fiscal surveillance oriented on a comprehensive notion of government assets and liabilities (net debt) would contribute to reduce the incentives to decumulate assets to reduce the gross debt and, indirectly to keep deficit and debt low. A higher attention to structural adjustment implies an increase in the political cost of deficit-reducing one-off operations and would reduce the incidence of accounting tricks. In the same direction goes the call for increased statistical transparency – as required by the reformed SGP – fostered by a public opinion becoming more adverse to fiscal gimmicks.[24] The shift to a more comprehensive fiscal surveillance based on multiple indicators may help to reduce the incentives to data manipulations (see, e.g., Balassone *et al.*, 2005).

While the empirical analysis carried out in this paper appears robust and the results largely consistent with those in the literature, several avenue for further research can be pursued. First, SFA components do not capture all the means throughout which governments can manipulate fiscal variables. For instance,

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[23]   On the reform of the SGP, see Buti *et al.* (2005), Buti (2006) and European Commission (2005 and 2006).

[24]   There is anecdotal evidence pointing to a higher perceived cost of creative accounting activities. Not only EU authorities are putting greater focus on statistical transparency, but also financial markets and credit agencies are increasingly aware of the long-term consequences for public finances of window dressing activities (see, e.g., "EU securitisation may have passed peak", *Financial Times*, 7 December 2005).

operations that allow cashing an immediate receipt in exchange for higher pension liabilities, sales of real estate, as well as other one-off revenues do not have affect any SFA component. A comprehensive analysis should integrate the three research approaches recalled in the introduction (bottom up identification of tricks, balance sheet and analysis of SFA components). Second, in the implementation of the EU fiscal rules, the first outcomes are the figures that really matter, though revisions in deficit, debt and SFA components are frequent. Though large revisions may be detrimental for the credibility of the concerned member states (notably Portugal in 2002, Italy in 2005 and especially Greece in 2004) and of the SGP itself, data revisions are relatively irrelevant for the implementation of the Pact. Therefore, governments have a specific interest in portraying healthy public finances in the first deficit notification, even if the data are subsequently revised upwards. In order to capture more effective the political incentives to manipulate fiscal accounting, one should use real-time SFA.[25] We conjecture that the repetition of our empirical analysis in real-time data would confirm, and reinforce, our conclusions.

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[25] See, e.g. Forni and Momigliano (2005) for an analysis of fiscal behavior using real time output gaps.

APPENDIX 1
DERIVING THE *X(Z)* AND THE *Z(X)* SCHEDULES (FIGURE 4)

From the first order conditions for the minimization of the loss function (5) with respect to d, the deficit d can be expressed as a function of x and z as follows:

$$d = \frac{\phi\,\hat{y} + \theta_1 x + \theta_2(1-\phi\,b)[z - \alpha(b-\bar{b})]}{\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2} \tag{9}$$

Plugging (9) into the solution of x in terms of d (expression (6)), below the line operations x are obtained as a function of financial stock-flow operations in the following way:

$$x = \frac{\theta_1[\phi\,\hat{y} + \theta_2(1-\phi\,b)(z - \alpha(b-\bar{b}))]}{(\theta_1 + \theta_3)[\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2] - \theta_1^2} \tag{10}$$

Finally, substituting (9) into equation (7), financial operations z can be expressed as a function of x in the following way:

$$z = \frac{\theta_2[\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2]}{(\theta_2 + \theta_4)[\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2] - \theta_2^2(1-\phi\,b)^2} \times$$
$$\times \frac{\alpha(b-\bar{b})[\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2]^{-1}(1-\phi\,b)[\phi\,\hat{y} + \theta_1 x - \theta_2(1-\phi\,b)\,\alpha(b-\bar{b})]}{(\theta_2 + \theta_4)[\phi^2 + \theta_1 + \theta_2(1-\phi\,b)^2] - \theta_2^2(1-\phi\,b)^2} \tag{11}$$

Equations (10) and (11) can be represented graphically as in Figure 4. Under the condition that $\phi\,b < 1$ both functions are linear and upward sloping. As for the relative sloped of $x(z)$ and $z(x)$, one checks that $\dfrac{\partial x}{\partial z}_{x(z)} > \dfrac{\partial x}{\partial z}_{z(x)}$ if and only if:

$$\theta_2(1-\phi\,b)^2[(\theta_2 + \theta_4)Q - \theta_2^2(1-\phi\,b)^2] > Q^2\left(\frac{1}{\theta_1} + \frac{\theta_2}{\theta_1^2}\right) - Q \tag{12}$$

where $Q = \phi + \theta_1 + \theta_2(1-\phi b)^2$. It is evident form (12) that a sufficiently small θ_2 guarantees $\dfrac{\partial x}{\partial z}_{x(z)} > \dfrac{\partial x}{\partial z}_{z(x)}$.

The inspection of equations (11) and (12) is sufficient to establish that the $x(z)$ schedule moves upward and that the $z(x)$ schedule moves downward in the (x, z) space. It is also easily established that both the schedules move downward when the debt rule becomes more stringent, namely, α rises. Less straightforwardly, it can bed shown that the same move in the loci occurs when the debt target becomes more ambitious (*i.e.*, $\bar{b}$ falls). Indeed, while the $x(z)$ schedule clearly falls, the case of the $z(x)$ is not clear-cut since z rises directly as a result of a fall in $\bar{b}$ but falls via the associated reduction in d. It is checked that the first effect always prevails.

APPENDIX 2
COMPARATIVE STATICS

After plugging (8) into (6) and (7) it is possible to perform comparative statics of the solutions for x and z with respect to model parameters.

- $\hat{y}$: By simple inspection of (8) one checks that an increase in $\hat{y}$ leads to a higher d and then, by (6) and (7), to higher x and z.

- α: α lowers d, thus causing a reduction in x. As for z, the impact is *a priori* ambiguous (z rises directly, but falls through d). Comparative statics analysis shows that the previous effect prevails, *i.e.*, $z_\alpha^* + z_d^* \dfrac{\partial d}{\partial \alpha} > 0$, so that $\dfrac{\partial z^*}{\partial \alpha} > 0$.

  The debt target $\bar{b}$ has the same impact as parameter α.

- b: The derivative of d with respect to b is ambiguous. Indeed, after some manipulations it is obtained $\dfrac{\partial d^*}{\partial b} > 0$ if and only if $\dfrac{\alpha(1 - \phi(b - \bar{b}) - \phi b)}{2\phi(1 - \phi b)} < d*$, which may or may not be the case. This implies an ambiguous impact of b on x. It is checked that there is also an ambiguous of b on z.

- θ_1: Parameter θ_1 affects negatively d. It has therefore a negative impact on z. Regarding x, its value increases for any given d. This effect needs to be weighted against the negative impact that θ_1 has on d. It can be shown that $x_{\theta_1}^* + x_d^* \dfrac{\partial d}{\partial \theta_1} > 0$ the direct positive effect always prevails, so that $\dfrac{\partial x^*}{\partial \theta_1} > 0$.

- θ_2: If $d > 0$, (*i.e.*, if the "true" budget balance records a deficit), the impact of parameter θ_2 on d is negative, since it reduces the numerator and increases the denominator. It follows that the impact of θ_2 on x is negative. Regarding the impact on z it is ambiguous, since θ_2 directly raises z while the reduction in d lowers it.

- θ_3: An increase in θ_3 would have a double negative impact on x, both directly and indirectly, via a lower value for d. The impact on z would only be indirect, and negative.

- θ_4: If $d > 0$, a higher value for θ_4 would reduce d and therefore x and, both directly and indirectly z.

Table 7 presents in synthetic form the results illustrated above.

Table 7

Political Incentives under Numerical Rules: A Simple Model
Main Results from Comparative Statics

	Impact on deficit (d)	Impact on "hidden deficit" (x)	Impact on financial operations (z)
Growth objective ($\hat{y}$)	+	+	+
Pace of debt reduction (α), debt target ($\bar{b}$)	–	–	+
Debt level (b)	?	?	?
Political cost of deficit (θ_1)	–	+	–
Political cost of debt (θ_2)	–	–	?
Political cost of "hidden deficit" (θ_3)	–	–	–
Political cost of "financial operations" (θ_4)	–	–	–

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FISCAL POLICY INDICATORS IN A RULE-BASED FRAMEWORK: AN INDIAN EXPERIENCE

Ranjit K. Pattnaik, Deepa S. Raj and Jai Chander[*]

Introduction

The stance of the fiscal policy may be assessed through various indicators. Assessing the thrust of the fiscal policy through the actual budgetary position of the Government may be misleading as the finances of the Governments are influenced not only by the fiscal policy but also by the economic environment as well as the legal and institutional framework. In formulating or assessing fiscal policy, it is important to distinguish between temporary or transitory factors and permanent factors influencing the budget so as to ascertain what part of the changes in fiscal position are due to the economic environment and what part is due to changes in fiscal policy. Temporary factors include effects on Government outlays and revenues brought about by cyclical deviations from the trend output as also by lumpy outlays and transitory changes in government earnings. Permanent factors, on the other hand, relate to the more enduring components of the budget in the absence of exogenous shocks and when the economy is operating at optimal capacity. The temporary factors need to be disentangled from the permanent factors to gauge the medium term orientation of the fiscal policy.

In India, the traditional fiscal indicators used for analysis of Government finances are the revenue deficit (RD), gross fiscal deficit (GFD) and gross primary deficit (GPD). Fiscal consolidation efforts, which were undertaken in the aftermath of the macroeconomic crisis of 1991, enabled a sharp fiscal correction in terms of reduction in these indicators during the first half of 1990s, but fiscal slippages in the second half of the decade necessitated measures to ensure that the deleterious fiscal position did not hamper the growth trajectory. It is in this context that India has adopted a rule-based fiscal framework with the enactment of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003 by the Central Government and the framing of FRBM Rules, 2004, thereby marking a new beginning in the fiscal consolidation process. Under the FRBM Act, 2003 the Central Government is committed to eliminate revenue deficit and reduce fiscal deficit to 3 per cent of GDP by end-March 2009. The FRBM Rules have stipulated annual targets for the phased reduction of revenue deficit and fiscal deficit. The Rules also impose annual ceilings on Government guarantees and additional liabilities. The elimination of revenue deficit and generation of revenue surpluses, thereafter would release fiscal space for further public investment.

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Notwithstanding the steady decline in the key deficit indicators in recent years, concerns have been expressed that the fiscal consolidation process is the result of fortuitous environment provided by sustained growth in economy, benign inflation, strong capital flows and low interest rates, and that there needs to be a more proactive fiscal consolidation. This paper attempts to assess the effectiveness of the Central Government's fiscal policy stance in terms of its impact on the structural and cyclical components of fiscal deficit, the impact of macroeconomic developments on structural revenues and the efforts required for the Government to move forward in attaining the FRBM targets. It may be mentioned that out of the 28 States in India, 23 have enacted fiscal responsibility legislations (FRL). An analysis of the State finances with respect to their individual chartered progress under the FRL is beyond the scope of the present paper. Section 1 surveys the literature on the measurement of structural and cyclical components of budget deficit; Section 2 presents the overview of public finances in India, outlining the evolution of measures of deficit and fiscal trends since the 1990s. Section 3 analyses the recent fiscal consolidation phase at the Centre and sets out indicators of fiscal stance; Section 4 presents the analytical framework for measuring the structural and cyclical components of deficits and for the decomposition of the structural revenues so as to distinguish the impact of macroeconomic environment on Government revenues; Section 5 presents the empirical findings of the exercise; Section 6 assesses the fiscal consolidation under the FRBM Act and Section 7 concludes.

1.   Survey of literature on measuring structural and cyclical deficits

Over the years various alternative techniques have been developed for adjusting the fiscal accounts to yield a more accurate measure of fiscal policy stance. The Cyclically-adjusted Budget Balance (CAB) is generally used as an index of discretionary changes in fiscal policy due to certain distinct advantages. By sifting cyclical changes from non-cyclical changes in the government's budgetary balance, the CAB helps to ascertain the orientation of the fiscal policy. Furthermore, a discretionary change in the fiscal stance can serve as a leading indicator of the future course of the policy insofar as the present policy decisions have long-term implications for public finances. CAB may also be used to analyse the reaction of policy authorities to changes in economic environment (Chouraqui *et al.*, 1990). Since the overall deficit is the sum of cyclical and structural components, with the estimation of one component, the other is derived as a residual. Most methods estimate the cyclical component first and net it from the overall deficit to derive the structural component indirectly. The most popular method for doing this is the gaps-elasticities approach used by the OECD, the IMF and the EU (Giorno *et al.*, 1995, Hagemann 1999, European Commission 1995). In this approach, the cyclical adjustments are made by adopting a three-step procedure. First, the output gap, *i.e.,* the difference between the actual output and potential output, is estimated. Second, the reaction of budget variables to output gap variations is estimated by applying the elasticity of government revenue and expenditure categories (with respect to GDP) to the output gap. Finally, the structural budget balance is calculated as the

difference between the sum of the cyclical revenue categories and the unadjusted revenue categories, on the one hand, and the cyclical expenditure categories and the unadjusted expenditure categories, on the other.

The measurement of potential output could be undertaken either by using the trend smoothing approach or the production function method. Some of the trend smoothing approaches discussed in the literature for extracting the trend output include simple linear trend, split time trend, Hodrick-Prescott (H-P) filter, peak-to-peak extrapolation estimates or a method based on Beverage-Nelson decomposition in a multivariate setting. The production function approach involves, generally, the use of a two-factor Cobb-Douglas production function. Under this method, the potential output is defined as a function of the trend rate of total factor productivity of capital stock and "potential" labour supply, *i.e*, the labour supply that is consistent with the "non-accelerating wage rate of unemployment" (NAWRU).

Using the CAB approach to describe the fiscal policy stance, though an improvement over the traditional fiscal indicators, can be misleading since the structural component encompasses a wide range of factors, including the fiscal drag. The methodology developed by Muller and Price (1984), therefore, disaggregates the structural component into base year effect, fiscal drag, and discretionary impact, after netting out the cyclical component using the gap-elasticities approach. The conclusions drawn on the basis of this methodology are dependent, to a large extent, on the choice of base year. Kremer *et al.* (2006) also adopt a disaggregated framework for the analysis of structural components of the budget. Employing the gap-elasticities approach, taxes and social contributions on the revenue side and unemployment benefits on the expenditure side are adjusted for the cyclical components. Structural revenue ratios are then broken down into fiscal drag, which captures any change in the revenue ratio that arises automatically, *i.e.,* without changes in legislation; decoupling of the tax base from GDP, which measures the deviation of the trend growth rate of tax base from the trend growth rate of nominal GDP; discretionary fiscal policy measures which measure the changes in revenue brought about by legislative policies; and residual developments. While the first two factors measure the impact of macroeconomic developments; the third, and to a great extent, the fourth factor identify the impact of fiscal policy.

The CAB approach suffers from certain drawbacks. The major weakness is its reliance on estimates of output gap which, in turn, depends on the calculation of potential output. As potential output cannot be directly observed, assumptions of non-inflationary growth rate are made. Effects of inflation and real interest rate changes are ignored. Furthermore, this method does not take into account underlying changes in the structure of the economy. The measurement of output gap is also sensitive to the techniques used. Errors in estimating the output gap can, therefore, have significant impact on estimated structural balances. The CAB also assumes that there are no latent pressures on spending and or/revenues. Despite these shortcomings, the CAB approach is still a useful tool to assess the fiscal stance of the Government, although it may be less useful as an indicator of fiscal sustainability or as a measure of fiscal policy impact on aggregate demand.

Alternate fiscal indicators have been put forth in literature. Blanchard (1990) advocates the use of moving benchmarks, wherein the induced and discretionary elements of changes in budget balances are derived by calculating the budget balance that would be obtained had the unemployment rate, inflation and interest rate remained at the previous year's level. To overcome the shortcoming of constant elasticities of budget variables assumed in the CAB approach, Jaegar (1990) follows a structural time series approach where time varying elasticities are used. In this method, the variances of the parameters are not well defined. Brandner, Diebalek and Schuberth (1998), developing on an earlier work by Cano and Kanutin (1996) on smoothed-ratio approach, therefore, suggest an alternate approach which estimates structural balances directly by 5means of a time series technique. Under this approach, budgetary categories expressed as ratios to GDP are decomposed into a trend and a cyclical component using the H-P filter and the structural deficit is derived as the difference between the sum of structural revenue and structural expenditure relative to GDP.

In India, Pattnaik, Pillai and Das (1999), estimated the structural and cyclical deficit using the methodology developed by Muller and Price (1984). They found that the growing GFD was on account of higher expenditure elasticity relative to revenue elasticity and that structural rigidities existed in the system as reflected in the predominance of the fiscal drag. Structural and cyclical components of the GFD was also estimated in the Reserve Bank's Report on Currency and Finance (RBI, 2002) for the Central and State Governments, separately as well as combined, on the basis of the methodology developed by Giorno *et al.* (1995) and Van den Noord (2000). The estimates confirmed the predominance of structural component of fiscal deficit. Rangarajan and Srivastava (2005) employed the smoothed-ratio approach to estimate the structural and cyclical components of fiscal deficit and primary deficit. Decomposing the fiscal deficit to GDP ratio into primary structural deficit, structural interest payments and cyclical fiscal deficit, they found that the impact of structural interest payments has been larger and more persistent than structural primary deficit in the 1990s, contributing to the large structural fiscal deficit. Estimates of the structural and cyclical deficits of major Indian States were made in the Reserve Bank's publication *State Finances – A Study of State Budgets 2004-05*, drawing from the methodology suggested by Muller and Price (1984). The amplitude of cyclical deficit was found to be lower in the second half of the 1990s than in the first half and fiscal drag appeared to have deteriorated for most of the State Governments (RBI, 2005).

2.   Overview of the Indian public finances

### 2.1   *Evolution of measures of deficit*

In India, like in most developing countries, designing of fiscal policy placed emphasis on a single measure of deficit, *i.e.*, the conventional deficit/budget deficit till the mid-1980s. The budget deficit or "deficit financing" was measured as the difference between total expenditure and total receipts (including borrowings) and

was financed by running down Government's cash balances with the Reserve Bank and sale of short-term treasury bills, mostly to the Reserve Bank. While the budget deficit was used as a measure of creating reserve money in the system, it suffered from two basic limitations: it did not reveal the full extent of the Government's reliance on Reserve Bank credit; and it tended to overstate the monetary impact of fiscal operation to the extent treasury bills were held outside the Reserve Bank. The Committee to Review the Working of the Monetary System in 1985 (Chairman: Sukhamoy Chakravarty), therefore, recommended the use of monetised deficit, which measures the net Reserve Bank credit to the Government to capture the impact of fiscal operations. Thus, since the mid-1980s, there has been a shift from the conventional single measure approach to measuring deficit to a multiple measure approach. A range of deficit indicators were conceptualized (Rangarajan *et al.*, 1989) and published in the various publications of both the Reserve Bank and the Government of India. Since 1991-92, the budget documents of the Government of India set out three key deficit indicators, the revenue deficit (RD), the gross fiscal deficit (GFD) and the primary deficit (PD). Out of these deficit indicators, GFD became an important target fiscal variable and crucial policy target of the Central Government in the context of the structural adjustment programme initiated in 1991 (Chelliah, 1996). Revenue deficit measures the difference between current expenditure and current revenue. It is used as a measure of the Government's dissaving. GFD, though traditionally defined as the difference between total government expenditure and current revenues, in the Indian context, was taken as the difference between aggregate expenditure and non-debt receipts consisting of tax revenue, non-tax revenue, recoveries of loans and disinvestment proceeds. Primary deficit which is the difference between GFD and interest payments is a measure of the sustainability of deficit. Other measures used in the literature are net fiscal deficit (NFD) which excludes net lending from GFD, net primary deficit (NPD) which excludes net interest payments from (NFD) and primary revenue balance (PRB) which nets out interest payments from revenue deficit (Appendix 1 and Appendix 2).

2.2   *Trends in fiscal indicators since the 1990s*

The rapid deterioration in the Government finances during the late 1980s caused by a faster rise in expenditure growth relative to revenue growth resulted in a steep rise in the Central Government's fiscal deficit to GDP ratio which culminated in a balance of payments crisis. The macroeconomic crisis of 1991 created an exigency and led to the chartering of a strong reversal of hitherto followed policies. Fiscal reforms were initiated with the aim of achieving a reduction in the size of deficit and debt in relation to GDP through revenue enhancement and curtailment in current expenditure growth while enlarging spending on investment and infrastructure so as to provide momentum to the growth process. Measures were undertaken to curb the pre-emption of institutional resources by the Government and simultaneously to provide a level-playing field to the private investors.

Figure 1

Key Deficit Indicators
(percent of GDP)
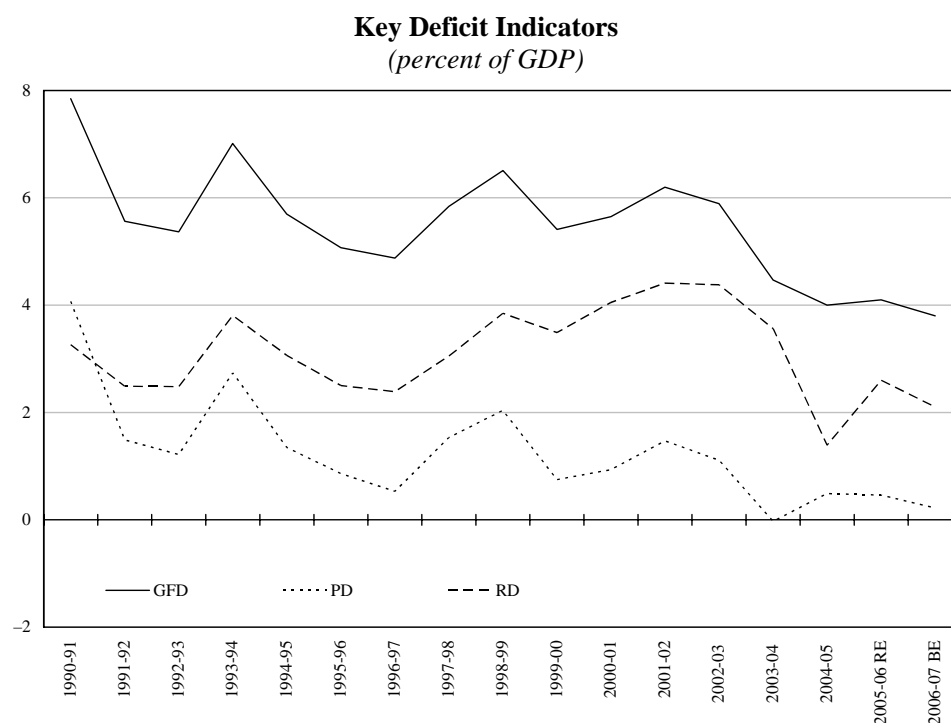
The strategy for restoring fiscal balance comprised tax and non-tax reforms, expenditure management and institutional reforms. Restructuring public sector mainly involved divestment of Government ownership which was initiated in 1991-92. Fiscal-monetary coordination was sought to be improved through deregulation of financial system, elimination of automatic monetization to reduce the size of monetized deficit, and reduction in pre-emption of institutional resources by the Government. At the sub-national level, fiscal adjustments began as a consequence of the deterioration in States' finances, which exacerbated in the latter half of the 1990s. With a view to promoting State reforms, access to Central Government assistance as well as to guarantees for loans from multilateral agencies was linked to their reform efforts. Several State Governments have also enacted Fiscal Responsibility Legislation (FRL), partly driven by the Twelfth Finance Commission's debt relief incentives.

The fiscal performance in terms of movements in the key deficit indicators, *viz.* revenue deficit (RD), gross fiscal deficit (GFD) and primary deficit (PD) since the undertaking of fiscal reforms in the early 1990s may be characterized in three distinct phases based on the performance: the period of improvement from 1991-92 to 1996-97; the period of worsening from 1997-98 to 2001-02 and the period of

improvement since 2002-03 which was accelerated by the enactment of the Fiscal Responsibility and Budget Management Act, 2003.

The GFD of the Centre witnessed a decline during the first half of the 1990s. Tax revenue as a proportion of GDP fell during this period as a result of restructuring of the tax system with focus on simplification and rationalisation of both direct and indirect taxes, drawing mainly from the recommendations of the Tax Reforms Committee, 1991 (Chairman: Raja J. Chelliah). The key tax reforms have been lowering of the maximum marginal personal income tax and corporation tax rate; widening of the tax base by way of a series of steps including introduction of presumptive taxes; progressive reduction in the peak rate of customs duty on non-agricultural products; reduction of slabs in excise duties; and introduction of service tax in 1994-95. The fiscal correction strategy focused on the expenditure front, whereby corrective measures initiated at the beginning of the 1990s, mostly in the terms of curtailment of expenditure growth, yielded some promising results. In fact, the reduction in revenue receipts brought about by the decline in tax/GDP ratio was more than offset by the reduction in revenue expenditure, resulting in a marginal reduction in the ratio of revenue deficit to GDP during this period. However, the fiscal consolidation even during the first half of the 1990s was brought about primarily through curtailment in capital outlay and net lending. Consequently, the gross fiscal deficit, on an average, declined by 0.49 per cent of GDP per annum during the period 1991-92 to 1996-97 (Table 1).

The implementation of the Fifth Pay Commission recommendation led to a substantial increase in the wage bills in 1997-98 and 1998-99. While tax reforms have generally led to a rise in tax revenue to GDP ratio across countries (Shome, 1995), in the Indian context, the tax-GDP ratio of the Central Government suffered a persistent decline from 9.7 per cent during the first half of the 1990s to 9.0 per cent in the second half of the 1990s. The decline in the tax/GDP ratio, thus, accentuated the decline in key deficit indicators since 1997-98. The switch from administered system to a system of increased market orientation of Government borrowing also meant higher interest rates and, therefore, larger interest payments, leaving fewer resources for undertaking non-interest expenditure. By the year 2001-02, all the major deficit indicators, *viz.* revenue deficit, fiscal deficit, and public debt rose to levels higher than those prevalent at the beginning of the reform process.

The fiscal deterioration and increased dissaving of Government administration witnessed in the latter half of 1990s renewed the urgency for improving public finances of both Centre and States. During 2002-03, finances of the Central Government revealed an improvement with a decline in all the key deficit indicators. This paved the way for the implementation of the Fiscal Responsibility and Budget Management (FRBM) Act, 2003. The enactment of the FRBM legislation by August 2003 and the framing of FRBM Rules, 2004 under it in July 2004 set the tone of a renewed effort towards fiscal consolidation. The FRBM Act embodies the spirit of inter-generational equity and provides for long-term macroeconomic stability by reducing fiscal deficit and eliminating revenue deficit by March 31, 2008 (later extended to March 31, 2009). The FRBM Rules 2004 set

Table 1

Changes in Key Fiscal Variables
(percent of GDP)

	1991-92 to 1996-97	1997-98 to 2001-02	2002-03 to 2006-07
	(average)	*(average)*	*(average)*
1. Revenue Deficit (B–A)	**–0.14**	**0.41**	**–0.45**
A. Revenue Receipts (i+ii)	–0.07	–0.06	0.28
i. Tax Revenue (net)	–0.12	–0.18	0.48
ii. Non-Tax Revenue	0.05	0.12	–0.21
Of which:			
a. Interest Receipts	0.01	–0.01	–0.21
b. Dividend and Profits	0	0.15	–0.01
B. Revenue Expenditure	–0.22	0.35	–0.17
Of which:			
i. Interest Payments	0.09	0.08	–0.23
ii. Subsidies	–0.17	0.05	–0.04
iii. Grants	–0.69	–0.64	0.06
iv. Defence	–0.06	0.03	–0.07
2. Gross Fiscal Deficit (1+3+4+5–6)	**–0.49**	**0.27**	**–0.48**
3. Non-defence Capital Outlay	–0.15	0.01	0.06
4. Defence Capital Expenditure	–0.03	0.02	0.05
5. Net Lending	–0.16	–0.14	–0.15
6. Disinvestment	0.01	0.03	–0.01
7. Gross Primary Deficit (2–Bii)	**–0.58**	**0.19**	**–0.25**

annual targets for phased reduction in key deficit indicators over the period ending March 31, 2008 (extended to March 31, 2009) and impose ceilings on Government guarantees and additional liabilities.

3.   Recent fiscal consolidation: indicators of fiscal stance

The fiscal trends since 2002-03 indicate that the fiscal consolidation achieved during this period is distinct from that of the first half of 1990s. Since the fiscal correction in the 1990s was achieved through cutbacks in expenditure, particularly

Table 2

Select Items of Receipts and Expenditure – Nature of Impact

	Inertial Impact	**Macroeconomic Policy Impact**	**Fiscal Policy Impact**
Tax revenue			
Of which:			
Corporation Tax	Yes (+)	No	Yes (+)/(–)
Service Tax	Yes (+)	No	Yes (+)
Income Tax	Yes (+)	No	Yes (+)/(–)
Excise Duty	Yes (+)	No	Yes (–)
Customs Duty	Yes (+)	No	Yes (–)
Non-Tax revenue			
Of which:			
Dividends and Profits	Yes (+)	Yes (–)	Yes (–)
Interest Receipts	No	No	Yes (–)
Non-debt capital receipts			
Recoveries of Loans	No	No	Yes (–)
Disinvestment Proceeds	No	No	Yes (–)
Revenue Expenditure			
Of which:			
Subsidies	No	No	Yes (+)
Interest Payments	No	Yes	Yes (–)
Capital Expenditure			
Of which:			
Loans and Advances	No	No	Yes (–)

Note: + indicates an increase in the fiscal variable and – indicates a decline in the fiscal variable.

grants on the revenue account and capital outlay on the capital account, rather than through improved revenue, the consolidation efforts could not be sustained. In contrast, substantial contribution from tax revenue coupled with declining interest payments/GDP ratio and reduced net lending helped in achieving the fiscal consolidation during the third phase *i.e.*, 2002-03 to 2006-07. As changes in fiscal variables may be characterised by inertial impact, macro-policy intervention impact and fiscal policy impact, an analysis of the various components of receipts and expenditure during the third phase was undertaken to ascertain the role of these three impacts in bringing about a change in the fiscal variables. These are summarized in Table 2.

3.1   Tax revenue

Tax/GDP ratio improved, on an average, by 0.48 per cent during the third phase despite substantial rationalization of tax rates. Introduction of new taxes such as the Securities Transaction Tax, Fringe Benefit Tax and Banking Cash Transaction enabled the buoyancy in collection. Furthermore, efforts were taken to tighten the tax structure to prevent leakages and improve tax administration. These developments reflect the *fiscal policy impact*. Despite reduction of customs duty, there was a significant increase in customs revenue on account of the oil price increase reflecting the *inertial impact*. Corporation income tax rate was reduced from 35 per cent to 30 per cent in 2004-05. However, the buoyancy in the economy has translated into higher tax collections, reflecting again the *inertial impact*. The alteration of tax brackets for personal income tax as part of a major overhaul of direct taxes to provide stability in the medium term, however, led to a lower growth in personal income tax collections.

3.2   Non-tax revenue

Non-tax revenue fell during the third phase. Interest receipts, the largest non-tax revenue for the Government has been declining on account of:

(a) reduction in lending rates on loans to State Governments and others;

(b) debt swap scheme which enabled State Governments to prepay their high cost liabilities over a three-year period between 2002-03 and 2004-05;

(c) debt restructuring of loans extended by the Central Government to those State Governments which enact fiscal responsibility legislation and reduction of interest rates thereon;

(d) discontinuation of Central Government loans to States for their plans in accordance with the Twelfth Finance Commission award[1] and

(e) prepayments by Central Public Sector Undertakings (CPSUs).

All these measures constitute the *fiscal policy impact*. Receipts from "dividends and profits" have been affected both positively and negatively. The buoyancy in the economy has enabled public sector enterprises to post profits, reflecting the *inertial impact*. However, dividends were also negatively affected by the *macroeconomic policy impact*. For instance, transfer of surpluses from the Reserve Bank has been lower on account of its sterilisation operations undertaken to contain exchange rate volatility. Furthermore, public sector oil marketing companies suffered "under recoveries" of around Rs.40,000 crore in 2005-06 as the pass-through of oil price hikes was not fully effected due to considerations for inflation. This reduced dividends from these companies.

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[1]   The Indian Constitution provides for appointment of the Finance Commissions every five years for recommending the transfer of resources from the Centre to the States.

3.3 Recoveries of loans

Recoveries of loans to the States by the Centre during the years 2002-03 to 2004-05 were high on account of the operation of debt swap scheme whereby existing high interest bearing loans to the States were swapped with fresh low interest cost market loans and small savings collections. These transactions, however, were made fiscal deficit neutral since the proceeds were utilized by the Central Government to discharge its liabilities with the National Small Savings Fund.[2] Recoveries of loans are estimated to decline in 2006-07, reflecting the impact of debt consolidation by the States under the Twelfth Finance Commission award. Thus, changes in this variable reflect primarily the *fiscal policy impact*.

3.4 Disinvestment proceeds

Disinvestment proceeds which are treated as above the line transactions had a significant bearing on the reduction of fiscal deficit in 2003-04 with over Rs.16,000 crore being mobilized, reflecting the *fiscal policy impact*. The Union Budget for 2006-07, however, proposes not to utilize the disinvestment proceeds to meet budgetary expenditure as these are to be earmarked for the National Investment Fund, thereby making the transaction deficit neutral.

3.5 Interest payments

Interest payments during the third phase have, in general, declined on account of the *macroeconomic policy impact* of lower interest rate regime. The weighted average interest rate on Central Government liabilities have been declining in recent years (Table 3). The Government's decision to buy back illiquid domestic securities and prepay external debt as part of its policy of debt restructuring, had, however, resulted in premium payment in 2003-04. This is a *fiscal policy impact*.

3.6 Subsidies

Measures taken to facilitate liquidation of stocks and drought conditions entailed large outgoes under food subsidies in 2002-03 and 2003-04. Since then food subsidies have generally declined as a proportion of GDP. Fertiliser subsidies have risen in recent years on account of the high input cost reflecting the rise in international oil prices. Explicit provision of petroleum subsidy was made in the

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[2] The National Small Savings Fund (NSSF) was created in April 1999 into which all small savings collections are credited. NSSF in turn invested these funds in special securities of the Central Government (20 per cent) and State Governments (80 per cent) between April 1999 and March 2002. Since March 2002, the entire net collections credited to the NSSF are being invested only in State Government special securities. Reinvestment of redemption proceeds of these securities is, however, made in Central Government securities.

Table 3

Average Interest Cost of Central Government Liabilities
(percent)

Year	Average Interest Rate
2000-01	9.73
2001-02	9.2
2002-03	8.62
2003-04	7.96
2004-05	7.31
2005-06 RE	6.52
2006-07 BE	6.37

Budget since 2002-03 after the dismantling of the Administered Price Mechanism. Thus the expenditure outlays undertaken for subsidies reflect fiscal policy impact.

4. Analytical Framework

The traditional indicators used for assessing fiscal situation of a country reflect the interplay of a variety of factors including policy decisions, structural changes in the economy and overall macroeconomic environment. In order to assess the efficiency of fiscal policy, there is a need to ascertain and separately analyse the impact of each of these factors on actual fiscal outcome. The present paper, therefore, adopts the broad framework developed by Kremer *et al. (*2006) after making certain modifications so as to make it suitable to the nature of data disseminated for the Indian economy. This methodology estimates cyclical and structural components of the gross fiscal deficit using a two-step procedure of detrending the GDP series and applying relevant elasticities of the fiscal variables to the output trend gap series.

4.1 Gross fiscal deficit: estimation of cyclical and structural components

The analytical framework of the present paper would be centred around gross fiscal deficit. To decompose the gross fiscal deficit into the structural and cyclical deficit, the series of relevant budgetary categories are first classified into the structural and cyclical components. Budgetary category X may be defined as follows:

$$X^a = X^s + X^c$$

where superscripts *a*, *s* and *c* represent actual, structural and cyclical components of the budget variable, respectively.

The structural component of a budgetary category is that part of budget balance which would have taken place had the actual GDP been equal to its trend level. The remaining part, which is generated by the gap between actual GDP and trend GDP, is called cyclical component of the budgetary category. For the present paper, the relevant expenditure category is assumed to be exogenous of the GDP growth and hence all expenditure is assumed to be structural in nature. Although the movements in GDP may influence government expenditure, the bulk of the expenditure remains independent of fluctuations in GDP. In literature, the only expenditure item which is adjusted for the cyclical component is social security benefits. Since these expenditures are negligible in the Indian context, the overall expenditure has not been adjusted for business cycles. Moreover, identifying the components of expenditure which respond to cyclical component of GDP would not be without errors particularly in the light of composition of the Government expenditure in India. Hence, it is assumed for the present purpose that all the expenditure is structural in nature.

Revenue receipts are first decomposed into cyclical and structural components. As the contribution of agricultural sector to the revenues of the Government is negligible,[3] the tax base of revenue receipts is assumed to be non-agricultural GDP. Following Bouthevillain (2001), the cyclical component of revenue receipts is calculated as a product of constant revenue elasticity and output gap (difference between actual nominal GDP and trend nominal GDP) and trend revenue receipts. The trend is estimated by using a Hodrick-Prescott filter with a smoothing parameter of $\lambda = 100$.

$$RR^c = RR^t * e_{rr} * (B^a - B^t)/B^t$$

where RR^c is the cyclical component of revenue receipts and e_{rr} is the elasticity of revenue receipts with respect to base or B, *i.e.* non-agricultural nominal GDP. The superscripts *a* and *t* represent actual and trend values, respectively.

The structural component RR^s would, thus, be the remaining part of RR.

$$RR^s = RR^a - RR^c$$

where RR^a is the actual revenue receipts.

The structural deficit is arrived at as the difference between the structural revenue and total expenditure as all the expenditure is assumed to be structural. Cyclical deficit is taken as the difference between gross fiscal deficit and the structural deficit which is essentially equal to cyclical revenue receipts. This also makes a case for further analysis of structural revenues.

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[3]   In India taxation of agricultural income is comes under the purview of the State Governments and are by and large outside the tax net.

4.2   Analysis of structural revenues

To further analyse the structural component of revenues, the changes in structural revenue ratios are broadly attributed to two factors: dynamic inertial effect and policy effect.

4.2.1 Dynamic inertial effect

The dynamic inertial effect is taken to be the changes in structural revenues that would have taken place even without any change in the fiscal stance. Thus, this effect would capture the fiscal drag and the effect of deviations in the growth rate of tax base from the growth rate of trend GDP.[4]

a.   Fiscal drag

Fiscal drag usually refers to the increase in average tax rates in a progressive income tax scheme as a consequence of increase in nominal income over time. If the elasticity of tax collection is other than one, the growth in tax revenue would differ from the growth in GDP implying a change in revenue receipts to GDP ratio. In this exercise the concept of fiscal drag is applied to the entire revenue receipts and not just tax revenue. The contribution of fiscal drag to revenue receipts/GDP ratio is calculated on the basis of the elasticity of revenue receipts and growth rate in trend non-agricultural GDP (g_t) which is assumed to be the base for all revenue receipts, including non-tax revenue. Elasticity of revenue receipts (e_{rr}) with respect to the tax base is calculated after netting out the impact of legislative changes (in the form of additional resource mobilisation) from the revenue receipts. The contribution of fiscal drag to changes in structural revenue receipts is computed as:

$$(e_{rr}-1) * g_t * RR_{t-1}/NGDP_t$$

where $NGDP_t$ is trend nominal GDP.

b.   Differential growth in trend tax base

This refers to the deviations in the growth of trend tax base from the trend GDP. Other things remaining same, the revenue receipts to trend GDP ratio will change if revenue base increases at a rate different from the trend growth GDP. As discussed above, the contribution of agricultural GDP to the Government revenue of the Government is negligible in India whereas its share in GDP is significant. The trend growth rate of agricultural GDP is lower than that of overall trend GDP (G_t) whereas non-agricultural GDP has registered a relatively higher growth, particularly in the last decade. The contribution of deviations of trend tax base growth to the change in structural revenue ratio is computed as:

$$(g_t - G_t) * RR_{t-1} / NGDP_t$$

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[4]   The deviations of growth rate of trend tax base from trend GDP is termed as decoupling of tax base by Kremer *et al.* (2006).

4.2.2 Short-term discretionary policy changes

This captures the changes in tax revenue as a result of policy changes. The short-term impact of changes in tax structure is measured in terms the additional resource mobilisation (ARM). The budget documents of the Government of India provide estimates of additional resource mobilisation/change in tax revenue on account of specific measures taken during the year.

4.2.3 Residual developments

The change in revenue receipts which is not explained by the three factors discussed above is attributed to factors such as improved tax administration, lagged effect of tax revenue, underestimation of ARM, structural changes in the tax base etc. These factors may be interpreted to provide the medium term fiscal stance adopted by the Government, at least on the revenue side. Thus, the residual effect captures the both short-term and long-term effect and includes changes in tax structure and other measures such as tax administration, lagged impact of tax changes, etc.

5. Empirical findings

Using the methodology outlined above, the structural and cyclical deficits were computed for the gross fiscal deficit of the Central Government (Table 4). The structural deficit relative to GDP had declined by nearly 1 percentage point during the third phase over the second phase. A surplus in the cyclical component during the third phase indicates the impact of upbeat economic activity enabling an overall reduction in GFD. It may be noted that all the years in the third phase witnessed

Table 4

Structural and Cyclical Deficits of the Central Government

| Year	Structural Deficit	Cyclical Deficit	Gross Fiscal Deficit
Phase I (1991-92 to 1996-97)	5.21	0.35	5.56
Phase II (1997-98 to 2001-02)	5.72	0.16	5.87
Phase III (2002-03 to 2005-06)	4.75	–0.11	4.63

Table 5

Adjusted Structural and Cyclical Deficits of the Central Government
(percent of GDP)

Period (1)	Structural Deficit (2)	Cyclical Deficit (3)	Adjusted Fiscal Deficit (4)
1991-92	3.9	0.3	4.2
1992-93	3.7	0.5	4.3
1993-94	4.7	0.6	5.3
1994-95	4	0.5	4.5
1995-96	3.6	0.1	3.6
1996-97	3.3	0.1	3.4
Phase I (1991-92 to 1996-97)	**3.9**	**0.4**	**4.2**
1997-98	4	0.2	4.2
1998-99	4.8	0	4.9
1999-00	4.6	0	4.7
2000-01	5	0.2	5.2
2001-02	5.2	0.3	5.6
2002-03	5.2	0.4	5.6
Phase II (1997-98 to 2002-03)	**4.8**	**0.2**	**5.0**
2003-04	4.7	0.1	4.8
2004-05	4.4	–0.3	4.2
2005-06 RE	4.9	–0.7	4.2
Phase III (2003-04 to 2005-06)	**4.7**	**–0.3**	**4.4**

high growth rates, particularly in the sectors which contribute to the revenue of the Government.

The GFD analysed above is the difference between aggregate expenditure and non-debt receipts which include revenue receipts, recovery of loans and disinvestment proceeds. There are, however, different views on the inclusion of disinvestment proceeds as budgetary receipts. If the GFD is to measure the net borrowing requirement of the Government, then disinvestment proceeds may be part of the non-borrowed receipts. However, as disinvestment reduces the financial assets of the Government, it leads to an increase in net financial liabilities of the

Structural and Cyclical Components of Adjusted Deficit of the Centre
(percent of GDP)
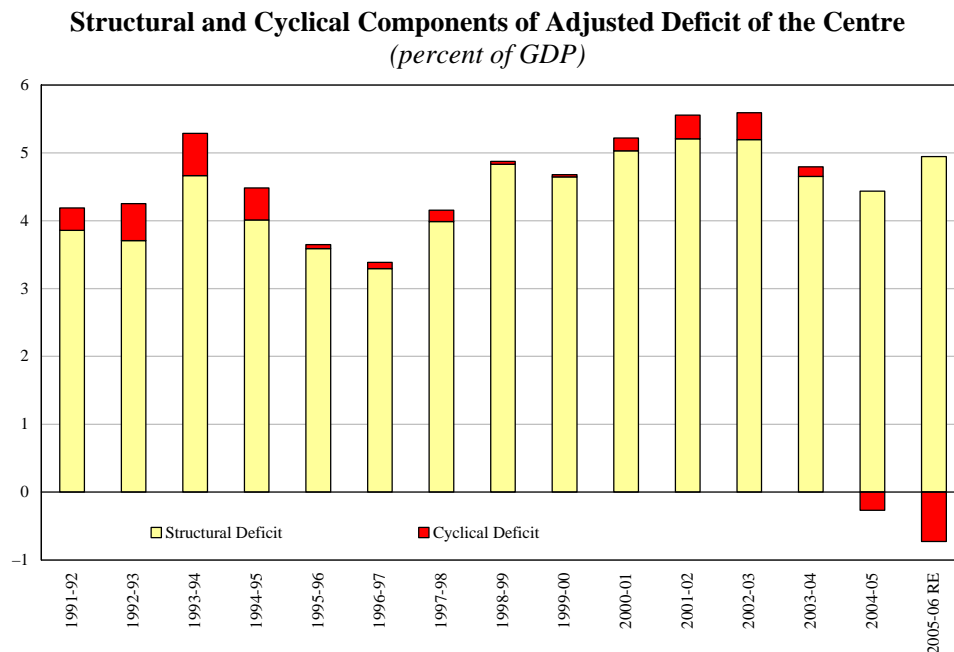
Government (Mody, 1994). There are similar views disputing the inclusion of net lending in the GFD as this also alters the financial assets of the Government and does not reflect changes in its net worth. In the Indian context, three major policy decisions have had an impact on the magnitude of the Central Government's fiscal deficit. First is the change in the accounting treatment of Small Savings consequent upon the creation of National Small Savings Fund (NSSF) in April 1999. As a result of this policy decision, loans extended to State Governments against Small Saving collections no longer formed a part of the Centre's expenditure and hence, were not taken into consideration for calculating the Centre's fiscal deficit. Second, the withdrawal of budgetary support in the form of loans to the State Government for their State Plans with effect from 2005-06, on the basis of the recommendations of the Twelfth Finance Commission (TFC), amounted to shifting the burden of raising resources for the State Plans to the State Governments. Third, from 2006-07 disinvestment proceeds will be earmarked for the National Investment Fund and will henceforth not affect the magnitude of GFD of the Centre. While the first two policy decisions have a bearing on the loans extended by the Government and hence on its expenditure, the third policy decision has a bearing on its non-debt capital receipts. The real progress in fiscal consolidation would, therefore, have to be evaluated only after adjusting for these developments. Thus, in order to have a consistent series, an adjusted deficit was computed netting out from the GFD, disinvestment proceeds and net lending *i.e.*, loans and advances minus recoveries. The structural and cyclical components of this adjusted deficit are presented in Table 5 and Figure 2.

From Table 5, it may be seen that the adjusted deficit declined during the third phase over the second phase. However, the reduction was evident from 2003-04, rather than from 2002-03 as in the case of unadjusted GFD, in line with the move towards FRBM framework. In the third phase, the cyclical deficit turned around to record a modest surplus in respect of both the adjusted and unadjusted deficits. This supports the view that fiscal consolidation in recent years has been facilitated by upswing in the output cycle. While movements in structural deficit showed marked improvement in the third phase in terms of unadjusted GFD, the improvement in structural deficit during this phase has been marginal in terms of adjusted deficit. The structural component of adjusted deficit continued to be higher than the overall adjusted deficit as in case of GFD.

Further analysis of the structural revenue and expenditure reveals that an improvement in structural deficit in the third phase is on account of increased revenues. Structural revenue in the third phase increased, on an average, by 0.3 percentage point of GDP over the second phase (Table 6).

As discussed in the Section on analytical framework, the factors contributing to structural revenues are examined. Decomposition of changes in structural revenue shows that the contribution of the dynamic inertial impact to structural revenue ratios, measured in terms of the fiscal drag and differential growth in trend tax base, declined in the third phase over the first two phases (Table 7). While short-term impact (represented by Additional Resource Mobilisation, ARM) contributed substantially in the second phase, the modest ARM shown in the budget documents have resulted in the lower contribution of this component in the third phase. There has been significant increase in the relative contribution of residual component during the third phase. This could possibly reflect the medium to long-term impact of fiscal policy measures on the structural revenue ratio.

One of the limitations of the methodology used in the above analysis is that the elasticity was assumed to remain constant over the years. In India, the point elasticity of revenue with respect of the relevant base has been varying significantly. Hence, an exercise was undertaken to examine the impact of a variable elasticity on the empirical findings relating to analysis of structural revenue in terms of fiscal drag, differential growth trend tax base, and residual developments. Separate elasticity of revenue with respect of non-agricultural GDP was used for each of the three phases discussed above. The empirical findings obtained by using variable elasticities were, however, by and large similar to those obtained by using a constant elasticity.

It may be noted that the empirical finding discussed above are subject to certain methodological limitations, particularly in respect of measurement of output gap. In the present study potential output was measured by using the HP-filter as relevant information was not available to use more sophisticated techniques to measure potential output such as production function approach. Since measurement of output gap based on the potential output is one of the key factors in the analysis, its measurement would have a significant bearing on the results.

Table 6

Structural Revenue and Expenditure
(percent of GDP)

Year	Revenue	Expenditure
(1)	(2)	(3)
1991-92	10.3	14.2
1992-93	10.3	14
1993-94	9.3	14
1994-95	9.4	13.4
1995-96	9.2	12.8
1996-97	9.2	12.5
Phase I Average	**9.6**	**13.5**
1997-98	8.9	12.8
1998-99	8.5	13.4
1999-00	9.3	13.9
2000-01	9.3	14.4
2001-02	9.2	14.4
2002-03	9.8	15
Phase II Average	**9.2**	**14**
2003-04	9.7	14.4
2004-05	9.5	14
2005-06 RE	9.1	14.1
Phase III Average	**9.5**	**14.1**

Table 7

Composition of Change in Ratio of Structural Revenue to GDP
(percent of total change)

Period	Fiscal Drag	Differential growth in trend tax base	Dynamic Inertial Effect (2+3)	Short-term discretionary policy changes (ARM)	Residual
1	2	3	4	5	6
Phase I (1991-92 to 1996-97)[*]	3.0	9.0	12	–1.0	89.1
Phase II (1997-98 to 2002-03)	4.2	15	19.3	19.3	61.5
Phase III (2003-04 to 2005-06)	3.0	8.7	11.7	10.6	77.7

[*] Excludes 1993-94 as it was an outlier in which the change in revenue receipts as a proportion of GDP was only 0.3 per cent.

Another factor which could lead to a high residual component is the underestimation of the short-term discretionary policy changes which, in this case, is represented by the ARM. The contribution of tax policy changes to the structural revenue could be much higher than the reported ARM since the Government has substantially rationalised the tax structure across the board and has widened the tax base as part of the tax reforms. These would have a bearing on the medium-long-term revenue generating capacity of the Government. The Government has also undertaken various measures to strengthen tax administration in recent years. The application of "information technology" has also improved the efficiency of tax administration. The cost of collection has shown a perceptible decline in recent years from 1.4 per cent in 2000-01 to 0.9 per cent in 2004-05 for direct taxes, 1.5 per cent to 0.8 per cent for customs duties and 0.8 per cent to 0.7 per cent for excise duties over the same period. These factors, though not captured in the ARM, would have influenced the structural revenues positively.

6.   Fiscal Consolidation under FRBM Act

Fiscal Responsibility and Budget Management (FRBM) Rules, 2004 spelt out the path for fiscal correction for the Central Government Finances. While the FRBM Act provides a strong institutional mechanism for making sustained progress in fiscal consolidation, the progress towards attaining the targets has been mixed. Although the FRBM Act was passed in August 2003, there were no explicit annual targets set for deficit reduction. Despite this, the fiscal year 2003-04 witnessed a marked reduction in all the key deficit indicators over the budgeted levels as well as the preceding year. With the notification of the Fiscal Rules in July 2004 and stipulations of minimum thresholds for annual reductions in deficit, a front loaded fiscal consolidation was budgeted for the fiscal year 2004-05, which required that the revenue deficit decline by more than twice the stipulated minimum threshold. The fiscal outcome for 2004-05 showed that not only was the budgeted reduction in revenue deficit realised but the fiscal deficit also declined by more than twice the stipulated minimum threshold. The Central Government was however, forced to set in a "pause" in its FRBM path in 2005-06 on account of the need to provide higher resources to the States Governments in accordance with the Twelfth Finance Commission award. The process of fiscal consolidation is set to resume in 2006-07, with a projected reduction in the revenue deficit to 2.1 per cent of GDP and fiscal deficit to 3.8 per cent of GDP. The targets under the FRBM Rules and progress so far are set out in Table 8.

It is evident from the table that although significant progress has been made in fiscal consolidation since the implementation of FRBM Act, it is a challenging task to achieve the FRBM targets within the stipulated timeframe. Given the downward rigidities in expenditure, further correction would need to be based on revenue augmentation as has been done in the recent phase. While the Government has benefited from both the cyclical and structural components of revenues, the contribution of the dynamic inertial effect to structural revenues has declined in

Table 8

FRBM Rules for the Central Government

Parameter	Provisions in the FRBM	Progress So Far
Fiscal Deficit (GFD)	To be reduced by 0.3 per cent or more of GDP every year, beginning with the year 2004-05, so that it does not exceed 3 per cent of GDP by end-March 2009.	Placed at 4.1 per cent of GDP in 2005-06 (Provisional Actuals) and budgeted at 3.8 per cent for 2006-07.
Revenue Deficit (RD)	To be reduced by 0.5 per cent or more of GDP at the end of each year, beginning from 2004-05, in order to achieve elimination of the RD by March 31, 2009.	Placed at 2.7 per cent of GDP in 2005-06 (Provisional Actuals) and budgeted at 2.1 per cent for 2006-07.
Contingent Liabilities	The Central Government shall not give guarantees aggregating an amount exceeding 0.5 per cent of GDP in any financial year beginning 2004-05.	Net accretion during 2004-05 was 0.57 per cent of GDP.
Additional Liabilities	Additional liabilities (including external debt at current exchange rate) shall not exceed 9 per cent of GDP for the year 2004-05. In each subsequent year, the limit of 9 per cent of GDP shall be progressively reduced by at least one percentage point of GDP.	8.0 per cent of GDP in 2004-05.

Sources: Fiscal Responsibility and Budget Management Rules, 2004, Government of India; Union Budget 2006-07, Government of India; Economic Survey 2005-06, Government of India.

recent years. This signifies a greater role played for the discretionary fiscal policy. This also implies that further fiscal consolidation would require a pro-active fiscal policy, placing emphasis on revenue augmentation. Studies show that the most recently proposed package of tax reforms undertaken to fulfill the commitments under the FRBM Act would improve tax productivity and lower the marginal tax burden and tax-induced distortions (Poirson, 2006).

7.   Conclusion

The Central Government finances in India have witnessed significant improvement in the FRBM phase. The various fiscal indicators analysed in the paper show that this consolidation has essentially been achieved through enhanced revenues. While the view held by many, including the international organisations, is that the macroeconomic performance has enabled the Government to achieve fiscal consolidation, our analysis shows that although this factor did play an important role in augmenting the Government's revenue, the strategy of rationalising the tax rates, improved tax compliance and widening of tax base also contributed to the increase in the structural revenue of the Government As emphasised in the Reserve Bank's Annual Report 2000-01, *"The path to durable fiscal consolidation is through fiscal empowerment* i.e.*, by expanding the scope and size of revenue flows into the budget. A fiscal strategy based on revenue maximisation would also provide the necessary flexibility to shift the pattern of expenditures and redirect them productively; on the other hand, fiscal adjustments based predominantly on expenditure reduction involve welfare losses and risk the danger of triggering a downturn of overall economic activity"*.(RBI 2001, pp. 131) In recent years, the Government has been attempting to plug the loopholes in the tax system and arrest leakages. These efforts would need to be continued and complimented by better tax administration and compliance. Focus on expenditure reprioritisation would help to keep a check in expenditure growth and simultaneously increase allocations for the social sector. The combined impact of high economic growth and a greater role for discretionary fiscal policy should enable the Government to meet the FRBM targets.

APPENDIX 1
FISCAL BALANCE SHEET

Receipts	Expenditures
Revenue Receipts (RR)	**Revenue Expenditure**
Tax Receipts (TR)	General Services (GSR)
Non-tax Receipts (NTR) *of which:* Interest Receipts (IR) Dividend & Profits (DP) External Grants (EG)	*of which:* Interest Payments (IP) Social Services (SSR) Economic Services (ESR) Grants-in-Aid (GIA)
Capital Receipts (CR) *of which:* Recoveries of Loans (ROL)	**Capital Expenditure (CE)** Capital Outlay (CO)
Disinvestment proceeds (DIS) Internal Debt (ID) Market Loans (ML) Other Internal Liabilities (OL) *of which:* Small Savings (SS) Provident Funds (PF) special Deposits (SD) Reserve Funds & Deposits (RFD) External Borrowings (EB)	Social Services (SSC) General Services (GSC) Economic Services (ESC) Loans & Advances (LA) General Services (GSL) Social Services (SSL) Economic Services (ESL) Other Loans & Advances (OLA)
Total Receipts (TR)= (RR+CR)	**Total Expenditure (TE)= (RE+CE)**

APPENDIX 2
CONCEPTS AND MEASUREMENT OF EXISTING DEFICIT MEASURES

Deficit Indicators (1)	Expenditure (2)	Receipts (3)	Measurement (4)
Traditional Measures			
1. Revenue Deficit (*RD*)	*RE*	*RE*	*RD=RE–RR*
2. Capital Account Deficit (*CAD*)	*CE=CO+LA*	*CR*	*CAD=CE–CR*
3. Conventional Budget Deficit (*CD*)	*TE=RE+CE*	*TR= RR+CR*	*CD=TE–TR=RD+CAD*
4. Monetised Deficit (*MD*)	*	*	*
Measure of Recent Origin			
5. Gross Fiscal Deficit (*GFD*)	*TE–ROL =RE+CO+ (LA–ROL) =RE+CO+NL*	*RR+DIS*	*GFD=(TE–ROL)–(RR+DIS) =(RE+CE–ROL)–(RR+DIS) =(RE+CO+LA–ROL)– (RR+DIS) =(RE+CO+NL)–(RR+DIS) =(RD+CO+NL–DIS)*
6. Primary Deficit (*PD*) (a) *PD*1	*TE–ROL–IP =(RE–IP)+ [CO+(LA–ROL)] =(RE–IP)+(CO+NL)*	*RR+DIS*	*PD1=(RE–ROL–IP)– (RR+DIS) =[(RE–IP)+(CO+NL)]– (RR+DIS)*
(b) *PD*2	*TE–ROL–IP =(RE–IP)+ [(CO+LA–ROL)] =(RE–IP)+(CO+NL)*	*(RR–IR) +DIS*	*PD2=(TE–ROL–IP)– [(RR–IR)+DIS] =[(RE–IP)+(CO+NL)]– [(RR–IR)+DIS]*
7. Net Fiscal Deficit (*NFD*)	*TE–NL =(RE+CE)– (LA–ROL) =(RE+CE)–NL*	*RR–DIS*	*NFD=(TE–NL)–(RR+DIS) =[(RE–CE)–(LA–ROL)]– [(RR+DIS) =[(RE–CE)–NL]–(RR+DIS)*
8. Net Primary Deficit (*NPD*)	*TE–NL–IP =(RE–IP)+ [CE–(LA–ROL)] =(RE–IP)+(CE–NL)*	*(RR–IR) +DIS*	*NPD=(TE–NL–IP)– [(RR–IR)+DIS] =[(RE–IP)+(CE–NL)]– [(RR–IP)+DIS]*
9. Primary Revenue Balance (*PRB*) *PRB*1 *PRB*2	*RE–IP RE–IP*	*RR RR–IR*	*PRB1=(RE–IP)–RR=RD–IP PRB2=(RE–IP)– (RR–IR)=RD–NIP*

* Since monetised deficit is essentially a financing item of the Central Government's budgetary gap, its measurement through expenditure and receipts approach is not applicable.

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THE ROLE OF FISCAL INDICATORS
IN SETTING FISCAL POLICY IN THE UK

Robert Woods[*]

1. Introduction

1. The UK's current fiscal policy framework was established over 1997 and 1998. It is based on five key principles: transparency, stability, responsibility, fairness and efficiency. These were set out in the *Code for Fiscal Stability*,[1] which was given legal underpinning by the 1998 Finance Act. The formulation of the Code reflected moves in other countries, such as New Zealand and Australia, which aimed to provide a more coherent and credible framework for fiscal policy with stronger reporting requirements.[2]

2. The *Code* requires that the Government must "state and explain its fiscal policy objectives and the rules by which it intends to operate fiscal policy over the life of the Parliament." In line with the *Code*, the Government has set out its fiscal objectives, as follows:

• Over the *medium term*, to ensure sound public finances and that spending and taxation impact fairly within and between generations; and

• Over the *short term*, to support monetary policy and, in particular, to allow the automatic stabilisers to help smooth the path of the economy.

3. Again in line with the *Code*, the Government has set out how these objectives will be implemented through two fiscal rules, against which the performance of fiscal policy can be judged. The fiscal rules are:

• The golden rule: over the economic cycle, the Government will borrow only to invest and not to fund current spending; and

• The sustainable investment rule: public sector net debt as a proportion of GDP will be held over the economic cycle at a stable and prudent level. Other things being equal, net debt will be maintained below 40 per cent of GDP over the economic cycle.

4. The *Code* also sets out a number of reporting requirements that have driven the development of the fiscal indicators explained in this paper. The *Code* names

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[1] HM Treasury (1998), *Code for Fiscal Stability*.

[2] See Balls and O'Donnell (2002), Chapters 8-10, for further information.

nine specific fiscal indicators that must be reported.[3] In addition, it requires the Government to:

- include any other such indicator as is required to judge achievement against the Government's fiscal policy objectives and rules and against the Government's European commitments, in particular the Stability and Growth Pact.

- present illustrative projections of the outlook for the key fiscal aggregates for a period of not less than 10 years into the future, based on a range of plausible assumptions, so as to shed light on the inter-generational impact and sustainability of fiscal policy.

- present an analysis of the impact of the economic cycle on the key fiscal aggregates, including estimates of the cyclically-adjusted position.

5.   The *Code for Fiscal Stability* was approved by Parliament on 9 December 1998. The following November, the Treasury published a paper, "Analysing UK Fiscal Policy",[4] the aim of which was to provide a guide to the range of fiscal indicators used, focusing on decisions regarding the key fiscal aggregates, rather than individual spending or taxation policies, important though they are. Over subsequent years, the Government has continued to enhance the transparency of the fiscal framework through reporting on new fiscal indicators, such as "core debt", and the publication of detailed fiscal analysis, in particular on long-term fiscal challenges and the accuracy of recent fiscal projections.

6.   This paper begins by considering the main indicators currently used in setting fiscal policy as presented in each Budget and Pre-Budget Report. It goes on to explain in more detail the approach used to cyclically adjust key fiscal balances. The following section considers some of the indicators used in analysing the longer term fiscal position, including issues of long-term fiscal sustainability and inter-generational fairness. Finally, the paper considers how the various indicators are used in formulating the Government's fiscal strategy.

2.   Main fiscal indicators currently used in the UK

7.   Section 1 outlined the UK's fiscal policy framework established over 1997 and 1998. In "Analysing UK Fiscal Policy" it was noted that "high quality external scrutiny of the conduct of fiscal policy plays a key role in ensuring that the benefits of the new framework are delivered fully". In order to facilitate such scrutiny, the key fiscal indicators were grouped under five headings relating to the Government's domestic fiscal policy objectives and its European commitments. Since the

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[3]   Financial statements must include: current spending, current receipts, the surplus on the current budget, public sector net borrowing, public sector net cash requirement, general government financial deficit, general government gross debt, public sector net debt and a measure of net worth. They should also include a statement of cash flows and, upon implementation of Resource Accounting and Budgeting, an operating statement, reflecting the Government's projected current revenue and current expenses for each financial year.

[4]   HM Treasury (1999), *Analysing UK Fiscal Policy*.

Table 1

Summary of Public Sector Finances
(percent of GDP)

	Outturns		Estimates		Projections			
	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Fairness and Prudence								
Surplus on current budget	–1.9	–1.6	–0.9	–0.6	0.1	0.5	0.7	0.8
Average surplus since 1997-1998	0.5	0.2	0.1	0.0	0.0	0.1	0.1	0.2
Cyclically-adjusted surplus on current budget	–1.4	–1.3	–0.3	0.4	0.7	0.7	0.7	0.8
Long-term Sustainability								
Public sector net debt[1]	33.2	35.0	36.4	37.5	38.1	38.3	38.4	38.4
Core debt[1]	32.8	34.3	35.2	35.4	35.5	35.7	35.9	36.0
Net worth[2]	28.5	29.0	26.0	24.8	23.3	22.9	22.9	22.8
Primary balance	–1.6	–1.7	–1.3	–1.1	–0.5	–0.1	0.1	0.1
Economic Impact								
Net investment	1.3	1.8	2.1	2.2	2.3	2.3	2.3	2.3
Public sector net borrowing (PSNB)	3.2	3.4	3.0	2.8	2.2	1.7	1.6	1.5
Cyclically-adjusted PSNB	2.7	3.0	2.4	1.9	1.6	1.6	1.6	1.5
Financing								
Central government net cash requirement	3.5	3.3	3.2	3.2	2.6	2.1	2.1	1.8
Public sector net cash requirement	3.5	3.3	3.0	2.9	2.4	1.8	1.8	1.5
European Commitments								
Treaty deficit[3]	3.1	3.3	3.2	3.0	2.4	1.9	1.7	1.6
Cyclically-adjusted Treaty deficit[3]	2.6	2.9	2.5	2.0	1.8	1.7	1.7	1.7
Treaty debt ratio[4]	39.5	40.8	42.6	43.9	44.5	44.5	44.5	44.5
Memo: Output gap	–0.6	–0.4	–1.2	–1.4	–0.7	–0.1	0.0	0.0

[1]   Debt at end March; GDP centred on end March.
[2]   Estimate at end December; GDP centred on end December.
[3]   General government net borrowing on a Maastricht basis.
[4]   General government gross debt measures on a Maastricht basis.

publication of "Analysing UK Fiscal Policy", new indicators have been added to enhance scrutiny, but reporting under the five groupings has remained constant. Table 1 is drawn from Budget 2006,[5] which was published on the 22nd March 2006.

8.   The following subsections will briefly discuss the key indicators used under each heading. With the exception of the central government net cash requirement and the Maastricht Treaty indicators, all of the Government's key fiscal indicators cover the entire public sector. This is because the liabilities of public corporations could fall ultimately on the taxpayer and, to exclude a portion of public sector activity from binding rules could create incentives to reclassify activity in order to meet the rules.

2.1   Fairness and prudence

9.   The indicators grouped under "fairness and prudence" are those that inform the Government's golden rule, which states that over the course of the economic cycle it will only borrow to invest and not to fund current expenditures. The key aggregate is the *surplus on the current budget*, which is defined as current receipts less current expenditure including depreciation. The golden rule is met when the average current budget (as a percent of GDP) over the economic cycle is in balance or surplus. This avoids pro-cyclical fiscal policies, which would run counter to the short-term fiscal policy objective of supporting monetary policy and allowing the automatic stabilisers to operate fully. For monitoring purposes, every Budget and Pre-Budget Report sets out the average surplus since the start of the current economic cycle.

10.   Finally, while the average surplus over the cycle should not be overly influenced by cyclical factors,[6] as an indicator of whether the Government is meeting the golden rule it is not very timely. The duration of the average post-war economic cycle in the UK is eight years. As such, it is important to have an indicator for the current budget surplus that abstracts from the influence of cyclical factors: the *cyclically-adjusted surplus on the current budget*. The method of cyclical adjustment used by HM Treasury is covered in Section 3.

2.2   Long-term sustainability

11.   While the golden rule goes a long way to meeting the Government's short- and medium-term fiscal policy objectives, by excluding public sector net investment, it does not place a limit on overall public sector borrowing. The golden rule is therefore augmented by the sustainable investment rule in order to ensure

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[5]   Chapter 2, p. 33.

[6]   It is not, however, completely unaffected. Given the way that HM Treasury estimates the output gap (explained briefly in Section 3), it is not necessarily the case that the extent of the up- and down-phase of any cycle will be perfectly balanced.

sound public finances are maintained. The "long-term sustainability" indicators are key to monitoring performance against the sustainable investment rule, which states that over the course of the cycle, *public sector net debt* will be held at a stable and prudent level. Other things equal, it will be held at 40 per cent of GDP. Public sector net debt is defined as public sector gross debt less liquid financial assets.[7] The Government chose to define the sustainable investment rule in terms of net, rather than gross, debt because net debt provides a better reflection of a government's immediate solvency.

12.   The primary role of the sustainable investment rule is to ensure sound public finances are maintained, but in doing so it also plays an important role in maintaining inter-generational fairness by ensuring that current taxpayers are not able to borrow to invest excessively in assets that are likely to be subject to diminishing social, as well as financial, returns.[8]

13.   As with the various flow indicators, it is useful to be able to abstract from the impact of the cycle on public sector net debt. The Treasury has developed a measure of *core debt*[9] that shows the evolution of net debt as determined by the structural fiscal balance. Taking as its starting point the level of public sector net debt in 1986-87, the start of the previous economic cycle, the cyclical component of net debt is calculated as the cumulative sum of cyclical borrowing. The estimate of core debt is equal to total public sector net debt less the cyclical component of net debt.

14.   Figure 1 shows how the path of public sector net debt has been affected by cyclical factors since 1986-87. It can be seen that in the late 1980s, when the economy moved significantly above trend, a substantial gap opened between the estimate of core debt and actual net debt. This closed in the down-phase of the cycle so that at the start of the next cycle, estimated to be in 1997H1, core and actual net debt were almost the same again. With the economy judged to have been below trend since end 2001, the cumulative effect of cyclical borrowing on public sector net debt – *i.e.* the difference between net debt and core debt – is judged to be around 2 per cent of GDP.

15.   The more familiar fiscal indicators of net borrowing and net debt are complimented with a measure of *net worth*, which is defined as net financial assets plus non-financial assets. The golden rule is closely aligned with net worth; if a government borrows only to finance investment, then any new debt will be matched by an increase in assets, leaving net worth broadly unchanged. Net worth has not yet played a significant role as a fiscal indicator in the UK's fiscal framework, mainly

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[7]   Given the level of public sector liquid financial assets in the UK, the 40 per cent public sector net debt ceiling complements the Government's European commitments (see the subsection on "European commitments"), which are defined in terms of general government gross debt.

[8]   See Toigo and Woods (2005).

[9]   For a full discussion of core debt, see: HM Treasury (2002).

Figure 1

Comparison of Core Debt and Net Debt
(percent of GDP)
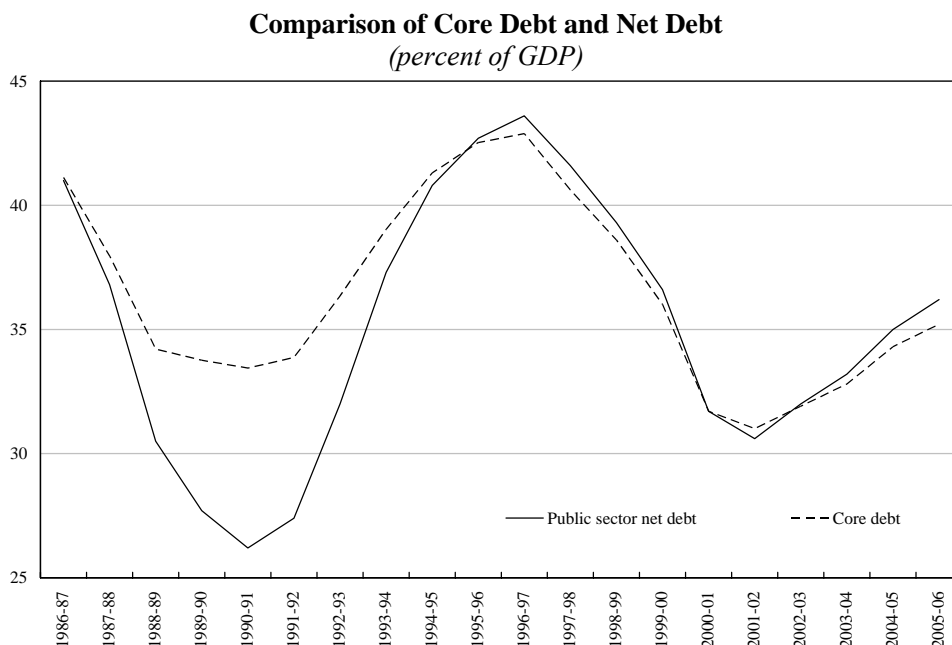
because of measurement difficulties surrounding the valuation of government assets, many of which have no market prices. However, with more reliable data becoming available through the Whole of Government Accounts (WGA) programme, it may be possible to place greater weight on such a measure (see Section 4.2).

16.   Finally, the main flow indicator used when considering long-term debt sustainability is the *primary balance*, defined as public sector net borrowing less net interest payments. This definition is in line with that recommended by the IMF[10] and used by the OECD,[11] but contrasts with that used by Eurostat and the European Commission[12] where the headline balance is adjusted for gross, rather than net, interest payments. In the UK's fiscal framework the target debt ratio is expressed in net terms so there is a clear rationale for defining the primary balance in terms of net interest payments.[13]

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[10]   IMF (2001), p. 46.

[11]   OECD (2005).

[12]   European Commission (2005).

[13]   Conversely, when, as under the Stability and Growth Pact, the target debt ratio is expressed in gross terms, the same rationale points to defining the primary balance adjusted for gross interest payments. If the interest rate is equal to the growth rate, the primary balance required to stabilise the gross debt ratio is zero defined in terms of gross interest payments. Similarly, the primary balance required to stabilise the net debt ratio is zero defined in terms of net interest payments.

Figure 2

Debt-stabilising Primary Balance under Different Scenarios
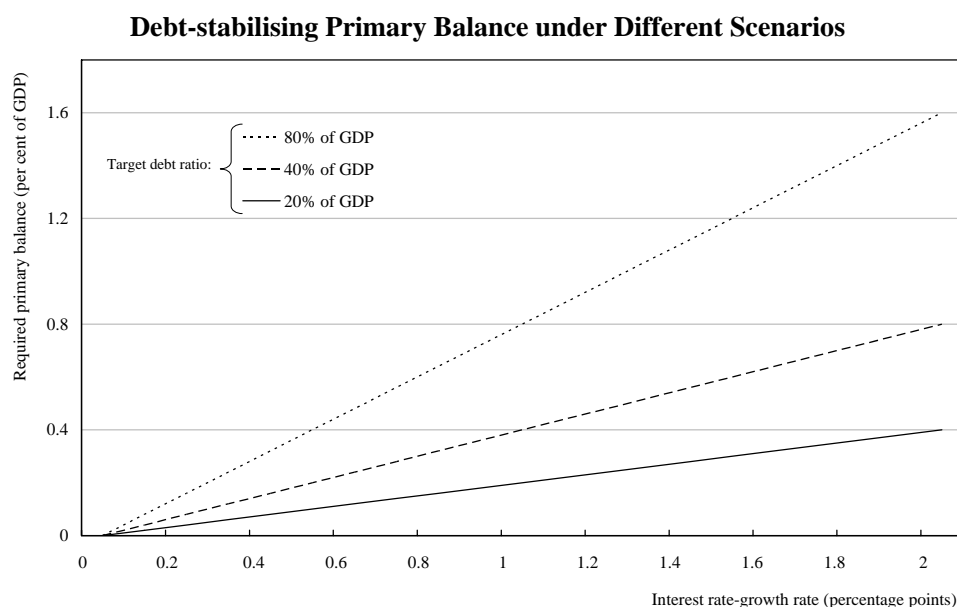
17. The standard debt sustainability equation,[14] which relates the required primary balance ratio to the difference between the prevailing interest rate and prevailing growth rate, means that when the interest rate is higher than the growth rate, a primary surplus is required in order to stabilise the debt ratio. Figure 2 illustrates the primary balance required to stabilise the debt ratio at various levels given different wedges between the interest rate and growth rate.

18. A full assessment of long-term fiscal sustainability requires a consideration both of stocks (of net liabilities) and also projected future revenue and spending flows. For this reason, since 2002, HM Treasury has published a detailed *Long-term Public Finance Report*. Indicators of long-term fiscal sustainability used in the report are discussed in Section 4.

2.3 Economic impact

19. The indicators grouped under the first two headings inform progress against the Government's fiscal rules. The main role of these indicators therefore concerns

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[14] The primary balance *PB* to GDP *Y* ratio required to stabilise debt at the target ratio D^*/Y is given by the difference between the real interest rate *r* and the real growth rate *g*, times the target debt ratio, *i.e.*:

$$\frac{PB}{Y} = (r - g)x\left(\frac{D^*}{Y}\right)$$

the Government's medium-term fiscal objectives. However, fiscal policy can also play a short-term role in supporting monetary policy, which is why the fiscal rules are defined over the full economic cycle, allowing borrowing to fluctuate between years. The indicators reported under the "economic impact" category allow for scrutiny of the short-term fiscal impact on the economy.

20. *Public sector net investment* is the Government's preferred measure of investment since conceptually it measures the increase in the public capital stock and therefore the amount of public expenditure that the principle of fairness dictates can be financed through borrowing. If, by contrast, the fiscal rules were set up to allow gross investment to be financed through borrowing it would imply the current generation of taxpayers passing on the cost of wear and tear on the public capital stock to the next generation of taxpayers.

21. As a first approximation, ignoring the potential economic impact of changes in the composition of spending and taxation over time, the key indicator for assessing the overall "fiscal impact" is the change in *public sector net borrowing*. When borrowing rises, fiscal policy has been loosened and the fiscal impact is positive. When borrowing falls, fiscal policy has been tightened and the fiscal impact is negative. However, not all of the fiscal impact will result from the conscious decisions of policymakers. In part, changes in borrowing will reflect changes in the position of the economy relative to trend via changes in the automatic stabilisers. The impact of fiscal policy over and above the automatic stabilisers is described as the "fiscal stance" and is measured by the change in the cyclically-adjusted public sector net borrowing. The overall fiscal impact is therefore made up of changes in the automatic stabilisers and the fiscal stance, which in turn can be split between discretionary policy measures and non-discretionary, non-cyclical factors, as set out in Box 1.

22. The impact of discretionary measures on the fiscal stance is estimated through the Budget scoring process. This involves estimating the direct cost or yield of a particular measure[15] relative to a baseline in which the measure was not taken. Non-discretionary, non-cyclical factors are less obvious. They include, for example, the impact on tax receipts of a change in the workforce composition. For example over 2005-06 income tax receipts held up better than might have been expected given the slowdown in UK growth because earnings growth was higher in the financial sector, which has a relatively larger proportion of taxpayers who pay tax at the higher rate.

23. This framework for analysing the short-term economic impact of fiscal policy can be used to unpack the fiscal impact into either *absolute* or *relative* terms. The absolute fiscal impact compares the fiscal aggregates in one year with the previous year – if borrowing increases from the previous year then the fiscal impact in absolute terms is positive. It is useful in considering the contribution of fiscal policy to the increase or decrease in growth from on year to the next. The relative

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[15] This is, it excludes any second round effects, e.g. from the effect on output or inflation.

Box 1

Key elements in determining the overall fiscal impact

Discretionary Budget measures to change the fiscal stance

+

effects of all *non-discretionary*, *non-cyclical factors* which have, or which are expected to, alter the fiscal stance

=

the change in the *fiscal stance* (measured by the change in the *cyclically-adjusted public sector net borrowing*)

+

the effect of the *automatic stabilisers* stemming from the cyclical position of the economy relative to trend

=

the change in the overall *fiscal impact* (measured by the total change in *public sector net borrowing*)

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fiscal impact compares the fiscal aggregates for a given year in the current Budget with projections made in the previous Budget (or pre-Budget) – if borrowing is revised higher for a given year, the relative fiscal impact is positive. This measure is of more interest in considering the "news" in the fiscal statement.

2.4   Financing

24.   The flow indicators under headings (a) to (c) are all accruals-based National Accounts concepts, which best reflect the sustainability or economic impact of fiscal policy. However, the accruals adjustments, which match the timing of activities with their financial impact, rather than payments, mean that these measures are not suitable for calculating the Government's debt issuance, which must necessarily match cash flows.

25.   The *central government net cash requirement* represents the level of central government net cash financing and is the key indicator of the Government's debt issuance, which is carried out by the Debt Management Office, an independent agency of Government.

26.   The *public sector net cash requirement* is the cash equivalent of public sector net borrowing and was, for many years through the 1980s and early 1990s, the main target for fiscal policy.[16] Since public sector net debt is a cash concept, annual changes in net debt are related to the public sector of net cash requirement.

2.5   European commitments

27.   The Stability and Growth Pact sets out the Maastricht criteria for EU Member States' deficit and debt ratios. Unlike the indicators pertinent to the UK's fiscal rules, the Stability and Growth Pact indicators are defined at the general government level, excluding public corporations. The Pact sets reference levels of 3 per cent of GDP for general government net borrowing, the *Treaty deficit*, and 60 per cent of GDP for general government gross debt, the *Treaty debt ratio*. In the case of the UK, the Treaty reference values are not binding, rather the UK must endeavour to maintain a Treaty deficit and Treaty debt ratio below the reference values.

28.   In addition to the Treaty reference values, the UK Government's prudent interpretation of the Pact emphasises the importance of taking account of: the cycle, the level of public net investment, and the sustainability of the public finances over the longer term and including debt sustainability.[17] In line with informing the Government's prudent interpretation of the Pact, the Government also presents the *cyclically-adjusted Treaty deficit* (measures of public net investment and net debt are also presented as discussed above).

3.   Approach to cyclical adjustment

29.   Identifying the cyclical part of the change in the budget balance is important for the management of public finances and for the conduct of macroeconomic policy more generally. The method used by HM Treasury, which is common to all the international organisations, consists of evaluating the cyclical component of the government balance on the basis of measurement of the economy's position in the cycle (captured by the output gap). The Cyclically Adjusted Balance (CAB) is then obtained by removing this cyclical component from the observed balance. More precisely, spending and revenues expressed as ratios of GDP over the past 30 years are regressed against contemporaneous and lagged estimates of the output gap.

30.   Before discussing how the budgetary elasticities are estimated, it is worth briefly reviewing the approach used to estimate the output gap by HM Treasury.[18] The approach involves reviewing a wide range of indicators to form a judgement

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[16]   The public sector net cash requirement was previously known as the public sector borrowing requirement.

[17]   For further information see HM Treasury (2004) and Woods (2005).

[18]   See HM Treasury (2002, 2005a) for further information.

Box 2
Presenting uncertainty

Fiscal policy decisions should also be taken with due regard for the degree of uncertainty in making fiscal projections. There are several different aspects that reflect this in the UK framework:

(i) The fiscal projections are made on the basis of assumptions that are intended to be deliberately cautious. A key assumption is that for trend growth which is assumed to be ¼ point below the Government's neutral estimate for the purpose of making the fiscal projections;

(ii) The projections are presented along with a stress test in which the level of trend output is 1 per cent lower than in the main projection. This allows for mis-judgements in the degree of spare capacity; and

(iii) The fiscal projections include sensitivity analysis on particular variables on occasion, e.g. trend growth, interest rates, equity prices. (The *Long-term Public Finance Report* also conducts some sensitivity analysis, including, for example, with respect to alternative demographic assumptions.)

Since 2002 the HM Treasury has also published a detailed analysis of fiscal forecast errors.[a] For example the *End of Year Fiscal Report (2005)* indicated the average absolute forecast error for public sector net borrowing a year ahead over 1997-2004 was 1.1 per cent of GDP with an average error of –0.4 per cent of GDP (indicating that the projections were cautious on average). The report also breaks down the detailed reasons for forecast errors on each main area of receipts and spending. For example, it indicates that in 2004-05 the Budget 2004 forecast for corporation tax at the start of the year was £0.6bn too high. This was the result of offsetting effects: "economic determinants" (in this case weaker than expected profits growth) meant receipts were £2.9bn lower than forecast; this was offset by the "NAO-audited assumptions" and "fiscal forecasting differences" which pushed up receipts by £1.1bn and £1.2bn respectively more than expected (the former effect largely related to oil prices, an audited assumption, and the latter to receipts from life assurance companies which increased by more than expected).

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[a] *End of Year Fiscal Report* (annual publication since 2002).

about when the economy is on trend (for example, survey evidence on capacity constraints, skill shortages, vacancies, earnings growth etc).[19] Once the on-trend points have been chosen the cycles are dated according to whether the economy decisively passes through trend and a linear trend is assumed between the on-trend points defining the up-phase and down-phase of the cycle. From the last on-trend point trend output growth has to be projected. This is done by projecting forward the actual trend productivity growth over the most recent cycle, and then combining that with projections for average hours, employment and the population of working age.[20]

31.   Given the estimate of the output gap, the next step is to estimate the budgetary elasticities, *i.e.* how sensitive are the public finances to changes in the output gap. In common with other organisations, the revenue and expenditure sides are taken separately. *On the revenue side*, both components of revenue (income taxes, corporate taxes, VAT and excise duties) and aggregate revenues are regressed against the output gap and trend GDP. Movements in tax receipts over time will be influenced by a number of factors, including discretionary tax measures, fiscal drag as well as purely cyclical effects. It is therefore necessary to adjust the data for the first two influences in order to identify the genuine effects of the cycle. Discretionary measures are accounted for by estimating a constant tax regime using Budget costings, with 1989-90 as a base.[21] Fiscal drag has been accounted for by the inclusion of the trend GDP variable, which plays the role of a time trend. The detailed results were published in HM Treasury (2003).[22]

32.   In total, the estimated aggregate equation for public sector current receipts (PSCR) has a lagged output gap coefficient of 0.2. However, to allow for the impact of the corporation tax reforms, a contemporaneous term has been introduced.[23]

Cyclically-adjusted PSCR/GDP = PSCR/GDP – 0.1 Output Gap – 0.1 Output Gap(–1)

The equation for cyclically-adjusted receipts means that revenues increase slightly *as a share of GDP* when output is above trend (so the elasticity of receipts to GDP will be slightly greater than 1). A term in the trend level of GDP (not shown above) implies an estimate of real fiscal drag of 0.2 per cent of GDP a year.

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[19]   See HM Treasury (2005b) and the NAO (2005) report which audited the dating of the cycle.

[20]   One advantage of this approach is that the indicators used to date the on-trend points are generally not revised. Compared with other approaches (e.g. a statistical filter like the Hodrick-Prescott filter), this helps to confer some stability to the output gap estimates in the face of significant revisions to national accounts data on output.

[21]   Costings for policy changes in national insurance contributions, local authority taxes and other non-tax receipts are not available on a consistent basis. Therefore, the cyclicality of these components is not estimated, because they could be seriously distorted by the effect of policy changes.

[22]   See the *End of Year Fiscal Report* (2003), Annex A.

[23]   There have been significant reforms to corporation tax since 1999 which have affected the timing of corporation tax relative to output fluctuations. The abolition of payable tax credits on dividends and advance corporation tax, and the introduction of quarterly instalment corporation tax payments for large companies have increased the contemporaneous elasticity of corporate taxes. The full effects of these changes would only be felt from 2003 on and would not be captured in the estimated elasticities.

Figure 3

Actual vs Cyclically-adjusted Net Borrowing
(percent of GDP)
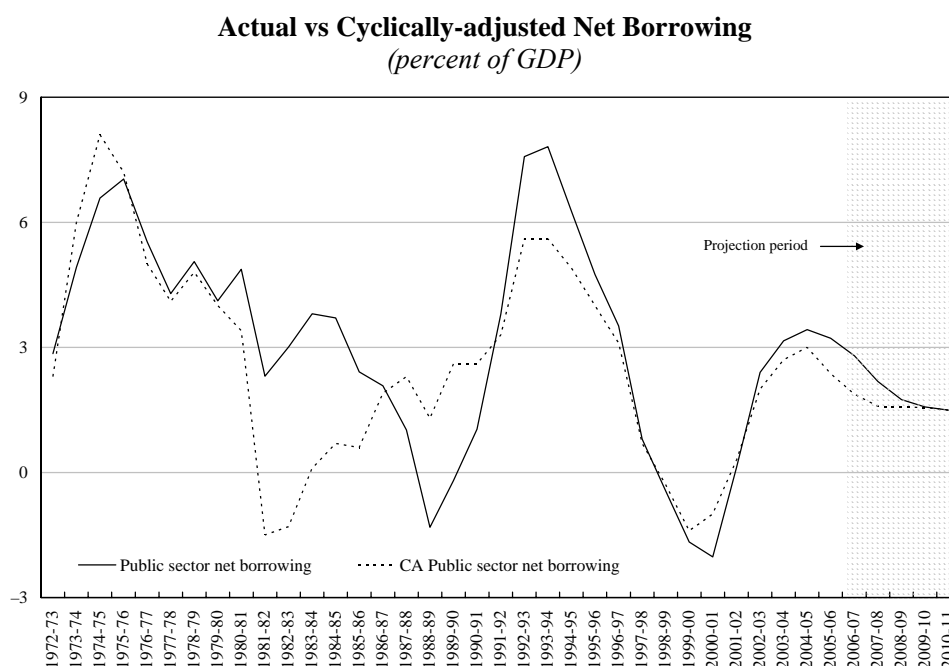
33.   As *public expenditure* is not very sensitive to the cycle, the Total Managed Expenditure (TME) ratio to GDP is sensitive to the cycle principally through a "denominator effect". That is, the ratio of spending to GDP would be expected to fall when output is above trend principally because of the rise in GDP. Hence, the TME elasticity to the output gap should be expected to be close to the ratio of TME to GDP, which is around 40 per cent. This reasoning is supported by the regression results.[24]

Cyclically-adjusted TME/GDP = TME/GDP + 0.4 Output Gap + 0.1 Output Gap (–1)

34.   In total, the sensitivity of the public finances to short-term economic fluctuations can be summarised as:[25]

   Cyclically-adjusted PSNB = PSNB + 0.5 Output Gap + 0.2 Output Gap (–1)

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[24]   See the *End of Year Fiscal Report* (2003), Annex A, for details. Among the spending items, cyclical social security (CSS) (including spending on Jobseeker's Allowance and Income Support for non-pensioners) is likely to display a high sensitivity to the cycle. Econometric analysis shows that CSS is sensitive to the lagged output gap.

[25]   Even after making the adjustment for the corporation tax changes, these estimates could be biased because social security contributions are not taken into account. This is because the information to construct constant tax regimes are not available for this item.

Estimated cyclically-adjusted net borrowing is plotted against actual net borrowing in Figure 3.

4.   Long-term fiscal sustainability and generational fairness

35.   As explained in Section 2.2 above, the UK uses projections of public sector net debt as its main summary indicator for assessing whether the Government's fiscal policy is sustainable in the long run. In the case of the UK, the sustainable investment rule requires that public sector net debt be held at a stable and prudent level over the course of the cycle. In addition, however, the Government publishes a number of long-term sustainability indicators based on comprehensive spending and revenue projections. The Government is also in the process of compiling consolidated Whole of Government Accounts (WGA) under a UK Generally Accepted Accounting Practice basis.

4.1   Indicators based on comprehensive projections

36.   Indicators based on comprehensive projections will generally take account of existing liabilities (for example debt) but also include information about future spending and revenue streams. As such they can provide an answer to the question of whether the government will be able to meet its obligations if and when they arise in the future. The main limitation is that projecting far into the future is inevitably subject to a high degree of uncertainty, making sensitivity analysis important.

37.   The UK Government publishes a range of sustainability indicators in its annual *Long-term Public Finance Report*,[26] which aims, *inter alia*, to provide a comprehensive picture of the sustainability of the public finances over the long term based on a range of plausible assumptions. The indicators are based on projections of the individual spending and revenue items, and of GDP, over a 50-100 year time horizon.

38.   To produce projections of real GDP growth the model combines economic assumptions about productivity growth with long-term employment projections (generated using Government Actuary's Department (GAD) population projections[27] and the "cohort" employment model).[28] Up to the end of the medium term (5 years ahead), the taxation and revenue projections are based on the Government's

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[26]   See, for example, HM Treasury (2005).

[27]   See, for example, Government Actuary's Department 2004-based population projections available at: http://www.gad.gov.uk/Population/index.asp

[28]   The "cohort" model projects future employment trends by using historical participation rates to calculate the probability that a male or female will enter or leave the labour market at a specific age. These probabilities can then be applied to existing and future participants in the labour market to build up a projected lifetime participation profile for each cohort. By applying these projections of participation rates to the latest population projections, a long-term projection of total employment is obtained.

Figure 4

**Aggregate Government Spending
and Revenue Attributable to an Individual Over Their Lifetime**
(percent)
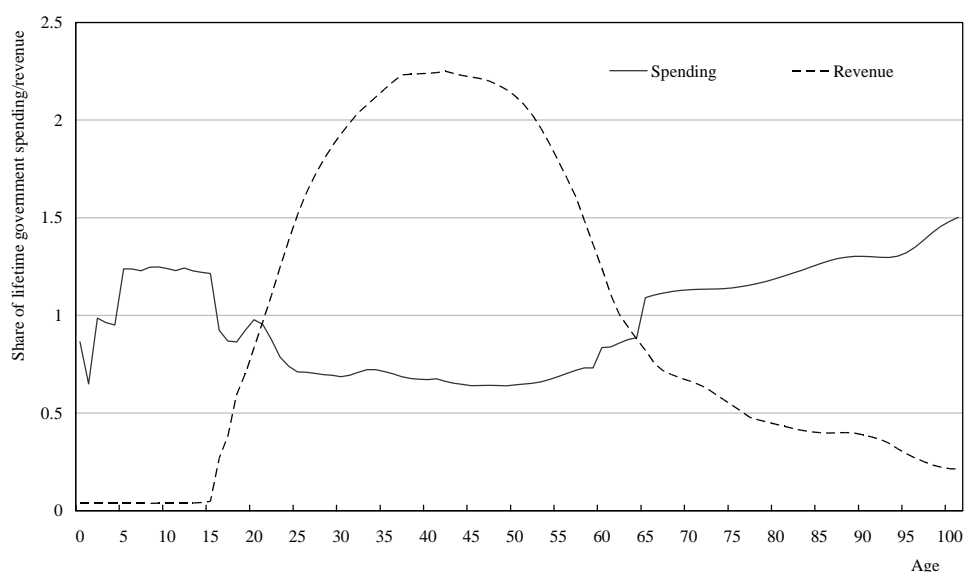
medium-term fiscal forecasts. Policy settings at the end of the medium term are then assumed to remain unchanged throughout the rest of the projection period.

39.   The spending and revenue projections use individual spending and revenue profiles derived from household or individual micro data. The profiles represent normalised per capita spending and revenue over different ages, and vary according to sex. The aggregate profiles in Figure 4 are generated by combining the profiles for the individual spending and revenue items holding the spending and revenue profiles constant over the person's lifetime.[29] As might be expected, the bulk of revenue is raised during the individual's working years, while government spending is mainly received during old age and, to a lesser extent, when young. Government spending rises as the individual approaches the end of their life, primarily reflecting the fact that a large share of total spending on health care during a person's life tends to be concentrated in the final years of life. But Figure 4 also demonstrates that tax

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[29]   In practice, in generating the projections the health and long-term care, the profiles shift during the projection period to implement the assumption used in the modelling regarding future trends in morbidity, namely that that the proportion of life spent in ill health remains constant as life expectancy increases. The profiles are therefore shifted progressively to the right, so that increases in expenditure associated with old age are effectively delayed. The pension profile also shifts between 2010 and 2020 to reflect the fact that the female state pension age rises gradually over this period.

revenue does not fall to zero beyond the state pension age.[30] This will reflect a combination of factors including: people paying income tax on income from working beyond the retirement age, pension and investment income, expenditure taxes and inheritance tax.

40.   Using the spending and revenue profiles, information on the number of males and females at each age, and information on total spending and revenue from HM Treasury's medium-term forecast, the projection model calculates the per capita allocation or contribution as a share of total spending or total revenue on the different spending and revenue items. Where appropriate, the projection model raises the per capita allocations and contributions in line with productivity gains over the projection horizon. These per capita terms are combined with detailed population projections to generate long-term spending and revenue projections. The projections are then used to calculate the following familiar indicators of long-term fiscal sustainability:

• *Intertemporal budget constraint/gap*: A government's obligations over time can be represented through the intertemporal budget constraint (IBC), which states that the present discounted value (PDV) of all future revenues (that is, over an infinite time horizon) should be equal to the PDV of all future spending (excluding interest payments) and today's outstanding debt burden. If the PDV of future primary balances is not sufficient to cover the current debt burden then the extent of the imbalance is called the intertemporal budget gap (IBG). As presented in the Treasury's Long-term Report, the IBG measures the constant increase (reduction) in tax revenue as a share of GDP needed for the Government to meet the IBC. Annex A provides more information on the derivation of the IBC.

• *Fiscal gap*: One of the problems with the IBG is that, as long as the IBC is satisfied (which requires, broadly, that debt cannot, on average, grow at too fast a rate, given the levels of interest rates and economic growth rates), there are no further constraints on the evolution of the debt to GDP ratio over time; it can take any value, provided sufficient fiscal surpluses are projected at some time in the future to allow the debt to be repaid. This potentially raises compatibility issues with existing debt targets such as the UK's sustainable investment rule or the 60 per cent gross debt to GDP criterion in the EU's Stability and Growth Pact. The fiscal gap approach, by contrast, uses the IBC to calculate the immediate and permanent change in the primary balance needed to achieve a certain, pre-determined debt target at a specific date in the future.[31] The required change in the primary balance to GDP ratio depends on the initial and desired target ratios, the time horizon and the projected primary balance. One problem with the fiscal gap is that (unlike the IBG) any information on the future evolution of the primary balance beyond the target year is ignored in the calculations. In practice,

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[30]   Currently, and as shown in Figure 4, the state pension age is 60 for women and 65 for men.

[31]   This definition follows Auerbach (1994).

Figure 5

Alternative Fiscal Gap Indicator: Projected Net Debt[*]
(percent of GDP)
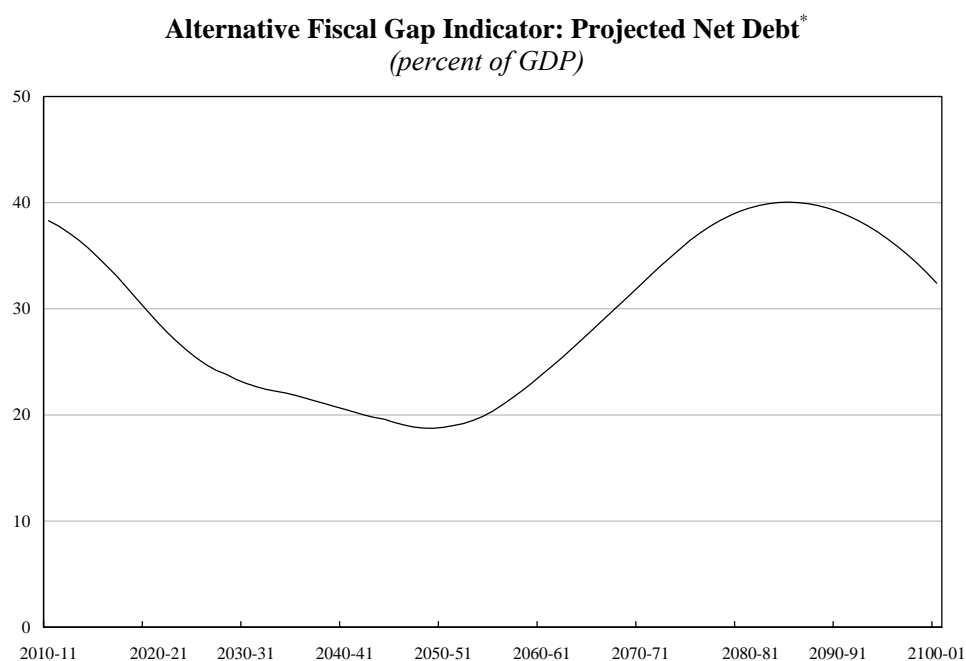
[*] With primary balance tightened by 3/4 per cent of GDP after the medium term.

Source: HM Treasury.

therefore, the *Long-term Public Finance Report* presents fiscal gaps over a range of horizons.

• *Alternative fiscal gap indicator*: As noted, the fiscal gap does not provide any information about the extent of fiscal pressure that might arise at different times during the projection period.[32] Indeed, changing the fiscal stance as required by the fiscal gap indicator does not preclude the possibility that the debt to GDP ratio might exceed the desired target value at some point during the projection period. This is particularly true for a distant target year and is likely to happen if spending and/or revenue develop in a non-linear way, for example due to demographic effects like the retirement of the baby boom generation. The alternative fiscal gap indicator provides one way of addressing this problem. It calculates the immediate and permanent change in the primary balance necessary so that the debt to GDP ratio *never* exceeds a certain limit. Figure 5 shows the alternative fiscal gap for the UK presented in the 2005 *Long-term Public Finance*

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[32]   This is, of course, also true of the intertemporal budget gap.

Report where the limit is the 40 per cent net debt-to-GDP ratio used in the sustainable investment rule.

- *Spending and revenue projections*: In order to get a complete picture of the timing and extent of future fiscal pressure, as well as the causes of that pressure, it is necessary to look at the spending and revenue projections on which the indicators are based. The *Long-term Public Finance Report* therefore also presents detailed projections for the age-related spending items over a 50-year time horizon, as well as projections for other spending and revenues.

4.2   GAAP-based accounts

41.   A number of countries have recently moved towards producing government financial accounts on a GAAP-based accruals basis.[33] The UK already publishes GAAP-based accounts for individual departments, and has announced that it will publish consolidated accounts for the public sector (Whole of Government Accounts or WGA) for the 2006-07 financial year onwards, once the methodological issues that have been raised by the development work are resolved in the dry-run processes. This section discusses the new information that will become available through the WGA programme, and how it can be used to improve overall fiscal transparency and accountability.

4.2.1 Comparing SNA and GAAP

42.   Both the System of National Accounts (SNA) and GAAP are accrual accounting systems; that is, they seek to record transactions/events when they occur rather than when cash payments are made. However, SNA is designed to record the economic activity of different sectors within the economy; while GAAP has been developed to reflect the financial performance of individual organisations. In addition, some differences reflect methodological differences and past practice, where in theory the two systems should concur. This is reflected in several key differences between the two systems:

- There are small but significant boundary differences between the two systems. For example, under GAAP, the Queen and Parliament are excluded from the public sector (because they are not seen to be under the government's control), while under SNA they are included.

- There are some differences in terms of how *assets* are treated. The most important of these is the purchase of military weapon systems (single-use military equipment). While GAAP treats these as capital assets (and records depreciation for them) SNA treats these as current expenditure. It is now proposed that the next revision of SNA will also treat expenditure on military weapons as gross fixed capital.

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[33]   Generally Accepted Accounting Practice. Countries which produce consolidated (whole of Government) financial statements on a GAAP basis include Canada, Australia and New Zealand.

Table 1

Defining Creditors, Provisions and Contingent Liabilities

Concept	Level of certainty	Example
Creditor	Certain transfer	Government debt
Provision	Certain or probable transfer, but uncertainty over timing	Nuclear decommissioning liability
Contingent liability	Possible transfer, uncertainty over existence of past event	Guarantees on private sector borrowing
Remote contingent liability	Possible transfer, but unlikely to occur	Notes and coins in circulation

- There are also important differences in how *liabilities* are recorded. Both SNA and GAAP record liabilities where both the obligation to pay and the amount are certain. But GAAP also includes provisions, where the obligation to pay is certain but the amount or timing is not. GAAP also records in a note to the accounts contingent liabilities, where the liability itself is contingent on some uncertain event.

- One of the most significant differences is the treatment of public service pension liabilities. Under SNA, current transactions in relation to public service pension schemes are included, such as cash flows in from current employees (employee contributions) and cash flows out to current pensioners (total pension payments). However GAAP recognises the value of pension entitlements as a liability at the time when they are earned (which may be 40 years or more before payments commence).

43. In addition, given the links between the two systems, there is considerable potential to improve overall data quality for the public sector through the WGA programme. For example, GAAP builds estimates of the capital stock and other liabilities from the "bottom up"; this has helped the Office for National Statistics in its ongoing efforts to improve estimates of public sector capital assets and depreciation.

44. Figure 6 compares the key SNA indicators public sector net debt and net worth with an indicative estimate of net liabilities on a GAAP basis. In particular, it can be seen that while (SNA-based) net worth is positive (financial and non-financial assets are higher than liabilities), indicative net liabilities on a GAAP basis are also positive (in 2003-04 they were estimated to be just under 15 per cent of GDP). This largely reflects the inclusion of the public service pensions liability.

Figure 6

**Public Sector Net Debt, Net Worth and Indicative Net Liabilities
on a GAAP basis**
(percent of GDP)
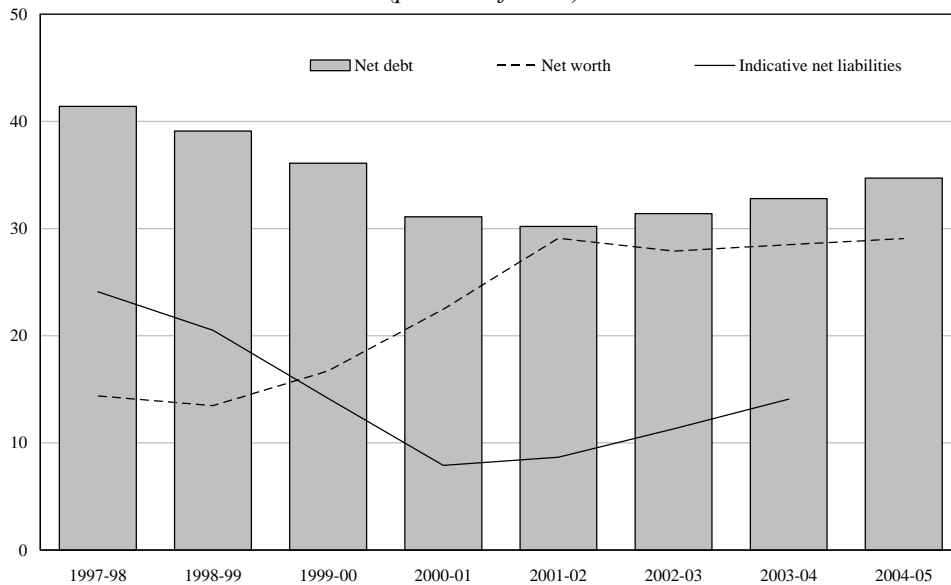
Net debt and indicative net liabilities as at end-March, GDP centred on end-March. Net worth as at end-December, GDP centred on end-December.

Data for indicative net liabilities are not yet available for 2004-05. The exact figures for the indicative net liabilities are 24.1, 20.5, 14.2, 7.9, 8.7, 11.3, and 14.8 per cent of GDP respectively.

Source: HM Treasury.

45.   This new information on assets and liabilities helps to increase fiscal transparency and accountability. However, it needs to be interpreted carefully. Information on new liabilities, for example, may suggest that the government's financial position is worse than previously thought. However governments rely primarily on future flows of revenue to fund both existing and future commitments and these are not included in the balance sheet. In this sense the GAAP-based balance sheet can only be a partial assessment.[34]

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[34]   An interesting illustration of this is given by considering the effect of a change in the assumed discount rate. A reduction in the discount rate increases net liabilities through the effect of increasing the estimated public service pension liability. However, in the UK case, the sensitivity analysis in successive versions of the *Long-term Public Finance Report* illustrate that, taking all the revenue and expenditure flows into account, a lower discount rate actually leads to an improvement in the inter-temporal budget gap.

46.   A full assessment of fiscal sustainability requires information both on existing and future spending commitments along with expected future revenue flows. Buiter[35] has suggested a comprehensive balance sheet that would include such flows. In theory, it would be possible to put together such a balance sheet from the projections in the UK Treasury's *Long-term Public Finance Report*. Such an exercise would show that the size of the public service pensions liability was small relative to the net present value of future tax receipts (as can be deduced from their respective flows as a share of GDP presented in the long-term report). Such a presentation would also underline that, other commitments, such as the net present value of future health spending, would be much more significant than public service pensions.

4.3   Inter-generational fairness

47.   As explained in the introduction, the Government's fiscal policy objectives include inter-generational fairness. This is enshrined in the Government's fiscal framework through the golden rule and the sustainable investment rule. This section looks at generational fairness and the fiscal framework in more detail and describes the generational accounts' inter-generational balance gap (IGG), which is an indicator of generational fairness published by the UK Government. It also discusses some of the limitations of this approach to generational fairness.

4.3.1   The benefit principle

48.   There is no single definition of generational fairness, but it is often expressed in terms of the "benefit principle": each generation of taxpayers should, as a group, contribute to public expenditures in accordance with their share of the benefits derived from those expenditures.[36]

49.   In order to assess whether, and to what extent, a particular policy change would be justified on generational equity grounds it is necessary to have detailed information on the likely lifetime net tax positions of current and future generations and the contribution of health spending to these positions. Moreover, in considering the generational equity implications of a policy change, a government should be aware about the high degree of uncertainty surrounding the projections. So while the benefit principle appears *prima facie* to provide a clear principle for governments to follow, in practice, given the uncertainties, it is extremely complex to assess the impact of policy changes on generational equity.

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[35]   See Buiter, W.H. (1999), "Notes on 'A Code for Fiscal Stability'". Buiter has explored the idea of a comprehensive balance sheet in a number of different papers, including Buiter (2002), "Measurement of the Public Sector Deficit and its Implications for Policy Evaluation and Design", IMF, Staff Papers, Vol. 30, pp. 306-49.

[36]   Coombs, G. and B. Dollery (2002), "An Analysis of the Debate on Generational Equity and Fiscal Sustainability in Australia", *Australian Journal of Social Issues*, Vol. 37, No. 4, November.

4.3.2 Generational fairness and the fiscal framework

50.   The benefit principle is reflected in the UK Government's fiscal objective that spending and taxation impact fairly both within and between generations. As Balls and O'Donnell (2002) explain, in practice this objective requires that:

"...those generations who benefit from public spending also meet, as far as possible, the costs of the services they consume".[37]

51.   The Government's generational fairness objective is supported by the golden rule, which states that over the economic cycle the Government can only borrow to invest and not to fund current spending. This rule is partly motivated by inter-generational equity considerations:

"...current spending, which mainly provides benefits to existing taxpayers, should be paid for by the current generation of taxpayers. Similarly, because capital spending produces a stream of services over time, it is fair that this form of spending is financed initially through borrowing".[38]

52.   So the golden rule aims to ensure that, as far as practicable, each generation (as a group) pays for the benefits of the public services it consumes.[39] The sustainable investment rule supports the golden rule in achieving inter-generational fairness by ensuring that current taxpayers are not able to borrow excessively for the purposes of investment. The upper limit on net debt minimises the risk that the burden of paying for this investment is shifted to future generations that do not benefit from the returns to this investment.

4.3.3 Generational accounting and the inter-generational balance gap

53.   Indicators of fiscal sustainability, such as the inter-temporal budget gap, provide limited information about the effect of fiscal policy on intergenerational fairness. For example, the fact that a government is projected to satisfy its IBC (which is calculated as a stock indicator) does not necessarily mean that it can meet its future obligations *if and when they arise*, nor does it reveal when pressure on the government finances might be greatest in the future. Meeting its obligations in the future could require the Government to effect substantial inter-generational transfers, as future generations might have to pay off debts built up by earlier generations.

54.   One approach to measuring the generational fairness of a government's fiscal stance, developed by Auerbach, Gokhale and Kotlikoff,[40] is to use generational

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[37]   Balls and O'Donnell (2002), page 134.

[38]   Balls and O'Donnell (2002), page 162.

[39]   The golden rule requires that current generations ensure that existing financial liabilities are held constant in nominal terms. Buiter and Grafe have suggested an alternative inflation and growth-adjusted golden rule, pursuant to which the government would ensure that its (net) financial liabilities were held constant as a share of GDP. See Buiter and Grafe (2004).

[40]   Auerbach, Gokhale and Kotlikoff (1992).

accounting. Generational accounting compares the projected lifetime net tax payments faced by newborns born in different years (net tax payments are the difference between taxes paid to the government and transfers received from the government, growth adjusted). If the present value (discounted to year of birth) of average lifetime net tax payments as a share of lifetime earnings (*i.e.* adjusted for growth) is the same for these different groups, then the government's fiscal stance is considered generationally fair.

55. The inter-generational balance gap (IGG) gives the amount by which current taxes have to rise (or fall), or spending has to fall (or rise), so as to achieve generational balance.[41] Specifically, the IGG shows the tax change required so that each successive future cohort pays the same share of its lifetime labour income in net taxes, while at the same time satisfying the IBC. The IGG focuses on current newborns, rather than existing generations, since the current government can only partially affect the lifetime tax burden of existing generations. More information on generational accounting and the derivation of the IGG indicator can be found in Annex A.[42]

56. The IGG therefore provides an indication of how far the Government is achieving its fiscal objective of ensuring that taxes and spending impact fairly between generations. For example, if current policy means that present revenue levels are insufficient to cover present spending, taxes will have to be raised in the future, disadvantaging future generations and favouring current generations.

57. However, the standard IGG indicator does not distinguish between current consumption and investment. Other things equal, an inter-generational imbalance that favours current generations will overstate the degree of imbalance since (as is reflected in the golden rule) current consumption only benefits the current generation whereas investment benefits both current and future generations. To obtain a better assessment of the degree of generational fairness of current policy, the generational accounts therefore need to treat current consumption and investment differently.

58. The measure of the IGG used in the UK Treasury's *Long-term Public Finance Report* addresses this issue by converting the future investment flow into a future flow of services (FOS) derived from the resulting capital stock. The future FOS accruing to society depends on the physical benefit (measured by depreciation) and on the monetary benefit of not having to rent the capital stock to be able to generate those physical benefits (similar to an imputed rent on the capital stock).[43]

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41   See also, for example, Cardarelli, Sefton and Kotlikoff (2000).

42   Gokhale and Smetters (2003) propose a closely related indicator of generational fairness, the generational imbalance.

43   The capital stock in any given year depends on the capital stock in the previous year, investment and depreciation. The capital stock K in year t is given by equation (1):

$$K_t = K_{t-1} + iY_t - \delta K_{t-1} \qquad (1)$$

(continues)

4.3.4 *Problems with the generational accounting approach*

59.   Generational accounting and the IGG suffer from a number of limitations. For this reason, the IGG measure plays only a very limited role as a fiscal indicator in the UK. The IGG is an imperfect measure of the extent to which current fiscal policy is fair on existing and future generations. Since it summarises in one figure the policy change required to achieve generational equity, it does not provide more detailed information about the timing and extent of generational inequity in the future. The IGG does not, therefore show the extent to which specific future generations will be net beneficiaries or net losers under current policy.

60.   Perhaps more importantly, the IGG is a forward-looking indicator and does not look at the fairness of policy changes to existing generations. It is therefore of rather limited use for carrying out generational fairness assessments of alternative policy proposals. Although this approach is rationalised on the grounds that governments cannot affect the historical net tax position of existing generations, it is nonetheless a significant limitation. It is at least arguable that a proposed change in fiscal stance should also consider the effect on the lifetime net taxation position of existing generations, particularly since the change in revenue from existing generations as a result of any hypothetical tax change required to ensure generational fairness is included in the calculation of the IGG. Moreover, given the high degree of uncertainty associated with very long-term projections, the IGG can in practice only assess generational fairness in relation to a few generations, while at the same time it discards historical information, which is known with certainty.

61.   In addition, it can be seen that generational accounting is not equivalent to the benefit principle. It looks at matching taxation and expenditure, not taxation and the benefits from expenditure.[44] The cost value of government purchases will not necessarily equal the social value. For example, generational accounting would not measure a return to investment in social capital through spending on urban green spaces or improved social housing. Nor does the generational accounting approach take into account the broader costs to future generations of current government policies, for example environmental costs. That said, it is the financial return that matters from the point of view of fiscal sustainability. Attempting to incorporate social returns into a measure of generational fairness could therefore result in a measure that does not guarantee fiscal sustainability (unlike the IGG, which is a hypothetical tax change which, *inter alia*, satisfies the IBC).

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where K_{t-1} is the capital stock in the previous year $t-1$, i the gross investment, Y_t is GDP in year t and δ the depreciation rate.

The flow of services FOS in year t is then given by equation (2):

$$FOS_t = \left(\delta K_t + r K_t \right) \tag{2}$$

and is the sum of the physical benefit (depreciation) δK_t in year t derived from the existing capital stock, and the monetary benefit (imputed rent) from the capital stock $r K_t$, where r is the real interest rate.

[44]   Coombs and Dollery (2002).

62.   Buiter (1997) identifies several other weaknesses of generational accounts. The usefulness of generational accounting relies on the validity of the life cycle model which requires, *inter alia*, that there exists no operational Ricardian intergenerational gift motive (that might offset, at least in part, intergenerational transfers through the government budget) and that markets are sufficiently complete that the timing of government taxes and transfers over the life cycle does not matter, only their present value (discounted at the government rate of interest). Buiter argues that:

> *"...generational accounts are uninformative as to the budget's impact on intergenerational distribution and saving behaviour when consumers' decision horizons are longer than those characteristic of the life-cycle model (e.g. when there is an operative Ricardian bequest motive), or when decision horizons are shorter than those postulated by the life-cycle model, because of the appropriate kind of capital market imperfections".*[45]

In order to address the first part of this criticism, some economists have suggested incorporating bequests into the generational accounts.[46] The impact of this could be quite substantial, for example Congdon (2005) estimated that in the UK bequests, including gifts inter vivos, could be of the order of 5 per cent of GDP a year.

63.   Buiter also notes that generational accounts are not calculated within the framework of a general equilibrium model of the economy, and therefore do not take into consideration the effects of changes in budgetary policy on pre-tax, pre-transfer and pre-subsidy factor incomes and rates of return.

64.   It is also very difficult to identify the appropriate discount rate for the purposes of calculating generational accounts. The discount rate should arguably include a premium to reflect the cost of uncertainty associated with future fiscal policy, but assigning a value to this premium is problematic, not least because different generations may attach different premiums for risk to prospective payments or receipts of each tax or transfer.[47]

65.   Annex B briefly discusses some other approaches to inter-generational fairness in the literature.

5.   Role of fiscal indicators in setting fiscal policy in the UK

66.   Fiscal indicators play a central role in guiding fiscal policy decisions and in ensuring a high level scrutiny over the conduct of fiscal policy in the UK. The

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[45]   Buiter (1997), page 606.

[46]   See de Neubourg, C. and A. Sebald (2003), *Intergenerational Fairness in Old-Age Provision: Who cures? Who cares?*, International Social Security Association, which describes generational accounts with bequests.

[47]   Congressional Budget Office (1995).

credibility and legitimacy of the overall framework depends on a high level of openness, transparency and accountability. While forward-looking projections of the key fiscal indicators can inform the fiscal strategy over the medium (and longer) term, the fiscal indicators also provide a backward-looking measure of how successful the Government has been in meeting its objectives.

67.   Fiscal policy needs to be set in a forward-looking way. Given the difficulty in changing fiscal policy it is desirable to set fiscal policy decisions in a medium-term context and to minimise the need for sudden lurches in policy. The policymaker's problem is to consider, given that we are where we are, where do we want to be and how should we get there? In the UK Treasury, as in most other policymaking institutions, the fiscal projections are made on the basis of underlying economic assumptions in which the economy comes back to the trend/potential level of output and then grows at the trend growth rate over the remainder of the forecast horizon. In the UK, the medium-term budget projections are made over five years, which means that generally the fiscal position that is projected three-to-five years ahead represents the desired fiscal position in "normal" times when output is on trend and any cyclical or otherwise temporary effects on the public finances have unwound.

68.   In the UK in recent years, the interaction between the Government's fiscal rules and the plans to raise public sector net investment to 2¼ per cent of GDP has led to fiscal policy being set to generate a current budget surplus of around ¾ per cent of GDP and thus public sector net borrowing of around 1½ per cent of GDP in the medium term. On plausible assumptions of the long-term nominal growth rate, this fiscal policy setting is consistent with stabilising public sector net debt below 40 per cent of GDP, thus also meeting the sustainable investment rule.

5.1   *The fiscal indicators and the fiscal objectives*

69.   As noted Section 2, the fiscal rules focus attention on two key indicators, the *current budget balance* and *public sector net debt*. These two indicators reflect the government's focus on the medium-term fiscal objectives of intergenerational fairness and fiscal sustainability over the cycle, and the fiscal rules are designed to ensure fiscal policy remains consistent with these objectives.

70.   The Government also has a short-term economic objective of supporting monetary policy. As noted above, the key indicators of the short-term economic impact of fiscal policy are *public sector net borrowing* and *cyclically-adjusted public sector net borrowing*.

71.   The *long-term indicators* in Section 4 do not directly factor into Budget policy decisions. The main concern surrounding these as indicators to direct policy decisions, rather than informing them and facilitating scrutiny, is that they are extremely uncertain and very sensitive to the assumptions underpinning them. In addition, when considering the longer-term fiscal imbalances that such indicators

might reveal, the appropriate policy response may often be for structural reforms rather than fiscal measures.[48]

5.2   Backward-looking performance appraisal

72.   To complement the forward-looking policymaking process, the Government's fiscal rules also provide hard *ex post* measures of the performance of fiscal policy. The ability to assess, in simple terms, whether fiscal policy has been operated in line with the fiscal rules plays an important role in facilitating external scrutiny and holding the government to account. One of the common failings of previous fiscal frameworks in the UK was that policy goals were set and frequently revised, but without a concrete, backward-looking measure of performance, governments were not held to account for these changes. As such, policy goals lacked consistency over time and governments were unable to build confidence that policy goals would be achieved.

73.   Box 3, taken from HM Treasury Budget 2006,[49] illustrates how the fiscal indicators have been used to provide a narrative of the Government's performance against its fiscal rules and objectives ex post in the Budget documents in addition to the commentary around the fiscal projections discussed in Section 2.

6.   Conclusions

74.   In the UK a wide range of fiscal indicators are presented and used to underpin fiscal decisions. The need for a range of indicators reflects the complexity of fiscal policy. The indicators both guide the Government in setting its fiscal policy and provide the evidence base to hold the Government to account. Several aspects of the way the indicators are used by the UK Government are worthy of note:

- The central role of the fiscal rules means that the evolution of the current budget and net debt over the 5 year fiscal projection horizon are very prominent. Net borrowing is mostly of interest in terms of its short-term impact on demand (though clearly net borrowing is also anchored by the net debt target in the medium and longer term);

- The framework is set up on the understanding that fiscal policy should 'see through' the short-term effects of the economic cycle, and hence indicators are presented in cyclically-adjusted terms and as averages over the cycle. Policy is also directed at the fiscal position in 3-5 years time when the economy is assumed to be on trend;

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[48]   For example, raising pension ages in the future rather than raising tax rates to reduce debt in the short term to pay for increased pension costs later on. Moreover, for permanent demographic changes, a fiscal response of this sort would clearly be unsustainable in the very long term.

[49]   Chapter 2, page 32. The references to figures in the box refer to the Budget 2006 document and are not included in this paper.

Box 3

Key successes of the UK fiscal framework

The UK fiscal framework was designed to address a number of challenges, discussed below. On each challenge clear progress has been made.

The first challenge was to ensure sound public finances and fairness within and between generations. Over the cycle from 1986-87 to 1997-98 the current budget was in deficit by an average of 1.9 per cent of GDP, peaking at over 6 per cent in 1993-94. While the current cycle has not been completed, the Budget projections show that by 2008-09 the average surplus will be 0.1 per cent of GDP. The largest deficit in any one year of this cycle, at 1.9 per cent of GDP, is equal to the average of the deficit over the previous economic cycle. Net debt as a percentage of GDP was 43.6 per cent in March 1997 compared with a projected 38.3 per cent at the end of the current cycle.

Current Budget Surplus
(percent of GDP)

Year of Cycle	1	2	3	4	5	6	7	8	9	10	11	12	Average
1986-87 to 1997-98 cycle	–1.4	–0.3	1.7	1.4	0.4	–2.0	–5.6	–6.2	–4.8	–3.4	–2.8	–0.2	–1.9
1997-98 to 2008-09 cycle	–0.2	1.2	2.2	2.2	1.0	–1.2	–1.9	–1.7	–0.9[1]	–0.3[2]	0.0[2]	0.5[2]	0.1

[1] Estimate.
[2] Projections for 2006-07 to 2008-09.

Second, fiscal policy has supported monetary policy over the cycle. One way of demonstrating this is to compare the change in cyclically-adjusted net borrowing (the fiscal stance) with the evolution of the output gap. The economy moved above trend in the first half of 1997, and between 1996-97 and 2000-01 the fiscal stance was tightened by 4 percentage points of GDP. As the economy moved below trend in late 2001, the fiscal stance was relaxed by just under 3 percentage points of GDP between 2001-02 and 2004-05.

The third challenge in 1997 was to rebuild the public capital stock. The fiscal rules provided the framework within which an increase in public investment could take place while maintaining sound public finances. Since 1997-98 public sector net investment has increased from 0.6 per cent of GDP to an estimated 2.1 per cent in 2005-06. For the remainder of the cycle, public net investment is projected to remain at 2¼ per cent of GDP, the longest period of sustained high public investment for 26 years.

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Source: Taken from UK Budget 2006, Box 2.4.

- Indicators of the uncertainty of the fiscal projections are important and the fiscal framework deliberately aims to be on the side of caution so as to avoid the need for policy reversals. In recent years, the Government has also presented more information on the reasons for differences between fiscal forecasts and outturns;

- There has also been an increasing emphasis on long-term indicators of fiscal sustainability although they do not have a direct impact on the setting of fiscal policy. An important reason for this is that in many cases structural reform, rather than fiscal measures, may be the better option; and

- The UK Government has an objective for inter-generational fairness - indeed it is part of the basis for the golden rule. Estimates of the inter-generational gap have also been presented in the *Long-term Public Finance Reports*, however, this is an area where there remains further work to be done if such indicators are to be useful in a policy context, in particular to take account of the position of existing generations and not just newborn generations.

APPENDIX 1
INTER-TEMPORAL BUDGET CONSTRAINT
AND GENERATIONAL ACCOUNTING

The inter-temporal budget constraint

The intertemporal budget constraint (IBC) is given by:

$$IBC : \sum_{s=t}^{\infty} R_s (1+r)^{-s+t} = \sum_{s=t}^{\infty} S_s (1+r)^{-s+t} + D \qquad (1)$$

where R_s is revenue in year s, S_s is spending in year s, r he discount rate, and D the initial stock of net debt.

We can also define the level of primary balance PB_s to equal $R_s - S_s$ so that the IBC can be rewritten as:

$$D - \sum_{s=t}^{\infty} PB_s (1+r)^{-s+t} = 0 \qquad (2)$$

By substituting into the left hand side the current level of debt, and current and (discounted) projected primary surpluses, the sum is equal to zero if the IBC is satisfied.

The IBC, in a variety of forms, has been used widely in the analysis of the sustainability of fiscal policy. For example, it is possible to rewrite equation (2) as ratios to GDP. This yields:

$$d - \sum_{s=t}^{\infty} pb_s \left(\frac{1+g}{1+r} \right)^{s-t} = 0 \qquad (3)$$

where d is the initial debt to GDP ratio, pb_s is the primary balance as a share of GDP in year s, g is the real growth rate of GDP, and r is the discount rate. This formulation of the IBC has been used to analyse the level of primary balances needed to achieve a certain debt target in the future, such as in "fiscal gap" analysis.[50] The fiscal gap is the immediate and permanent change in the primary balance that is needed in order so that the debt to GDP ratio at time T in the future returns to the level that prevails at the current time.[51]

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[50]   Auerbach, A. (1994), *The US Fiscal Problem: Where We Are, How We Got There, and Where We're Going*.

[51]   The formula can be modified so that any debt to GDP ratio can be targeted at time *T*.

Generational accounting

In contrast with the fiscal gap, generational accounting looks at the absolute levels for the primary balance and debt rather than ratios, that is, equation (2) rather than equation (3). Equation (2) can also be used to calculate whether there is a "gap" in the long-term public finances. If current and future revenues are not sufficient to cover current and future spending and current debt, for a finite period the right hand side of equation (2) will not equal zero, but be a positive number. The extent of the imbalance is called the intertemporal budget gap (IBG):

$$IBG = D - \sum_{s=t}^{T} PB_s (1+r)^{-s+t} \tag{4}$$

The size of the IBG represents the immediate and permanent change in the primary balance that is needed in order that the IBG will equal zero; in other words, to ensure equation (2) is satisfied.

The inter-generational balance gap (IGG) can be used as a measure of the extent of fiscal adjustment needed to achieve generational balance. The IGG can be thought of as a stricter version of the intertemporal budget constraint, as the following section demonstrates.

Deriving the inter-generational balance gap

The following discussion (and notation) is drawn from Cardarelli *et al.* (2000). Using $PB_s = R_s - S_s$ in equation (4) and combining with equation (1) yields:

$$IBG = D - \sum_{s=t}^{\infty} R_s (1+r)^{-s+t} + \sum_{s=t}^{\infty} S_s (1+r)^{-s+t} \tag{5}$$

Look at the term $\sum_{s=t}^{\infty} R_s (1+r)^{-s+t}$ in more detail. The tax revenues to be collected

by the Government can be broken down into two parts: the burden on generations that are already born, and the burden on future generations.

Tax revenues to be collected (defined as net of transfers) can be expressed as:

$$\sum_{s=0}^{D} N_{t,t-s} P_{t,t-s} + \sum_{s=1}^{\infty} N_{t,t+s} P_{t,t+s} (1+r)^{-s} \tag{6}$$

with the first term the burden on current generations, and the second term the burden on future generations.

First, the burden on current generations.

$N_{t,t-s}$ is the present value of the average remaining lifetime net tax (taxes less transfers) payment of the person born in year $t-s$, or is aged s years old, at time t.

$P_{t,t-s}$ is the population of the generation born in year $t-s$ at time t.

Therefore, $N_{t,t-s}P_{t,t-s}$ represents the future tax burden of the generation born in year $t-s$, at time t. Summing across from $s=0$ to D, the maximum length of life, adds together the tax burdens of different generations that have already been born.

Secondly, the burden on future generations $N_{t,t+s}$ is the present value *(to the year of birth)* of the average lifetime net tax payment of the person to be born in year $t+s$, or in s years time.

Because this is only discounted to the year of birth, this value needs to be discounted s years back to time t, hence the inclusion of $(1+r)^{-s}$.

$P_{t,t+s}$ is the population of the generation born in year $t+s$, determined in the year of birth.

Therefore, $N_{t,t+s}P_{t,t+s}(1+r)^{-s}$ represents the tax burden of a generation to be born in s years time, at time t. Summing across from $s=1$ to infinity adds together the tax burdens of the generations born every year from now into the infinite future.

Using equations (5) and (6), the intertemporal budget gap, as a share of GDP, can be represented by:

$$IBG = [D_t - \sum_{s=0}^{D} N_{t,t-s}P_{t,t-s} - \sum_{s=1}^{\infty} N_{t,t+s}P_{t,t+s}(1+r)^{-s} + \sum_{s=0}^{\infty} S_{t+s}(1+r)^{-s}]/GDP \quad (7)$$

where spending S now only includes government purchases (*i.e.* transfers are not included).

If the intertemporal budget gap is equal to zero, then it means that future tax collections will be sufficient to meet future spending and to pay off current debt. This does not mean, however, that the tax collections will be distributed equally across time. A country commits to raising taxes in the future to pay off past debt may still attain a IBG of zero. However, this policy makes future newborns relatively worse off than current newborns. Similarly, a country that runs large surpluses today while reducing taxes in the future may still attain an IBG of zero, but this policy could make current newborns worse off relative to future newborns.

Inter-generational fairness as defined by the IGG is achieved when current policy treats current newborns and future newborns equally on a growth adjusted basis, such that each future cohort faces the same lifetime net tax rate as current newborns. The basis for comparison for future newborns is current newborns, rather than all past newborns. This is because while the Government today can affect the

lifetime tax burden for current newborns and future newborns, it can only partially affect the lifetime tax burden for past newborns or existing generations.

If current and future newborns are to be treated the same, then the present value (discounted to their year of birth) of their average lifetime net tax payments should be the same, regardless of the year of birth. In the notation introduced above, this means that, $N_{t,t}$, the present value of the average lifetime net tax payment of the person born in year t, at time t, should equal $N_{t,t+s}$, the present value of the average remaining lifetime net tax payment of the person born s years from time t, for all s.

So in defining the IGG we are assuming that, each member of all future generations pays $N_{t,t}$ in net taxes, *i.e.*:

$$IGG = [D_t - \sum_{s=0}^{D} N_{t,t-s} P_{t,t-s} - \sum_{s=1}^{\infty} N_{t,t} P_{t,t+s}(1+r)^{-s} + \sum_{s=0}^{\infty} S_{t+s}(1+r)^{-s}]/GDP \qquad (8)$$

Thus equation (8) measures the extent of fiscal adjustment needed today, as a share of GDP, in order for future flows of spending and current debt to be financed by tax flows that do not favour one generation over the other.

The IGG is defined above in terms of the inter-generational fairness of tax flows, rather than spending flows, in that lifetime net tax payments are equalised between current newborns and future newborns. On the spending side (excluding transfers) it is already assumed that current newborns and future newborns have the same lifetime spending flow. That is, both current and future newborns are assumed to face the same (current) spending policies.

APPENDIX 2
OTHER APPROACHES TO INTER-GENERATIONAL FAIRNESS

75. The problems with the generational accounting approach were discussed in Section 4. This section briefly reviews three alternative approaches that have been suggested in the literature.

76. Hills (2004) has looked in more detail at generational accounts for the UK in order to identify "welfare generations", *i.e.* cohorts that have been or are projected to be net beneficiaries of the welfare state over their lifetimes.[52] In order to do this he looks at how education, health and social security spending have been distributed among different cohorts since 1901, using both historic and projected data. He assesses generational equity on the basis of equivalent sacrifice, i.e. that payments to government and payments received from government:

> *"...should be taken as balancing if they represent the same value – or sacrifice – in terms of contemporary living standards".*[53]

Hills looks at cohorts born within successive 5 year periods, calculating estimates of the total education, health and social security spending received by each cohort and the total taxes paid by each cohort towards these spending items. He concludes that those born between 1901 and 1921 were, to a modest extent, a "welfare generation", but that on the whole the UK welfare system has been, and is projected to continue to be, fairly well balanced from an inter-generational equity perspective.

77. Analysis of this type is extremely data intensive. For example, Hills notes that limitations in the historical data mean:

> *"...allocating health spending even by five year age groups involves some fairly heroic assumptions".*[54]

However, calculating a projection of the IGG is itself subject to a high degree of uncertainty, and Hills's approach does address some of the problems with the IGG identified in Section 4. It provides information about the position of particular cohorts, rather than summarising the degree of generational fairness in the economy in a single figure. And by including historical data the approach allows an assessment of the projected net lifetime tax position of current generations as well as current newborns and future generations. It therefore permits the identification of whether particular generations are projected to be net beneficiaries of the tax and benefits system, as well as an assessment of how proposed policy changes will affect current and future cohorts individually.

78. Another approach to inter-generational fairness is to take a broader view of the benefit principle, assessing policies as generationally fair if they satisfy the needs of the present without compromising the needs of the future. According to

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[52] See Hills (2004) and Falkingham and Hills (1995).

[53] Falkingham and Hills (1995), page 36.

[54] Falkingham and Hills (1995), page 37.

such an approach, the government/society is passing on a "portfolio" of assets, including, *inter alia*, public and private physical capital, human capital, a stock of technology and knowledge, and natural resources. As was explained in Section 4, generational accounts do not measure all the benefits/costs generated by some types of government spending, for example the returns to education in the form of higher growth and technological advancements, or the costs to future generations of environmental damage. Therefore the "portfolio" approach would require generational fairness to be assessed on a broader basis than generational accounts. Indicators such as the index of sustainable economic welfare (ISEW) and measures of 'living standards' incorporate some of the broader costs and benefits of government spending.[55] Another approach would be to try to capture the returns to investment in human capital formation by treating education spending as investment with a return, rather than as current consumption (although the measurement of this return would be very difficult).

79.   Finally, Musgrave,[56] among others, has argued for a different notion of generational fairness, assessed in relation to the ability of different generations to pay taxes as opposed to the broader or narrower versions of the benefit principle described above. If per capita incomes rise over time then it could be argued, along similar lines to those used to justify the intra-generational distribution of income, that richer future generations should bear a higher tax burden. Moreover, to the extent that generational accounts are unable to incorporate factors such as the improvement of physical and human capital by previous generations, such an approach might accord more closely to the standard notion of generational fairness than at first appears to be the case (though less so if the environmental and other costs to future generations of current policies are taken into account). However, this is a highly problematic approach to generational equity, not least because future generations are unlikely to consider it fair. It also raises questions about what upper limit, if any, should be placed on the ever-increasing tax to GDP ratio that is implied (with implications for labour market incentives, for example).

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[55]   Crafts (2003).

[56]   Musgrave (1988).

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FISCAL INDICATORS IN A RULE-BASED FRAMEWORK

Robert Boije [*] *and Jonas Fischer* [**]

Introduction

The increased attention given to rule-based budgetary frameworks creates a platform for designing indicators to assess fiscal policy performances and plans. Both at international and national level, efforts have been made to develop refined indicators that capture the budgetary stance and performance in the short, medium and long term.

Sweden provides a pertinent example as it has operated an elaborate national rule-based fiscal policy framework for some time. This stipulates that the general government budget position should satisfy a 2 per cent of GDP surplus over the cycle. This is complemented by medium-term expenditure ceilings on central government expenditure and a balance requirement for local government budgets. In addition, as Sweden is an EU Member State, the rules of the Stability and Growth Pact (SGP) apply.

In Sweden, as in all countries, a number of institutions assess budgetary performance and each has developed its own battery of indicators to that end. At national level, the Ministry of Finance (MoF), the National Institute of Economic Research (NIER) and the Riksbank are particularly involved, while at EU level, the European Commission and the ECB apply their standard indicators. At world level, the OECD and IMF, for example, use similar indicators.

In this paper we compare some of the different indicators used for assessing the Swedish budgetary and fiscal position. We will concentrate on the 2000-05 period as it was one of relative stability in comparison to the structural changes that followed the economic crises in the early 1990s, though they were marked by both strong and weak cyclical positions. The purpose is to assess, with references to Swedish experiences, the performance of different indicators across economic circumstances and the policy objective at hand, and on this basis, to draw some conclusions that we believe are valid also in a wider budgetary surveillance context.

The paper is organised as follows: Section 1 provides, as a background, a short description of the Swedish rule-based budgetary framework and its performance. Section 2 provides a general "job description" of fiscal indicators. In Section 3 we assess, with reference to Section 2, the qualitative features of the fiscal

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[*]   Sveriges Riksbank, Monetary Policy Department. E-mail: robert.boije@riksbank.se

[**]   European Commission, DG ECFIN, E-mail: jonas.fischer@cec.eu.int

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       The views expressed are the responsibility of the authors and do not necessarily represent the views by the Riksbank and the European Commission.

Figure 1

The Swedish Economic Performance, 1990-2005
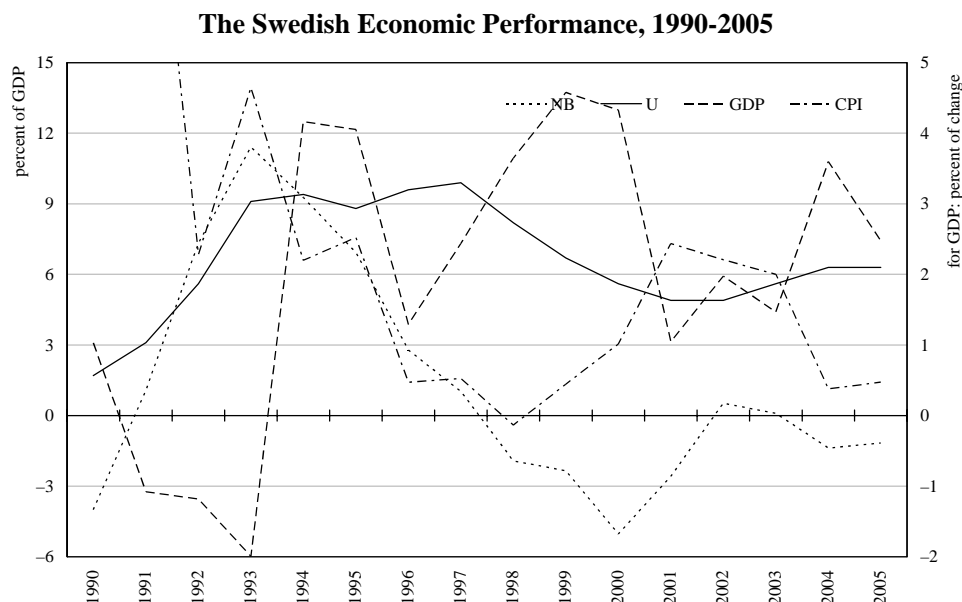
Source: European Commission services (Ameco database).

indicators applied by the Riksbank, the NIER, the MoF and the European Commission for measuring the discretionary component of a budget change, the fiscal stance and the structural budget balance. This section also describes what these indicators have to say about the Swedish budgetary and fiscal performance between 2000 and 2005. In Section 4 we discuss *ex post* revisions of fiscal indicators, to what extent these revisions are caused by forecast errors in the actual budget balance and what it means for *ex ante* policy advice based on fiscal indicators. Finally, in Section 5, based on the Swedish experience, we discuss what lessons can be drawn for budgetary surveillance in general.

1.   The Swedish budgetary framework

The budget surplus of 4 per cent of GDP in 1990s was transformed into an 11 per cent deficit in 1993 as a result of the deep economic crises in the beginning of the 1990. This became the catalyst for the creation of the stability-oriented Swedish macroeconomic framework of today, including substantial changes regarding the conduct of fiscal policy.

Between 1994 and 1998, a consolidation programme amounting to 7.5 per cent of GDP and a more austere budget process were implemented. Due to this and a

more favourable economic development in general, in 1998 the budget balance was again back in surplus (see Figure 1). To safeguard the consolidation of public finances and to prevent fiscal policy from being used pro-cyclically, a set of budgetary rules were introduced.

In 1997, the Riksdag (the Swedish parliament) decided to introduce a surplus target for the general government sector, with full effect from 2000. The target was that general government net lending should be 2 per cent on average over a business cycle. The principal aim of the surplus target, as it is applied and defined by the Government today, is to strengthen, via lower government debt, the public sector's position up to around 2015 ahead of the strains that will be placed on government finances thereafter by demographic factors. A budget surplus in normal cyclical conditions also lessens the risk of incurring a substantial deficit during a protracted economic slowdown; according to the SGP, a deficit in the general government must not exceed 3 per cent of GDP.

The year 1997 also saw the introduction of an expenditure ceiling for central government spending, with the overall objective of supporting the surplus target. The expenditure to which the target applies – called the expenditure subject to the ceiling – comprises all central government expenditure, excluding interest on government debt and expenditure related to the old-age pension system. The expenditure ceiling for an individual year, normally established three years in advance, prevents temporary rises in revenue, during a boom, for example, from being used to finance increased spending. In that way, the expenditure ceiling contributes to preventing a pro-cyclical fiscal policy (at least on the expenditure side). It also contributes to preventing a trend rise in government expenditure as a share of GDP and helps to ensure that consolidation measures are implemented if expenditure risks exceeding the ceiling.

To further bolster the surplus target, a balanced-budget requirement was brought in for local governments in 2000; if a local government runs a deficit one year, it has to rebalance its finances within three years.

1.1   The performance of the rules

1.1.1   The expenditure ceilings

As regards the *expenditure ceilings*, during the first years of the new framework, 1997-2000, the ceilings were set so that expenditure covered by the ceilings was reduced from above 36 per cent of GDP in 1997 to just above 32 per cent of GDP in 2000. Since then, the expenditure ratio has been roughly constant. More recently, the guiding principle has been that additional ceilings are set as a constant share to potential GDP (Budget Bill 2005).

The expenditure subject to the ceiling has been below the ceiling every year since it was adopted in 1997 (see Table 1). However, the expenditure ceiling system has not been applied fully according to the Budget Act's intentions. The difference

Table 1

Central Government Expenditure Ceiling
(SEK billion)

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Expenditure ceiling	723	720	753	765	791	812	822	858	870
Expenditure subject to ceiling	698	718	751	760	786	812	819	855	869
Budgeting margin	25	2	2	5	5	0	3	3	5

Sources: The NIER, the Riksbank and the Swedish National Financial Management Authority.

between the expenditure subject to the ceiling and the expenditure ceiling – the budgeting margin – is supposed to be a buffer both against uncertainty in economic developments and against factors that may cause unforeseen increases in expenditure, such as increased sick leave. The budgeting margin has been very small, with the exception of 1997. That is because it has been used to increase spending. The expenditure ceiling has, to a large extent, been circumvented by giving new benefits in the form of tax reductions in periods when tax revenue has improved. This behaviour undermines the purpose of the expenditure ceiling.

1.1.2   The surplus target

The surplus target, as it is defined from 2000, can be evaluated by calculating the general government sector's annual net lending for a whole business cycle. If net lending is 2 per cent on average over the cycle, the surplus target has been met. In practice, a problem when assessing to what extent budget positions or budget plans are in compliance with the surplus target "on average over the cycle", is that there is no method within the framework for calibrating "the cycle" and measuring surpluses against it. As these variables are not directly observable and measurement uncertainty is large and a variety of possible estimates are available, the lack of an agreed method makes an assessment of compliance unclear. Nor is it clear how "on average" should be understood. Even so, during the period 2000-04, net lending averaged 1.7 per cent (see Table 2). Resource utilisation is judged by many, however, to have been relatively low for the greater part of this period, suggesting that an average net lending of 1.7 per cent may have been broadly consistent with the target. However, since the period does not cover an entire business cycle, it is difficult to determine whether this surplus has been consistent with the target. Even so, a measure of the structural budget balance provides answers to which extent the budget position in an individual year is in line with the target (we will come back to that in the next section). Also, when assessing the fulfilment of the surplus target and whether central government will run an underlying deficit in the period ahead it should be remembered that the temporarily high tax receipts around the years 2000

Table 2

**Net Lending of General Government and Sub-sectors
and Accumulated Budget Balance in the Local Government Sector**
(percent of GDP and SEK billion)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**
Total	5.0	2.6	–0.5	–0.2	1.5	1.6
Central government	2.6	7.4	–1.8	–1.8	–0.6	–0.8
Old-age pension system	2.2	–4.6	1.9	1.9	1.9	2.0
Local government sector	0.2	–0.2	–0.5	–0.2	0.2	0.4
Accumulated budget balance in local government sector			–7	–8	–6	5

and 2004 as well as low interest expenditure on government debt have helped to push up average net lending during this period.

The Swedish surplus target, as presently defined, does not preclude the use of an asymmetric fiscal policy. The target can be met even with small surpluses when times are good, but fiscal policy would then have to be contractive during economic downturns. However, such a policy works pro-cyclically and will not contribute to an appropriate fiscal and monetary mix in terms of stabilisation policy. Aware of this problem, in its 1999 Convergence Programme (pp. 4-5) the Swedish government stated:

"As the medium-term goal refers to the public sector fiscal balance seen over the business cycle, the actual budget surplus could fall below 2 per cent of GDP in a phase of the business cycle with relatively high idle capacity in the economy, but conversely exceed 2 per cent of GDP in the peak phase of the business cycle. Thus, the level that the budget surplus will reach in an individual year is dependent on the phase of the business cycle, which provides scope for the automatic stabilisers to work. In this way it is possible to refrain from a pro-cyclical policy. A medium-term goal of a public sector surplus equivalent to 2 per cent of GDP should also be compatible to some extent with conducting an active fiscal policy, with the aim of moderating swings in the business cycle without risking excessive deficits during downturns".

Obviously, the Swedish government aimed to avoid a pro-cyclical fiscal policy using the medium-term objective and some measure of the automatic stabilisers, to define yearly targets for the budget balance. Rather than translating this view into a formal rule determining targets for the annual budget balances, the government instead chose to refer to the use of the nominal expenditure ceiling for the central government as a means of supporting a symmetric fiscal policy.

Table 3

A Comparison of Required and Expected Budget Balance
(percent of GDP)

	2004	2005	2006	2007
(1) Budget balance	0.7	0.6	0.4	0.9
(2) GDP gap	–1.3	–0.5	–0.2	0.0
(3) Automatic stabilisers	0.9	0.4	0.1	0.0
(4) Annual target for budget balance (required by the surplus target)	1.1	1.6	1.9	2.0
(5) Under/overshooting, (1)–(4)	–0.4	–1.0	–1.5	–1.1

Sources: 2005 Budget Bill, Swedish Ministry of Finance, and own calculations.

However, the government has deviated from those intentions. The 2005 budget bill, for example, provides clear evidence on this. Given the forecast of the automatic stabilisers and the annual budget balance as provided by the Swedish government in the 2005 Budget Bill, Table 3 shows the difference between the expected actual budget balances and those that would have been required if they had to be determined by the medium term objective adjusted for the effect of the automatic stabilisers. The annual required budget balance is calculated as $S^{t \arg et} = 2 + 0.7\big((Y - Y^*)/Y^*\big)$.[1]

For example, in the Budget Bill for 2005, the output gap for 2005 was estimated at –0.5 per cent of GDP. The cyclical effect can then be estimated at –0.4 per cent of GDP [0.7x (–0.5) = –0.4]. During the relevant forecast period the annual target would, *ex ante*, have been missed for every year. The government must have been aware that the forecasts of the annual budget balances were not in line with the medium-term objective. The government's *ex post* defence has been that a labour market upswing has been delayed despite strong GDP growth and that this has motivated some discretionary stabilisation measures which weaken the actual and the structural budget balances. A closer look at the reforms in the latter years indicates, however, that most of them are intended to be permanent and hence cannot be regarded as stabilisation policy measures. One explanation for the *ex ante* non-adherence to the medium-term objective is rather that the government has largely circumvented the expenditure ceiling by introducing new tax expenditures.[2] A further sign of this is that the government's own forecast in the Budget Bill for 2005 showed that the surplus would not reach 2 per cent of GDP even when the

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[1]   This section follows Boije (2005).

[2]   See also Boije (2002 and 2005) and Fischer (2005).

GDP gap was expected to be closed in 2007. This means that the surplus target has not been seen as a binding *ex ante* restriction. However, *ex post*, net lending outcomes have been shown to be better than expected *ex ante*, mainly due to positive surprises on the revenue side, something we will come back to in Section 4.

1.1.3 Net lending in sub-sectors and the budget balance requirement for local governments

The balanced-budget requirement for local governments, evaluated in terms of the accumulated results, has been achieved with a lag. It should, however, be noted that the increase in local government net lending has, to some extent, via higher central government grants, come at the price of lower central government net lending. It is likely that the implicit bailout commitment from the central government creates incentives for local governments to set spending at the limit when revenue growth is healthy, leading to expansionary policies in good times, and to rely on additional central government transfers in bad times.

This is one reason why central government net lending has been negative since 2002. Another is that since 1998, the central government budget has been highly expansionary almost every year. The reforms concerning the central government budget during the period 1998-2006 total just over SEK 200 billion, neutralising the effect of the consolidation programme.[3] However, central government net lending, expressed as a share of GDP, has decreased relatively little in relation to the overall size of these reforms. One explanation for that may be the introduction of the new austere budget process, which even in the absence of regulatory changes can improve the underlying balance since some nominal expenditure is not automatically adjusted for inflation in the same way as before. Another possible explanation is that revenue has been relatively high for several years, partly due to temporary factors and that interest expenditure has been low (lower than expected).

Summing up: The Government's budget policy targets, on the whole, have been broadly achieved to date. However, some distance to the surplus target has been built up, local governments have fulfilled the balanced-budget requirement with a lag and the expenditure ceiling has not been applied fully according to the Budget Act. In addition, the central government budget has been expansionary most years since 1998. The less-than-strict application of the budget policy targets risks contributing to a gradual erosion of their purpose. For example, the government's tendency to circumvent the expenditure ceiling by using increased (temporary) revenue to create benefits on the revenue side of the budget may lead to a pro-cyclical policy. In the long run, this may make it more difficult to manage the future strain on government finances resulting from demographic developments. One conclusion to be drawn from this is that budgetary and fiscal policy should be

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[3]   See the box "Expenditure cuts and reforms" in *The Swedish Economy*, March 2003, NIER, and *Budgetpropositionen för 2006* (The Budget Bill for 2006), Ministry of Finance.

Figure 2

Determinants of the Actual Budget Balance

	Temporary	Permanent
Economy	A	C
Policy	B	D

closely monitored. One way of doing this is to use fiscal indicators, and in the next section we discuss in general terms different indicators used for assessing budgetary and fiscal policy performance. Thereafter, we describe and compare the different indicators used nationally and by the European Commission to assess the fulfilment of the Swedish surplus target and assess whether fiscal policy on the whole has been expansionary or not.

2.   Budgetary indicators: job description

The basis for all fiscal indicators is the actual budget balance. It is therefore useful to define its determinants in an appropriate way. Figure 2 provides a two-dimensional description of the factors affecting the budget balance. In the first dimension, the factors are divided into those which are economy-induced and those which are policy-induced, while in the second dimension the distinction is between temporary and permanent factors.

Square A includes factors related to the temporary state of the economy at given tax and expenditure rules, such as unemployment-related expenditure or cyclical interest rate movements. It also includes, for example, temporary higher/lower tax revenues due to some tax bases being temporarily higher/lower than their trend values or tax elasticities being temporarily higher/lower than normal. Square B, includes, for example, temporary higher expenditures due to discretionary stabilisation policy measures. Square C captures, for example, how potential GDP

and demographic trends affect the budget balance, while square D includes the effect on the budget of permanent changes to tax and expenditure rules.[4]

Let us more formally identify the main effects associated with the different squares. For simplicity, let us assume that there is only one tax and one tax base and that there is no expenditure (or alternatively, that the expenditure is seen as a negative tax, in terms of, for example, benefits). Let us also ignore interest. The tax base is assumed to be GDP (Y) and the tax (or net tax) is proportional to GDP. The actual tax income, T, (or the budget balance if we assume that it captures also negative taxes) can then be expressed as:

$$T = \tau Y \tag{1}$$

while the structural tax income can be written as:

$$T^* = \tau Y^* \tag{2}$$

where Y^* is potential GDP. The change in the actual tax income can be expressed as:

$$\Delta T = \tau Y - \tau_{-1}Y_{-1} = \tau Y - \tau_{-1}Y_{-1} + \tau_{-1}Y - \tau_{-1}Y = \tau_{-1}(Y - Y_{-1}) + (\tau - \tau_{-1})Y = \tau_{-1}\Delta Y + \Delta \tau Y \tag{3}$$

The change in the structural revenue can, equivalently, be written as:

$$\Delta T^* = \tau_{-1}\Delta Y^* + \Delta \tau Y^* \tag{4}$$

Now, let us divide the changes in the tax rate into temporary and permanent changes. Then, the change in the actual tax revenue and the structural tax revenue can be written as:

$$\Delta T = \tau_{-1}\Delta Y + \Delta \tau^{temp}Y + \Delta \tau^{perm}Y \tag{5}$$

$$\Delta T^* = \tau_{-1}\Delta Y^* + \Delta \tau^{perm}Y^* \tag{6}$$

Note that in our definition of the change of structural tax revenue, we take only permanent changes in the tax rate into account.

Equation (5) can, equivalently, be written as:

$$\Delta T = \underbrace{\tau_{-1}\Delta Y^*}_{C} + \underbrace{\tau_{-1}\left(\Delta Y - \Delta Y^*\right)}_{A} + \underbrace{\Delta \tau^{temp}Y}_{B} + \underbrace{\Delta \tau^{perm}Y}_{D} \tag{7}$$

The first term on the right-hand side captures the effects of the factors in square C in Figure 2. It thus measures the impact on tax revenue from permanent changes in GDP (the tax base), at given tax rules. The second term captures the effects belonging to square A. It measures the cyclical part of tax revenue, at given tax rules. The third and the fourth terms capture the effects devoted to square B and D respectively. The term B captures the effect on tax revenue caused by a temporary

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4   See also, Braconier and Forsfält (2004).

change in the tax rate, at a given tax base. Finally, the term D captures the effect on tax revenue caused by a permanent change in the tax rate, at a given tax base.

To get an idea of how the change in actual tax revenue relates to the change in structural tax revenue, the last term in equation (7) can be split into two parts, giving us the following expression:

$$\Delta T = \underbrace{\tau_{-1} \Delta Y^*}_{C} + \underbrace{\tau_{-1}\left(\Delta Y - \Delta Y^*\right)}_{A} + \underbrace{\Delta \tau^{temp} Y}_{B} + \underbrace{\Delta \tau^{perm} Y^*}_{D'} + \underbrace{\Delta \tau^{perm}\left(Y - Y^*\right)}_{D''} \quad (8)$$

As can be seen, terms C and D' (which, thus, is a part of square D in Figure 2) together capture the change in structural tax revenue. We are now in a position to define the different fiscal concepts, by referring to Figure 2 and the equations (7) and (8).

2.1   The structural budget balance and the CAB

Many institutions make no difference between the structural budget balance and the cyclically adjusted budget balance (CAB). Others use the CAB as an indicator of the structural budget balance. The CAB was originally constructed to answer one question: what would the budget balance be if the economy were in equilibrium (or at full employment), given unchanged tax and expenditure rules. A calculation of the CAB involves estimation of the cyclical balance, measuring the cycle's impact on the actual budget balance, that is, the effect on the budget balance of the automatic stabilisers (captured by square A in Figure 2). Subtracting the cyclical part of the budget balance from the actual budget balance leaves a measure of the CAB.

The structural budget represents the budget balance based on permanent trends, or adjusted for all temporary flows. The difference compared with the CAB is that the CAB only corrects the actual budget balance for the cycle in economic activity.

Distinguishing between permanent and temporary factors is, however, not straightforward, besides being dependent on the purpose of the study and the relevant time perspective. In the long run everything is temporary. For calculations of the structural budget balance in the short and medium term, it is reasonable to treat the cyclical impact in the form of the automatic stabilisers as a temporary flow. Ideally, one should also exclude other effects of a temporary nature, such as temporary fiscal policy measures (including stabilisation policy measures), one-off measures (for example, revenues from auctions of mobile phone licenses) and fluctuations in tax receipts caused by changes in asset prices (non-linearly related to economic activity). From this perspective, the structural budget balance (or the change in it) should only be based on the factors belonging to squares C and D.

What value has an estimator of the structural budget balance? (this applies also in part to the CAB). It can be politically tempting to use large budget surpluses

in good times for what are intended to be permanent reforms: increased expenditure, for example. If a budgetary surplus is largely due to a favourable economic situation, so that when this normalises it will be greatly diminished, scope for such reforms does not exist (provided that the public debt is not allowed to increase). Thus, the structural balance can be used to assess whether or not proposed tax and expenditure reforms are appropriate in the medium term (over the business cycle). It can also be used to assess whether the government is likely to run a balanced budget over the cycle or to achieve more ambitious medium-term objectives. The change in the structural budget balance measures the improvement or deterioration of the medium-term budget balance.

2.2   The fiscal stance

The fiscal stance may be defined as the budgetary impact of all factors affecting the actual budget balance, excluding that of automatic stabilisers (thus, it includes the factors captured by B, C and D). The objective is to assess whether discretionary fiscal policy works pro-cyclically on aggregate demand or not. Thus, the stance has to be evaluated against a measure of the cyclical position. Since we know that the automatic stabilisers work counter-cyclically, there is no point in including these in the definition of fiscal stance (although they also affect aggregate demand). Unlike the change in the structural budget balance, the stance should include the effects of temporary discretionary measures, because such measures are likely to affect aggregate demand, although they do not change the structural budget balance. However, it is arguable whether factors belonging to square C should be included in a proper measure of fiscal stance. Some structural changes in the economy may be caused by fiscal policy and should therefore be included in the measure of fiscal stance. However, should structural changes in the economy not caused by fiscal policy be included?

Indicators of the fiscal stance are sometimes used together with the deviation of the key interest rate from its (estimated) equilibrium value to assess whether fiscal and monetary policy, taken together, has a neutral, expansive or tightening effect on demand. A pro-cyclical fiscal policy accentuates swings in GDP and makes the conduct of monetary policy harder. The latter apply to monetary policy, irrespective of whether it is conducted within a single country, as in Sweden, or within a currency union, like the EMU.

In practice, the change in the primary CAB (PCAB) is often used as an indicator of the fiscal stance (thus, including factors belonging to square C in Figure 2), although other indicators exist as well, as we will see later on. Primary here means that the effect of changes in interest expenditure (and interest income) has been excluded.[5] A decrease in the PCAB between two points in time is

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[5]   If this effect is not excluded, a change in the CAB caused by a change in the net interest expenditure may be incorrectly interpreted as discretionary policy.

interpreted to mean that discretionary fiscal policy is expansionary, while an increase is taken to signify contractionary policy.

2.3   *The volume of discretionary measures*

When assessing fiscal and budgetary policy it can be of value to know to what extent changes in the actual budget balance are due to discretionary policy actions rather than to the economic environment. In terms of Figure 2, such an indicator should capture changes in the actual budget balance related to squares B and D. The first best solution would, of course, be to directly measure the value of taken policy measures, *i.e.* using a down-up approach. However, in the absence of detailed data on different tax and expenditure bases and rates, the change in the PCAB might still be used as a rough indication of discretionary measures, because in such cases there are no obvious alternatives. For example, at EU level, the change in the PCAB, adjusted for temporary and one-off measures, is currently used to assess whether EU Member States in excessive deficits have taken "effective action" in consolidating their budgetary positions in line with Council recommendations.[6] However, one drawback in using the PCAB for this purpose is that it also captures changes in the actual budget balance represented by square C in Figure 2.

2.4   *Fiscal impact and impulse*

From a macroeconomic perspective it can be of value to have an idea of the fiscal impact, that is, how fiscal policy affects aggregate demand, irrespective of whether the effect results from discretionary policy or automatic stabilisers. One simple fiscal indicator that can be used for this purpose is the change in the total budget balance (thus, capturing the effects in the squares A, B C and D).[7] On the other hand, this measure does not reveal what part of the change in demand has affected the budget balance and what part has, conversely, been influenced by the budget. To avoid this endogeneity problem, the change in the PCAB is instead often used as a rough indicator of fiscal impact. Since the CAB indicates what the budget balance would be if the economy were in equilibrium (or at full employment), it should eliminate this type of endogeneity problem, provided that the CAB is estimated such that it is orthogonal to the cycle. In practice, however, there are different shortcomings in estimating the CAB which often leads to the estimated CAB being correlated with the cycle.[8] Moreover, if one is interested in the overall

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[6]   See the 22 February 2006 Communication from the European Commission to the Council on the assessment of the action taken by Italy in response to the Council opinion under Article 104.7.

[7]   One could, of course, argue that not only the change of the net lending but also the level should be of importance for aggregate demand. If public revenue is higher than expenditure, this should have a contractive effect on demand, even if net lending is decreasing.

[8]   See, for example, Boije (2004), for a brief and non-technical discussion of these factors and how they can be solved.

Table 4

Definitions of Fiscal Concepts

Change in structural budget balance	C+D'
Fiscal stance	B+C (or only a part?) +D
Discretionary policy	B+D
Fiscal impulse	A+B+C+D

fiscal impact on demand, including the effect of the automatic stabilisers, the change in the PCAB does not tell the whole story.

The use of budget-balance-based fiscal indicators as measures of the fiscal impact on aggregate demand has been heavily criticised from several points of view. For example, indicators based only on budget balance do not take into account that the expenditure and revenue sides of the budget have different multipliers and that households' expectations about the future, the current economic situation, the size of public debt and the structure of the tax and expenditure system are important factors to consider in an assessment of the fiscal impact. Obviously, such an analysis requires sophisticated models. However, in such models, the results will heavily depend on the specific assumptions made when they were constructed. In the absence of such models, or when there is no consensus on the choice of the most appropriate model, there are simply no easily implementable alternatives. Indicators of the fiscal impact based on budget balance provide information that is better than nothing.[9] However, since these indicators do not measure the actual impact on aggregate demand, it would be fairer to say that they, at best, measure the fiscal *impulse* on demand.

Summing up: With reference to Figure 2 and equations (7) and (8), Table 2 provides our definition of the change of the structural budget balance, the fiscal stance, the volume of discretionary measures and the fiscal impulse.

We will use this framework as a reference when, in the next section, we compare the qualitative features of the indicators used for assessing the fiscal and budgetary performance in Sweden. As will be evident, some practical aspects apply that are not covered by this stylised framework.

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[9]   See also Krogstrup (2002).

3.   The Swedish budgetary and fiscal performance: the fiscal indicators' story

In this section we assess the fulfilment of the surplus target in recent years as well as the fiscal stance and the discretionary fiscal policy. We compare the results of the indicators used by the Riksbank, the NIER, the MoF and the European Commission and describe the *main* qualitative differences between the different indicators.

3.1   Indicators of the CAB

3.1.1 Methodology

The MoF calculates the CAB on the basis of an estimated output gap and an "aggregated" budget elasticity that is assumed to be 0.7. That means that if the (estimated) output gap changes by 1 percentage point, the cyclical component of net lending as a share of GDP is judged to change by 0.7 percentage points. To estimate the GDP gap for the individual years during the forecast period, the MoF usually assumes that the GDP gap is to be closed in the end of the forecast period (*i.e.* three years ahead). The formula used for calculating the CAB (as a percentage of GDP) is:[10]

$$\frac{S^*}{Y} = \frac{S}{Y} - \hat{\beta} \frac{Y - Y^*}{Y^*} \tag{9}$$

where S is the actual budget balance, S^* is the CAB, Y is GDP, Y^* is potential GDP and $(Y - Y^*)/Y^*$ is the output gap expressed in per cent of potential GDP. The aggregate budget elasticity $\hat{\beta}$ (thus, assessed to be 0.7) is *assumed* to catch the impact of the automatic stabilisers (thus, belonging to square A in Figure 2) but not the effect on net lending of temporary stabilisation policy measures (belonging to square B). In principle, the European Commission uses the same approach. However, it estimates the output gap using the commonly agreed production function approach in combination with an aggregated budgetary elasticity estimated on the basis of calculations made by the OECD, which is somewhat lower than 0.6 (see European Commission, 2004).

The Riksbank uses different methods to calculate the CAB. Here we will refer only to the method used by the Riksbank in its analyses for the European Central Bank (referred to here as the ESCB method).[11] The ESCB method decomposes several tax and expenditure bases into a trend and a cyclical part (using a HP filter). The cyclical component of each tax and expenditure is obtained by multiplying the

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[10]   When this equation is used in practice, the output gap is expressed in real terms while the actual budget balance and the CAB is expressed as a share of *nominal* GDP.

[11]   This method can not be regarded to be the Riksbank's official method.

"gap" that the decomposition results in by an estimated elasticity that shows how the tax or expenditure varies with each "gap". For instance, if actual private consumption, which is the principal base for indirect taxes (e.g. VAT), is above the estimated trend value in a particular year, this is interpreted to mean that the revenue from indirect taxes in that year is higher than "normal", *i.e.* that there is a positive "cyclical component" in the indirect taxes. Consequently, this method does not estimate the CAB on the basis of an assessment of the aggregate output gap. The formula used for calculating the CAB (in levels) is:[12]

$$S^* = S \; - \sum_i T_i \varepsilon_{T_i,B_i} \; \frac{B_i - B_i^*}{B_i^*} + E_U \varepsilon_{E_U,U} \left(\frac{U - U^*}{U^*} \right) \tag{10}$$

where T_i represents a special tax category (for example, indirect tax revenue), B_i is the *i*-th tax base (for example, private consumption), B_i^* is the trend value of the *i*-th tax base (obtained by a HP filter), ε_{T_i,B_i} is the *i*-th tax elasticity (measuring, for example, how indirect taxes respond to a change in private consumption), E_U is unemployment-related expenditure, the elasticity $\varepsilon_{E_U,U}$ measures how unemployment-related expenditure respond to a change in unemployment, U is the number of unemployed and U^* is its (HP-filtered) trend value.[13]

One advantage of this method compared with the "aggregated" method based on an output gap and aggregated budget elasticity is that, at least in some measure, it takes account of composition effects, *i.e.* that different kinds of macroeconomic shocks can affect the tax and expenditure bases in different ways and that tax bases are not necessarily linearly related to GDP. The benefit of the "aggregated" method, on the other hand, is that it is somewhat more transparent and the results are directly related to a total measure of economic conditions.

The NIER adjusts the actual net lending for:

(i)   the difference between the actual output and the estimated potential output (the output gap),

(ii) the difference between the actual unemployment rate and the estimated equilibrium unemployment rate (the unemployment gap), and

(iii) the deviation of principal tax bases from their normal proportion of GDP.

The equilibrium base-to-GDP ratios are estimated with help of an HP filter. Tax revenues are assumed to be proportional to their respective tax bases, thus, the tax elasticity is *assumed* to be 1 for all taxes (in contrast to the ESCB method where they are allowed to differ from 1). Other revenue is assumed to be proportional to GDP. Unemployment expenditure is assumed to be proportional to unemployment.

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[12]   See Bouthevillain *et al.* (2001) for a derivation of this formula.

[13]   For simplicity, the same index has been used for the tax and its base.

Other expenditure, such as public consumption, is assumed to be proportional to nominal potential GDP and thus independent of the cyclical state of the economy. The formula used for calculating the CAB is:[14]

$$S^* = S - \sum_i \frac{T_i}{B_i}\left(Y\left(\frac{B_i}{Y}\right) - Y^*\left(\frac{B_i}{Y}\right)^* \right) + \frac{E_U}{U}\left(U - U^*\right) \tag{11}$$

This formula states that the difference between the actual budget balance and the CAB depends on the output gap, the unemployment gap and the deviations of base-to-GDP ratios from their equilibrium levels (the composition effect). Worth noting is that this formula, under some conditions, is similar to equation (10). In defining the CAB, the NIER makes use of the trend values of the base-to-GDP ratios while the Riksbank (or ESCB) uses the trend values of the bases in levels (thus not related to GDP). The trend value of the base divided by the trend value of GDP is not necessarily the same as the trend value of the base-to-GDP ratio. Let us assume, however, that this is the case (under most circumstances the discrepancies should be small). The equation (11) can then be written as:

$$S^* = S - \sum_i T_i \frac{B_i - B_i^*}{B_i} + E_U\left(\frac{U - U^*}{U}\right) \tag{12}$$

Under this assumption, the only difference between equations (10) and (11) is that equation (10) includes elasticities allowed to differ from 1 and that the trend values of B and U show up in the denominators instead of the actual values. For small tax base and unemployment gaps and for elasticities close to one, these differences should have only a minor impact on the level of the estimated CAB. The NIER's practical implementation, however, gives rise to some other discrepancies which may induce quite large differences in results. Equation (11) explicitly makes use of an estimated output gap, while equation (10) does not. Furthermore, the NIER applies several sophisticated models and indicators to estimate the unemployment gap, not just an HP filter (the same applies to the estimation of the output gap).

3.1.2 *Comparison of results*

Table 5 shows how the CAB has developed between 2000 and 2005 according to the four different measures described above. All measures indicate that the surplus target has been overshot in some years, while it has been undershot in others. The measure used by the MoF indicates that the surplus has been met *on average* during this period, while the measures used by the European Commission and the NIER state that it has been slightly undershot. In comparison to the European Commission figures, it would appear that in general the MoF has estimated larger negative output gaps over the period. The indicator used by the Riksbank (the ESCB) states that the target has been undershot significantly. As can

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[14] See Braconier and Forsfält (2004) for a derivation of this formula.

Table 5

Indicators of the CAB
(percent of GDP)

	2000	2001	2002	2003	2004	2005	Average 2000-2005
National Institute of Economic Research	3.5	2.7	0.1	0.4	1.6	1.7	1.7
Ministry of Finance	4.1	3.1	0.4	1.0	2.1	2.1	2.1
European Commission	3.9	2.4	0.0	0.9	1.9	1.6	1.8
The Riksbank	3.0	1.1	–1.2	0.4	2.1	2.3	1.3
Difference highest–lowest	1.1	2.0	1.6	0.6	0.5	0.6	

Sources: Budget Bill 2006 (Ministry of Finance), Wage Formation in Sweden 2005 (NIER, October 2005), European Commission Services and the Riksbank (November 2005).

been seen, the differences in results between the different indicators are substantial in some years. The indicator used by the Riksbank (the ESCB) provides a structural budget balance for 2000-02 that is about 1 per cent lower than what the other indicators show. Let us try to figure out what may explain this huge difference.[15]

As a point of reference we have calculated the cyclical component of the budget balance with a HP-filtered GDP gap using the same de-trending parameter used in the ESCB method and a budget elasticity of 0.7. This method provides a cyclical component for all years that does not differ significantly from that obtained by the ESCB method. This indicates that composition effects do not explain the main differences in results. However, the HP-filtered GDP gap for the year 2000 is much more positive compared to the GDP gaps obtained by the MoF and the NIER. This should be one explanation as to why the CAB obtained by the ESCB method is significantly lower for the year 2000.

For 2001 and 2002 the GDP gaps obtained by the MoF and the NIER provide negative cyclical components while the ESCB method still provides positive ones. Overall, this should at least partly explain why the MoF and the NIER estimates of the structural budget balances for these years are much lower than the ones obtained by the ESCB method.

Summing up: In principle, all major institutions involved in assessing the Swedish budgetary performance have their own method to estimate the cyclically-adjusted or structural balance in the medium term. In this section we have shown that the results can differ substantially for individual years between the

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[15]   In the comparison we have ignored potential differences in the treatment of one-off effects.

different indicators used to measure the CAB or the structural budget balance. When assessing medium-term trends from a general perspective, such differences for individual years may not be problematic. However, in a context where these indicators are used to assess policy objectives, such as the fulfilment of the Swedish surplus target, and where the assessments lead to short-term policy conclusions, it is particularly important to be aware of the nature of the indicator used.

3.2   Indicators of the fiscal stance and discretionary policy

In this section we will compare the different indicators used by the MoF, the European Commission, the Riksbank and the NIER to assess the fiscal stance and the volume of discretionary measures. None of these institutions uses a "bottom-up" approach to calculate the volume of discretionary measures for the entire public sector. However, the MoF does use such an approach to calculate the volume of discretionary measures in the central government's budget. The MoF and the Riksbank use the change in the PCAB (or the structural budget balance) not only to assess the fiscal stance but also to get an idea of the volume of discretionary measures in the entire public sector. The NIER does not use the PCAB to assess the fiscal stance but a measure it calls the "policy-dependent change in net lending". Since the NIER does not have a "bottom-up" calculated measure of the volume of discretionary measures, we will use its policy-dependent change in net lending also as an indicator of discretionary policy in the entire public sector. The methods used to calculate the CABs were described above. Here we will therefore only describe the MoF's method to calculate the volume of discretionary measures and the NIER's construction of the policy-dependent change in net lending.

3.2.1 The MoF method to calculate the discretionary policy in the central government's budget

The MoF uses detailed information about tax and expenditure bases and rules to calculate the effect on the budget balance of all new decisions. Changes in the tax rates, for instance, are multiplied by the relevant tax bases. The calculation is performed statically, *i.e.* it is assumed that the bases are not affected by the changed taxes (or the changed expenditure). When the effects on net lending of all the rule changes are totalled and related to GDP, this gives a measure of the volume of discretionary measures in the central government's budget.[16] Only new active measures are counted, not *passive* changes in expenditure and tax levels due to indexation (this issue is examined in more depth in the following section).

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[16]   See Prop. 2005/06:1, *The Budget Bill for 2006*, Sweden's Economy, Appendix 2.

3.2.2 The NIER's indicator of fiscal stance

The NIER assumes that, given unchanged rules, direct and indirect taxes as well as social security contributions, are proportional to the respective tax and contribution base. If the tax or contribution shares are changed from one year to the next it is interpreted to be the result of discretionary fiscal policy measures. For other revenue, the norm used is that, given unchanged policy, it constitutes over time a constant share of the nominal gross domestic product. A change in the share between two years is interpreted as the result of discretionary measures. As regards expenditure, it is assumed that unemployment benefit, given unchanged rules, is proportional to the number of unemployed. For public consumption and other expenditure, the norm applied is that these, given unchanged policy, constitute a constant share of the nominal potential gross national product. If the expenditure shares change between two years, it is interpreted as the result of discretionary measures. When the deviations from the "norm" share for each revenue and expenditure category are totalled, this gives what the NIER calls the "policy-dependent change in net lending".[17]

A simplified example shows how the NIER's indicator should be interpreted. The principal tax base for indirect taxes is composed of total private consumption. Let us assume that indirect taxes expressed as a share of total private consumption (the implicit tax ratio) is 20 per cent initially (the norm tax rate). If private consumption totals SEK 1,200 billion, indirect taxes in this example will be SEK 240 billion. If private consumption increases by SEK 10 billion and indirect taxes at the same time rise by SEK 2 billion, this is interpreted with the NIER's indicator to mean that discretionary fiscal policy (concerning indirect taxes) is unchanged. However, if taxes increase by more or less than SEK 2 billion (in which case the implicit tax ratio has changed), it is interpreted as a result of discretionary political decisions.

Worth noting is that the NIER uses the "proportionality assumption" both when estimating the CAB and when calculating the policy-dependent change in net lending. There is, however, one main difference between these two indicators: while the policy-dependent change in net lending is intended to capture only policy-induced changes (those represented by square A and B in Figure 2), the change in the CAB also captures structural changes in the economy (square C in Figure 2 – for example, changes in the NAIRU). Still, revisions of the level of potential GDP (due, for example, to changes in the NAIRU) will affect the policy-dependent change in net lending, since it is assumed that public expenditure, other than unemployment-related expenditure, is linearly related to nominal potential GDP, at unchanged rules.

It should also be noticed that, because of the way it is constructed, the NIER uses the policy-dependent change in net lending for measuring not only the effects on the budgetary balance of active decisions, but also those of passive decisions.

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[17] The indicator is based on a method proposed by Braconier and Holden (1999).

Since the NIER assumes that, on the basis of unchanged rules, benefits (and other transfers) grow with nominal potential GDP (*i.e.* that they are in practice indexed), any deviation from this principle is interpreted as a passive discretionary change of the budget balance. Some benefits in Sweden are not indexed in the short term even if they can be regarded as indexed in the medium term, for example the child allowance, which is not changed every year, but in frequent discretionary steps. When the child allowance is raised by an active decision, the MoF's indicator invariably interprets this as a new discretionary measure. However, the NIER's fiscal stance indicator interprets it as a discretionary change in fiscal policy only if the change in benefits, expressed as a percentage, deviates from nominal potential GDP growth. For instance, if nominal potential GDP is assumed to grow by 5 per cent and the government actually increases the child allowance by 5 per cent, the indicator used by the MoF treats this change as a result of an expansionary fiscal policy, while the indicator used by the NIER does not. If the child allowance is not changed at all from one year to another, the NIER indicator interprets this as passive discretionary policy. In terms of Figure 2, the NIER's indicator for the fiscal stance is intended to capture only the effects encompassed by squares B and D *(including* both *active* and *passive* decisions).

3.2.3 The pros and cons...

...as regards the indicators' ability to measure the volume of discretionary measures

The bottom-up approach used by the MoF is the one that most likely gives the best precision as regards the impact on net lending due to active discretionary measures since it is based on actual changes in tax and "benefit rates" and the relevant tax and expenditure bases. Thus, if the purpose is to measure the static budget effect of active discretionary measures, this indicator should be suitable. However, as noted above, the MoF only makes such detailed calculations for those policy changes that concern the central government budget. It would be simple to also include the local government sector in the calculation as regards changes in local government tax rates. Measuring discretionary changes in local government consumption is, however, more difficult.

The advantage of using the NIER's policy-dependent indicator or the change of the PCAB as a measure of the volume of discretionary measures is that these indicators cover the whole public sector and not just the central government budget. One problem with the NIER's indicator – if used for this purpose – is, however, that – as described above – it captures not only changes in the budget balance related to active discretionary measures but also the impact from structural changes in the economy (that is, factors included in square C in Figure 2). The same problem applies to the change in the PCAB.

In a cross-country context, a closely linked issue is how to define discretionary measures to safeguard equal treatment. Take a country *A* where some expenditures are index-linked to inflation and compare with country *B* where the same expenditures also increase with inflation but through yearly discretionary

decisions. In the case of Sweden, the volume of the discretionary annual increase of central government grants to communes, largely intended to cover wage inflation, is exaggerated under the MoF approach in comparison to other countries where expenditures would develop at exactly the same pace but as a result of indexation.

…as regards the indicators' ability to measure the fiscal stance

A proper measure of the fiscal stance should capture the effect on the budget balance not only of discretionary measures, but also due to fiscal circumstances that affect the budget balance and aggregate demand in the same way as active discretionary measures. If all taxes are proportional to GDP and all expenditure is fixed in nominal terms, a growth in nominal GDP improves the budget balance even if there are no active discretionary measures. This should have a similar effect on aggregate demand as, for example, an active increase of the tax rate in a system where all expenditure grows with nominal GDP. The indicator used by the NIER treats both those circumstances in a similar way, which speaks in favour of this indicator. This also has implications in a cross country setting. Let us again consider the two different countries, *A* and *B*, identical in all aspects except that benefits are indexed in country *A*, but not in country *B*. If the measure of fiscal stance is allowed to capture only active discretionary measures, the absence of such measures from one year to another will result in a zero fiscal stance in both countries although the tax and expenditure system, due to non-indexation, will have a more contractive effect on aggregate demand in country *B*.[18]

The main difference between the change in the PCAB and the NIER indicator – as noted above – is that the latter is intended to exclude changes in the budget balances due to structural changes in the economy. However, in practice, structural and behavioural changes may violate the NIER's proportionality assumption. In that case, a change in the tax or contribution shares may incorrectly be interpreted as a result of fiscal discretionary measures. Furthermore, *ex post* revisions of the potential GDP also affects the NIER's estimate of fiscal stance.

3.2.4 *Comparison of results between different indicators*

Table 6 shows the fiscal stance between 2002 and 2005 as estimated by the Riksbank (ESCB), the NIER, the European Commission and the MoF, using the indicators described above. As mentioned above, those indicators are also treated as proxies for the volume of discretionary measures in the entire public sector. The MoF's "bottom-up" calculation of the volume of discretionary measures in the central government budget is also included in the table as a point of reference.

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[18] This section is greatly influenced by comments provided by Ingemar Hansson, director-general at the NIER.

Table 6

Indicators of the Fiscal Policy Stance, 2001-05
(change in percent of GDP)

	2001	2002	2003	2004	2005
National Institute of Economic Research					
Policy-dependent change in net lending	–1.1	–1.9	0.0	1.0	0.0
Ministry of Finance					
Discretionary fiscal policy in the central government budget	–1.7	–1.8	–0.5	–0.4	–1.3
Change in primary structural balance	–1.1	–2.4	–0.3	0.7	–0.2
The European Commission					
Change in primary structural balance	–2.3	–2.6	0.0	0.7	–0.3
The Riksbank					
Change in primary structural balance	–2.9	–2.1	0.7	1.3	0.1

Note: The Riksbank only excludes interest expenditure on the government debt. The NIER excludes interest income as well. The Ministry of Finance excludes net capital income, including dividends from state-owned companies and the Riksbank.

Sources: Budget Bill 2006, Ministry of Finance (figures adjusted in October due to a NA revision of the net lending), Wage Formation in Sweden 2005, October 2005, NIER, and the Riksbank (November, 2005).

All indicators of fiscal stance show that fiscal policy was expansionary in 2001. However, there are main differences; the indicators used by the NIER and the MoF point to a less expansionary stance compared to the effect on net lending of the discretionary fiscal policy in the central government budget, while the indicators used by the Riksbank and the European Commission show the opposite. As discussed in Sections 3.1 and 3.2.3, there are several methodological differences between the various indicators explaining the differences in results.

All indicators show that fiscal policy was expansionary in 2002: net lending decreased by roughly 2 per cent of GDP due to the expansionary policy. Reforms in the central government budget, e.g. reductions in income tax on work and measures in healthcare, the school system and care services explain the bulk of the expansionary policy that year.

For 2003, the MoF's indicator of fiscal stance points to a somewhat expansionary fiscal policy, in line with the active discretionary measures taken in the central government budget. The indicators applied by the NIER and the

European Commission show a neutral policy whereas the ESCB's method indicates fiscal tightening. So, for that year too, the indicators provide slightly different pictures of the fiscal stance.

For 2004, all indicators of the fiscal stance point to a relatively tight fiscal policy in spite of stimulatory measures in the central government budget. That indicates that 2004 had relatively large contractionary discretionary measures that are not evident in the effects of the measures in the central government budget. Several factors can explain this difference: the MoF's two indicators differ by just over 1 percentage point for 2004. According to the Ministry, some three-tenths of the difference is explained by higher net lending in the local government sector (mainly due to local government tax hikes) and four-tenths by increased corporate tax revenue, partly owing to the recent implementation of interest on tax allocation reserves. Actual public expenditure in 2004 was much lower than implied by the norms applied by the NIER when calculating expenditure for an unchanged policy. In addition, corporate tax revenue was higher than the NIER's norm for an unchanged policy. These deviations are thus interpreted as being the result of contractionary fiscal policy. So these factors mainly explain why the indicators measuring the fiscal stance reflect contractionary fiscal policy in 2004 in spite of expansionary measures in the central government budget.

Despite a considerably expansionary fiscal stance in the central government budget, the fiscal stance indicators on the whole point to a neutral discretionary fiscal policy for 2005. For this year, too, improved local government saving and/or higher corporate tax revenue may explain a large part of the difference between these indicators and the aggregate effect of the rule changes concerning the central government budget.

Summing up: As in the case of CABs and structural balances, there are several methodological differences between the different indicators used to assess the fiscal stance and the discretionary policy. We have shown that those differences have occasionally led to significant differences in results during the period 2001-05. We have shown, for example, that it is particularly important when analysing the stance of fiscal policy to not only take into account the direct effects of rule changes as announced in the central government's budget. However, the differences go deeper as they also relate to different benchmarks used for defining "unchanged policy". Under such circumstances, the conclusions and policy advice – as regards, for example, the degree of pro-cyclicality – may differ substantially depending on the choice of indicator. When discriminating between the different indicators, the pros and cons should be analysed against the objective at hand. For example, a proper indicator of fiscal stance should be indifferent to indexation of taxes and expenditures in the sense that it should capture both active and passive fiscal measures affecting demand in a similar way.

Table 7

Indicators of the Fiscal Policy Stance in 2004, Forecast Revisions
(change in percent of GDP)

National Institute of Economic Research		ESCB		Ministry of Finance			
Policy-dependent change in net lending		Change in primary structural balance		Discretionary measures in the central government budget		Change in primary structural balance	
	2004		**2004**		**2004**		**2004**
December 2002	0.5	November 2002	0.3	BB for 2003	–0.3		–0.2
December 2003	0.5	November 2003	0.2	BB for 2004	–0.2		0.1
December 2004	0.8	November 2004	0.9	BB for 2005	–0.4		0.1
October 2005	1.0	November 2005	1.3	BB for 2006	–0.4		0.7

Note. ESCB only excludes interest expenditure on the central government debt, not interest income on debt securities. The NIER excludes
interest income as well. The Ministry of Finance excludes net capital income, including dividends from state-owned companies and the Riksbank.

4. *Ex post* revisions of fiscal indicators

Revisions of indicators over time are not a problem *per se*: incorporating the most recent information as the quality of the figures improves is indeed welcome. However, revisions of indicators become an important issue when policy advice is given *ex ante*, on the basis of forecasts, and then assessed *ex post* either on the basis of revised forecasts or outcomes. In this section we look closer at the sources of and reasons for revisions of indicators.

Table 7 shows the revisions over time of the indictors used to measure fiscal stance for a single year, here chosen to be 2004. To improve the comparability of the indicators, the compared forecasts are those that have been presented in, or in conjunction with, the 2005 Budget Bill (BB) and that have factored in the reforms announced in the Bill.

When the forecasts were prepared in the autumn of 2002, both the MoF's indicators showed that fiscal policy would be slightly expansionary in 2004, whereas the two other indicators at the time indicated that fiscal policy would instead be slightly contractionary. The indicators taken together showed at that time a broadly neutral fiscal stance.

Between 2002 and 2005 the forecast of fiscal policy austerity for 2004 was revised upwards by 0.5-1.0 per cent of GDP, as measured by the indicators that cover the whole public sector. At the same time, the results show that this revision for 2004 cannot be due to the central government budget having become more contractionary over time owing to additional consolidation measures for that year. Instead, the discretionary fiscal policy in the central government budget for that year has become somewhat more expansionary over time, according to the indicator that measures the effect of rule changes in the central government budget. Lower public (mainly local government) consumption, higher local government taxes and larger-than-expected corporate tax revenue may explain a large part of the revision.[19] Overall this is a pertinent example of the uncertainties involved. If the change in the PCAB is used to measure the fiscal stance in 2004, it would appear that what *ex ante* looked to be a broadly neutral fiscal stance, in the end turned out to be highly contractionary even though very few new discretionary measures were taken to this end. This makes a case to have a closer look at the revisions of the underlying national accounts figures.

One way of doing this is to look, for individual years over time, at Swedish budgetary figures provided across the different generations of Swedish convergence programme (CP) updates (where figures are based on the respective budget bills). Indeed, it is striking how volatile budgetary outcomes have been in relation to the CP forecasts. This is even so for the short-term forecasts of the coming budget year. In addition, over the last few years surprises have mostly been on the positive side.

Table 8 compares the forecast (for real GDP growth, net lending, revenues, primary expenditures and interest expenditures) made in the programme of year t for the coming budgetary year $t + 1$ with the outcomes as measured in the programme of year $t + 1$ (still a forecast at this point but made towards the end of the year) and year $t + 2$.

The choice of time frame is explained in the context of the following year's budget polices being set taking account of the perceived situation at the time of the budget formulation. It follows that the "surprises" would generally not be explained by new policies as most policies would have been included in the budget. Of course, final data from the most recent national accounts may show even larger differences but it would be difficult to control for changes in accounting rules. However, the figures should still be interpreted with caution as they do not control for possible methodological changes to the accounting rules within the time frame.[20]

Looking at the net lending figures in Table 8, three periods stand out: 2000-01 with positive surprises, 2002-03 with negative surprises and 2004-05 again with positive surprises. It is interesting to see that in most cases the "surprise

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[19] At the end of 2003, Statistics Sweden (SCB) began to report tax revenue fully in accrual-based terms in the National Accounts, which in itself affects the distribution of tax revenue between years. The forecast of the accrual effects has been revised several times, making it difficult to analyse the cause of the changes in forecasts for a certain year over time.

[20] However, changes in figures between accounting standards from ESA79 to ESA95 have been considered.

Table 8

Convergence Programme (CP) Plans versus Outcomes
(percent of GDP)

	Forecast year (t+1):	2000		2001		2002		2003		2004		2005	
Difference late forecast for *t*+1 in CP *t*+1 and	**CP of year *t*+1 and *t*+2**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	**CP**	*n.a.*
Outturn in CP *t*+2 from forecast made in CP*t* for the year:		2000	2001	2001	2002	2002	2003	2003	2004	2004	2005	2005	
	GDP	0.9	0.6	–1.8	–2.3	–0.3	–0.5	–1.1	–0.9	1.5	1.6	–0.6	*n.a.*
	Net lending	**1.3**	**2.0**	**1.1**	**1.3**	**–0.4**	**–1.0**	**–1.3**	**–1.0**	**0.3**	**1.0**	**0.8**	*n.a.*
	Revenues	0.6	1.2	1.9	2.0	0.2	0.5	0.5	0.2	–0.9	–0.5	1.2	*n.a.*
	Primary expenditure	–0.4	–0.6	0.9	0.8	0.8	1.6	2.0	1.7	–0.7	–0.9	0.7	*n.a.*
	Interest expenditure	–0.3	–0.2	–0.1	–0.1	–0.2	0.0	–0.2	–0.6	–0.5	–0.6	–0.2	*n.a.*

Note: The table shows the difference between the planned figures for year $t+1$ in the CP of year t with the comparable figures in the CP of year $t+1$ and $t+2$. For example, the budget balance outcome for 2000 as reported in the CP submitted in the end of 2001 was 2.0 per cent of GDP better than the figure planned for 2000 in the CP of 1999.

Source: Swedish Convergence Programmes and European Commission Technical Assessments 1998-2005.

element" increases when more final data is available towards the end of $t + 1$. Very broadly, different factors can help explain the "surprise" elements.

In the year 2000, the reason was mainly economic growth, in that the upswing was substantially more powerful than believed, leading both to higher revenues and lower expenditures. In 2001, the growth upswing was abruptly halted as external demand faltered and household consumption grew more weakly than expected (developments that were further reinforced by the September 11th events). Nevertheless, tax payments grew more than expected due to high household sector capital gains and corporate profits in 2000, taxes which were paid and accounted for in 2001. In addition, employment grew better than expected. In 2002 and 2003 the net lending surprises were on the negative side. Explanatory factors were a continuously weaker cycle than foreseen and the downturn of the ICT sector. Nevertheless, the budgetary impact and persistence of the very expansionary budget for 2002 (an election year) was underestimated. In 2004, growth was substantially higher than forecast, driven by a surprisingly strong export performance. While the budget balance outcome measured at the end of 2004 was better than expected in 2003 it was not much better. This was explained by the low tax content of the export-driven growth and weak labour market developments. According to the current CP, the surplus will be even higher, now largely explained by the one-off corporate tax revenues from the liquidation of corporate tax allocation funds. For 2005, corporate tax developments, largely depending on the 2004 profit levels and also to some extent on the liquidation of the tax periodisation funds, are again explanatory factors. In addition, for the later years the lower interest expenditure, as a consequence of a persistent low inflation (below the Riksbank's inflation target), has contributed to a higher net lending than expected.

Overall, this example illustrates well the level of uncertainty in the basic aggregates even over the very short term and when controlling for new discretionary measures. A further illustration of the volatility of public finance figures in the short term can be given by comparing outcomes with forecasts obtained using standard fiscal elasticities. This provides a tool for demonstrating how forecasts based on standard "average" fiscal elasticities can go wrong. Let us apply this approach to the Swedish case and concentrate on the revenue side of the budget: Figure 3 shows the difference between the changes in the tax ratio according to the national accounts in relation to what would have been expected *ex ante*, using the OECD tax and tax base elasticities estimated for Sweden (see Girouard and André, 2005). In these calculations, taxes on production and imports, social contributions, personal and corporate income tax have been included. The approach is the same as used in the 2005 round of European Commission assessments of Stability and Convergence programmes as regards the comparison between national and European Commission tax forecasts (see European Commission, 2006 and Appendix for a technical description of the method). However, while the European Commission used this approach to compare differences between different forecasts, we use it here to explain the differences between a forecast based on standard fiscal elasticities and the actual outcomes.

Figure 3

A Decomposition of the Tax Ratio: Outcome to Expectations
(percent of GDP)

	Elasticity component		Composition component
	Difference (NA – *ex ante*)		Interaction component
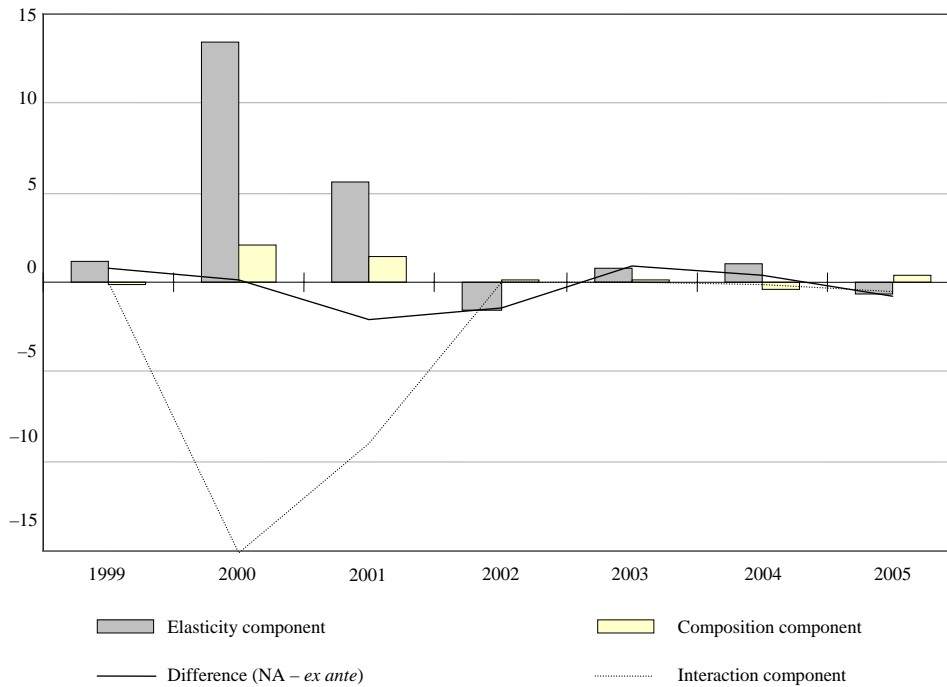
The difference between the actual change in the tax ratio and what would have been expected given OECD elasticities of tax bases to GDP and tax revenues to the tax bases have been split up into an "elasticity component" and a "composition component". In principle, the "elasticity component" reflects for a specific year the difference between how taxes actually grew and how they would have been expected to grow according to the OECD tax elasticity to the tax base. In the same way the "composition component" reflects for a specific year the difference between how taxes actually grew and how they would have been expected to grow according to the OECD tax base elasticity to GDP. It is crucial to be aware that the "elasticity" component also includes the impact of one-off and other temporary measures. There is also an interaction component capturing the interaction between the elasticity and the composition component. Forecasts would generally be expected to closely follow *ex ante* expectations adjusted for specific knowledge on discretionary measures, especially forecasts extending beyond the following budget year.

Looking at the 1999-2004 period where outcomes are available, the differences between the outcomes and the *ex ante* forecast can be large, sometimes even huge. This applies in particular to 2000 (and 2001) when corporate tax receipts

were extraordinarily high (and thus fell substantially in 2001) due to a one-off payment relating to a privatised public corporation (called Alecta) while at the same time tax bases grew very slowly in comparison to expectations given GDP growth. For the other years the "difference components" are smaller but, in some cases, still between 0.5-1.0 per cent of GDP. Overall, this illustrates that annual tax elasticities and tax bases can diverge significantly from average expectations.

Summing up: In this section, we have seen that indicators can change substantially in the very short term. What *ex ante* may seem to be an expansionary fiscal policy can turn out *ex post* to be contractionary. We have shown that such changes are often linked not to changes in policies, but rather, to revisions in forecasts or outcomes of the underlying national accounts figures. Indeed, in the case of Sweden the short-term volatility in public finance figures appears to have been very high. It would appear that the magnitude of this uncertainty overshadows any reductions in uncertainty that can be achieved by developing more refined indicators. If the aim is to improve fiscal policy descriptions on the basis of fiscal indicators, it appears to be more important to concentrate on how to improve national accounts statistics and forecasting.

5. Lessons for budgetary surveillance and policy making

In this paper we have looked at the different indicators used to assess the Swedish fiscal policy performance. Most institutions involved (the Riksbank, the NIER, the MoF and the European Commission) have developed their own individual battery of indicators used for similar aims, for example, to measure the structural budget balance, the fiscal stance and the volume of discretionary measures. While the same applies to most countries, the question is what lessons can be drawn from the Swedish experience for budgetary surveillance and policy making in a horizontal setting.

We can see two major lessons with reference to the Swedish example. We have shown that different indicators can give substantially different results for individual years due to methodological differences. When assessing medium-term trends, such differences for individual years may not be problematic from a general perspective. However, in a context where these indicators are used to assess policy objectives, such as the fulfilment of the Swedish surplus target, and where the assessments lead to short-term policy conclusions, it is particularly important to be aware of the nature of the indicator used. Some features, such as how "unchanged policy" is defined, are particularly important if the indicator is to be used for budgetary surveillance, for example in a cross-country context where equal treatment is required. Different benchmarks used can lead to different conclusions about both the fulfilment of the medium-term objective and the fiscal stance. Let us think about two different EU member countries, *A* and *B*, identical in all aspects, except that benefits are indexed in country *A*, but not in country *B*. If the measure of fiscal stance is allowed to capture only active discretionary measures, the absence of such measures from one year to another will result in a zero fiscal stance in both

countries although the tax and expenditure system, due to non-indexation, will have a more contractive effect on aggregate demand in country *B*. A similar argument can be made as regards an assessment of the size of planned consolidation measures. This may, for example, be part of an assessment within the SGP regarding countries response to Council recommendations. While two countries may follow the same policies it is important to avoid a situation where a technical feature such as different practices in the use of indexing lead to different conclusions.

A second lesson relates to the implications of the overall volatility in public finance figures in the short term. Indeed, we have shown, with reference to the Swedish case, that the "surprise element" in budget forecasting is substantial, illustrating the uncertainties involved. In addition, the revisions of national account figures can also be large in the short term. The degree of uncertainty may be linked to that Sweden is a small export-oriented open economy with a large public sector. However, if this conclusion can be generalised to other countries, it appears that the magnitude of this uncertainty overshadows any improvements in precision that can be achieved by making more refined methodological changes to budget indicators.

APPENDIX

In Section 4, tax outcomes are compared with what would have been expected in a forecast based on the standard *ex ante* elasticities, as estimated by the OECD (see Girourd and André, 2005 and European Commission, 2006). The analysis is carried out on the basis of information for the four major tax categories, *i.e.* indirect taxes, corporate and personal income taxes and social contributions. Conceptually, the analysis draws on the definition of semi-elasticity, which measures the change in a ratio *vis-à-vis* the relative change in the denominator. The semi-elasticity of the tax-to-GDP ratio of the *i*-th tax $\dfrac{T_i}{Y}$ can be written as:

$$\eta_i = \frac{d\left(\dfrac{T_i}{Y}\right)}{dY}Y = \left(\frac{dT_i}{dY_i}\frac{Y}{T_i}-1\right)\frac{T_i}{Y} = \left(\frac{dT_i}{dB_i}\frac{B_i}{T_i}\frac{dB_i}{dY}\frac{Y}{B_i}-1\right)\frac{T_i}{Y} = (\varepsilon_{T_i,B_i}\varepsilon_{B_i,Y}-1)\frac{T_i}{Y}$$

where ε_{T_i,B_i} and $\varepsilon_{B_i,Y}$ respectively denote the elasticity of the *i*-th tax T_i relative to its tax base B_i and the elasticity of the tax base B_i relative to aggregate GDP (*Y*). To the extent that ε_{T_i,B_i} is derived from observed or projected data, it will typically reflect:

(i) the effect of discretionary measures (including one-offs) and
(ii) the tax elasticity.[21]

By contrast, if ε_{T_i,B_i} is the standard *ex ante* elasticity, as estimated by the OECD, it will be net of discretionary measures. The second elasticity $\varepsilon_{B_i,Y}$ can be used as an indicator of the tax intensity of GDP growth; for instance, a higher elasticity of consumption relative to GDP means that for the same GDP growth indirect taxes will be higher.

The definition of a semi-elasticity has two practical implications. First, any change in the tax-to-GDP ratio of the *i*-th tax can be written as the product of the semi-elasticity and GDP growth:

$$d\left(\frac{T_i}{Y}\right) = \eta_i \cdot \frac{dY}{Y}$$

and the change in the total tax-to-GDP ratio is the sum:

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[21] The observed or projected elasticity (*ex post* elasticity) of the *i*-th tax also includes the effect of other factors (OF) such as discretionary measures:

$$\frac{\Delta T_i}{T_i} = \varepsilon_{T_i,B_i\,ex\,ante}\frac{dB_i}{B_i} + \frac{OF_i}{T_i} = \varepsilon_{T_i,B_i\,ex\,post}\frac{dB_i}{B_i}$$

$$\sum_i d\left(\frac{T_i}{Y}\right) = \sum_I \eta_i \frac{dY}{Y}.$$

Second, differences between two tax projections can be decomposed into an elasticity component and a composition component:

$$d\left(\frac{T_i}{Y}\right)' - d\left(\frac{T_i}{Y}\right) = \left[\left(\varepsilon'_{T_i,B_i}\varepsilon'_{B_i,Y} - 1\right)\frac{T_i}{Y} - \left(\varepsilon_{T_i,B_i}\varepsilon_{B_i,Y} - 1\right)\frac{T_i}{Y}\right]\frac{dY}{Y}$$

If

$$(\varepsilon'_{T_i,B_i} - \varepsilon_{T_i,B_i}) = \alpha_i; \quad (\varepsilon'_{B_i,Y} - \varepsilon_{B_i,Y}) = \beta_i$$

then

$$d\left(\frac{T_i}{Y}\right)' - d\left(\frac{T_i}{Y}\right) = \left[\left(\alpha_i\varepsilon_{B_i,Y} + \beta_i\varepsilon_{T_i,B_i} + \alpha_i\beta_i\right)\frac{T_i}{Y}\right]\frac{dY}{Y}$$

where $\alpha_i\varepsilon_{B_i,Y}\dfrac{T_i}{Y}\dfrac{dY}{Y}$ determines the elasticity component and $\beta_i\varepsilon_{T_i,B_i}\dfrac{T_i}{Y}\dfrac{dY}{Y}$

the composition component. The third component in the equation $\alpha_i\beta_i\dfrac{T_i}{Y}\dfrac{dY}{Y}$

measures the interaction of the elasticity and the composition components. It is generally small but can become significant in some cases. The tax elasticity relative to GDP of total taxes is obtained as $\varepsilon = \sum_i w_i\varepsilon_{T_iB_i}\varepsilon_{B_iY}$ with w_i the share of the

i-th tax in the overall tax burden.

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COMMENTS ON SESSION 4:
THE ROLE OF INDICATORS IN FISCAL POLICY

Yngve Lindh[*]

It has been rewarding to read the two papers in this session I have been asked to discuss. Both papers give interesting insights on fiscal indicators. However, the papers are quite different in scope.

Moulin and Wierts show that there is a divergence between the budgetary commitments taken by member states in their stability and convergence programmes and the policies actually implemented. As a consequence, objectives become "moving targets". One aim of the paper is to find explanations for such behavior.

Boije and Fischer discuss different variants of fiscal indicators with the purpose of measuring structural budget balances and cyclically-adjusted balances on one hand and indicators of fiscal stance and fiscal impulse on the other. As an example, they analyze variants of such indicators used by different institutions to analyze Swedish fiscal policy. Because of the differences in the scope of the papers, I find it convenient to separate my comments on them.

Discussion on "How Credible Are Multiannual Budgetary Plans in the EU?" by Laurent Moulin and Peter Wierts

Moulin and Wierts analyze in a careful manner the budgetary slippages with respect to the plans outlined in the stability and convergence programmes. They compare the intentions expressed therein with their relative *ex post* outcomes. Their main question is whether these slippages depend on a failure to implement the measures planned or on a forecast bias concerning economic growth.

In part three of the paper, the Authors point out in an illustrative manner that plans to achieve the target of a "close-to-balance" budget have in many cases not materialized and that, in their programmes, member states had planned to improve general government balances by ¼ percentages points of GDP on average and by ½ percentage points of GDP in countries with high initial deficits. Moreover, they find that:

- planned measures concern, in most cases, the expenditure side,
- plans have a tendency to backload reductions in deficit, and
- macroeconomic assumptions have been ambitious.

However, the comment on expenditure cuts having expansionary effects (the so-called "non-keynesian effects") is a bit far-fetched in this context. According to my reading of the literature on fiscal policy effects, such mechanism works in the

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[*] Ministry of Finance, Sweden.

case of very serious fiscal crises, when the credibility of fiscal (and/or monetary) policy is completely lost. Examples of this can be found in the deep crises suffered by some European countries in the early 1990s. Even if some member states had problems in fulfilling their obligations under the Stability and Growth Pact, the crises under scrutiny have not been that deep.

Why are objectives missed?

Most of the slippages have occurred on the expenditure side. It is also an interesting finding that tax cuts have, on average, been lower than planned and that growth was overestimated and inflation underestimated, especially for countries with poor initial conditions.

A simple explanation

A possible explanation, not mentioned by Moulin and Wierts, for the finding that fiscal policies have not been as ambitious as planned, could be that the "plans" for later years in the time horizon, *i.e.* for $t + 2$ and $t + 3$, should not be seen as strictly such, nor should they be seen as forecasts. Instead, for some countries they represent calculations based on current policies. At the year $t + 1$, new measures are normally decided for the year $t + 2$, and in $t + 2$ new measures are added for $t + 3$. This simple explanation could contribute to the results and its implications could be analyzed further.

Possible extension or further research

The comprehensive data set that Moulin and Wierts have compiled could be used for further tests and research. One possibility could be to test whether the differences between programmes and outcomes reflect differences in the robustness of the fiscal framework of each member state. In particular, one could test the fulfillment of plans against the strictness of expenditure ceilings. In such a test it would be interesting to evaluate whether the volatility of surpluses derives from the revenue or the expenditure side. A plausible hypothesis is that in member states which have implemented expenditure ceilings, public expenditure has been less volatile and the overshooting has been smaller than in member states with weaker rules. Another way of action could be to test if expenditure slippages are related to election years or not.

Discussion on "Fiscal Indicators in a Rule-based Framework: The Case of Sweden" by Robert Boije and Jonas Fischer

The added value of the paper lies in its clear discussion and comparison of different types of indicators for structural net lending, fiscal stance and related

indicators. For me it is of special interest that Swedish data on public finances are used by the Authors as an example. But the discussion is general and valuable also for readers without this special interest.

I find the description in part one of the Swedish budgetary framework, with its virtues and problems, appropriate and in line with that in the article that I co-authored with Urban Hansson Brusewitz and that was presented in the 2005 workshop. I have only two remarks:

- In the Swedish system, annual targets are set for each year to support the overall target. These targets are motivated in the Budget Bills in relation to the cyclical situation of the economy and the current position of net lending compared to the overall target, although no strict formal rule is used. The annual targets for the coming year were introduced in 2003.

- About the relation between the surplus target and the expenditure gaps, it is correct that the expenditure ceiling should been seen as supporting the surplus target. But the expenditure ceilings also have their own motivations. They hinder windfall gains to be used as permanent expenditure increases. They also sharpen allocation between expenditures. This is a mechanism that has been noticed in the context of the discussion on quality of public finances at the European Union level. Hence, an advantage of expenditure ceilings is that it could be the case that the expenditures are tilted towards growth-enhancing measures.

On the other hand, the existence of small budgetary margins, the use of tax expenditures and the problem of definition of the economic cycle are, as Boije and Fischer point out, problems worth discussing.[1]

Analytical part of the paper

The analysis on budgetary indicators in the second part of the paper is enlightening. It gives a clear structure to sort out the differences between indicators and it also sorts out the terminology. What do we really mean by fiscal stance, fiscal impulse and fiscal impact?

According to our experiences in Sweden, I believe that measures of structural balances and CABs are problematic to use as measures of compliance with a budget balance target. The uncertainty in the measurement of the level of potential output and the *ex post* revisions of output gaps are two problems. Such indicators should therefore only be used in conjunction with others to evaluate whether current fiscal policies are in line with the overall surplus target. There are also important

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[1]   The Swedish fiscal framework has also been discussed in Balassone, F. (2005), "Sweden – Selected issues – The Swedish Fiscal Framework: Towards Gradual Erosion?", IMF; Fischer, J. (2005), "Sweden, Country study – Swedish Budget Rules: Praise from Brussels, Pressure at Home", EU Commission; Hansson Brusewitz, U. (2002), "The Swedish Medium-term Budget Framework", in *A Collection of Country Reports*, KDI School of Public Policy and Management, Seoul (Korea); and Hansson Brusewitz, U. and Y. Lindh (2005), "Expenditure Ceilings and Fiscal Policy – Swedish Experiences", in *Public Expenditure*, Banca d'Italia's Workshop on Public Finances.

measurement problems related to one-off measures and some very volatile revenues from taxes, such as capital income taxes and corporate income taxes. It is hard to assess if changes in these revenues are to be considered as permanent or temporary.

Indicators for fiscal stance, fiscal impulse and fiscal impact

Boije and Fischer point out two problem areas that we must carefully consider. The first one comprises the structural changes not related to policy decisions, for instance the demographic and behavioral changes affecting public expenditure. The second one consists of non-indexed benefits which, in practice, are indexed in the medium term.

Personally, I always get uneasy when I see diagrams representing the policy mix of fiscal and monetary policies. It is important to know exactly what is and what is not included in the fiscal stance and monetary stance indicators. Boije and Fischer sort out this aspect nicely and I can only strongly agree with their conclusion that it is particularly important to be aware of the nature of the indicators used.

Impact and impulse

I also fully agree with the authors that changes of net lending could only be seen as an indicator of the impulse from the public sector on the private sector demand and not a measure of the effects of demand. In order to measure the effects on demand, much more sophisticated models would be needed. However, I also believe that it is possible to have at least rough estimates of the effects by analyzing the components of the impulse carefully, *i.e.* how this latter is made up by changes in taxes, transfers, public consumption, net capital income etc.

To use changes in net lending as an indicator of *fiscal impulse* is indeed simple and static. But it is also appealing since this indicator is transparent and gives detailed information on what is going on. The fiscal impulse can be disaggregated into the influences from changes in automatic stabilizers and in structural net lending (fiscal stance). Structural net lending can in turn be disaggregated into discretionary measures by central and local government, net capital income and other effects. The last component can in turn be interpreted as the impact of demographic changes and other structural changes in the economy. We can by this set of indicators show that discretionary fiscal policy by government, fiscal stance and the overall impulse from public sector on demand in the private sector could differ substantially from each other.

COMMENTS ON SESSION 4:
THE ROLE OF INDICATORS IN FISCAL POLICY

Karsten Wendorff[*]

When I saw the agenda, I initially felt slightly uncomfortable to be the final contributor to the workshop. But then, of course, I realised that Daniele had made the perfect choice. Germany, with Michael Schumacher, might seem to be a natural candidate for pole position, but in a conference on economic and fiscal issues – at least given our recent performance – we could well deserve to start last on the grid.

Moreover, I am more than recompensed for any inconvenience by the two very interesting papers I have to comment on. In order to keep you awake at this point of the workshop, I shall try to be as unfair and nasty as possible.

Comments on "From Deficits to Debt and Back: Political Incentives under Numerical Fiscal Rules" by Marco Buti, João Nogueira Martins and Alessandro Turrini

First, I shall discuss the paper by Marco Buti, Joao Nogueira Martins and Alessandro Turrini, which tackles the issue of European fiscal rules and creative accounting from a monitoring and (as commissioner Almunia stated) "police" perspective. Second, I shall focus on the paper by Robert Woods on fiscal rules/fiscal indicators in a national context, namely the UK. This approaches the subject from the policymaker or (as commissioner Almunia may have thought) "criminal" perspective.

"Creative accounting" has played a prominent role in the discussion on fiscal surveillance in Europe in the past few years. However, it is very difficult to analyse these measures systematically. Buti *et al.* make an important contribution to this issue and, therefore, also to this workshop on fiscal indicators. I shall begin with a brief discussion of stock flow adjustment (SFA), followed by the model and, finally, the results.

As suggested by von Hagen and Wolff, the authors take s*tock flow adjustments* as a measure of creative accounting. However, in my view, the disaggregated treatment of stock flow adjustments represents a significant improvement on von Hagen/Wolff. The disaggregated approach is very productive given the very different economic nature of these measures. It is particularly important to separate privatisation receipts and portfolio investments from other stock flows. The following extensions of the analysis may be worth considering:

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[*]   Deutsche Bundesbank.

- "Reclassifications" may be included in the measure of "hidden deficits" because they are natural candidates for creative accounting (for example, in the case of debt assumptions from public corporations).

- It would be very interesting to show a table with the results for the "extended definition" of hidden deficits by country and year. However, the reason why the authors are not very explicit may be that some of the data used are confidential.

- Taking real-time data from spring 2005 appears somewhat arbitrary. It would be interesting to see real-real time data for all years (probably not available) and the result of the analysis with current data.

The *model* which is presented in the paper is, in my view, quite intuitive. One important political recommendation which is derived from the model is that one should try to reduce the incentive for creative accounting. There may be two ways of doing this:

- The right way would be to reduce the incentive by raising the costs – the political costs – of window dressing. In this context, transparency, auditing by Eurostat, and also papers focusing on creative accounting are important. However, Buti *et al.* seem to be very cautious about increasing such costs. In footnote 7, they state very prudently that "We are not necessarily suggesting that any country reported wrong or inconsistent data on purpose. However, governments may have an interest in keeping low quality statistical systems if this results in a minimisation of their deficits."

- By contrast, the wrong way to reduce the incentive for creative accounting is, of course, to weaken the rules: Weakening the rules reduces the incentive to manipulate the data. Unlike the authors, I think that we have gone some way down that road in Europe.

The *econometric results* are, in my view, not ultimately convincing and only partly prove the authors' conclusions.

While, in the model, an increase of the true deficit is expected to lead to an increase in the SFA, the problem in the econometric analysis is that the Maastricht deficit is reduced by significant SFA in order to fall below 3 per cent and is, therefore, affected by the SFA (simultaneity problem). It would be conceivable to use the Maastricht deficit plus the "hidden deficit" to obtain the "true deficit". This would seem to be particularly appropriate, because Buti *et al.* could overcome the von Hagen/Wolff problem of not being in a position to separate privatisations and hidden deficits.

Looking at the data intuitively, I would not focus on EU 25.

- First, I would expect huge statistical problems, at least in the new member states in the early years.

- Second, I would not expect a major creative accounting incentive for the non-euro-area countries with respect to the European rules – at least in the early years. Therefore, for the deficit, I would concentrate on the euro zone and on countries with true deficits above 3 per cent (Germany, France, Italy, Portugal,

Greece, the Netherlands, and additionally – known as a "specialist" in creative accounting – Austria). The results shown in Table 1 seem to confirm that these are the candidates for creative accounting.

The econometric results seem to conflict with the authors' conclusions in some cases.

- The results for the SGP framework (which, in my view, is the most relevant case) indicate that deficits have a mostly negative impact on SFA. This means that the positive effect, which the authors claim, comes from countries outside the euro area.

- The dummy "overshooting the 3 per cent" has an important and significant negative impact on the hidden deficit in euro-area countries. This contradicts the authors' conclusions, but is probably a result of the fact that countries which are characterised by large hidden deficits are precisely those countries which respected the 3 per cent limit.

Overall, the paper by Buti *et al.* is a major contribution to the discussion on fiscal indicators. It explains creative accounting from the spring 2005 perspective for the period 1995 to 2004. However, this specific approach focusing on stock flow adjustments may no longer be appropriate to tackling the issue of creative accounting in the future because the "virus" will have mutated: stock flow adjustments may disappear, but substituted by even more dangerous mutations. I would expect measures which reduce debt and deficit simultaneously (outside government transactions, securitisations, assumptions of pension liabilities). Moreover, temporary measures may be used to shape the deficits over time, thereby circumventing the rules.

An important conclusion of the paper is that, in the end, every rule is expected to be circumvented. Therefore, transparency has to be improved, and institutions must be in place to defend the rules, to control for creative actions, and to increase the costs of window dressing. However, making the rules more complicated and complex, introducing more room for discretionary decisions, interpretation and more country-specific analysis may also lower the incentive for creative accounting, but it does not foster fiscal sustainability.

Comments on "The Role of Fiscal Indicators in Setting Fiscal Policy in the UK" by Robert Woods

In his very interesting and impressive paper, Robert Woods discusses the fiscal indicators used by the UK treasury. He explains in detail the sophisticated and elaborate fiscal framework, which seems to match the cited criteria for appropriate fiscal rules:

- Transparency, openness, accountability for external scrutiny of fiscal policy is one of the key messages.

- Nine key indicators address short-term, medium-term and longer-term aspects (although showing the Maastricht criteria is probably no more than an example

of British humour, because the criteria do not really seem to be at the core of fiscal policy targets in the UK).

- Forecast evaluation is done and careful assumptions should underlie fiscal planning.
- Compliance with the rules is explicitly checked and communicated.
- The focus is on aggregated figures rather than on the details in order to convey the most relevant aspects to the general public.

The framework presented in the paper contrasts markedly with what we find in Germany, where transparency, in my view, can significantly improve and where the – much weaker – national fiscal golden rule is widely circumvented. But the situation may be always more complicated if you have a strongly decentralised federal system.

All in all, it seems to me that the UK is a fiscal policy framework paradise. However, after having read the Buti *et al.* paper, I am, of course, very suspicious and I wonder: What is wrong with the British? Why they are less susceptible to cheating with fiscal rules?

My first guess was that they respect the rules because of their tradition of "fair play". (In Britain, people queue up at the bus stop but British teams do not usually win the World Cup.) My second guess was that maybe fiscal policy window dressing is a specific feature of EMU members and affects countries which do not want to introduce the euro to a lesser extent.

But then I read a Times article from 31 December 2005:

"Mr Brown gained credibility, beyond actual performance by adopting his "golden rule" on current state spending. That credit melted away as the golden rule was reduced to a comedy club joke. In future the eyes of those who finance higher-than-forecast deficits will focus on the bare numbers".

Or, to put it more politely, like the IMF:

"However, the current form of the golden rule requires a precise dating of the cycle. Not only is this difficult, but the adjustments in the definition of the cycle have proved an unhelpful distraction from the more important considerations of what a sustainable fiscal policy is and how it should be achieved".

Having read this, I gained the vague impression that, in the fiscal framework paradise of the UK, someone may have found the apple.

At present, the relatively new comprehensive fiscal framework in the UK seems to be undergoing a stress test.

- These quotations suggest that some window dressing operations may have taken place with respect to the assessment of the cycle in order to just meet the rule of balancing the primary budget over the cycle.
- The current forecast is judged in the press to be quite optimistic.

- The debt ratio is expected to be not far away from the upper bound of 40 per cent.
- Fiscal policy has been significantly relaxed during the past four years (unlike monetary policy, which has been tightened overall).
- One can probably detect a certain expansionary pre-election effect before last year's parliamentary elections.

Hence, the strength of the fiscal rules in the UK will be put to the test in the next few years. It will be very interesting to see whether the UK government – unlike in earlier years – will implement a fiscal policy in the medium term that will significantly improve the cyclically adjusted primary balance in order to comply with the current fiscal framework. Therefore, I am looking forward to reading Robert's paper on the UK's experience of fiscal rules in the future.

COMMENTS ON SESSION 4:
THE ROLE OF INDICATORS IN FISCAL POLICY

Miguel St. Aubyn[*]

Comments on "Political Implications of Fiscal Performance in OECD Countries" by Adi Brender and Allan Drazen

Adi Brender and Allan Drazen question is an empirical one, and very relevant not only in what Economics is concerned, but also in political terms – how does deficit reduction affect a politician probability of being reelected? A good number of us, I believe, may well think that a politician has to be courageous in order to engage in a deficit reduction or fiscal consolidation program. But Adi and Allan have good news for them – they will be rewarded, not only by history, but also by the electorate, and not in the long run, but also in the short to medium term. As a matter of fact, politicians that have reduced the deficit are more easily reelected, according to the technically sound, even if a bit surprising, results presented in this most interesting paper.

Authors should be praised by their clarity, and they are really careful when presenting data sources, definitions and methods. They rely on probit regressions, which tell the researcher the basic message that the deficit significantly affects the probability of being reelected, and this when several controls are (rightly) introduced – like the business cycle, inflation or majority voting.

A potential cause of bias that occurred to me was the following: and what about politicians that give up about presenting again for an election? What about those that, considering everything lost, withdraw from the political scene? This is a possible source of bias if a good number of fiscal consolidation protagonists are among these "notional losers".

The authors offer some possible explanations for their results. Namely, that voters are "rational forward looking individuals who do not follow for 'fiscal illusions'". One could well go a step further. A pure Barro-Ricardian economist could even argue that, in fact, rational forward looking individuals do not really care about deficits, in so far as spending levels are sustainable and financed by present and future taxes. But, clearly, the voters (and the authors) have a model in mind where deficits make a difference – and we all now there are several reasons for departure from Ricardian equivalence.

An alternative explanation for voters to care about deficit reduction comes to my mind. Deficit diminution is only one of the things a successful politician does. It works a bit like a "competence signal". Voters may read more in a fiscal

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[*]   ISEG – Technical University of Lisbon.

consolidation episode than the deficit value. For example, they can infer that public sector efficiency increased, so that their taxes are more effectively spent.

I suggest two possible extensions:

- the authors have examined total expense and total revenue, concluding that government size does not matter. But it could be that spending composition matters...

- as the deficit is not an exogenous variable completely controlled by the policy maker, it would be interesting to check whether results are robust to the consideration of a cyclically adjusted deficit measure.

Comments on "Fiscal Policy Indicators in A Rule-Based Framework: An Indian Experience" by Ranjit K. Pattnaik, Deepa S. Raj and Jai Chander

In India, there is a double objective for budgetary policy – by the end of March 2009, the revenue deficit should be null, and the fiscal deficit should not exceed 3 per cent of GDP. Note that the revenue deficit equals the difference between current expenditure and current revenue. The objective in India is therefore a version of the golden rule.

The Indian deficit has declined in recent times, and the authors are interested in disentangling government action influence from the general macroeconomic performance one. They apply methods close to Kremer *et al.* (see Session 1) and compute CABs for India from 1991-92 to 2005-06.

As widely discussed on Thursday in this workshop, there are different ways of measuring trend and cycle – some are purely statistical, others rely more on economics. Moreover, given the trend and the cycle, the methods may still differ in the way of computing the cyclical component of the budget.

The main conclusion is that government action, particularly in what concerns revenue, has been important in driving the deficit down (and not so much general macroeconomic performance). Even if this conclusion is warranted by careful calculations by the authors, it is, of course, dependent on the methods they rely upon. As there is a good number of competing alternatives, it would be interesting to test for robustness of this conclusion by comparing with results from other procedures.