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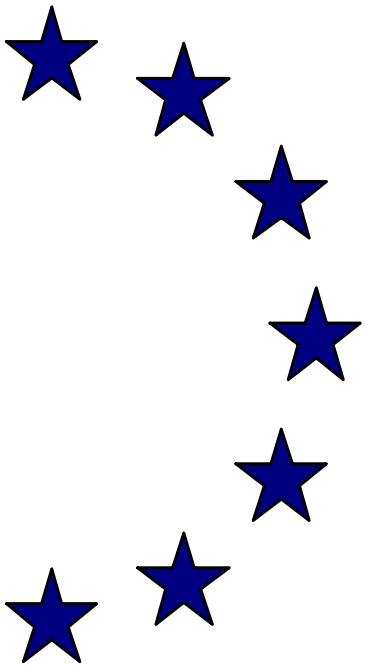

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Fiscal rules, inertia and discretionary fiscal policy

by

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Abstract

In current practice, changes in the cyclically-adjusted budget balance (CAB) are generally interpreted as reflecting the effort of discretionary fiscal policy. This paper shows, that such an interpretation is not a sufficiently accurate description of the behaviour of fiscal policy, and, in some cases, it may even conceal an important deficit bias. Specifically, as growth projections are an important building block of budgetary plans, optimism in forecasting growth, coupled with pervasive lags and inertia in the implementation phase of the budget, will result in a fiscal expansion, even in the absence of discretionary measures. In order to track down this kind of *passive* behaviour in the light of growth surprises or sanguine growth assumptions the traditional reading of the CAB needs to be adjusted. This is achieved by relaxing the benchmark assumption according to which, under unchanged fiscal policy, the deficit to GDP ratio is invariant to growth. An empirical application to public finance data of four large EU countries shows that *passive* behaviour is an important element in practice, as forecast errors are significant in explaining changes in the CAB. Moreover, in some cases official growth forecasts appear to have a clear upward bias.

Keywords: Fiscal Policy, Cyclically-Adjusted Budget Balance, Potential Output, Forecast Accuracy, Policy Inaction.

JEL classification: E61, H3, H6

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1. INTRODUCTION

Changes in the cyclically-adjusted budget balance (CAB) are the most commonly used indicator of discretionary fiscal policy effort. Prominent examples are the IMF in its World Economic Outlook and the OECD in its Economic Outlook, where both institutions regularly comment on fiscal positions in structural terms associating changes in the structural deficit with discretionary policy interventions. Similarly, in its annual report on public finances in the Economic and Monetary Union (EMU) and, more importantly, in assessing the stability programmes of the Member States under the provisions of the Stability and Growth Pact (SGP), the European Commission gauges the discretionary effort of fiscal policy by the change in the CAB.

The basic idea in using changes in the CAB as an indicator of discretionary fiscal policy is that, once the budget is purged of its cyclical component, any remaining difference across time should, by exclusion, signal the effect of active fiscal policy interventions. The concept is particularly appealing because of its simplicity and the possibility of replication.

Various difficulties linked with the CAB have been discussed in the literature, the main references being Blanchard (1990), Chouraqui et al. (1990) Gramlich (1990) and, more recently, Braconier and Holden (1999) and Bouthevillain et.al. (2001). The main flaw of using the CAB as an indicator of discretionary fiscal policy, is that removing the effects of cyclical output fluctuations still leaves other possible sources of variation in the budget balance which cannot be termed discretionary. In particular, changes in the interest rate, a variable not controlled by fiscal authorities, can have significant effects on the budgetary position. To adjust for that non-policy element the focus has been shifted to the cyclically-adjusted primary balance (CAPB).

This paper argues that, even after shifting the focus to the CAPB, a more important adjustment is required. In particular, one needs to take into account the budgetary effect of over- or underestimating underlying growth in the planning phase of the budget. Expenditure plans are generally fixed a year in advance based on a forecast of revenues, which are typically linked to the projection for economic output. If output turns out lower than officially projected with no or very little adjustment of non-cyclical expenditure plans in the implementation phase of the budget, it would be misleading to describe the ensuing deterioration of the CAPB as being the result of discretionary fiscal. Consequently, changes in the CAPB can either be attributed to active fiscal policy interventions or, alternatively, to the inaction of fiscal policy in the event of lower or higher than projected underlying growth. In particular, in view of the inertia and complexity of the fiscal policy making process, including policy lags, it is safe to assume that contemporaneous corrections for growth surprises will be limited giving rise to what might be called passive fiscal policy.

A further key issue addressed in this paper is to judge as to whether budgetary forecast errors simply reflect the intrinsic uncertainty of a non-deterministic world or constitute a deliberate strategy of fiscal policy to overestimate the level of economic activity in order to ex-ante embellish the structural fiscal position, while ex-post blaming weaker than expected growth.

The traditional reading of changes in the CAPB does not allow for the distinction between genuine discretionary fiscal policy and passive policy. In particular, changes in the CAPB are taken to be invariant with respect to growth, which can be true only if non-cyclical expenditures always follow revenues. As a result of this neutrality assumption, any increase or decline in the CAPB is taken to exclusively yet mistakenly measure discretionary changes in fiscal policy.

Splitting the CAPB into a component due to passive fiscal policy in the light of forecast errors and a component which is genuinely discretionary does not bear any difference on the actual outcome of the CAPB itself. Ex post, an improvement or deterioration of the CAPB is a purely factual issue. However, it is evident that the story of how the change in the CAPB was brought about and the conclusions to be drawn can be very different. In a context of fiscal consolidation, for instance, a deterioration of the CAPB generally triggers the conclusion that fiscal authorities should refrain from changing policy instruments that expand the non-cyclical deficit, while in some cases it would be more appropriate to ask for greater prudence in setting up budgetary plans or to flag the absence of prompt reactions to counter the effects of lower-than-projected potential growth.

Although in a different context, the notion that changes in the CAPB may not simply reflect discretionary fiscal policy, is already present in the literature. The budgetary effect of growth is obtained as a sort of by-product while focusing attention on different issues. For example, Blanchard and Perotti (2001) and Perotti (2002) allow for growth to affect the CAPB when characterising the dynamic effects of fiscal policy on output. Fatás and Mihov (2002) build a quantitative measure of discretionary fiscal policy by extracting both a cyclical component and some automatic growth effect from the observed series of the expenditure-to-output ratio. However, in both cases the effect of growth is neither quantified nor conceptually clarified. A step further in realising that discretionary policy has to be better specified is made by Buti and Van den Noord (2003) who analyse changes in the CAPB in relation with political elections. The common trait of these otherwise unrelated lines of research is that they give up the neutrality assumption underlying the traditional reading of changes in the CAPB. As a result, the structural budget balance is affected by underlying growth.

The main problem in giving up the neutrality assumption is to find a convincing alternative. While it may not be difficult to recognise that an automatic link between non-cyclical expenditures and revenues is not a realistic benchmark for describing unchanged fiscal policy, there is no clear-cut answer to the question of how non-cyclical expenditure may, under unchanged fiscal policy, be linked to the level of economic activity. This difficulty is generally well recognised and accepted in a context tightly linked to that of gauging discretionary fiscal policy changes, notably the problem of measuring the demand stimulus arising from discretionary changes in the fiscal position. Heller et. al. (1986) and Mackenzie (1989) review the issue, pointing out that any measure for assessing the thrust of fiscal policy will be conditional on the assumption of unchanged revenue and expenditure policy. Nonetheless, the same dependence is generally not acknowledged when using changes in the CAPB as an indicator of discretionary fiscal policy. The neutrality assumption is generally maintained.

The present paper tries to look more carefully into the neutrality assumption underlying the current reading of the CAPB and explores the scope for alternative propositions. The main point is to show that because of the neutrality assumption changes in the CAPB do

not provide a sufficiently accurate description of the behaviour of fiscal policy, and, in some cases, may even conceal an important deficit bias.

The remainder of the paper is organised as follows. The second section developes a more detailed discussion of the conceptual issue, focusing on the mechanics of the CAPB and the interplay between the neutrality assumption, forecast errors and budgetary inertia. A simple method for quantifying the budgetary effect of passive fiscal policy is offered. The third section of the paper investigates the empirical relevance of growth surprises in explaining the cyclically-adjusted budget balance. Based on budget data of the four largest EU countries, notably Germany, France, United Kingdom and Italy, we first check the accuracy of official economic forecasts underpinning budgetary plans. After that, a regression analysis shows that prediction errors are statistically significant in explaining the CAPB. The fourth section discusses the results of the empirical analysis touching on possible elements of criticisms. The last section concludes the paper highlighting the importance of sound and prudent macroeconomic projections underpinning budgetary plans.

2. THE CYCLICALLY-ADJUSTED PRIMARY BUDGET BALANCE AS INDICATOR OF DISCRETIONARY FISCAL POLICY

2.1. The mechanics of the CAPB

The basic idea underlying the empirical application of the CAPB is to think of the actual primary budget balance b as being the sum of two unobserved components: a structural and a cyclical. Expressing all budgetary variables in percentage of GDP this can be written as

(1) $$b_t = r_t - g_t = r^s(fp_t, y_t^P) - g^s(fp_t, y_t^P) + (\varepsilon_r - \varepsilon_g)\left(\frac{y_t}{y_t^P} - 1\right)$$

where r and g are total revenues and primary expenditures respectively. The cyclical component is typically modelled as a function of the output gap $\left(\frac{y_t}{y_t^P} - 1\right)$ scaled by the cyclical sensitivities of revenues and expenditures ε_r and ε_g. In a cyclical slowdown the cyclical component would typically cause the overall balance to deteriorate due to higher expenditure for unemployment benefits and lower tax revenues. The structural component of the budget balance, indicated by a superscript *s*, is taken to include two major determinants. The first is active fiscal policy, denoted as fp_t, the effect of which we actually want to isolate. The second determinant is potential output y_t^P accounting for the fact that budgetary variables may generally depend on the level of economic activity.

In a purely static context the structural component b_t^s is simply and effectively obtained as a residual, by subtracting the cyclical component from the actual budget balance:

(2) $$b_t^s = r_t^s - g_t^s = (r_t - g_t) - (\varepsilon_r - \varepsilon_g)\left(\frac{y_t}{y_t^P} - 1\right)$$

or equivalently

$$b_t^s = r_t^s - g_t^s = (r_t - \varepsilon_r(\frac{y_t}{y_t^P} - 1)) - (g_t - \varepsilon_g(\frac{y_t}{y_t^P} - 1)) \ .$$

Once the cyclical element is correctly identified, the structural component necessarily follows. Possibly different determinants of the structural component are not relevant in this context. What matters is just the level of the underlying budgetary position.

If one introduces the temporal dimension into the picture, further identifying assumptions need to be imposed to shed light on what determines the changes in the structural balance. Taking the total differential of (1) gives

$$(3) \qquad db_t = \left[\frac{\partial r_t^s}{\partial fp_t} - \frac{\partial g_t^s}{\partial fp_t}\right] dfp_t + \left(\frac{\partial r_t^s}{\partial y_t^P} y_t^P - \frac{\partial g_t^s}{\partial y_t^P} y_t^P\right) \frac{dy_t^P}{y_t^P} + \left(\varepsilon_r - \varepsilon_g\right) \left[\frac{dy_t}{y_t} - \frac{dy_t^P}{y_t^P}\right] \frac{y_t}{y_t^P}$$

The first two terms on the right hand side of equation (3) identify the two structural components, i.e. the policy-induced part and the effect of potential output variations respectively.[1] Assuming that, in analogy to changes in the output gap, the effect of potential output growth on the budget balance can be captured by separate sensitivity parameters, (3) can be rewritten as

$$(4) \qquad dcapb_t = db_t - \left(\varepsilon_r - \varepsilon_g\right) \left[\frac{dy_t}{y_t} - \frac{dy_t^P}{y_t^P}\right] \frac{y_t}{y_t^P} = \left[\frac{\partial r_t^s}{\partial fp_t} - \frac{\partial g_t^s}{\partial fp_t}\right] dfp_t + \left(\varepsilon_r^{y^P} - \varepsilon_g^{y^P}\right) \frac{dy_t^P}{y_t^P}$$

In current practice, the overall change in the CAPB is taken to exclusively gauge the effort of discretionary fiscal policy actions. The underlying rate of growth is assumed to play no role. In terms of equation (4) this interpretation - the neutrality assumption discussed in the Introduction - would be correct only if $\varepsilon_r^{y^P} = \varepsilon_g^{y^P}$, i.e. revenues and expenditures are assumed to have exactly the same response to changes in the level of

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[1] From a theoretical point of view equation (3) involves two important simplifications. It disregards any direct effect fp_t may have on both actual and potential output. In the context of the prevailing macroeconomic paradigm, contractionary fiscal policy measures are generally assumed to have a negative effect, if not on the underlying rate of growth, then at least on the cyclical position of an economy. Hence equation (1) may be rewritten as

$b_t = b^s(fp_t, y_t^p) + \varepsilon(\frac{y_t(fp_t)}{y_t^p} - 1)$ and hence

$$db_t = \left[\frac{\partial b_t^s}{\partial fp_t} + \varepsilon \frac{1}{y_t^P} \frac{\partial y_t}{\partial fp_t}\right] dfp_t + \frac{\partial b_t^s}{\partial y_t^P} y_t^P \frac{dy_t^P}{y_t^P} + \left[\frac{dy_t}{y_t} - \frac{dy_t^P}{y_t^P}\right] \varepsilon \frac{y_t}{y_t^P}$$

The likely response of actual output to fiscal policy measures will generally dampen the efficacy of any consolidation effort in the sense that a larger discretionary correction is required to achieve a specific nominal target. Nevertheless, equation (3) is justified by the problem at hand, i.e. decomposing observed changes in the budget. The aim of this work is not to determine ex ante the impact on output or the required size of a specific fiscal policy measure, but to identify different components in the observed changes of the budget balance given cyclical variations and underlying growth.

economic activity. At this point it needs to be stressed that this assumption of neutrality does not imply constant expenditure and revenue-to-GDP ratios over time.[2] The current reading of the CAPB is actually consistent with different trends in the size of government. It can imply either a rising or declining size of government depending on the numerical value of $\varepsilon_r^{y^p}$. According to estimates provided by the OECD[3], tax elasticities range from 1.1 to 0.6 in EU member states, meaning that under unchanged fiscal policy the ratio of revenues to GDP would increase or decrease respectively.

Equation (4) can also be interpreted as a special case of the more general problem of decomposing observed changes in the actual budget balance into a policy component and a component resulting from changes in the economic environment. The annex to this paper shows how the neutrality assumption underlying the CAPB can be derived as a particular parameter restriction of that general problem. It also shows that alternative parameter restrictions give rise to alternative indicators of discretionary fiscal policy examined and applied in the literature.

2.2. Active versus passive fiscal policy

Once the neutrality assumption is questioned changes in the CAPB no longer provide a sufficiently accurate description of discretionary fiscal policy actions. They mistakenly lump together the component that Buti and Van den Noord (2002) call 'genuine' discretionary policy changes and changes resulting from passive behaviour on the side of fiscal authorities.

The effect of passive fiscal behaviour originates in the diverging development of non-cyclical expenditures and revenues in the event of higher or lower than expected growth. On the revenue side it is reasonable to assume that any downward/upward shift in the underlying rate of growth will automatically translate into a corresponding decrease/increase in governments' receipts as, under unchanged fiscal policy, tax bases should bear a stable relationship with the level of economic activity. If this is the case, the elasticity remains the same from an ex-ante and an ex-post point of view.

By contrast, one cannot take for granted the existence of a similar stable relationship between non-cyclical expenditure and the level of underlying activity. Admittedly, in the planning stage of the budget, the level of expenditure will generally be set by fiscal authorities in accord with projected revenues to the extent that the budget plan is derived from macroeconomic forecasts. However, any relationship between expenditure and economic activity that may hold from an-ex ante point of view will break down in the implementation phase of the budget once inertia comes into play. Any form of inertia on the side of fiscal authorities, be it due to institutional hurdles or due to political constraints, in the event of higher or lower than expected growth uncouples expenditure from the level of economic activity. In other words, over- or underestimating economic growth coupled with inertia in the implementation phase of the budget will result in a deterioration or improvement in the CAPB compared to plans, even if fiscal authorities

[2] Heller et. al. (1986) and more recently von Hagen et. al. (2001) and von Hagen (2002) define neutral fiscal stance as the policy that keeps the revenue and expenditure-to-GDP ratios unchanged.

[3] Giorno et. al. (1995) and Van den Noord (2000), both published as OECD working paper, are the main references regarding tax elasticities for OECD countries.

do not take any discretionary policy measures. In terms of equation (4) this means that the change in the CAPB is not neutral with respect to forecast errors, i.e. $(\varepsilon_r^{y^P} \neq \varepsilon_g^{y^P})$ for $(\frac{dy_t^P}{y_t^P} - E_{t-1}\frac{dy_t^P}{y_t^P})$.[4]

The importance of inertia in economic policy has been extensively discussed and examined in the literature starting with the famous argument on "long and variable lags" by Milton Friedman (1959) later on reviewed by Blinder and Solow (1972) referring to fiscal policy and ranging to the more recent political economy type of explanations for inaction and delay as reviewed in Drazen (2000). Closely linked to the issue of budgetary procedures, Halleberg, Strauch and von Hagen (2001) provide empirical evidence for fiscal policy inertia in the event of negative economic shocks.

In principle, any forecast is, by its very nature, subject to uncertainty implying that projection and outturn will rarely coincide. Hence, as long as projections turn out to be unbiased and the root mean squared error is not exceptionally big, the effect of over or under predicting non-cyclical growth on the fiscal stance would have to be accepted as the natural consequence of a non-deterministic world. Conversely, a different conclusion is warranted if projections turn out, for example, to systematically overrate the underlying speed of the economy. In that case, the combination of prediction errors and inertia becomes a systematic part of fiscal performance, introducing a kind of deficit bias. This issue will be further discussed in the next section.

The gain from distinguishing genuine discretionary policy changes from changes simply resulting from passive fiscal policy is twofold. First, it basically helps to get the story right. When assessing the fiscal stance of a country it may be key to understand the causes for an observed deterioration in the structural fiscal position in order to draw the correct conclusions. When faced with a fall in the CAPB, the current practice generally consists in linking the fiscal loosening with active fiscal policy measures such as tax cuts or increases in expenditure. In addition, depending on the fiscal framework, the fiscal loosening may be condemned coupled with the recommendation of refraining from further actions, when in reality it could be more appropriate to ask for greater prudence in setting up budgetary plans or to ask for prompt actions to counter the effects of growth surprises. Secondly, the distinction between genuine and passive fiscal policy can be an important element in the relatively recent but growing literature aiming at explaining fiscal behaviour by means of simple fiscal rules, analogous to the by now well established rules for monetary policy following Taylor (1993). Examples of this branch of literature are Gali and Perotti (2003), Ballabriga and Martinez-Mongay (2002) and Taylor (2001).

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[4] While the assumption of neutrality may be justified in the planning phase of the budget, i.e. fiscal policy makers may plan to spend expected additional non-cyclical revenues, it will generally not hold in the implementation phase due to inertia. Expanding equation (4) to allow for forecast errors we get

$$dcapb_t = \left[\frac{\partial r_t^s}{\partial fp_t} - \frac{\partial g_t^s}{\partial fp_t}\right] dfp_t + \left(\varepsilon_r^{y^P} - \varepsilon_g^{y^P}\right)\left(\frac{dy_t^P}{y_t^P} - E_{t-1}\frac{dy_t^P}{y_t^P}\right) + \left(\varepsilon_r^{y^P} - \varepsilon_g^{y^P}\right)E_{t-1}\frac{dy_t^P}{y_t^P}$$

where the last term on the right hand side referring to budgetary plans can be taken to be zero.

A quantification of the budgetary effect of passive fiscal policy is complicated by the practical difficulty of measuring the degree of inertia in the implementation phase of the budget. For an accurate assessment one would have to know exactly if and how fiscal authorities react to variations in the economic outlook, when the reaction is likely to be different in each instance.

Nonetheless, a rough estimate of the budgetary effect can be obtained by applying two working assumptions. Firstly, it can be assumed that in the event of growth surprises fiscal authorities do not adjust expenditure plans in the implementation phase of the budget. At first sight, the assumption of complete inertia may seem to be a strong one, but it may still be a reasonably good approximation taking into account the lags with which economic growth is measured, coupled with the slowness of the political process to design, approve and implement correcting measures. According to Halleberg, Strauch and von Hagen (2001), who carried out a survey on budgetary procedures in the EU, few countries have formal rules to cope with lower than expected revenues. In addition, the authors do not find a significant difference in the fiscal performance between member states with formal rules and member states without such rules. The second and less contentious working hypothesis would be to assume that the tax system is proportional or nearly proportional, implying a semi-elasticity $\varepsilon_r^{y^P}$ equal to zero. In this case, any departure from projected GDP coupled with full inertia affects the CAPB-to-GDP ratio by an amount equal to the primary non-cyclical expenditure-to-GDP ratio for each percentage point of lower than expected GDP.[5]

This rule of thumb can also be applied in a purely ex-ante setting, when assessing the possible risks to the budgetary projections to changes in the economic growth scenario, i.e. when performing a sensitivity analysis. The assumption of complete inertia on the expenditure side of the budget produces a useful estimate of the discretionary adjustment required to meet the budgetary plans in case underlying growth, and hence revenues, fall short of or exceed prior projections.

It should finally be stressed that the working assumption of complete inertia of non-cyclical expenditure can reasonably be made only over the short term, say one year. Over the longer term and for countries with credible fiscal rules designed to cope with growth surprises in the implementation phase of the budget the working assumption would clearly not be justified, and different propositions would be required. However, the quest for an alternative and more realistic assumption other than complete inertia pushes open the door to the more fundamental and more difficult issue of the determinants of non-cyclical expenditure. More specifically, to correctly identify discretionary policy changes in the budget one has to define the trend of non-cyclical expenditure in the absence of discretionary policy interventions, i.e. the behaviour of non-cyclical expenditure under

[5] Assuming no adjustment on non-cyclical primary expenditure in the implementation of the budget means that the level of expenditure is taken to be fixed at the planned level. If in addition the tax system is taken to be proportional we have:

$$\frac{dg_t^s}{dy_t^P} y_t^P = \frac{d\,\frac{t-1\overline{G}_t}{y_t^P}}{dy_t^P} y_t^P = -\frac{t-1\overline{G}_t}{y_t^P}.$$

unchanged fiscal policy. In terms of equation (4) the problem is to find a value for $\varepsilon_g^{y^p}$. While there may be a relatively simple answer for certain expenditure categories, such as wages and salaries for public employees, it is less obvious and more complex for others, e.g. investment.

3. EMPIRICAL ANALYSIS: ACTIVE VERSUS PASSIVE FISCAL POLICY

Following the conceptual discussion on how discretionary fiscal policy may be affected by inertia on the side of fiscal policy makers in the event of lower or higher than projected growth this section moves on to the empirical analysis of the issue. Attention is focused on the four largest EU Member States: Germany, France, the United Kingdom and Italy.

3.1. Accuracy of potential output growth forecasts

As a first step we look at the track record of potential output forecasts underlying official budgetary projections. Except for Germany, the macroeconomic scenario underpinning budgetary projections does not include an explicit forecast of potential output growth. However, estimates can be derived from forecasts of actual GDP figures using the HP-filter. To start with, one-step ahead forecasts of potential output growth were derived from the annual budget plans for each year of the 1987-2003 period using the HP-filter. These forecasts were compared with "actual" potential output growth, which was estimated via the HP-filter on the complete historical real GDP series starting in 1960, plus the April 2003 Consensus forecast for 2003.

Table 1 shows the key statistics obtained from the accuracy check. The analysis by country shows that there is a clear tendency to overestimate the growth rate of potential output, notably in Italy and Germany. In the case of Italy, for instance, the official one-step-ahead projection has - except for one year - always exceeded the actual outturn over the sample period. The average bias is around 0.6 percentage points per year. Similarly, the official German projections on average overrate the underlying speed of the economy by around half a percentage point each year, with the accuracy turning particularly bad in the second half of the 1990s when official forecasts were very slow to adapt to the marked deceleration in potential output growth. While the forecasts are slightly more accurate in the case of France, they also appear to embody some kind of structural optimism. A simple test using a normal distribution for the forecast errors shows that in these three cases the bias is statistically significant.

Only the British Treasury seems to produce unbiased growth projections. The estimated average forecast error is smaller than one decimal point and is not significant at a 10% significance level. This is all the more remarkable as the official forecast of the Treasury for the period *t+1* is generally presented in March of year *t*, whereas in the case of Italy, Germany and France the official forecast is presented later in the year.

While it goes beyond the scope of this paper to investigate the reasons for the systematic upward bias in projecting the underlying speed of the economy, the most persuasive explanations probably involve political economy variables. Artis and Marcellino (1999) briefly address the strategic nature of growth forecasts underpinning official deficit projections. Buti and van den Noord (2003) examine the role of electoral cycles in euro area countries in the 1999-2002 period, showing that while countries systematically

overrate potential growth, there is no clear link to elections. A more formal line of explanation is provided by the models briefly referred to above in connection with Drazen (2000), explaining delay or inaction in economic policy as a consequence of heterogeneity and conflict of interest. A government facing political constraints either because of powerful vested interests, the public goods nature of the effects of fiscal policy or the ex-ante uncertainty about private benefits, could have an incentive to be overly optimistic on economic growth in the process of planning the budget in order to play down the need for fiscal consolidation. Ex-post any shortfall of economic growth and the ensuing deterioration of the fiscal position would then be typically attributed to unexpectedly adverse cyclical developments.

The systematic upward bias in official growth forecasts could also result from a lack of coordination between monetary and fiscal policy institutions. Following Artis and Allsopp (2003) a lower assessment of underlying growth on the part of the monetary authority vis-à-vis fiscal policy makers could lead the central bank to react whenever, faced with fiscal plans anchored on a higher estimate of underlying growth, growth appeared likely to rise above its own assessment of the growth potential.

3.2. Discretionary fiscal policy and prediction errors

The second step of the empirical analysis consists in investigating the relationship between discretionary fiscal policy and prediction errors on non-cyclical growth. From the discussion in section 2 we expect that the combination of forecast errors and inertia should give rise to a negative relationship, with the CAPB deteriorating in the event potential growth turns out lower than expected. To check whether data support this relationship we run the following regression.

$$(5) \qquad capb_t = \beta_1 + \beta_2 \left(E_{t-1} \frac{\Delta Y_t^P}{Y_t^P} - \frac{\Delta Y_t^P}{Y_t^P} \right) + \sum_{i=1}^{n} \beta_{3,i} d_{t-i} + \sum_{i=1}^{m} \beta_{4,i} b_{t-i} + e_t$$

where *capb* is the cyclically-adjusted primary budget balance, *d* government debt, *b* the actual budget balance, all in percent of GDP. The expression in round brackets measures the size of the error on the one year out forecast for potential output growth. Equation (5) can be interpreted as the reduced form of a structural model in which fiscal policy makers target the government debt-to-GDP level *d* and there is inertia in correcting non-cyclical expenditures in the implementation phase of the budget compared to budgetary plans. Moreover, equation (5) links up with the branch of research establishing empirical relevance of simple fiscal rules as in Bohn (1998), Ballabriga and Martinez-Mongay (2002) or Gali and Perotti (2002).

The estimation results for the individual countries are summarised in Table 2. The main point to highlight is that the figures would appear to confirm our *a priori*. In particular, the estimated values of the coefficient β_2 turn out to have the expected negative sign, implying that, indeed, an optimistic prediction of potential growth affects the cyclically-adjusted fiscal position. Moreover, the coefficients of the other two explaining variables, the debt-to-GDP ratio and the actual budget balance-to-GDP ratio, are also estimated to have the correct sign. However, due to the small number of observations (17 per country) test statistics are relatively poor. The estimated coefficients, especially those measuring the effect of prediction errors, are not uniformly significant across countries. Unsurprisingly, the lowest β_2 coefficient is estimated for the UK, reflecting the

accuracy of the Treasury's growth forecasts. In the case of Italy the negative sign of the estimated value of β_2 is obtained after including a dummy for the first three years of the 1990s. At the time, the Italian government was forced to enact restrictive fiscal packages to counter the risk of insolvency in a period of general economic slowdown, the degree of which was generally underestimated in the planning phase of the budget.[6] As a result, the budgetary effect of overestimating growth was masked by the strong fiscal consolidation.

The estimation statistics improves considerably if country data are pooled. The corresponding results, displayed in the lower part of Table 2, corroborate the evidence emerging from the country-specific regressions. Most importantly, the estimated value of the common β_2 coefficient is negative and significant at conventional significance levels.

As the problem of inertia in the fiscal policy process is essentially due to the political difficulty of changing spending commitments, the regression exercise was repeated by replacing the cyclically-adjusted primary balance with non-cyclical primary expenditure, in order to check the robustness of our finding. The results are reported in Table 3. The specification of equation (5) is slightly modified to account for the high degree of auto-correlation in the expenditure series. Apart from the constant, it only includes the prediction error and the lagged dependent variable. The role of the debt ratio and the actual budget balance in explaining non-cyclical primary expenditure is not statistically significant and regressions containing these terms are not presented here.

The first point to note about the regression results is that the direction of the response of non-cyclical expenditure to prediction errors is in line with what we expect, i.e. optimism on growth in the phase of budgetary planning increases the non-cyclical expenditure-to-GDP ratio. Again, except for the UK, the β_2 coefficients estimated in the country-specific equations have the correct sign and are significantly different from zero. The dummy related to the strong fiscal consolidation in Italy in the early 1990s is not statistically significant, as the correction was mainly attained by intervening on the revenue side. The role of prediction errors is confirmed in the pooled regression. The statistical properties of the pooled regression improve when excluding the UK, the country with the best track record in estimating potential output growth.

4. DISCUSSION

The empirical link between the structural budget balance and the prediction errors detected in the previous section could be queried on at least two grounds. The first criticism would be to point out that such a link would actually pose no serious problem. The combined budgetary effect of over- or underestimating growth and fiscal policy inertia is not necessarily harmful to the extent that its impact on the fiscal stance is not pro-cyclical. In fact, prediction errors tend to be positively correlated with the output gap reflecting the lag with which forecasters tend to follow economic developments. The result would be a perhaps unintentional but still welcome stabilising effect on the

[6] The risk of insolvency is highlighted by Corsetti and Roubini (1993) who perform statistical tests providing strong evidence against sustainability of fiscal policy at the time in Italy.

economy. However, to the extent that there is a systematic bias towards overestimating economic growth, as suggested by our analysis, the effect of the prediction errors would be to hamper fiscal consolidation by passing on the forecast bias onto the structural deficit. Especially in a period of economic slowdown, such as the one observed since 2000 in the euro area, reluctance of fiscal policy makers to accept a lower growth potential, coupled with the inertia in the phase of the implementation of the budget, worsens the fiscal position in the medium term.

In studying discretionary fiscal policy in the European Union Gali and Perotti (2003) identify, in addition to the automatic stabilisers, what they call a systemic or endogenous component in the structural surplus with a clear counter-cyclical pattern that tends to become stronger after the beginning of EMU in 1999. While the authors refrain from providing a story, probably because it would be audacious to argue that the ability to fine-tune the economy has improved in recent years, their findings are perfectly consistent with our proposition. The finding that discretionary policy has become more counter-cyclical after 1998, can, in our view, be explained by the increase in prediction errors in that period of time.

The second element of criticism is more technical and concerns the possible endogeneity of the forecast errors on potential output growth with respect to changes in the CAPB. However, it is not clear in which direction the bias would tilt our regression results. Keynesian and non-Keynesian effects are both possible. In addition, policy makers should be generally aware of the real effects of fiscal policy actions and hence factor them into their growth forecasts. Any remaining systematic bias in the prediction error would imply that forecasts are based on the wrong model of the economy.

5. SUMMARY AND CONCLUSIONS

This paper has illustrated the caveat of using changes in the CAPB as an indicator of discretionary fiscal policy. In particular, it has been argued that the traditional reading of the CAPB can be blurred by the effects of over- or underestimating growth in the planning phase coupled with inertia in the implementation phase of the budget.

An empirical application to budget data of the four largest EU economies showed that the effect is tangible and significant in practice. As a first point, the growth projections underlying the budget turn out to have a clear upward bias in Germany, Italy and France implying that, on average, the planned budget balance relies on too optimistic growth and, hence, revenue projections freeing, on an ex-ante basis, additional expenditure. With no or very little correction on the expenditure side, in the implementation phase of the budget, the upward bias in projected growth translates into a negative bias for the budget balance. Regression analysis investigating the relationship between the CAPB and prediction errors on non-cyclical growth corroborates our proposition. The CAPB deteriorates/improves when potential growth is over/underestimated. The link is statistically significant, except for the United Kingdom, which also happens to be the country where official growth forecasts are unbiased.

The main conclusion to be drawn from our results is that greater attention has to be paid to the macroeconomic scenario underpinning budgetary plans. An observed change in the CAPB does not necessarily point to active fiscal policy actions such as tax increases or expenditure cuts. The change can simply result from passive behaviour when underlying

growth departs from plans. Although both active and passive fiscal policy may finally share the same outcome in terms of the observed fiscal position, the difference in how the change was brought about calls for different conclusions and recommendations. This is especially true in the context of a common fiscal framework such as the SGP, where continuous budgetary surveillance ranging from the ex-ante assessment of budget plans to the monitoring of the implementation of the budget is expected to foster fiscal discipline. In the light of the findings of this paper, the fiscal loosening observed in recent years in some of the large EU countries highlights the scope for paying more attention to the link between growth projections and the implementation of the budget, the effect of which is traditionally ignored in the traditional analysis of discretionary fiscal policy.

Annex

Measured changes in the primary budget balance can be viewed as consisting of two unobserved components: one resulting from discretionary fiscal policy, the other due to changes in the economic environment, i.e.

A.1 $$\Delta b_t = \Delta b_t^{fp} + \Delta b_t^{v}$$

where b is the primary budget balance to GDP ratio and the superscripts v and fp indicate the economic environment and fiscal policy respectively. As with most models involving unobserved variables, the decomposition is achieved by modelling at least one of the components identifying the second as a residual. Within the class of linear models, a general formulation of the decomposition A.1 has the form:

A.2 $$\Delta b_t^{fp} = \Delta b_t - \Delta b_t^{v} = \Delta b_t - H_t Z_t$$

where Z_t is a nx1 vector containing the rate of change between period *t-1* and *t* of all economic variables affecting the budget. Likely candidates to be included in Z_t are economic growth, possibly divided into potential and cyclical, changes in the rate of unemployment, the rate of inflation and demographic change. The 1xn vector H_t contains the semi-elasticities measuring the effect of the economic variables on the primary budget balance-to-GDP ratio. In most applications the semi-elasticities are taken to be constant through time. The inner product of H and Z measures the impact of the economic environment on the primary budget balance-to-GDP ratio in period *t*.

Changes in the CAPB as well as other indicators of discretionary fiscal policy examined in the literature can be derived from A.2 by imposing restrictions on the vector H.

Changes in the CAPB

$$\Delta b_t^{fp} = b_t - \varepsilon \cdot ygap_t - (b_{t-1} - \varepsilon \cdot ygap_{t-1}) = \Delta b_t - \varepsilon\,(ygap_t - ygap_{t-1}) = \Delta b_t - HZ_t$$

In this case H and Z_t are one-dimensional vectors containing respectively the sensitivity parameter ε and the variation of the output gap.

Blanchard fiscal impulse as outlined in Blanchard (1990) and applied, for instance, in Alesina and Perotti (1995)

The discretionary component is obtained by calculating the budget balance that would have prevailed in time period *t* if the variables chosen to represent the economic environment had not changed compared with period *t-1*:

$$\Delta b_t^{fp} = \left(b_t - [\alpha, \beta](\Delta T_t / T_{t-1}, \Delta u_t)\right) - b_{t-1} = \Delta b_t - [\alpha, \beta](\Delta T_t / T_{t-1}, \Delta u_t) = \Delta b_t - HZ_t$$

where T is a variable capturing economic trends and u is the rate of unemployment.

"Dutch measure" as in Chouraqui et. al. (1990) or von Hagen (2002)

The discretionary component is obtained as the difference between the actual primary deficit and the primary deficit that would have prevailed if expenditures had grown with potential GDP and revenues had grown with actual GDP. This assumes that, apart from cyclical variations in expenditure, the prevailing policy rule is to keep the revenue and expenditure ratio constant:

$$\Delta b_t^{fp} = \Delta b_t - \alpha^{g,c}(\Delta y_t^P / y_{t-1}^P - \Delta y_t / y_{t-1}) = \Delta b_t - HZ_t .$$

where H and Z_t are one-dimensional vectors containing respectively $\alpha^{g,c}$, referring to the change in expenditure resulting from the cyclical component of GDP growth, and the difference between potential and actual output growth.

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Table 1

Accuracy of potential and actual output growth forecasts underpinning public finance projections
1987-2003

Country	Source of official forecast	Date of release	potential output		actual output	
			average error on one-year-ahead forecast	RMSE	average error on one-year-ahead forecast	RMSE
Germany	Finanzbericht	End of August	0.47*	0.67	0.56*	1.91
France	Projet de loi de finances	End of September/beginning of October	0.24*	0.45	0.48*	1.48
Italy	Documento di programmazione economico-finanziaria (DPEF)	End of June/beginning of July	0.56*	0.63	0.81*	1.13
UK	Financial Statement and Budget Report	End of March	0.07	0.29	-0.04	1.32

* Significantly different from 0 at 10%

$$E_{t-1}\frac{\Delta Y_t^P}{Y_t^P}-\frac{\Delta Y_t^P}{Y_t^P}=\alpha+\varepsilon_t \quad \varepsilon_t \sim N(o,\sigma)$$

$$H_0: \ \alpha=0$$

Table 2

The response of the primary cyclically-adjusted budget balance to prediction errors of potential growth

Country-specific regressions

	Prediction error t		Government debt t-1		Budget balance t-1		Budget balance t-2		Dummy ('91-'93)	
	beta 2		beta 3		beta 4.1		beta 4.2			
	coeff.	p value	coeff.	p value	coeff.	p value	coeff.	p value	coeff.	p value
Germany	-2.61	(0.01)	0.12	(-0.01)	0.08	(0.75)				
France	-1.25	(0.05)	0.02	(0.16)	0.72	(0.00)	-0.42	(0.10)		
Italy	-1.00	(0.26)	0.21	(0.00)	0.28	(0.00)			2.52	(0.00)
United Kingdom	-0.17	(0.89)	0.20	(0.00)	0.73	(0.00)				

No. of obs. 17

Pooled regression D, F, I, UK

	Prediction error t		Government debt t-1		Budget balance t-1		Budget balance t-2		Dummy ('91-'93)		Fixed effects
	beta 2		beta 3		beta 4.1		beta 4.2				
	coeff.	p value	coeff.	p value	coeff.	p value	coeff.	p value	coeff.	p value	
	-1.35	(0.00)	0.08	(0.00)	0.72	(0.00)	-0.23	(0.05)			
Germany									-	-	-1.61
France									-	-	-2.09
Italy									1.96	(0.00)	-3.56
United Kingdom									-	-	-1.90

Table 3

The response of the non-cyclical primary expenditure to prediction errors of potential growth

Country-specific regressions

	Prediction error t		Cyclically-adjusted primary expenditure t-1		Government debt t-1	
	beta 2		beta 3		beta 4	
	coeff.	p value	coeff.	p value	coeff.	p value
Germany	2.01	(0.00)	0.65	(0.00)	-0.04	(0.13)
France	1.30	(0.01)	1.21	(0.00)	-0.01	(0.66)
Italy	0.86	(0.17)	0.61	(0.00)	-0.02	(0.11)
United Kingdom	0.80	(0.48)	0.77	(0.00)	-0.18	(0.00)

No. of obs. 17

Pooled regression D, F, I, UK

	Prediction error t		Cyclically-adjusted primary expenditure t-1		Government debt t-1		Fixed effects
	beta 2		beta 3		beta 4		
	coeff.	p value	coeff.	p value	coeff.	p value	
	0.86	(0.00)	0.79	(0.00)	-0.02	(0.02)	
Germany							10.52
France							11.23
Italy							12.85
United Kingdom							9.88

No. of obs. 68