Elusive Counter-Cyclicality and Deliberate Opportunism? Fiscal Policy from Plans to Final Outcomes

Álvaro M. Pina*

April 2009

Work in progress; comments are most welcome.

Abstract

Drawing on the European Commission's Autumn forecasts, I estimate fiscal reaction functions with four different information sets, ranging from budget plans to final outcomes. I also analyse deviations from plans during budget implementation. In a panel of 15 EU countries from 1987 to 2006, moving from plans to final data generally weakens the counter-cyclicality of budget balances and expenditures (though not of revenues), and reinforces electoral effects. Deviations from plans play a negligible role in the former finding, as they are often a-cyclical; but have a major role in the latter, as they display a clear opportunistic pattern.

JEL Classification: E62, H20, H50, H60

Keywords: fiscal policy, real-time data, revenue, expenditure, cyclicality, elections

* ISEG (School of Economics and Management)/Technical University of Lisbon and UECE (Research Unit on Complexity and Economics). Address: ISEG/UTL, R. Miguel Lupi 20, 1249-078 Lisboa, Portugal. E-mail: ampina@iseg.utl.pt

I thank Jorge Correia da Cunha and Maximiano Pinheiro, as well as participants at a seminar given at the Economic Research Department of Banco de Portugal, for valuable comments and suggestions. Support for this project from Banco de Portugal, in the form of grant for visiting researchers, is gratefully acknowledged. The usual disclaimer applies.

1. INTRODUCTION

This paper analyses fiscal behaviour in the light of alternative information sets, ranging from the data available to policymakers when budgets are drafted (which in the literature is often referred to as "real-time data") to the latest release of fiscal and macroeconomic time series covering past years. Fiscal reaction functions are estimated for the widely used cyclically-adjusted primary balance (*CAPB*), but also for its components on the revenue and expenditure sides. A particular emphasis is placed on the response to cyclical conditions, found to be the feature of fiscal behaviour which varies the most across different information sets; but other aspects of fiscal policy, such as the presence of opportunistic electoral effects, are considered as well. Further, I investigate to what extent deviations from fiscal plans during budget implementation play a role in explaining differences between results with ex-ante or with ex-post data.

Fiscal policy cyclicality has been under close scrutiny in recent years. Part of the interest in the topic stems from the stabilization role of fiscal policy, arguably made more important in a monetary union context (due to the possibility of asymmetric shocks), and intensely appealed to in the current crisis. However, cyclicality also matters from a more long-run perspective: the well-known problem of "pro-cyclicality in good times" poses a threat to fiscal sustainability, insofar as the accumulation of public debt in a recession is not (sufficiently) reversed during the following economic expansion.

Over the past decade several studies have highlighted the importance of analyzing monetary policy rules on the basis of real-time data – i.e., information (estimates or forecasts) actually available at the time of monetary policy decision-making (e.g. Orphanides, 2001). More recently, this informational problem has also been taken on board as regards fiscal reaction functions. However, while in the case of monetary policy data revisions are confined to the macroeconomic variables to which interest rates respond (such as inflation or the output gap), fiscal indicators themselves are exposed to uncertainty. The latter stems from a variety of sources: for instance, misperceived macroeconomic conditions (which lead to revisions in cyclically-adjusted fiscal variables if potential output is reassessed) and departures from fiscal plans at the implementation stage. The implications of evolving information sets are therefore even wider in fiscal than in monetary policy.

As far as the literature on fiscal policy in real time is concerned, a number of early contributions (Forni and Momigliano, 2004; Golinelli and Momigliano, 2006) estimate

reaction functions where the use of real-time data is limited to the output gap and, in some cases, to a few other right-hand-side variables (e.g. the lagged primary balance). More recent papers – Cimadomo (2008), Giuliodori and Beetsma (2008), Beetsma and Giuliodori (2008), Bernoth *et al.* (2008) – extend the use of real-time information to the dependent variable (usually the *CAPB*), and thus ensure that the different variables in a fiscal reaction function belong to a common information set. Most of these studies focus on fiscal cyclicality, and share the conclusion that fiscal policy responds more counter-cyclically to real-time output gaps than to ex-post ones. These divergent results between ex-ante and ex-post data are accounted for by the fact that data revisions tend to move the output gap and the *CAPB* in opposite directions, and thus increase pro-cyclicality. The latter is hence a problem of "misinformation rather than malintention" (Bernoth *et al.*, 2008, p. 23).

To avoid the possible window dressing of national budgets, all the abovementioned studies use December issues of the OECD *Economic Outlook* as the source for real-time data. In this paper, I draw on the European Commission's Autumn forecasts instead. There are a number of motivations for this choice. The Commission started to publish output gap and *CAPB* forecasts later than the OECD, but was first to decompose budget balance projections into revenues and expenditures. By circumventing the absence of an explicit output gap forecast with a proxy based on GDP growth, I am able to work with a longer sample (starting in 1987 rather than in 1995, as is the case in most previous contributions) and, more importantly, to study real-time fiscal behaviour on the revenue and expenditure sides, instead of considering the budget balance alone. Using Commission forecasts also makes it possible to check to what extent previous findings are specific to OECD figures; as shown by Golinelli and Momigliano (2008), cyclicality results can be affected by the source of fiscal data.

This paper adds to the literature on fiscal policy in real time in two further aspects. First, I study whether deviations from fiscal plans during budgetary implementation help explain differences between ex-ante and ex-post policy. For instance, a strong pro-cyclical behaviour in those deviations would contribute (with some malintention involved…) to the general pattern of cyclicality findings in previous studies. Yet, to my knowledge, an explicit analysis of updates to original fiscal plans has so far only been undertaken in Beetsma and Giuliodori (2008). Second, the treatment of alternative information sets is more comprehensive than in previous contributions, as reaction functions are estimated for (i) one-year-ahead forecasts, (ii) current-year estimates, (iii) provisional outcomes and (iv) final outcomes.

In a sample of 15 European Union (EU) countries in the 1987-2006 period, I find anti-cyclicality to wane from plans to final outcomes, and trace this phenomenon to public expenditure. Electoral effects also vary across information sets: they seem absent from planned policy, but become apparent as soon as one moves to current-year estimates. Updates in fiscal plans at the implementation stage are mostly a-cyclical, and thus of second-order importance to overall fiscal cyclicality; but are found to be highly responsive to parliamentary elections.

The remainder of this paper is organized as follows. The next section describes the dataset and reports some summary statistics on data revisions. Section 3 presents the specification of fiscal reaction functions and the ensuing estimation results for alternative information sets. Section 4 deals with deviations from fiscal plans during budget implementation. The final section offers some concluding remarks.

2. DATA, NOTATION AND TERMINOLOGY

I start by defining the notation and terminology used throughout. Let

$$X_{i,t}^{t+s}$$

denote the value of variable X in country i and year t, as released in the European Commission Autumn forecasts of year $t+s$. Each issue of these forecasts constitutes a different data vintage. The status of data is given by index s. For instance, s = -1 indicates forecast status, i.e., forecasts for year t prepared in the Autumn of t-1; s = 0 implies current-year estimates; and s = 1 stands for (generally) provisional figures, released in the following Autumn.

Data vintages used in this study run from 1986 to 2007, defining a window of 20 years (1987-2006) for which forecasts, estimates and provisional figures are available. The latest vintage (Autumn 2007) also yields what will be called final data (i.e., conventional time series, with values for different years from the same release), which for comparability has also been collected for the 1987-2006 time span[1]. As for country coverage, the sample includes the 15 EU members prior to the 2004 enlargement (EU15 henceforth), though most figures for Austria, Finland and Sweden are only available from 1995 onwards[2].

[1] Sometimes referred to as data of final status, though in this case it is $t+s$, rather than s, which stays constant. Notice further that for year 2006 provisional and final figures are actually the same.
[2] It would be possible to consider some vintages before 1986 as well, but they contain information for still fewer countries.

From each vintage, 5 fiscal variables are collected (all in % of GDP): the budget balance (*B*), total revenue (*R*), total expenditure (*E*), interest payments (*I*) and public debt (*D*). Before 2000, variables *I* and *D* were often not reported in the issue of *European Economy* devoted to the presentation of Autumn forecasts, but could be retrieved from different issues of that publication making explicit reference to the respective Autumn forecasts as their source[3]. I further collect from each vintage a time series of real GDP growth from 1960 onwards, which is used for output gap estimation as described below. The Appendix deals with more detailed data management issues, such as missing values and consistency checks.

The European Commission only started to publish forecasts for cyclically-adjusted balances (*CAB*) and for output gaps in 1997 and in 2000, respectively. Further, the methodology of cyclical adjustment has not remained constant[4]. Taking account of these limitations, I have decided to construct estimates of output gaps for all the vintages in the sample through a uniform methodology based on GDP growth (a similar approach is followed by Gollinelli and Momigliano, 2006). The ensuing gaps are then used in the cyclical adjustment of fiscal variables.

Gaps are based on the Christiano-Fitzgerald (CF) filter, since its end-of-sample properties are arguably better than those of popular alternatives, such as the Baxter-King or Hodrick-Prescott (HP) filters (see Christiano and Fitzgerald, 2003). For vintage $t+s$, I construct an index of real GDP from 1960 to year $t+s+2$ (using the time series of growth rates), and run the CF filter to estimate the output gap until year $t+s+1$[5]. I then derive the cyclically-adjusted revenue (*CAR*), primary expenditure (*CAPE*) and primary balance (*CAPB*) – all in percentage of potential output – following the method of the Commission (European Commission, 2006, pp. 115-119). This approach subsumes the elasticities (with respect to the output gap) of the several cyclically-sensitive items into two budgetary sensitivity parameters, one for revenue (ε^R) and the other for expenditure(ε^E)[6]. Formally:

[3] For instance, until 2001 Autumn forecasts were published in Supplement A to European Economy. Other issues of European Economy drawing on those forecasts include the so-called Annual Economic Reports.

[4] For instance, in the Autumn 2000 and Autumn 2001 vintages *CAB* figures were based on output gaps estimated through the Hodrick-Prescott filter, while in the Autumn 2002 reported *CAB* data were computed using production function-based gaps.

[5] The filter is applied to log(GDP) and assumes that cyclical fluctuations correspond to the 2-10 years frequency range. Before 1990 Autumn forecasts did not include year $t+s+2$, and thus the $t+s+1$ gap had to be estimated with a time series ending in that same year. While acknowledging that it would be desirable to extend further the series for GDP, I wish to avoid arbitrary (though commonly used) extension procedures, such as extrapolation based on ARIMA models.

[6] For simplicity these parameters are only allowed to vary across countries, though in reality they also change over time (for instance, they tend to increase with the size of the public sector). Using final data, I have computed the

$$CAR_{i,t}^{t+s} = \left(1 + \frac{GAP_{i,t}^{t+s}}{100}\right)(R_{i,t}^{t+s} - \varepsilon_i^R GAP_{i,t}^{t+s}) \quad (1)$$

$$CAPE_{i,t}^{t+s} = \left(1 + \frac{GAP_{i,t}^{t+s}}{100}\right)(E_{i,t}^{t+s} - I_{i,t}^{t+s} - \varepsilon_i^E GAP_{i,t}^{t+s}) \quad (2)$$

$$CAPB_{i,t}^{t+s} = \left(1 + \frac{GAP_{i,t}^{t+s}}{100}\right)\left[B_{i,t}^{t+s} + I_{i,t}^{t+s} - (\varepsilon_i^R - \varepsilon_i^E)GAP_{i,t}^{t+s}\right] = CAR_{i,t}^{t+s} - CAPE_{i,t}^{t+s} \quad (3)$$

For consistency with the OECD Economic Outlook, which has been the source of real-time fiscal data in previous studies, proceeds from UMTS licenses (recorded as negative expenditure) are excluded when computing variables *CAPE* and *CAPB*[7]. As is well known, many other one-off and temporary measures have taken place in EU countries, which for data limitations are not netted out above, but will be dealt with in the following sections.

To put into perspective this paper's output gap estimates, Table 1 provides a comparison with two alternative measures computed by the Commission, one based on the HP filter and the other on a production function (PF) approach (all three estimates refer to final data, i.e., from the Autumn 2007 vintage). The CF-based gap has a much smaller standard deviation, taking values that in absolute terms are often just over half of those obtained by alternative methods. However, it remains highly correlated with its counterparts (correlation coefficients of 0.76 and 0.77 with HP-based and PF-based gaps, respectively), thus capturing essentially the same cyclical patterns.

Output gaps and fiscal variables are subject to revisions in successive data vintages. Gaps may change due to unexpected developments in actual GDP or to reassessments of an economy's potential output. Revisions in cyclically-adjusted fiscal aggregates may correspond to differences between planned and implemented policy, to late disclosure of fiscal outcomes, to methodological changes or to revisions in the output gap itself. For a given variable $X_{i,t}$, I denote the difference between vintages $t+s$ and $t+s'$ as

$$X_{i,t}^{t+s,t+s'} = X_{i,t}^{t+s} - X_{i,t}^{t+s'}. \quad (4)$$

implicit sensitivity parameters for each country and year, and checked that ignoring the time variation has a negligible impact on results (Additional Appendix, Table A.1).

[7] This has required collecting UMTS figures from several editions of the Autumn forecasts (as for the other fiscal variables), and in particular distinguishing forecast from realized values.

Table 2 reports mean absolute revisions for two choices of vintages: the difference between estimates and forecasts ($X_{i,t}^{t,t-1}$), and the difference between final values and estimates ($X_{i,t}^{2007,t}$). As far as fiscal variables are concerned, one expects the former difference to be largely (though not exclusively) induced by deviations from fiscal plans during budget implementation, either in response to cyclical developments or to other motivations; whereas the latter difference should mainly be driven by other factors, such as methodological changes or output gap revisions.

In line with previous studies, Table 2 shows that data revisions are substantial, both for output gaps and for fiscal variables[8]. One also observes that, in an overwhelming majority of cases, revisions from current-year estimates to final data are larger than revisions from forecasts to estimates. Further, revenues and expenditures tend to undergo larger revisions than the budget balance, especially from estimates to final data, which suggests an enhanced vulnerability to methodological changes.

To conclude this section, Table 3 presents correlations between revisions in the output gap and revisions in fiscal variables. The latter are taken in first differences, rather than in levels, so as to minimize the impact of methodological changes. In the case of revisions from forecasts to estimates, correlations tend to be rather small, suggesting a fairly muted response to new information about cyclical conditions during budget implementation. However, as one moves from current-year estimates to final data, correlations become somewhat stronger for variables *CAPB* and *CAPE*, implying that cyclicality patterns may vary with data status. Both issues will be taken up in what follows.

[8] When compared with mean absolute revisions reported by Cimadomo (2008) or Bernoth *et al.* (2008), who use OECD data, figures in Table 2 tend to be smaller for output gaps (for the reasons presented before), but also for the *CAPB*. However, the comparison is hampered by differences in samples and (sometimes) in the precise definition of revisions.

3. PLANNED *VERSUS* EX-POST FISCAL POLICY

3.1. Empirical specification

I estimate fiscal reaction functions of the form

$$\Delta FV_{i,t}^{t+s} = c_i + \beta_1 GAP_{i,t}^{t+s} + \beta_2 FV_{i,t-1}^{t+s} + \beta_3 D_{i,t-1}^{t+s} + \gamma' x_{i,t} + u_{i,t}, \quad (5)$$

where *FV* is the fiscal variable of interest (*CAPB*, *CAR* or *CAPE*, always relative to potential output), *GAP* is the Christiano-Fitzgerald output gap, *D* is the debt-to-GDP ratio, and *x* is a vector of variables which control for electoral effects and for the impact of European fiscal rules. The differenced dependent variable is defined as $\Delta FV_{i,t}^{t+s} = FV_{i,t}^{t+s} - FV_{i,t-1}^{t+s}$.

Dummy variables are defined for parliamentary elections, both considering all such elections (variable *ELEC*) and disaggregating them into regular elections (held in the final 6 months of a full term; variable *ELECR*) and early elections (variable *ELECE*). I draw on data compiled by Golinelli and Momigliano (2006) for 11 Euro Area countries and kindly made available by the authors, extending their sample with similar criteria and primary sources.

As for European fiscal rules, variables *MAAS* and *SGP* intend to capture the need for fiscal adjustment in the run-up to monetary union and under the Stability and Growth Pact (SGP), respectively. The former is defined as $MAAS_{i,t}^{t+s} = (B_{i,t}^{t+s} + 3)/(1997 - t)$ for Euro Area countries, $B_{i,t}^{t+s} < -3$ and *t* between 1992 and 1996; and equals zero elsewhere. As regards the latter, $SGP_{i,t}^{t+s} = (B_{i,t}^{t+s} + 3)/2$ for Euro Area countries, $B_{i,t}^{t+s} < -3$ and *t* from 1997 onwards; and takes value zero elsewhere[9]. More negative values indicate a stronger need for consolidation. In the equation above these variables are lagged one period (i.e., they are entered as $MAAS_{i,t-1}^{t+s}$ and $SGP_{i,t-1}^{t+s}$), to capture fiscal conditions at the time of preparing the budget for the following year.

Equation (5) includes country fixed effects (c_i), but not time fixed effects. Including the latter would, in my view, fundamentally change the interpretation of the cyclicality parameter (β_1), since the coefficients of time effects would tend to capture fiscal responses to common shocks.

[9] In the case of Greece, timings are adjusted: in the denominator of *MAAS* 1997 becomes 1999 and this variable is defined for t=1992,…,1998, whereas *SGP* can take non-zero values from 1999 onwards. Variables identical or close to these can be found in Golinelli and Momigliano (2006) or in Beetsma and Giuliodori (2008).

All variables in the fiscal reaction function are from the same vintage, hence minimizing the risk that the relationship between the regressand and the regressors is blurred by methodological changes. A common vintage also implies a common information set, i.e., a contemporaneous assessment of fiscal and macroeconomic conditions. Four versions of equation (5) are estimated, corresponding to differences in data status. Estimation with s = -1 corresponds to the analysis of planned fiscal policy; s = 0 yields an assessment of fiscal behaviour on the basis of current-year estimates, already incorporating information which becomes available during budget implementation; s = 1 adds one more year to the information set, studying fiscal policy with provisional data (available in the following Autumn); finally, $t+s$ = 2007 corresponds to the conventional use of ex-post data, i.e., of the latest available information[10]. From this point of view, our paper is more encompassing than previous contributions, which used subsets of the four possibilities considered here[11].

3.2. Results

I first analyse results obtained for variable *CAPB*, and then turn to its disaggregation into revenues and expenditures. In each case fiscal reaction functions were estimated both by least squares (lagging the output gap, i.e., taking $GAP_{i,t-1}^{t+s}$, to avoid endogeneity problems[12]) and by GMM.

Table 4 reports least squares results for the *CAPB*. In line with most of the literature, the anti-cyclicality of fiscal policy tends to wane as one moves from plans to final outcomes. Planned fiscal policy is strongly counter-cyclical, whereas policy assessed on the basis of final outcomes is essentially a-cyclical. The output gap coefficients are numerically bigger than in previous studies, which mainly stems from the fact that gaps in this paper are themselves smaller (in absolute terms)[13]. When considering separately the reactions to positive and negative output gaps[14], it emerges that the decline in counter-cyclicality is somewhat stronger

[10] In an attempt to align the electoral dummies with the remaining variables as far as the availability of information is concerned, I use *ELECR* with s = -1 (i.e., planned fiscal policy does not take early elections into account), and *ELEC* in the remaining cases.
[11] For instance, Cimadomo (2008) compares planned and final data, while Bernoth *et al.* (2008) use current-year estimates *versus* final data (with planned data used for robustness checks).
[12] Cimadomo (2008) and Turrini (2008), among others, also take this route.
[13] On the basis of final data, I have checked that fiscal reaction functions are extremely similar whether one uses the CF gap or the gap estimates produced by the Commission, the main difference pertaining to the gap coefficient, which is numerically larger with CF figures (Additional Appendix, Table A.1).
[14] Two new variables were created, each obtained through the product of *GAP* by an indicator variable taking value one when the gap is positive (negative), and zero otherwise.

and "faster" (in the sense of becoming apparent as soon as data status changes from forecasts to estimates) in the case of positive gaps.

As regards other policy determinants, variable *CAPB* is found to respond to debt ratios in a stabilizing way (though at the planning stage this feedback seems weaker and with only borderline statistical significance), and to be highly persistent. As in Cimadomo (2008), persistence is highest with planned data[15], which may be a consequence of the "no policy change" assumption in the preparation of fiscal forecasts. Further, the Maastricht (*MAAS*) variable displays a negative and highly significant coefficient, capturing consolidation efforts by prospective euro area members in the run-up to the single currency. This contrasts with the reaction to excessive deficits under the SGP, which is discernible at the planning stage but completely vanishes with latest available data. Finally, the estimations reveal strong electoral effects (a deterioration of the fiscal balance in election years), with the notable exception of planned fiscal policy, where they seem completely absent[16].

I now examine the contributions of cyclically-adjusted revenues (Table 5) and expenditures (Table 6) to the above findings. The most striking conclusion is that the fading away of counter-cyclicality as we move from one-year-ahead forecasts to final data is entirely an expenditure-driven phenomenon. Revenues remain anti-cyclical across data of different status, and output gap coefficients, though generally small, even display a modest upward trend as *s* increases, most evident in the case of positive gaps. As for expenditures, planned policy is also clearly anti-cyclical, but output gap coefficients decrease (in absolute terms) and eventually switch sign as *s* increases – particularly in good times, which feature significant pro-cyclicality with final data[17].

Policy persistence is even stronger for revenues and expenditures than for the *CAPB* (a result in line with Turrini, 2008), and, as before, is highest for planned data. The feedback on debt is

[15] These estimates should be regarded with prudence, as the coefficient of the lagged dependent variable is particularly vulnerable to the well-known bias problem when estimating by least squares dynamic fixed effects models with a "small" number of time observations (see e.g. Judson and Owen, 1999; Bruno, 2005). The fact that the bias is much less severe for the other coefficients helps to explain why the least squares dummy variable estimator remains widely used in the empirical analysis of fiscal reaction functions.

[16] Studies using OECD one-year-ahead forecasts sometimes find statistical significance for an electoral dummy, though often only at the 10% level (e.g. Cimadomo, 2008; Giuliodori and Beetsma, 2008; Beetsma and Giuliodori, 2008). Working with OECD current-year estimates, Bernoth *et al.* (2008) report a larger and more significant coefficient. It then seems possible that OECD data yield a pattern of electoral effects across information sets similar to this paper, though in a mitigated form. Needless to say, different samples also limit comparability.

[17] When considering separately the four quartiles of the output gap distribution, pro-cyclicality with final data is most clear-cut in the 4th quartile (Additional Appendix, Table A.2) – i.e., in really good times…

more visible (numerically and statistically) on the expenditure side. Adjustment efforts prompted by European fiscal rules seem to have taken place mainly through higher revenues. As for the *CAPB*, opportunistic electoral effects are not discernible in planned fiscal policy. In estimates, provisional data and final data, those effects tend to be present on both sides of the budget, though often with weaker statistical significance than in the *CAPB* reaction functions[18].

Bernoth *et al.* (2008) argue that the contrast between ex-ante anti-cyclicality and ex-post a-cyclicality (or even pro-cyclicality) is due to errors in assessing the output gap in real time. If new information induces an output gap revision of a given sign (say, an increase), then the *CAPB* will simultaneously undergo a revision of the opposite sign (a deterioration, in the example), hence increasing the degree of pro-cyclicality. Our results for revenues and expenditures lend support to this explanation. Revisions in the output gap give rise to a revision of the same sign in variable *CAPE*, but have almost no impact on *CAR* (recall that both are ratios to potential output), since the output elasticity of revenues is close to unity (implying that, in equation (1) above, the sensitivity parameter ε^R is close to R divided by 100). Therefore, one would expect expenditures to become more pro-cyclical as new information is taken on board, with no similar effect on the revenue side. This entirely conforms to the results in Tables 5 and 6.

All the previous reaction functions have also been estimated with GMM, taking the contemporary output gap as a regressor and instrumenting it with its own lag (from the same data vintage) and a proxy of the lagged international cycle (defined for each country as a GDP-weighted average of the lagged gap of the other countries in the sample)[19]. Results are given in Tables 7 to 9, and confirm in qualitative terms all conclusions based on least squares estimation. While the coefficients of explanatory variables other than the output gap remain fairly stable across estimation methodologies, parameter estimates referring to the output gap tend to be numerically larger (in absolute terms) with GMM, and there is a general loss of accuracy in the estimation, especially when considering separately positive and negative gaps.

Further, I have checked whether one-off and temporary measures (one-offs for conciseness), which some countries have resorted to abundantly, distort to any significant degree coefficients

[18] I have checked that when excluding from the sample one country at a time all results remain qualitatively unchanged, and indeed coefficient estimates generally record little variation.

[19] In the case of positive *versus* negative gaps, the lags of the respective variables have been used as instruments, thus yielding a total of three instruments including the international cycle. In the computation of the latter, GDP weights are PPS-adjusted, and the three late entrants to the EU15 (Austria, Finland and Sweden) are excluded from the averages.

in fiscal reaction functions. Though ideally one would like to handle all one-offs in the way UMTS proceeds were controlled for, there are both conceptual and informational obstacles. On the one hand, there is no clear definition of what constitutes a one-off, and indeed the most widely used sources for the budget effects of such measures present important discrepancies (see the next footnote). On the other hand, identifying final values in not enough for our purposes, as one would need data of different status as well (e.g. one-year-ahead forecasts or current-year estimates). In the light of these difficulties, my approach has been to exclude all observations corresponding to countries and years where one-offs equal to or above a certain threshold – set at 1% of GDP – have been identified[20]. Previous conclusions continue to hold, though with some numerical and statistical weakening of variable *MAAS* coefficients (especially with final data, and on the revenue side – Additional Appendix, Tables A.3 to A.5), which suggests that one-offs may have played a role in the pre-1999 adjustment efforts.

4. FISCAL RESPONSES DURING BUDGET IMPLEMENTATION

4.1. Empirical specification

I now study how governments deviate from budgetary plans – or, put differently, update those plans – during the implementation stage. Drawing on Beetsma and Giuliodori (2008) and extending their specification, I estimate the following model:

$$FV_{i,t}^{t,t-1} = c_i + \rho_1 GAP_{i,t}^{t,t-1} + \rho_2 FV_{i,t-1}^{t,t-1} + \rho_3 D_{i,t-1}^{t,t-1} + \sigma' z_{i,t} + \delta' w_{i,t} + u_{i,t} \qquad (6)$$

The dependent variable is the update in the fiscal stance, measured as the difference between current-year estimates and one-year-ahead forecasts (recall the notation in section 2). On the right-hand side one finds the updates of the six variables included in the fiscal reaction function (5): the output gap, the lagged fiscal variable of interest, the lagged debt ratio, the holding of elections (whose update is assimilated to early elections), *MAAS* and *SGP* (the last three variables are grouped into $z_{i,t}$, which therefore contains *ELECE*, $MAAS_{i,t-1}^{t,t-1}$ and $SGP_{i,t-1}^{t,t-1}$). Several of these updates consist in new information about year t-1 which only becomes

[20] Identification of one-offs is based on ex-post values and uses the following sources: from 1993 to 1999, Koen and van den Noord (2005, Table 5, p. 15); from 2000 to 2002, European Commission (2004, Table II.4, p. 85); from 2003 onwards, AMECO database, Autumn 2007 release. Comparison between sources (made possible by the fact that the first two also cover some further years) reveals sizeable discrepancies, even when numbers are compiled by the same institution (second and third sources). Though set at a high level, the chosen threshold implies a loss of 35 observations (also due to the presence of lagged variables).

available in the course of year t (e.g. a worse-than-expected fiscal position, possibly in violation of European-level rules), and which could prompt a within-year fiscal response.

Equation (6) also considers the possibility of systematic patterns in fiscal deviations from plans, in response to information already available at the time of budgeting. These deviations could correspond to policy changes which were not announced at the stage of budget preparation (and hence not taken into account by the Commission in the Autumn forecasts), but which still take place in some predictable way, either in the form of new policy measures or through changes in the strictness of implementation of existing provisions. For this purpose, vector $w_{i,t}$ contains the forecast for the output gap ($GAP_{i,t}^{t-1}$) and the dummy variable for regular elections (*ELECP*).

Most variables in equation (6) involve data from two different vintages, and are therefore vulnerable to methodological changes. From this perspective, the presence of the lagged dependent variable is particularly important, as changes in accounting criteria from the Autumn of year t-1 to the Autumn of year t should have a broadly similar impact on the levels of fiscal variables in both years. It turns out that in all cases one could statistically accept the restriction $\rho_2 = 1$, the dependent variable thus becoming

$$\Delta FV_{i,t}^{t,t-1} = \Delta FV_{i,t}^{t} - \Delta FV_{i,t}^{t-1} = (FV_{i,t}^{t} - FV_{i,t-1}^{t}) - (FV_{i,t}^{t-1} - FV_{i,t-1}^{t-1}),$$

i.e., the update in the annual change (rather than in the level) of *FV*. Therefore equation (6) simplifies to

$$\Delta FV_{i,t}^{t,t-1} = c_i + \rho_1 GAP_{i,t}^{t,t-1} + \rho_3 D_{i,t-1}^{t,t-1} + \sigma' z_{i,t} + \delta' w_{i,t} + u_{i,t}. \qquad (7)$$

4.2. Results

Equation (7) is estimated by GMM, using as instruments for variable $GAP_{i,t}^{t,t-1}$ the own gap update of year t-1 ($GAP_{i,t-1}^{t,t-1}$) and the update in the GDP-weighted average of other countries' gaps in year t[21]. There could be objections to the second instrument on simultaneity grounds, since fiscal policy in large economies could contemporaneously affect cyclical conditions in partner countries. However, due to the lags involved in the international transmission of effects, this should be less of a problem here than if one used the year t international cycle as an instrument in equation (5) – and, in more practical terms, using the update in the

[21] Beetsma and Giuliodori (2008) also use these instruments, as well as interest rate updates.

international cycle of year *t*-1 instead yielded no consistent improvement in terms of Hansen J test results. As before, I have also experimented with separate variables for positive and negative gap updates (i.e., improvements *versus* deteriorations in the assessment of year *t* cyclical conditions), instrumented with the respective lags.

In this section, the analysis is based on results obtained with the exclusion of one-offs (performed as before). Judging from the experience of UMTS licenses, one-offs are often unaccounted for at the budget preparation stage, and hence responsible for sizeable deviations between implemented and planned fiscal policy – which could generate outliers and hence distort coefficient estimates.

Results for *CAPB* updates are given in Table 10, where the first two columns exclude responses to pre-existing information. Fiscal policy does not seem to react in a statistical significant way to updates in cyclical conditions, nor to revisions in lagged debt ratios. On the other hand, there is a marked response to early elections, which on average induce discretionary policy to be loosened by 0.5 p.p. of GDP. Further, worse-than-expected breaches of the deficit limit in the years preceding monetary union seem to have given rise to a within-year correction effort of a magnitude roughly comparable to the deterioration itself[22].

There is also evidence of systematic patterns in fiscal updates, both in line with opportunistic political business cycles and as a response to cyclical conditions. Regular elections have lead to expansionary updates, though not as large as in the case of early elections. A more benign behaviour, in the form of an anti-cyclical fiscal response, is observable when the economy is expected to be producing below potential. Overall, results contrast with those of Beetsma and Giuliodori (2008), who find for a group of 14 EU countries a pro-cyclical response to output gap updates, but no significant electoral effects.

Decomposing fiscal updates into their revenue and expenditure parts proved harder in econometric terms (with problems in the validity of instruments when considering positive *versus* negative gap updates), and with less suggestive results. As Tables 11 and 12 show, there is some evidence of a pro-cyclical reaction of taxes to gap updates, which contrasts with a stabilizing response to the output gap forecast. One also observes that revenues strongly react to "bad news" about worsened violations of the SGP in the preceding year. No opportunistic

[22] Adjusted for the number of years left until 1997 – recall the definition of variable *MAAS*.

electoral effects reach statistical significance on the revenue side, whereas on the expenditure side the only significant coefficient precisely concerns the response to regular elections[23].

Overall, while sometimes one can identify which side of the budget accounts for a given *CAPB* result (e.g. expansionary updates in response to regular elections take place through increased outlays), in other cases tracing the origin of an aggregate fiscal response becomes very difficult (e.g. as with early elections). One possible explanation is that what matters most is the production of the aggregate response itself, and not its composition in terms of budget items; depending on specific circumstances, policymakers might sometimes resort to expenditure, and sometimes to revenue, in order to achieve a given fiscal balance outcome.

A final line of comment to empirical results in this section concerns their consistency with those of section 3, and in particular whether they can bridge any gaps between fiscal reaction functions with planned data (s = -1) and with current-year estimates (s = 0). In the case of elections, the answer is clearly positive. Opportunistic fiscal updates during budget implementation provide a plausible explanation to the contrast between the absence of electoral effects in fiscal forecasts and their emergence when the information set is enlarged to estimates (a contrast most visible for variables *CAPB* and *CAPE*). As for the cyclical stance of fiscal policy, the answer is less clear-cut, largely because the difference between cyclicality results with s = -1 and with s = 0 is much milder itself. In any case, fiscal updates during implementation cannot account for the contrast between anti-cyclicality in fiscal plans and a-cyclicality with final data.

5. CONCLUSIONS

In this paper, fiscal reactions functions were estimated for (i) one-year-ahead budgetary plans, (ii) current-year estimates of fiscal outturns, (ii) provisional fiscal outturns, compiled in the year following budget implementation and (iv) final (i.e., latest-release) fiscal data. In each of the four cases, the dependent and explanatory variables are from the same vintage, and hence correspond to a common information set. I also estimate empirical models for deviations from fiscal plans (defined as current-year estimates minus one-year-ahead forecasts), as these can potentially help explain why results differ with alternative information sets. Drawing on data from the European Commission's Autumn forecasts, I take as dependent variable the *CAPB*,

[23] As in section 3, on the whole results are robust to the exclusion of individual countries from the sample.

but also cyclically-adjusted revenues and primary expenditures. The sample runs from 1987 to 2006 and comprises 15 EU countries.

Two features of fiscal behaviour are found to vary significantly across information sets: cyclicality and the response to upcoming elections. As regards the former, fiscal plans are found to be anti-cyclical, either assessed on the basis of balances, revenue or expenditure. The same holds for current-year estimates and for provisional data, though the anti-cyclicality of balances and expenditures becomes somewhat weaker, particularly in response to positive output gaps. However, as one moves to final outcomes, only revenues remain consistently counter-cyclical; the *CAPB* becomes a-cyclical, and there is even some evidence of expenditure pro-cyclicality, especially in good times.

As in previous studies, fiscal plans are therefore more anti-cyclical than the ensuing outcomes. Disaggregating balances into revenues and expenditures makes it possible to trace this phenomenon to the spending side of the budget. In turn, this finding lends support to an explanation based on successive reassessments of an economy's cyclical position, with revisions to potential output playing a major role, which concomitantly affect the *CAPB* and cyclically-adjusted primary expenditure (as a ratio to potential GDP), but have only second-order effects on cyclically-adjusted revenue (since its output elasticity is close to unity). An alternative explanation would be pro-cyclical deviations from plans during budget implementation; but it received scant empirical support, as those deviations were found to be mostly a-cyclical.

Opportunistic expansionary effects in electoral years were not detected for planned fiscal policy, but were conspicuous in all outturn data. Updates in fiscal plans during implementation help explain this pattern, since they display strong electoral effects, which are largest for early elections but also sizeable for regular ones. Opportunistic behaviour can be found on both sides of the budget (except, again, at the planning stage), though with some more visibility in public expenditure. However, statistical significance is highest and most consistent as regards the *CAPB*, suggesting that revenues and expenditures may be used as substitutes in the process of loosening policy.

While results on fiscal cyclicality are a reminder of the difficulties in conducting discretionary counter-cyclical policy, the prevalence of opportunistic responses to upcoming elections stresses the need to reinforce fiscal rules and institutions at the national level. In this respect, investigating the role played by existing frameworks provides an avenue for future research.

REFERENCES

Beetsma, R. and M. Giuliodori (2008), Fiscal Adjustment to Cyclical Developments in the OECD: An Empirical Analysis Based on Real-Time Data, CEPR Discussion Paper no. 6692.

Bernoth, K., A. Hughes Hallett and J. Lewis (2008), Did Fiscal Policy Makers Know What They Were Doing? Reassessing Fiscal Policy with Real Time Data, CEPR Discussion Paper no. 6758.

Bruno, G. (2005), Estimation and Inference in Dynamic Unbalanced Panel Data Models with a Small Number of Individuals, *Stata Journal*, 5(4), 473-500.

Christiano, L. and T. Fitzgerald (2003), The Band Pass Filter, *International Economic Review*, 44(2), 435-465.

Cimadomo, J. (2008), Fiscal Policy in Real Time, European Central Bank, Working Paper Series, no. 919, July.

European Commission (2004), Public Finances in EMU – 2004, *European Economy*, No. 3.

European Commission (2006), Public Finances in EMU – 2006, *European Economy*, No. 3.

Forni, L. and S. Momigliano (2004), Cyclical Sensitivity of Fiscal Policies Based on Real-Time Data, *Applied Economics Quarterly*, 50(3), 299-326.

Giuliodori, M. and R. Beetsma (2008), On the Relationship between Fiscal Plans in the European Union: An Empirical Analysis Based on Real-Time Data, *Journal of Comparative Economics,* 36, 221-242.

Golinelli, R. and S. Momigliano (2006), Real-Time Determinants of Fiscal Policies in the Euro Area, *Journal of Policy Modeling*, 28(9), 943-964.

Golinelli, R. and S. Momigliano (2008), The Cyclical Response of Fiscal Policies in the Euro Area. Why Do Results of Empirical Research Differ So Strongly?, Banca d'Italia, Temi di discussione, no. 654, January.

Judson, R. and A. Owen (1999), Estimating dynamic panel data models: a guide for macroeconomists, *Economics Letters*, 65, 9-15.

Koen, V. and P. van den Noord (2005), Fiscal Gimmickry in Europe: One-Off Measures and Creative Accounting, OECD, Economics Department Working Papers, no. 417.

Orphanides, A. (2001), Monetary Policy Rules Based on Real-Time Data, *American Economic Review*, 91(4), 964-985.

Turrini, A. (2008), Fiscal policy and the cycle in the Euro Area: The role of government revenue and expenditure, European Commission, Economic Papers, no. 323, May.

APPENDIX: DATA MANAGEMENT ISSUES

1. Minimizing lost observations

To minimize the number of lost observations due to missing values, I have on a few occasions resorted to data from the closest available vintage (i.e., the one immediately before, or after, the vintage lacking some variables), or to accounting identities. Hence:

- In the Autumn 1986, Autumn 1995 and Autumn 1997 vintages, the time series for GDP growth were completed back to 1960 with values from issues of *European Economy* published in the previous Spring or Summer;

- In the Autumn 1995 and Autumn 1997 vintages, values for interest payments (I) were taken from issues of *European Economy* published in the following Spring[24];

- In the Autumn 1986 and Autumn 1987 vintages, total revenue was derived from the budget balance and total expenditure ($R = B + E$).

2. Remaining missing values

Econometric estimations in this paper generally present a number of observations somewhat below the maximum level of 300 (15 countries, 20 years). By far the most important cause of lost observations is the later accession of Austria, Finland and Sweden to the EU (losses of 27, 24 and 21 observations for $s = -1$, $s = 0$ and $s = 1$, respectively). A few further losses (for $s = 0$ and $s = 1$) correspond to accounting discrepancies between B, E and R, in which case I dropped from the sample the observations involved. In very rare cases, some variables were literally missing for specific years in the original sources, or it was impossible to complete some series backwards with ESA79 figures (for final data; see below).

3. Issues pertaining to final data

In the AMECO database release used to retrieve final data (Autumn 2007 vintage), a few countries still do not have time series for ESA95 fiscal variables dating back to the eighties. In these cases, series for B, E, R and I were completed backwards using annual changes (in p.p. of GDP) from ESA79 data (and thus preserving accounting identities). Data for Germany refers to the western *lander* only until 1990 (fiscal variables relative to GDP) or 1991 (GDP growth).

[24] The ensuing measurement error should be of second-order magnitude, since public debt is largely pre-determined and the implicit interest rate on public debt is generally less volatile than short-term (or even long-term) interest rates.

Table 1. Summary statistics of alternative output gap estimates (EU15, 1987-2006, final data)

	No. Obs.	Mean	Std. Error	Min.	Max.
CF output gap	300	-0,02	1,31	-3,70	5,96
HP output gap	300	0,15	2,22	-7,52	8,80
PF output gap	300	-0,04	2,06	-7,63	6,91

CF: Christiano-Fitzgerald; HP: Hodrick-Prescott; PF: production function. The HP-based and PF-based output gaps are estimated by the Commission (variables AVGDGT and AVGDGP in the AMECO database, respectively).

Table 2. Mean absolute revisions (1987-2006)

	$GAP^{t,t-1}$	$GAP^{07,t}$	$CAPB^{t,t-1}$	$CAPB^{07,t}$	$CAR^{t,t-1}$	$CAR^{07,t}$	$CAPE^{t,t-1}$	$CAPE^{07,t}$
Belgium	0.32	0.53	0.48	0.74	0.90	1.34	1.04	1.63
Denmark	0.25	0.61	0.80	1.29	1.15	1.60	1.12	1.19
Germany	0.33	0.80	0.85	0.66	0.90	1.13	1.21	1.25
Greece	0.54	0.66	1.64	2.32	2.19	3.90	2.65	3.66
Spain	0.39	0.48	0.64	0.66	0.65	1.35	0.99	1.26
France	0.29	0.51	0.50	0.80	0.40	0.90	0.70	0.65
Ireland	0.54	1.07	0.96	0.84	1.20	1.38	1.37	1.24
Italy	0.27	0.51	0.59	0.78	0.59	0.95	0.72	0.63
Luxemburg	0.40	1.41	1.36	1.48	2.52	5.09	2.07	5.93
Netherlands	0.41	0.57	0.63	0.94	0.72	1.27	0.88	1.42
Austria	0.23	0.48	0.42	0.44	1.17	1.25	0.95	1.27
Portugal	0.40	0.75	1.08	1.11	1.41	2.15	1.56	1.88
Finland	0.40	0.72	0.56	0.90	1.17	1.01	1.27	1.39
Sweden	0.23	0.58	0.78	1.10	1.17	1.39	0.95	0.87
United Kingdom	0.36	0.55	0.75	0.71	0.51	1.05	0.87	1.43
EU15	0.36	0.69	0.82	0.99	1.09	1.71	1.23	1.70

For variable X, $X^{t,t-1}$ denotes the difference (in absolute terms) between current-year estimates and one-year-ahead forecasts, and $X^{07,t}$ denotes the difference (in absolute terms) between final data (Autumn 2007 vintage) and current-year estimates. Differences are given in p.p. of GDP (potential GDP in the case of output gaps).

Table 3. Correlations between revisions (EU15, 1987-2006)

Variable X	$\Delta CAPB$	ΔCAR	$\Delta CAPE$
corr ($GAP^{t,t-1}$,$X^{t,t-1}$)	-0.18	-0.13	0.06
corr ($GAP^{07,t}$,$X^{07,t}$)	-0.31	0.02	0.32

See notes under Table 2. First differences are defined with data from the same vintage; one has, for instance, $\Delta CAPB_{i,t}^{t} = CAPB_{i,t}^{t} - CAPB_{i,t-1}^{t}$.

Table 4. Fiscal reaction functions: EU15, 1987-2006
(equation (5), Δ*CAPB* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Lagged output gap	0.41***		0.33***		0.27***		0.08	
	(7.99)		(5.54)		(4.65)		(1.13)	
Positive lagged output gap		0.35***		0.19*		0.10		-0.01
		(3.17)		(1.66)		(0.93)		(-0.05)
Negative lagged output gap		0.45***		0.48***		0.46***		0.18
		(4.73)		(3.82)		(3.89)		(1.38)
Lagged dependent variable	-0.16***	-0.16***	-0.22***	-0.22***	-0.24***	-0.25***	-0.25***	-0.25***
	(-6.57)	(-6.58)	(-5.78)	(-5.90)	(-6.29)	(-6.54)	(-6.52)	(-6.67)
Lagged debt	0.01	0.01	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(1.63)	(1.60)	(3.55)	(3.51)	(2.82)	(2.95)	(3.34)	(3.35)
Elections	-0.00	0.00	-0.46***	-0.46***	-0.51***	-0.52***	-0.55***	-0.54***
	(-0.04)	(0.03)	(-2.97)	(-2.95)	(-3.19)	(-3.17)	(-3.94)	(-3.92)
Maastricht (lagged)	-0.43***	-0.43***	-0.41***	-0.43***	-0.62***	-0.65***	-0.49***	-0.50***
	(-3.91)	(-3.94)	(-3.05)	(-3.27)	(-4.69)	(-5.00)	(-3.66)	(-3.70)
SGP (lagged)	-0.33*	-0.32*	-0.54*	-0.50	-0.34	-0.29	0.00	0.04
	(-1.80)	(-1.71)	(-1.67)	(-1.54)	(-0.90)	(-0.77)	(0.01)	(0.10)
No. Obs.	272	272	272	272	270	270	296	296
R^2	0.47	0.47	0.40	0.41	0.33	0.34	0.25	0.26

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table 5. Fiscal reaction functions: EU15, 1987-2006
(equation (5), Δ*CAR* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Lagged output gap	0.09**		0.11*		0.14***		0.17***	
	(2.01)		(1.76)		(2.66)		(3.16)	
Positive lagged output gap		0.02		0.08		0.14		0.26***
		(0.16)		(0.59)		(1.38)		(2.93)
Negative lagged output gap		0.14*		0.14		0.14		0.07
		(1.87)		(1.21)		(1.21)		(0.73)
Lagged dependent variable	-0.05***	-0.05***	-0.10***	-0.10***	-0.11***	-0.11***	-0.17***	-0.17***
	(-3.32)	(-3.39)	(-3.35)	(-3.35)	(-3.49)	(-3.41)	(-5.16)	(-5.08)
Lagged debt	-0.00	-0.00	0.01	0.01	0.00	0.00	0.01	0.01
	(-0.54)	(-0.56)	(1.25)	(1.24)	(0.57)	(0.57)	(0.99)	(1.04)
Elections	0.03	0.04	-0.19	-0.19	-0.41***	-0.41***	-0.27**	-0.28**
	(0.31)	(0.39)	(-1.54)	(-1.54)	(-2.66)	(-2.66)	(-2.01)	(-2.07)
Maastricht (lagged)	-0.36***	-0.36***	-0.29**	-0.29**	-0.35**	-0.35**	-0.40***	-0.40***
	(-4.67)	(-4.75)	(-2.36)	(-2.42)	(-2.44)	(-2.48)	(-3.30)	(-3.26)
SGP (lagged)	-0.50**	-0.49**	-0.59***	-0.59***	-0.14	-0.14	-0.20	-0.23
	(-2.37)	(-2.38)	(-3.39)	(-3.29)	(-0.43)	(-0.43)	(-0.65)	(-0.75)
No. Obs.	272	272	272	272	270	270	296	296
R^2	0.32	0.32	0.20	0.20	0.18	0.18	0.21	0.21

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table 6. Fiscal reaction functions: EU15, 1987-2006
(equation (5), Δ*CAPE* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Lagged output gap	-0.33***		-0.22***		-0.11**		0.11	
	(-7.82)		(-4.21)		(-2.14)		(1.50)	
Positive lagged output gap		-0.40***		-0.17*		-0.03		0.27**
		(-3.78)		(-1.68)		(-0.39)		(1.98)
Negative lagged output gap		-0.29***		-0.27***		-0.20**		-0.06
		(-4.05)		(-2.86)		(-2.00)		(-0.60)
Lagged dependent variable	-0.06***	-0.06***	-0.08***	-0.08***	-0.09***	-0.09***	-0.08**	-0.08**
	(-4.56)	(-4.55)	(-3.62)	(-3.64)	(-3.30)	(-3.32)	(-2.42)	(-2.50)
Lagged debt	-0.01	-0.01	-0.01	-0.01	-0.02***	-0.02***	-0.02***	-0.02***
	(-1.41)	(-1.45)	(-1.46)	(-1.43)	(-2.64)	(-2.71)	(-2.74)	(-2.79)
Elections	0.08	0.09	0.30**	0.30**	0.13	0.13	0.34***	0.32***
	(0.83)	(0.90)	(2.40)	(2.41)	(1.03)	(1.05)	(2.66)	(2.66)
Maastricht (lagged)	0.11	0.11	0.14	0.15	0.28**	0.29**	0.13	0.13
	(1.36)	(1.34)	(1.13)	(1.19)	(2.44)	(2.57)	(0.99)	(1.02)
SGP (lagged)	0.05	0.06	0.19	0.18	0.43	0.41	0.18	0.11
	(0.24)	(0.30)	(0.62)	(0.58)	(1.61)	(1.54)	(0.48)	(0.31)
No. Obs.	272	272	272	272	270	270	296	296
R^2	0.38	0.38	0.23	0.23	0.21	0.21	0.21	0.22

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table 7. Fiscal reaction functions: EU15, 1987-2006
(equation (5), Δ*CAPB* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data (s+t = 2007)	
Output gap	0.68***		0.96***		0.63***		0.20	
	(6.79)		(5.26)		(4.43)		(1.40)	
Positive output gap		0.56		1.21		1.01		-2.25
		(1.08)		(1.01)		(1.28)		(-1.06)
Negative output gap		0.72***		0.76		0.33		3.26
		(3.01)		(0.85)		(0.41)		(1.36)
Lagged dependent variable	-0.14***	-0.15***	-0.16***	-0.16***	-0.25***	-0.24***	-0.27***	-0.29***
	(-4.60)	(-4.37)	(-3.47)	(-3.30)	(-8.63)	(-6.23)	(-8.24)	(-4.07)
Lagged debt	0.00	0.00	0.01	0.01	0.00	0.00	0.02***	0.01
	(0.04)	(0.03)	(0.76)	(0.79)	(0.52)	(0.22)	(2.73)	(0.84)
Elections	0.05	0.06	-0.42**	-0.41**	-0.45***	-0.39**	-0.51***	-0.91**
	(0.34)	(0.40)	(-2.40)	(-2.41)	(-2.92)	(-2.14)	(-3.54)	(-1.97)
Maastricht (lagged)	-0.35***	-0.35***	-0.53***	-0.54***	-0.65***	-0.66***	-0.54***	-0.51
	(-2.59)	(-2.59)	(-3.54)	(-3.49)	(-5.38)	(-5.07)	(-4.32)	(-1.42)
SGP (lagged)	-0.24	-0.21	-0.68*	-0.76	-0.05	-0.24	-0.19	0.89
	(-0.91)	(-0.69)	(-1.69)	(-1.39)	(-0.17)	(-0.51)	(-0.54)	(0.73)
No. Obs.	272	272	272	272	264	264	290	290
R^2	0.21	0.20	0.24	0.23	0.31	0.28	0.29	0.09
Hansen J (p-value)	0.42	0.43	0.83	0.93	0.08	0.12	0.04	0.27

Estimation method: GMM. The output gap is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' lagged gaps, all from the same data vintage (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. The value of the Hansen J statistic sometimes proved sensitive to the presence of outliers, which made me re-estimate the four final columns excluding the observations corresponding to the 1st and the 100th percentiles of the residuals distribution. Even with this correction, the results for final data should be regarded with caution, as the exogeneity of instruments is problematic (next to last column) and the precision of estimates with positive *versus* negative gaps split is poor (last column).

Table 8. Fiscal reaction functions: EU15, 1987-2006
(equation (5), ΔCAR as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Output gap	0.16**		0.36**		0.30**		0.37***	
	(2.07)		(2.05)		(2.24)		(3.12)	
Positive output gap		0.09		1.29		0.94		1.40
		(0.25)		(1.24)		(1.33)		(0.92)
Negative output gap		0.19		-0.29		-0.44		-1.02
		(1.12)		(-0.41)		(-0.55)		(-0.56)
Lagged dependent variable	-0.05***	-0.05***	-0.08***	-0.07*	-0.11***	-0.10***	-0.15***	-0.16***
	(-3.08)	(-3.09)	(-2.65)	(-1.86)	(-3.41)	(-2.58)	(-4.21)	(-3.79)
Lagged debt	-0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.01
	(-0.85)	(-0.93)	(0.39)	(0.30)	(0.44)	(0.19)	(0.32)	(0.92)
Elections	0.05	0.04	-0.15	-0.17	-0.43***	-0.33*	-0.23	-0.01
	(0.51)	(0.41)	(-1.17)	(-1.26)	(-2.62)	(-1.79)	(-1.53)	(-0.03)
Maastricht (lagged)	-0.34***	-0.35***	-0.34**	-0.39***	-0.34**	-0.35**	-0.46***	-0.47**
	(-4.37)	(-4.56)	(-2.44)	(-2.61)	(-2.24)	(-2.16)	(-3.39)	(-2.46)
SGP (lagged)	-0.47**	-0.45**	-0.59***	-0.84**	-0.10	-0.39	-0.27	-0.76
	(-2.33)	(-2.17)	(-3.41)	(-2.55)	(-0.31)	(-0.79)	(-0.91)	(-0.90)
No. Obs.	272	272	272	272	270	270	296	296
R^2	0.26	0.26	0.13	0.08	0.10	0.05	0.11	0.04
Hansen J (p-value)	0.36	0.25	0.18	0.40	0.06	0.21	0.17	0.23

Estimation method: GMM. The output gap is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' lagged gaps, all from the same data vintage (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. The precision of estimates with positive *versus* negative gaps split is generally poor.

Table 9. Fiscal reaction functions: EU15, 1987-2006
(equation (5), Δ*CAPE* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Output gap	-0.52***		-0.61***		-0.29**		0.29*	
	(-6.86)		(-4.17)		(-2.23)		(1.84)	
Positive output gap		-0.69*		-0.68		-0.20		3.65
		(-1.76)		(-0.87)		(-0.39)		(1.38)
Negative output gap		-0.41**		-0.51		-0.42		-3.88
		(-2.25)		(-0.90)		(-0.73)		(-1.25)
Lagged dependent variable	-0.06***	-0.06***	-0.08***	-0.08***	-0.09***	-0.09***	-0.07	-0.10
	(-3.61)	(-3.60)	(-3.38)	(-3.44)	(-3.40)	(-3.45)	(-1.61)	(-1.19)
Lagged debt	-0.00	-0.00	-0.00	-0.00	-0.01**	-0.01**	-0.02**	0.01
	(-0.21)	(-0.38)	(-0.23)	(-0.22)	(-2.08)	(-2.04)	(-2.48)	(0.21)
Elections	0.01	0.03	0.25*	0.25*	0.14	0.15	0.44***	1.04
	(0.12)	(0.29)	(1.92)	(1.92)	(1.06)	(1.11)	(3.09)	(1.45)
Maastricht (lagged)	0.05	0.04	0.21*	0.20*	0.32***	0.33***	0.07	-0.13
	(0.48)	(0.38)	(1.68)	(1.66)	(2.63)	(2.70)	(0.51)	(-0.30)
SGP (lagged)	-0.07	-0.04	0.24	0.26	0.44	0.41	0.19	-1.53
	(-0.28)	(-0.15)	(0.68)	(0.62)	(1.58)	(1.17)	(0.53)	(-0.96)
No. Obs.	272	272	272	272	270	270	296	296
R^2	0.20	0.22	0.19	0.19	0.19	0.19	0.16	0.03
Hansen J (p-value)	0.24	0.11	0.65	0.47	0.18	0.12	0.01	0.41

Estimation method: GMM. The output gap is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' lagged gaps, all from the same data vintage (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. As in Table 7 above, the results for final data should be regarded with caution, as the exogeneity of instruments is problematic (next to last column) and the precision of estimates with positive *versus* negative gaps split is poor (last column).

Table 10. Deviations from budgetary plans: EU15, 1987-2006
(equation (7), Δ*CAPB* update as dependent variable)

Output gap update	-0.36		-0.30	
	(-1.54)		(-1.31)	
Positive output gap update		-0.69		-0.42
		(-1.38)		(-0.90)
Negative output gap update		1.10		0.08
		(0.56)		(0.04)
Lagged debt update	0.02	0.01	0.03	0.02
	(0.99)	(0.46)	(1.59)	(1.18)
Early elections	-0.49**	-0.52**	-0.51**	-0.50**
	(-2.33)	(-2.39)	(-2.32)	(-2.31)
Maastricht update (lagged)	-1.04***	-1.11***	-0.93**	-0.88**
	(-2.98)	(-3.15)	(-2.49)	(-2.30)
SGP update (lagged)	-1.93	-1.73	-1.98*	-1.82
	(-1.51)	(-1.49)	(-1.65)	(-1.60)
Output gap forecast			0.18**	
			(2.38)	
Positive output gap forecast				-0.01
				(-0.04)
Negative output gap forecast				0.27**
				(2.19)
Regular elections			-0.29**	-0.27**
			(-2.22)	(-2.07)
No. Obs.	235	235	235	235
R^2	0.16	0.16	0.20	0.22
Hansen J (p-value)	0.41	0.59	0.69	0.71

Estimation method: GMM. The output gap update is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' contemporary gap updates, all from the same pair of data vintages (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table 11. Deviations from budgetary plans: EU15, 1987-2006
(equation (7), Δ*CAR* update as dependent variable)

Output gap update	-0.35*		-0.32	
	(-1.69)		(-1.57)	
Positive output gap update		-0.61		-0.44
		(-1.00)		(-0.81)
Negative output gap update		1.24		0.77
		(0.58)		(0.38)
Lagged debt update	0.02	0.01	0.03	0.02
	(1.25)	(0.61)	(1.63)	(1.15)
Early elections	-0.25	-0.23	-0.21	-0.19
	(-1.61)	(-1.42)	(-1.38)	(-1.19)
Maastricht update (lagged)	0.15	0.15	0.29	0.31
	(0.27)	(0.25)	(0.46)	(0.49)
SGP update (lagged)	-2.44***	-2.23***	-2.32***	-2.18***
	(-3.79)	(-3.17)	(-3.57)	(-3.20)
Output gap forecast			0.14**	
			(2.11)	
Positive output gap forecast				0.12
				(0.47)
Negative output gap forecast				0.15
				(1.28)
Regular elections			0.05	0.02
			(0.41)	(0.16)
No. Obs.	235	235	235	235
R^2	0.18	0.14	0.20	0.18
Hansen J (p-value)	0.32	0.03	0.19	0.01

Estimation method: GMM. The output gap update is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' contemporary gap updates, all from the same pair of data vintages (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. Results with positive *versus* negative gaps split should be regarded with caution, as the exogeneity of instruments is problematic and the precision of estimates declines.

Table 12. Deviations from budgetary plans: EU15, 1987-2006
(equation (7), Δ*CAPE* update as dependent variable)

Output gap update	-0.10		-0.10	
	(-0.53)		(-0.51)	
Positive output gap update		-0.10		-0.13
		(-0.23)		(-0.32)
Negative output gap update		0.22		0.30
		(0.17)		(0.25)
Lagged debt update	0.01	0.01	0.00	0.01
	(0.36)	(0.34)	(0.27)	(0.34)
Early elections	0.08	0.13	0.12	0.15
	(0.50)	(0.77)	(0.76)	(0.92)
Maastricht update (lagged)	0.38	0.62	0.46	0.62
	(0.91)	(1.28)	(1.13)	(1.38)
SGP update (lagged)	0.30	0.28	0.41	0.31
	(0.30)	(0.25)	(0.44)	(0.31)
Output gap forecast			-0.02	
			(-0.45)	
Positive output gap forecast				0.09
				(0.49)
Negative output gap forecast				-0.10
				(-1.19)
Regular elections			0.29***	0.29***
			(2.92)	(2.84)
No. Obs.	229	229	229	229
R^2	0.14	0.15	0.17	0.17
Hansen J (p-value)	0.07	0.02	0.10	0.04

Estimation method: GMM. The output gap update is instrumented with its own lag (considering separately positive and negative values in even columns) and with a GDP-weighted average of other countries' contemporary gap updates, all from the same pair of data vintages (see text for further details). Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. The value of the Hansen J statistic sometimes proved sensitive to the presence of outliers, which made me re-estimate the four columns excluding the observations corresponding to the 1st and the 100th percentiles of the residuals distribution. Even with this correction, results should be regarded with caution, as the exogeneity of instruments remains problematic (especially with positive *versus* negative gaps split).

ADDITIONAL APPENDIX

Table A1. Fiscal reaction functions with alternative output gaps and budgetary sensitivity parameters: EU15, 1987-2006 (equation (5), final data)

Dep. variable	Δ*CAPB*			Δ*CAR*			Δ*CAPE*		
Output gap estimate	CF	PF	PF	CF	PF	PF	CF	PF	PF
Time-varying ε^R, ε^E?	N	N	Y	N	N	Y	N	N	Y
Lagged output gap	0.08	0.07	0.06	0.17***	0.09**	0.08**	0.11	0.04	0.04
	(1.13)	(1.61)	(1.50)	(3.16)	(2.32)	(2.20)	(1.50)	(1.22)	(1.25)
Lagged dependent variable	-0.25***	-0.28***	-0.28***	-0.17***	-0.17***	-0.17***	-0.08**	-0.10***	-0.10***
	(-6.52)	(-8.54)	(-8.55)	(-5.16)	(-5.22)	(-5.37)	(-2.42)	(-3.59)	(-3.61)
Lagged debt	0.02***	0.02***	0.02***	0.01	0.01	0.01	-0.02***	-0.01*	-0.01*
	(3.34)	(3.20)	(3.18)	(0.99)	(1.60)	(1.55)	(-2.74)	(-1.88)	(-1.86)
Elections	-0.55***	-0.54***	-0.55***	-0.27**	-0.28**	-0.29**	0.34***	0.32***	0.32***
	(-3.94)	(-3.95)	(-4.07)	(-2.01)	(-2.10)	(-2.16)	(2.66)	(2.66)	(2.70)
Maastricht (lagged)	-0.49***	-0.69***	-0.67***	-0.40***	-0.41***	-0.39***	0.13	0.25*	0.24*
	(-3.66)	(-5.05)	(-4.91)	(-3.30)	(-3.26)	(-3.12)	(0.99)	(1.87)	(1.83)
SGP (lagged)	0.00	-0.02	-0.01	-0.20	-0.06	-0.06	0.18	0.41	0.40
	(0.01)	(-0.05)	(-0.02)	(-0.65)	(-0.19)	(-0.18)	(0.48)	(1.21)	(1.20)
No. Obs.	296	296	296	296	296	296	296	296	296
R^2	0.25	0.27	0.26	0.21	0.19	0.19	0.21	0.20	0.20

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values. CF denotes the Christiano-Fitzgerald output gap (used elsewhere in the paper), and PF stands for the production function-based output gap estimated by the Commission (variable AVGDGP in the AMECO database). When time-varying, the budgetary sensitivity parameters ε^R and ε^E are those implicit in the cyclically-adjusted revenue and primary expenditure computed by the Commission (variables URTGAP and UUTGBP in the AMECO database). In all cases variables *CAPB*, *CAR* and *CAPE* were recomputed (excluding UMTS proceeds) through equations (1) to (3) with the appropriate output gap and sensitivity parameters.

Table A2. Expenditure reaction functions with *GAP* split into quartiles: EU15, 1987-2006 (equation (5), Δ*CAPE* as dependent variable)

	Forecasts (s = -1)	Estimates (s = 0)	Prov. data (s = 1)	Final data ($s+t$ = 2007)
Lagged output gap: 1st quartile	-0.28***	-0.25**	-0.18	-0.09
	(-4.05)	(-2.56)	(-1.60)	(-0.82)
Lagged output gap: 2nd quartile	-0.26	-1.22**	0.29	-0.21
	(-0.99)	(-2.22)	(0.57)	(-0.58)
Lagged output gap: 3rd quartile	-0.32	-0.47*	-0.16	0.61
	(-1.26)	(-1.76)	(-0.51)	(1.09)
Lagged output gap: 4th quartile	-0.43***	-0.13	-0.06	0.29*
	(-4.49)	(-1.24)	(-0.71)	(1.93)
Lagged dependent variable	-0.07***	-0.08***	-0.09***	-0.08**
	(-4.77)	(-3.57)	(-3.31)	(-2.57)
Lagged debt	-0.01	-0.01	-0.02***	-0.02***
	(-1.60)	(-1.49)	(-2.75)	(-2.81)
Elections	0.09	0.31**	0.13	0.32***
	(0.97)	(2.49)	(1.02)	(2.61)
Maastricht (lagged)	0.10	0.14	0.28**	0.13
	(1.23)	(1.22)	(2.51)	(1.02)
SGP (lagged)	0.01	0.20	0.39	0.12
	(0.06)	(0.68)	(1.43)	(0.34)
No. Obs.	272	272	270	296
R^2	0.40	0.24	0.21	0.22

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table A3. Fiscal reaction functions excluding one-offs: EU15, 1987-2006
(equation (5), Δ*CAPB* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Lagged output gap	0.40***		0.36***		0.26***		0.04	
	(6.67)		(5.38)		(3.36)		(0.55)	
Positive lagged output gap		0.42***		0.25**		0.02		-0.08
		(3.87)		(2.09)		(0.12)		(-0.71)
Negative lagged output gap		0.39***		0.47***		0.54***		0.18
		(3.45)		(3.24)		(3.89)		(1.35)
Lagged dependent variable	-0.15***	-0.15***	-0.23***	-0.23***	-0.27***	-0.28***	-0.26***	-0.26***
	(-5.94)	(-5.90)	(-6.68)	(-6.76)	(-8.17)	(-8.58)	(-5.95)	(-6.09)
Lagged debt	0.01*	0.01*	0.02***	0.02***	0.02***	0.02***	0.02***	0.02***
	(1.79)	(1.79)	(3.70)	(3.61)	(2.78)	(2.97)	(3.38)	(3.39)
Elections	-0.09	-0.09	-0.43**	-0.44**	-0.50***	-0.50***	-0.60***	-0.58***
	(-0.84)	(-0.82)	(-2.57)	(-2.56)	(-2.84)	(-2.81)	(-4.19)	(-4.15)
Maastricht (lagged)	-0.42***	-0.42***	-0.30**	-0.32**	-0.45***	-0.46***	-0.31**	-0.30**
	(-3.03)	(-3.01)	(-2.31)	(-2.50)	(-3.50)	(-3.73)	(-2.25)	(-2.19)
SGP (lagged)	-0.33*	-0.33*	-0.69*	-0.67*	-0.56	-0.48	-0.14	-0.08
	(-1.76)	(-1.80)	(-1.72)	(-1.65)	(-1.22)	(-1.05)	(-0.34)	(-0.21)
No. Obs.	239	239	238	238	235	235	261	261
R^2	0.47	0.47	0.41	0.42	0.34	0.35	0.26	0.27

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table A4. Fiscal reaction functions excluding one-offs: EU15, 1987-2006
(equation (5), Δ*CAR* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data ($s+t$ = 2007)	
Lagged output gap	0.05		0.13**		0.17***		0.18***	
	(0.95)		(2.22)		(2.70)		(3.11)	
Positive lagged output gap		0.07		0.17		0.12		0.27***
		(0.64)		(1.33)		(1.01)		(2.86)
Negative lagged output gap		0.03		0.09		0.23*		0.08
		(0.38)		(0.71)		(1.90)		(0.70)
Lagged dependent variable	-0.05***	-0.05***	-0.10***	-0.10***	-0.13***	-0.13***	-0.20***	-0.20***
	(-2.86)	(-2.85)	(-3.12)	(-3.08)	(-3.58)	(-3.56)	(-5.11)	(-5.05)
Lagged debt	-0.00	-0.00	0.01	0.01	0.01	0.01	0.01	0.01
	(-0.31)	(-0.31)	(1.24)	(1.25)	(0.85)	(0.88)	(1.12)	(1.17)
Elections	-0.02	-0.02	-0.21*	-0.21*	-0.42***	-0.42***	-0.34**	-0.35***
	(-0.15)	(-0.17)	(-1.66)	(-1.66)	(-2.58)	(-2.58)	(-2.48)	(-2.59)
Maastricht (lagged)	-0.30**	-0.30**	-0.42**	-0.41**	-0.28*	-0.28*	-0.19	-0.20
	(-2.46)	(-2.45)	(-2.39)	(-2.37)	(-1.85)	(-1.92)	(-1.25)	(-1.27)
SGP (lagged)	-0.43**	-0.44**	-0.55***	-0.56***	-0.15	-0.14	-0.48	-0.52*
	(-2.05)	(-2.05)	(-2.80)	(-2.77)	(-0.43)	(-0.38)	(-1.58)	(-1.70)
No. Obs.	239	239	238	238	235	235	261	261
R^2	0.27	0.27	0.20	0.20	0.18	0.18	0.21	0.21

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.

Table A5. Fiscal reaction functions excluding one-offs: EU15, 1987-2006
(equation (5), Δ*CAPE* as dependent variable)

	Forecasts (s = -1)		Estimates (s = 0)		Provisional data (s = 1)		Final data (s+t = 2007)	
Lagged output gap	-0.38***		-0.25***		-0.09		0.14*	
	(-8.29)		(-3.97)		(-1.45)		(1.83)	
Positive lagged output gap		-0.44***		-0.18		0.01		0.34**
		(-4.02)		(-1.50)		(0.12)		(2.64)
Negative lagged output gap		-0.33***		-0.33***		-0.21*		-0.09
		(-4.69)		(-2.99)		(-1.80)		(-0.92)
Lagged dependent variable	-0.04***	-0.04***	-0.05**	-0.05**	-0.08***	-0.08**	-0.07**	-0.07**
	(-2.66)	(-2.66)	(-2.20)	(-2.23)	(-2.61)	(-2.57)	(-2.05)	(-2.15)
Lagged debt	-0.01**	-0.01**	-0.01**	-0.01**	-0.02**	-0.02***	-0.03***	-0.02***
	(-2.07)	(-2.12)	(-2.21)	(-2.14)	(-2.50)	(-2.60)	(-3.02)	(-3.15)
Elections	0.12	0.13	0.28**	0.28**	0.14	0.14	0.36***	0.34***
	(1.18)	(1.25)	(2.00)	(2.02)	(0.98)	(1.00)	(2.72)	(2.69)
Maastricht (lagged)	0.19*	0.19*	-0.00	0.01	0.25*	0.26*	0.25*	0.23*
	(1.78)	(1.74)	(-0.02)	(0.06)	(1.66)	(1.74)	(1.88)	(1.78)
SGP (lagged)	0.09	0.10	0.31	0.29	0.51**	0.47**	-0.07	-0.15
	(0.49)	(0.53)	(0.98)	(0.92)	(2.12)	(2.00)	(-0.19)	(-0.44)
No. Obs.	239	239	238	238	235	235	261	261
R^2	0.42	0.43	0.22	0.23	0.21	0.22	0.25	0.26

Estimation method: least squares dummy variables with robust standard errors. Country fixed effects are not reported. Asterisks *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. T-statistics are given in parentheses. R^2 is computed as the squared correlation coefficient of actual and fitted values.