

Fiscal policy in Europe and the Stability and Growth Pact

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Abstract – The paper investigates how European fiscal authorities behaved in the last decades - namely, under the constraint posited by the European Monetary Systems during the 1980s, the Maastricht Treaty during the 1990s, and the Stability and Growth Pact (SGP) later on – also taking into account monetary and fiscal policy interactions. We argue that the traditional measure used for evaluating fiscal policy – the cyclically-adjusted public budget (CAPB) – is a too rough indicator of the fiscal stance as a function of the two objectives of output stabilization and debt decumulation. We construct two theoretical appraisals of the fiscal rule pursued by the government – Tax Smoothing and Expenditure Smoothing - and use them as dependent variables in our econometric estimates. Under quite plausible conditions, the compliance with the 3% limit on the public deficit / GDP ratio imposed by the SGP could imply the renounce during a downswing, not only to pursue discretionary fiscal policy but also to output stabilization by automatic stabilizers. We conclude that fiscal sustainability – that is the compliance with the intertemporal public budget constraint which is required to the fiscal authorities of the European Monetary Union (EMU) – stresses the objective of debt decumulation, thus creating a *trade-off* with the objective of output stabilization, especially for the high-debt EMU countries.

Keywords – Fiscal stance, fiscal rules, fiscal sustainability, monetary and fiscal policy interactions, European Monetary Union.

JEL – E62, E63, H62, H63, O52

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1. Introduction

The institutional framework for conducting macroeconomic policy in Europe passed through many changes in only twelve years. In 1990, the process towards free movements of capitals was finalized. In 1991, the “economic constitution” embodied in the Treaty of Maastricht was approved. In 1993, the liberalization of the circulation of goods, services, and persons was completed. In 1998, among the countries admitted to the European Monetary Union (EMU), fiscal policy coordination under the rules of the SGP started¹. In 1999, the take-over of national monetary policies by the European Central Bank (ECB) was accomplished along with the creation of the EMU. Finally, the euro was launched on January 1st, 2002.

The main reason offered for the introduction of the SGP was the fear of negative externalities spreading across the EMU countries. In the absence of an institutional mechanism for the enforcement of fiscal policy coordination, each EMU government could be taken by the temptation of free-riding on the “common pool” of financial resources. The funding of expansionary fiscal stances in European financial markets would fail to endogenize the negative *spillover* that an expansionary fiscal stance causes to the other members in the form of higher interest rates on the euro.

On the other hand, in devising the SGP no special consideration was given to the problem of the co-existence of a sole monetary policy and a plurality of national fiscal policies, as the impact of monetary and fiscal interactions on the output level and on the public budget was not recognized (WYPLOSZ, 2006). The reason for this neglect was the intellectual consensus of most policy-makers and economists on a monetary and fiscal policy-mix oriented to “Monetary Dominance”. The so-called “Brussels-Frankfurt consensus” mainly consists of the view that the priority given by the Central bank to monetary stability necessarily implies governments to abide by a restrictive monetary and fiscal policy-mix by national governments (ALESINA ET AL., 2001). The monetary and fiscal policy coordination can be waived, as the ECB and national fiscal authorities are committed to the same inflation and output objectives (DIXIT AND LAMBERTINI, 2003). Yet, in this paper we will stick to the tenet that sym-

metric shocks, or asymmetric shocks originating in one country and generating *spillover* effects throughout the euro area, may induce the ECB and the fiscal authorities to put different weights in their respective loss functions, thus putting in danger overall macroeconomic stability (Farina and Tamborini, 2004).

The “Brussels-Frankfurt consensus” maintains that “fiscal indiscipline”, by which the monetary and fiscal policy mix of the EMS (European Monetary System) countries was hampered throughout the 80s, has not been discontinued in the 90s and after. During Stage II of the pre-EMU procedures (1993-97), the credible threat of exclusion from the single currency performed as an effective enforcement device for the Maastricht criteria. In most EMU countries, both the deficit /GDP and the debt / GDP ratios were successfully reduced. During Stage III of the EMU and the first years of the euro (1998-04), however, the sanction of exclusion from the monetary union has no longer been in place. The more favourable conditions for the financing of the debt service from 1998 on removed a factor which in the previous years had prevented government to engineer fiscal expansions (KREMER ET AL., 2006). At the inception of the EMU, though the conditions of public finances improved after the passage to the singly currency had brought about the savings on interest expenditure, public deficits and debts as a percentage of GDP have begun to increase again.

This paper investigates the behaviour of fiscal authorities in Europe by conducting econometric estimates on the variation of fiscal stances put forward by governments. We criticize the European Commission’s view on fiscal policy in Europe by arguing that it overstates the “room for manoeuvre” at disposal of the European Fiscal authorities under the SGP. To fulfil the SGP stringent requirements may impede the output recovery after a negative shock, thus putting the economy at the risk of a prolonged recession. Therefore, the EMU governments have an incentive to renege on the commitment to comply with the SGP.

Our econometric exercise moves from the following question: from Maastricht on, has the objective of debt consolidation created a trade-off with the objective of output stabilization? To answer this question, one needs a measure of discretionary fiscal policy. Our method of com-

puting the fiscal stances stated by the EMU governments does not rely on the usual indicator for the variation of the fiscal stance by governments, the cyclically-adjusted public budget (CAPB). In our opinion, this is a too rough indicator to convey the interplay between the fiscal stance which the fiscal authorities are prepared to implement and the several constraints that their reaction function has to take into account. A new measurement of the dependent variable is here set up. We regress the two fiscal policy objectives on a dependent variable computed according to the principle of Tax Smoothing, which we consider the fiscal rule to which the SGP is inspired. It will be shown that under quite plausible conditions the compliance with the 3% SGP limit could imply the renounce during a downswing not only to discretionary fiscal policy but also to output stabilization by automatic stabilizers.

The analytical framework of section 2 presents some shortcomings of the SGP as a set of guidelines for the EMU macroeconomic governance. Section 3 argues that these shortcomings are reflected in the “cyclically-adjusted” indicator for the discretionary fiscal policy used for the evaluation of the EMU governments’ behaviour. In Section 4 we introduce the “Tax Smoothing” Principle as the fiscal rule to which the EMU governments commit themselves. The regression results of econometric estimates portrayed in Section 5 put in question the theses of a turn of fiscal policy to “a-cyclicity” in the post-Maastricht years (GALI AND PEROTTI, 2003, EUROPEAN COMMISSION, 2004; WYPLOSZ, 2005), and of a “consolidation fatigue” which could have arisen after the inception of the monetary union in 1999 (HUGHES HALLETT ET AL., 2003). Section 6 concludes.

2. Macroeconomic governance under the Stability and Growth Pact

We will now investigate the impact of the constraints imposed by the SGP on the fiscal policy implemented by national fiscal authorities. We will draw on the standard analytical framework by which the EMU macroeconomic governance is usually analysed (BUTI ET AL., 2001; BUTI AND GIUDICE, 2002).

We write the aggregate demand as:

$$(1) \hat{y} = \zeta_1(d - d_s) - \zeta_2(i - \pi^e - r_{LP}) + \mu_1$$

The dependent variable (\hat{y}) is the *output gap*. The term $(d - d_s)$ is the deviation of the total public budget / GDP ratio (d) from its structural value d_s . The aggregate demand is positively affected by a positive deviation over the cycle. The term $(i + \pi^e - r_{LP})$ is the difference between the long period and the effective value of the real interest rate, where π^e is expected inflation. For sake of simplicity, hereafter the long term real interest rate (r_{LP}) is set to zero. The term μ_1 is an exogenous *shock*.

The aggregate supply function is the standard one:

$$(2) \pi = \pi^e + \alpha(\hat{y}) + \mu_2$$

where π is inflation and μ_2 is an exogenous *shock*.

The central bank's loss function is expressed in terms of the minimization of the distance between the actual and the target inflation rate (zero inflation), as well as of the rate of interest from its long-run value:

$$(3) L_{BC} = \pi^2 + \beta_1(i - i_{LP})^2$$

where i_{LP} is the long-run interest rate and the value of β_1 reflects the interest rate "smoothing", which is the way in which monetary authorities implement the stabilization objective, after giving lexicographic priority to the monetary stability objective. In case of a negative *output gap*, the monetary policy reaction to an increase in prices is slowed down by keeping the interest rate close to the previous year's value.

As for fiscal policy, let us formalize the SGP rationale. The structural total deficit / GDP ratio (d_s) ratio is allowed to deviate from the zero value to which should be stuck in the medium-term equilibrium, up to the limit of $\hat{d} \leq 3\%$ during the cycle due to the functioning of automatic stabilizers $\psi s(\hat{y})$:

$$(4) \hat{d} = d_s - \psi s(\hat{y})$$

The parameter ψ takes the value 0 in equilibrium (the target is then the structural total deficit/ GDP ratio (d_s), to be set to zero in the medium term) and the value 1 after a shock. The effective value of the total deficit / GDP ratio (d) can rise till (\hat{d}), which is the 3% limit imposed by the SGP. The coefficient s (the budget's elasticity after an output deviation from its natural level) measures the automatic stabilizers' capacity to absorb the *output gap* (\hat{y}) following a shock. Hence, the parameter ψ can take the value 1 only during an *output gap*. In the case the *output gap* turns to negative ($\hat{y} = 0$), the total balance / GDP ratio will be increased according to the hypothesis ($\psi = 1$) and the automatic stabilizers' sensitivity (s); in the medium term equilibrium ($\hat{y} = 0$), the actual budget must equalize the structural budget kept on balance ($\psi = 0$). Any EMU government is asked to set on the average a balanced structural budget target $d_s = 0$, so that – provided that a negative shock is not too large (a maximum of 3% as a percentage of GDP) – the structural balance / GDP ratio d_s plus a maximum of 3 points of deficit creation by the automatic stabilizers do not incur in a value for d larger than the 3% limit (\hat{d}).

The fiscal authorities' loss function is defined on the deficit objective as considered in equation (4), and over the output objective:

$$(5) \quad L_{pf} = [(d_s - \psi s (\hat{y}))]^2 + \beta_2 (\hat{y} - y^*)^2$$

The coefficient β_2 is the weight for output stabilization relative to deficit stabilization. Fiscal authorities could be tempted to set the output target beyond the potential output, by engineering discretionary fiscal policies. In order to avoid a “deficit bias” in fiscal policy, corresponding to the “inflation bias” in monetary policy, governments should waive any attempt to manipulate the macroeconomic equilibrium: $y^* = 0$. This inhibition is not enough – *per se* – to forbid discretionary manoeuvres adding to the operation of automatic stabilizers. Provided that in the medium-term a zero structural deficit over GDP ($d_s = 0$) is preserved by setting $\psi = 0$ in equation 4, fiscal authorities are allowed to completely offset by automatic stabilizers (during a negative output gap, the parameter takes the value of 1 in equation 4). However, either the total deficit / GDP ratio is far from the 3% limit ($d < \hat{d}$) or equal to it, the value of the

structural deficit / GDP ratio in the first term of equation 5 could be higher than the SGP requirement of $d_s = 0$ over the cycle. If a discretionary fiscal policy were engineered in the absence of an *output gap*, the deficit created by the operation of automatic stabilizers during a downswing would make the structural public budget / GDP ratio to be positive also in the medium term ($d_s > 0$). The SGP considers this as an infringement to “fiscal discipline” which creates a social loss in the fiscal authorities’ function of equation 5. Therefore, the requirement of a balanced budget in structural terms in the medium term can be enforced only by imposing to governments to rely just on the automatic stabilizers during a downswing. The inhibition to counteract a negative *output gap* by means of discretionary expansionary manoeuvres can be expressed by assuming that the SGP requires $\beta_2 = 0$ in equation 5.

Can we be confident that this design for fiscal policy coordination inside the EMU does not insert a deflationary bias in the macroeconomic equilibrium, thus give the governments the incentive to violate the 3% limit? Is a mechanism design in place preventing fiscal authorities to renege on the SGP and avoid the deflationary consequences of a procyclical fiscal stance during downturns? It is easy to show that both questions have a negative answer.

Fiscal policy is not set *in vacuo*. It is embedded in a complex macroeconomic environment, where international markets and the ECB, as well as past events, count much. In many EMU countries, both the large amount interest payments impinging upon the numerator and the slow output dynamics at the denominator have impeded the structural total deficit / GDP ratio to shrink to zero. For a “high” public debt country (that is, a public debt / GDP ratio > 60%), the value of d is likely to be close to (\hat{d}) . An EMU government may face a trade-off between the need to absorb a negative output gap and the obligation to stay inside the 3% limit. Often happens that the decision is to violate the SGP and keep sustaining the output level.

Let us consider again the AD function. By expressing equation (4) in terms of d_s , substituting in (1) and solving for \hat{y} , we obtain:

$$(6) \quad \hat{y} = \frac{1}{1 + \psi s \zeta_1} \left[\zeta_1 (d - \hat{d}) - \zeta_2 (i - \pi^e) + \mu_1 \right]$$

Assume that the central bank pursues a “zero inflation” target under REH ($\pi = 0$); in the absence of inflation expectations ($\pi^e = \pi = 0$) and of AD shocks ($\mu_1 = 0$), the output gap is nil: $\hat{y} = 0$.

$$(7) \quad 0 = \frac{1}{1 + \psi s \zeta_1} [\zeta_1(d - \hat{d}) - \zeta_2 i]$$

From equation (7), considering that in equilibrium $\psi = 0$, one may end up with an expression connecting any rise in the interest rate to the total deficit / GDP ratio:

$$(8) \quad d = \hat{d} + (\zeta_2 / \zeta_1) i$$

In equilibrium also $i = i_{LP} = 0$ holds, so that $d = \hat{d}$. Provided that fiscal authorities are willing to plan a series of primary surpluses aimed at preserving (or accomplishing) the 3% limit for the public deficit / GDP ratio, their commitment to bring the deficit down to $d_s = 0$ in the medium-term can be considered credible. However, the requirement to get the total deficit / GDP ratio stuck to zero in the medium-term cannot be enforced, especially in the real world of the EMU countries that still run positive values below the 3% limit. Hence, an exogenous shock could jeopardize the SGP requirement of a balanced structural total deficit / GDP ratio. In fact, equation (8) shows that an increase in the interest rate will lift up the total deficit / GDP ratio and the effective total deficit / GDP ratio d may exceed the target (\hat{d}). Similarly, a slow output dynamics will impinge on the denominator of (d): the slower the growth rate, the lower the amount of fiscal revenues which in each year are at the disposal of fiscal authorities, the more will be difficult to implement the variation of the fiscal stance in the numerator of the total balance / GDP ratio aimed at keeping the effective value for d far from the target (\hat{d}). The worse situation, as well-known, materializes when the output is hit by a negative supply shock. The inflation-output trade-off will be tackled by the ECB by raising the interest rate, thus increasing the secondary deficit, while in the fiscal stance the primary balance will rise too due to the consequent lowering in the output dynamics. The SGP asks a government to take responsibility also for these possible exogenous shocks

to the total deficit / GDP ratio d . In order to avoid the formation of an additional amount of public debt, an EMU government is required by the SGP to engineer a pro-cyclical fiscal stance.

The analytical framework sketched above has then cast light on the possibility that the requirements imposed by the SGP could lead a government to let the total deficit / GDP ratio soar and exceed the 3% limit. Let us then analyse how to measure the variation of the fiscal stance as an indicator of the government's discretionary interventions.

3. Is the cyclically adjusted public budget a reliable proxy of discretionary fiscal policy?

The disregard of the SGP for the difficulties that fiscal authorities encounter in abiding by its requirements transmits to the method which is normally used for the computation of CAPB, that is the total budget net of the impact of the cycle (the tax and expenditures elasticities, multiplied by the output gap). This method takes the functioning of the fiscal system over the cycle – i.e. the effect on the public budget of the automatic stabilizers set in motion by the GDP variations – out from the *ex post* observed public budget balance. How the fiscal authorities have *ex ante* contributed to the determination of the CAPB is then inferred *a rebours*. The regression models aiming at assessing the fiscal stance of the EMU countries compute the dependent variable by cancelling out both the effects of the automatic stabilizers on the total balance and the amount of interest payments. The government's autonomous variation of the fiscal stance is then measured by the so-called “structural” primary balance: the cyclically-adjusted public budget balance (the value that the public budget would have assumed “if the output level would have not changed”), minus the exogenously determined amount of interest payments (stemming from the stock of public debt times the interest rate determined by financial markets and monetary policy). All variables are normalised by the GDP.

We disagree with this procedure, as it just cancels out the impact of output variations on the primary balance at the numerator of the deficit

/ GDP ratio. Yet, it is unable to offer any evaluation of the fiscal authorities' behaviour in front of the size of the fiscal retrenchment to be accomplished to comply with the SGP requirements, which varies depending on the amount of new fiscal revenues created by the growth rate and by the level of the interest rate. This is a cause for flaws in measurement.

First, similarly to most models and analytical frameworks rooted in the New Classical Economics, the CAPB measure overlooks the fiscal multiplier². Since the two independent variables – the objectives of output stabilization and debt consolidation – are regressed on the structural primary balance / GDP ratio, no attention is given to the endogenous feed-back of an expansionary fiscal policy on the output level. The consequence is that the government's interventions, which determine the variation of the fiscal stance desired for pursuing the two fiscal policy objectives, are not analysed but considered just *a residual*.

Second, the CAPB method overlooks that the management of the primary balance by the fiscal authorities may turn out to be a difficult task. In order to abide by the SGP, fiscal authorities could find themselves in the position to cope with a lower formation of fiscal revenues due to slow growth, or to widen the primary surplus paying for a rise in the debt service. The fiscal retrenchment, no matter whether conducted by means of a cut in public expenditures or the lift of fiscal revenues, may come at the cost of suspending the operation of automatic stabilizers waiving the output stabilization objective. Yet, the measurement of discretionary fiscal policy, by computing the CAPB determine the cyclically-adjusted primary balance and then subtracting the interest payments, overlooks that the primary balance and the secondary balance are interdependent. In particular, the CAPB is unable to give any account of the way in which fiscal authorities react to the obligation to compensate for any deviation of the total balance from the condition of a zero structural total deficit/ GDP ratio *different from* the impact of the cycle on the primary balance / GDP ratio.

The discretionary fiscal policy should not be considered just as the variation of the *primary* balance net of the cycle and interest payments. The rate at which the GDP grows at the denominator of the structural total balance / GDP ratio is instrumental for the discretionary fiscal policy

being viable. By taking into consideration only the variation of the primary balance at the numerator of the balance / GDP ratio, the CAPB method ignores to what extent the speed of output growth and the interest burden influence fiscal policy discretion. If fiscal revenues are low, interest payments must be financed by new bond issuing. It can be said that the CAPB controls for the *short-term* fiscal stance (in the hope to fulfil the medium-term SGP target of a zero structural balance/GDP ratio), while the *long-term* fiscal sustainability also involves the problem to cope with the influence of the growth rate and the interest rate on the structural total balance/GDP.

Overall, to compute discretionary fiscal policy as a *residual* impedes to properly evaluate the exogenous influence of the interest rate and the growth rate on the variation of the fiscal stance operated by the fiscal authorities. Econometric estimates using the CAPB as the dependent variable are unable to control for conditions under which fiscal authorities pursue the long-term sustainability of public finances.

In this paper we are concerned with the possible trade-off between the short term objective of output stabilization and the long term objective of debt consolidation. The exclusive reliance of most empirical research on the CAPB obscures the problem of the possible conflict between output stabilization and debt reduction. In fact, the CAPB and the growth rate of the debt/GDP ratio respond to different variables. Whereas the former just cancels out the effect of the *cyclical* component of GDP on the *total* budget, the latter depends on the evolution of the *primary* balance in connection with the gap between the real interest on debt and the GDP growth rate. On the one hand, the alleged a-cyclicality of fiscal policy from Maastricht onwards could also stem from the strengthening of the consolidation effort, which obliged fiscal authorities to renounce to expansionary interventions during upswings and turn excess fiscal revenues to the reduction of the debt / GDP ratio. On the other hand, it may well happen that an upward leap in the interest rate (and then in interest payments) and/or a lower growth rate causes the rise of the deficit and debt above the planned figures for reasons different from deliberate expansionary interventions by the fiscal authorities.

We then conclude that the CAPB, by measuring the variation of the fiscal stance just as a *residual*, is unsuited to indicate whether a violation

of the SGP is due to a lack of “fiscal discipline” or to a lack of “room for manoeuvre” caused to the fiscal authorities (FAs) by a non-expected squeeze of the fiscal revenues, following a slowdown in the growth rate of income, and/or an excessive absorption by interest payments after a rise in the interest rate provoked by international financial markets or by the ECB monetary stance. Whatever the origin of a deficit / GDP above the 3% limit, the SGP imposes on the fiscal authorities the obligation to compensate for any exogenous shock to the public budget. The fiscal retrenchment, which is needed in order to abide by the 3% limit and/or to impede the further accumulation of public debt, may come at the cost of suspending the operation of automatic stabilizers. Thus, the SGP requirements are potentially conducive to a deflationary bias in the overall macroeconomic governance. Disappointingly, this is not detected by the current method of evaluating the variation of fiscal stances by the EMU governments (FARINA AND TAMBORINI, 2001 and 2004).

In order to propose an alternative measurement of the variation of the fiscal stance autonomously implemented by the EMU governments, we have to analyse the constraint represented by the fiscal rule which the SGP asks them to abide by. Then, our alternative computation of the variation of fiscal stances in Europe - the discretionary interventions adding (or subtracting) with respect to the “compulsory” interventions due to the commitment to the chosen fiscal rule – will allow us a correct evaluation of the fiscal authorities’ behaviour.

4. The Fiscal Rule of Tax Smoothing

The New Classical economics points to a public budget management by fiscal authorities which does not interfere with the functioning of liberalised markets. This theoretical approach was very influential in the design of the SGP. We consider the principle of Tax Smoothing (BARRO, 1989) as the normative approach to the variation of the fiscal stance to which the SGP is inspired.

The main prescriptions of Tax Smoothing as the fiscal rule governing the variation of the fiscal stance are the following: 1) The tax rate

must remain constant over time; 2) Any excess fiscal revenues stemming from the growth rate higher than potential growth must be set aside for the “rainy days”. This principle overlaps quite well the SGP requirement that cyclical fluctuations in the public budget be averaged out in order to stick to a balanced budget in the medium term.

We will now present a method to assess the variation of the fiscal stance of which fiscal authorities’ could be taken as responsible, alternative to the CAPB method consisting in taking away the impact of automatic stabilizers on the public budget. Let us write the primary surplus as a percentage of the GDP (v_t):

$$(9) \quad v_t = \frac{T_t - G_t}{Y_t} = (\tau_t - \gamma_t)$$

where T are fiscal revenues, G is public expenditure, Y is the GDP, τ is the T/Y ratio (tax rate) and γ is the public expenditure / GDP ratio.

The fiscal revenues which are formed during an expansionary cycle (g) – even when higher than the potential output growth (g^*) – are to be spent in the subsequent negative cycle. During a recession, the operation of fiscal stabilizers will then be financed out of these funds, with no increase in taxation. Thus, the variation of v_t implied by the Tax Smoothing rule is:

$$(10) \quad \Delta v_t = \frac{\Delta T_t - \Delta G_t}{Y_{t-1}} = g(\tau_t - \gamma_t)$$

The following equation determines the fiscal authorities’ discretionary behaviour, after having deducted the constraints imposed by the Tax Smoothing principle (the terms into squared brackets) and the interest burden (the last term):

$$(11) \quad \Delta v^{\text{TS}} = \Delta v_t - [\lambda_1 \pi_{t-1} (g_t - g^*) + \lambda_2 \gamma_{t-1} (g_t - g^*)] - iB/Y$$

Hence, Δv^{TS} is the discretionary intervention implemented by the fiscal authorities in addition to complying with the Tax Smoothing principle, that is the variation of the fiscal stance operated by fiscal authorities with respect to the “compulsory” interventions due to the commitment to the

chosen fiscal rule adopted rule; Δv_t is the change in the surplus ratio due to the cycle. The values of the coefficients ruling on the “compulsory” interventions required by the fiscal rule are: $\lambda_1 = 0$ if $(g_t - g^*) < 0$ and 1 if $(g_t - g^*) > 0$; $\lambda_2 = 0$ if $(g_t - g^*) > 0$ and 1 if $(g_t - g^*) < 0$.

The Tax Smoothing rule dictates the “automatic reaction” to the cycle, in order to impede an increase in the tax rate or the debt accumulation across periods. The public budget should generate a surplus in upswings to cope in downswings (when fiscal revenues decline) with the funding of additional public expenditures (unemployment transfers, etc.) ($\lambda_2 = 1$ if $(g_t - g^*) < 0$). The evaluation of the budget in structural terms impedes the government to devolve the additional revenues to discretionary interventions during an expansion, and allows the automatic stabilisers to implement the counter-cyclical reaction during a recession. Once the total deficit has been annulled, the rotation of deficits and surpluses over the cycle should then leave the structural total budget balanced in the medium-term.

However, while in downswings the rise in the deficit / GDP ratio makes the 3% limit bite, in upswings no instrument has been envisaged to compel fiscal authorities to keep to zero the value of the coefficient λ_2 ($\lambda_2 = 0$ if $(g_t - g^*) > 0$) in order to set aside the excess fiscal revenues for the “rainy days”. Even if the 3% limit for the total balance / GDP ratio were a credible enforcement for a structural total balance / GDP ratio to be equal to zero in the medium-term, the compliance with the intertemporal public budget constraint (IPBC) is not warranted. Fiscal sustainability requires to set – in each country’s IPBC equation – the appropriate values for the interest rate and the growth rate, which are both out of the reach of the fiscal authorities. Both the Tax Smoothing and the SGP do not consider that the difference between these rates as the crucial variable for fiscal sustainability.

We will now construct a regression model, to empirically assess the discretionary manoeuvre implemented by an EMU government in the fulfilment of the two objectives of output stabilization and debt consolidation. Differently from the CAPB method, our analytical framework of public budget accounting provides the computation of the actual behaviour of fiscal authorities. In fact, we make explicit the influence of the

difference between actual and potential growth on the formation of fiscal revenues, the impact of the interest rate variations on the interest payments, and the commitment to the Tax Smoothing fiscal rule.

5. A panel regression model for the evaluation of the TS fiscal rule

We conduct econometric estimates by setting up a panel composed by the EMU countries (but Luxembourg) and three non-EMU (Denmark, Sweden and UK) for the period 1980-2004. The regression equation is the following:

$$\Delta v_t^{\text{TS}} = C + \alpha_1 \text{output gap}_{i,t} + \alpha_2 \text{debt}_{i,t-1} + \alpha_3 (i-i^*)_{i,t} + \alpha_4 \mathbf{Z}_{i,t} + \varepsilon_{i,t}$$

where Δv_t^{TS} is the estimated deviation of the fiscal stance from the Tax Smoothing fiscal rule, output gap is the difference between trend and actual GDP over trend GDP, $i-i^*$ is the difference between each country long term interest rate minus the German one, and \mathbf{Z} is a vector of dummy variables. This latter variable deserves special attention.

As said above, the influence of the budget on the fiscal authorities' behaviour is evaluated by just comparing the results of regression estimates conducted using as the dependent variable, alternatively, the total balance and the cyclically-adjusted balance; that is, those components of the public budget which are under the government's control. This expedient dodges the problem of measuring the influence of exogenous influences on the EMU governments' behaviour. Among possible disturbances, the variation of the interest rate is one of the most frequent. Once the interest burden is cancelled out as it is not under the fiscal authorities' control, the question remains of assessing the influence of the amount of the interest payments on the fiscal revenues disposable for the discretionary fiscal policy.

To this extent, in addition to the objectives of output stabilization and debt consolidation, the interest differential with Germany is included in our econometric estimates. The aim is to capture the influence of the

interest burden on the discretionary behaviour of the fiscal authorities in the pre-EMU period. From the EMS to the EMU inception the monetary-fiscal policy interactions have been shaped by the hegemonic position of Germany inside the EMS, the DM pegging by the non-German central banks which has compelled the n-1 countries to renounce to gear their monetary policy on domestic conditions, and the Bundesbank's influence on the imposition of the Maastricht and SGP fiscal limits aimed at enforcing the Monetary Dominance in the strategic interaction among monetary and fiscal authorities. The asymmetric functioning of the monetary integration process suggest that the non-German central banks did not behave autonomously. These monetary authorities followed the Bundesbank's tight monetary stance and suffered from the interest differential imposed by the financial markets' request for a risk premium, to compensate both for expected devaluation of the currency and a possible default by the government.

We consider the German monetary-fiscal policy mix as the benchmark for the fiscal authorities committed to the European monetary unification process. Therefore, in a panel analysis including Germany, the interest differential with Germany – and not the domestic interest rate – is to be considered. The difference between the two rates captures the way in which financial markets perceive the relative country-risk, and then pushes the government of the country paying a premium to make restrictive policies to reduce this risk.³ In the regressions, the interest differential which respect to Germany during the pre-EMU period (and the level of the interest rate on the euro during the EMU) measures the impact of the interest increases on the total balance, in turn creating the need for a fiscal contraction in the primary balance, in order to offset the increases in interest payments and stabilize the public debt / GDP ratio.

Table 1 reports regression results for the TS rule. Econometric estimates are with OLS and IV. The instrumental variables (two lags of output gap and the interest differential with respect to Germany) have been included in the regressions to cope with endogeneity problems running from fiscal variables to GDP. The p-value of over-identifying restrictions is always safely in the non rejection area, suggesting that these instruments are appropriate. Results are qualitatively similar across the two

estimations techniques, but OLS tend to estimate the coefficients with an upward bias, which is something we expect when reverse causation is not taken into account. Tables 2 and 3 report the results considering two sub-periods (1980-92 and 1980-1998), again with OLS and IV. These two Tables show a negative sign of the output variation coefficient, indicating that the fiscal authorities' behaviour was pro-cyclical during the 1980s (a negative sign for the fiscal stance variation, which means restriction, in case of a positive output gap). The value of this coefficient then diminished, in the pre-EMU (1993-98) and EMU (1999-2004) periods, indicating that fiscal policy turned to be a-cyclical.

Table 1. Tax Smoothing (1980–2004) §

	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) IV	(6) IV
Constant	-1.116** (0.497)	-0.588*** (0.060)	-0.152 (0.786)	-0.858* (0.353)	-1.598** (0.805)	-1.625** (0.677)
output gap	-0.877*** (0.271)	-0.877*** (0.271)	-0.988*** (0.397)	-1.456*** (0.435)	-0.526*** (0.141)	-0.553*** (0.140)
Debt t-1	3.331*** (0.813)	3.011*** (0.844)	4.595*** (1.142)	4.712*** (0.960)	3.460*** (1.371)	4.411*** (1.371)
i-i*	0.987*** (0.139)	0.871*** (0.119)	0.835*** (0.140)	0.984*** (0.132)	1.033*** (0.097)	1.033*** (0.083)
EMU countries		0.774*** (0.219)				0.027 (0.146)
EMU (98-04)			-1.511*** (0.383)			
Pre EMU (92-97)				0.641** (0.296)		
N	287	287	287	287	265	265
Adj-R ²	0.894	0.894	0.913	0.898		
p-value over id. χ^2					0.365	0.311

§ Numbers in parentheses are robust standard errors. *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively.

Table 2. Tax Smoothing (1980–92) §

	(1) OLS	(2) IV	(3) OLS	(4) IV
Constant	1.880** (0.884)	1.727* (0.959)	1.144** (0.538)	-2.651* (1.449)
output gap	-1.137* (0.629)	-0.811** (0.373)	-1.308** (0.587)	-0.729** (0.303)
Debt t-1	4.163** (1.686)	4.378*** (1.699)	7.029*** (1.686)	11.611*** (2.465)
i-i*	0.571*** (0.064)	0.647*** (0.143)	0.811*** (0.110)	1.360*** (0.202)
N	123	105	203	185
Time period	1980-92	1980-92	1980-98	1980-98
Adj-R ²	0.949		0.921	
p-value over id. χ^2		0.416		0.367

§ Numbers in parentheses are robust standard errors. *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively.

Table 3. Tax Smoothing (1980–98) §

	(1) OLS	(2) IV	(3) OLS	(4) IV	(5) OLS	(6) IV
Constant	-1.066** (0.489)	-1.377* (0.652)	1.880** (0.883)	1.727* (0.959)	0.144* (0.095)	-2.651** (1.449)
output gap	-1.578*** (0.471)	-1.294*** (0.302)	-1.137* (0.421)	-0.711* (0.373)	-1.308*** (0.387)	-0.729*** (0.103)
Debt t-1	4.353*** (0.803)	5.903*** (1.901)	4.163*** (1.686)	4.378*** (1.699)	5.029*** (1.186)	5.611*** (1.465)
i-i*	0.987*** (0.139)	1.126*** (0.176)	0.571*** (0.064)	0.647*** (0.264)	0.811*** (0.110)	1.360*** (0.202)
High debt	1.515*** (0.064)	1.127*** (0.069)	2.891*** (0.655)	2.179** (0.816)	2.019*** (0.565)	2.866*** (0.510)

N	287	269	123	105	203	185
Time period	1980-2004	1980-2004	1980-1992	1980-1992	1980-1998	1980-1998
Adj-R ²	0.894		0.949		0.921	
p-value over id. χ^2		0.521		0.266		0.637

§ Numbers in parentheses are robust standard errors. *, **, and *** denote significance at 10%, 5%, and 1% levels, respectively.

The values of the coefficient for output stabilization suggest that the rising contribution of the growth rate to fiscal revenues in the second half of the 1990s was probably sufficient to allow fiscal authorities to pursue both their objectives. The coefficient for debt consolidation - which is positive and increasing in the 1993-98 - indicates that a strong effort to cope with the SGP requirements is successful for a government committed to “fiscal discipline”.

Another important determinant of fiscal policy was the interest differential with Germany. The large value of the coefficient in the pre-Maastricht period indicate that interest payments put a serious constraint on discretionary fiscal policy. During the pre-Maastricht period, after an increase in the interest rate, a non-German country should have raised the *primary* balance / GDP ratio to impede the increase in the *total* balance / GDP ratio. This variable is always significantly positive, typically at the 1% level. This is quite straightforward to interpret. Governments tend to offset the effect of the differential with a restrictive discretionary policy in order to gain credibility from financial markets. Instead, for those countries whose governments did not follow the Tax Smoothing Principle the enlargement of the interest differential was not absorbed by engineering a fiscal restriction but caused a fiscal expansion. To these countries applies the European Commission complaint that the discretionary fiscal policy has not been oriented to restriction (BUTI AND FRANCO, 2005).

By conducting econometric estimates for the period 1980-2002, GALI AND PEROTTI (2003) have also found for the EMU countries “a clear trend towards a smaller value” of the coefficient linking the output gap to the cyclically-adjusted primary deficit / GDP ratio (*ibidem*, p.17).⁴ The au-

thors take this result as a proof of the evolution of fiscal authorities from a pro-cyclical to an anti-cyclical behaviour. In claiming that the pursuing of the output stabilization objective was not hampered by the imposition of fiscal rules – first the Maastricht Treaty and then the SGP – this view paves the way to the allegation to the European governments to be persistently prone to “fiscal indiscipline”. The shift towards higher levels of public deficit and debts at the inception of the EMU has been traced to a “consolidation fatigue” suffered by fiscal authorities, that is the end of the commitment to fiscal discipline just after the end of the enforcement represented by the Maastricht clauses for admission to the monetary union (HUGHES HALLETT *et al.*,2003).

Similarly to the econometric exercise by GALI AND PEROTTI (2003), our econometric estimates include the “hard EMS” years (1980-92), the period till the pre-EMU years (1980-98), and finally also the EMU inception (1998-04). Regression results in Tables 1 to 3 also show declining output gap coefficients from Maastricht on, that is in 1992-97, and in the comparison of 1998-04 *vis-à-vis* 1980-04. This results, however, are obtained by making explicit the fiscal rule to be followed in combination with the formation of fiscal revenues and the amount of the interest payments. As for the commitment to the Maastricht and SGP requirements, the coefficient values express the withering of the tendency to expand public expenditures and the shrinking of discretionary interventions, due to the need to comply with the 3% and 60% constraints on public deficit and debt. As for the consideration of the balance between the growth rate and the interest burden, our method to single out the fiscal authorities’ discretionary behaviour allows to take into account the improved macroeconomic situation of the second half of the 1990s. Hence, a less pro-cyclical fiscal policy can be explained by the larger formation of fiscal revenues in Europe during the positive output gaps of those years and the lowering interest rates, due to a rising probability to be admitted to the monetary union eventually ending in the annulment of the default risk premia inside the EMU.

The thesis of a “consolidation fatigue” after the inception of the monetary union in 1999 can be contended as well. The recession following the “Twin Towers” shock, by squeezing the formation of additional

fiscal revenues, has narrowed the “room for manoeuvre” of fiscal authorities. Moreover, the stop to debt consolidation started in the same year of the blast of the stock exchange bubble. We have already shown that the sharp decline in the growth rate of the first years of the new millennium compelled governments more oriented to expansionary fiscal interventions to comply with Monetary Dominance and implement a “passive” fiscal policy. Yet, this slowdown in growth rate is also a plausible reason for the fiscal authorities’ resistance to the SGP obligation to turn back to a pro-cyclical behaviour and start a fiscal retrenchment during a recession. The turn to negative of the primary balance was not the effect of a change in behaviour, but the signal that the amount of fiscal resources was no longer enough for sustaining the double effort of output stabilization and debt consolidation.

Overall, the estimates where the variation of the fiscal stance is positive convey a clear message. In order to keep reducing the public debt, many EMU governments have suspended the operation of the automatic stabilizers after the “Twin Towers” shock and implement a fiscal restriction. Table 3 says that this may not be true for the “high debt” countries, where still large interest payments, in front of a smaller formation of fiscal revenues, have rendered difficult to pursue at the same time output stabilization and debt consolidation.

6. Concluding remarks

We started this paper by questioning the usual method for evaluating discretionary fiscal policy. To compute the variation of the fiscal stance as a residual impedes to take properly into account the exogenous influence of the interest rate and the growth rate on the variation of the fiscal stance operated by the fiscal authorities. Econometric estimates using the CAPB as the dependent variable are unable to control for conditions under which fiscal authorities pursue the long-term sustainability of public finances. We have disentangled the real behaviour of government, once the obligations to which fiscal authorities are committed by the chosen fiscal rule have been deducted (together with interest payments) from

the additional fiscal revenues created by the output growth. The observed variation of the fiscal stance is a sort of “comprehensive reaction” – consisting both of the obligations of the fiscal rule and of the more or less limited “room for manoeuvre” at disposal of the government – to the contribution of growth to the budget balance.

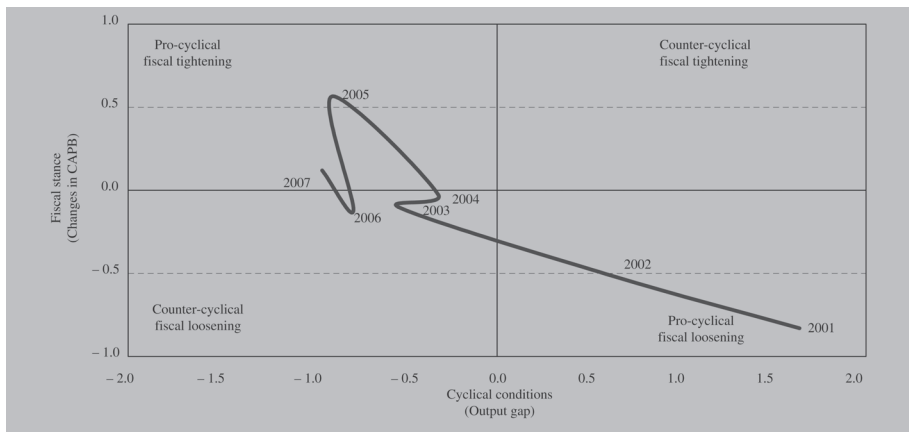
We conducted cross-country time-series econometric estimates with a panel composed by the EMU and the three non-EMU countries for the period 1980-2004 also controlling for the sub-periods 1992-97 and 1998-2004. Our results show that the main change which has taken place in the switch in 1993 from the “hard” EMS to the Maastricht and SGP periods has not consisted in a growing counter-cyclical orientation of discretionary fiscal policies over time, but in the strengthening of the debt consolidation objective.

The European Commission has been put forward the view that the establishment of a “monetary dominance” regime, whereby fiscal authorities abide by the restrictive monetary stance of the central bank, keeps to be hampered in Europe by the FAs’ lack of compliance with the SGP (BUTI AND FRANCO, 2005). In this perspective, the “fiscal indiscipline” which impaired the monetary and fiscal policy mix of the European countries throughout the 1980s was not completely dismissed in the 1990s and after, also considering that the fiscal retrenchment was realised by raising tax pressure more than by cutting public expenditures. The enforcement device of the Stability and Growth Pact (SGP) was not sufficient to orient government to abide by Monetary Dominance, as it just relied on a penalty (the deposit) for “excessive deficit” which is much lower than the stick of the pre-EMU period (the exclusion from the EMU). Hence, the requirements of the SGP should be revised and become more demanding. In fact, a much lower potential growth than was expected in Europe at the time of the SGP introduction suggests that the limit on the deficit / GDP ratio should be fixed at an even lower level than the 3% (GROS, 2004).

This interpretation does not seem to be confirmed by the European Commission’s more recent computations, showing that the fiscal stances of the EMU countries are far from being out of control of and the monetary and fiscal policy-mix tends to comply with “Monetary Dominance”.

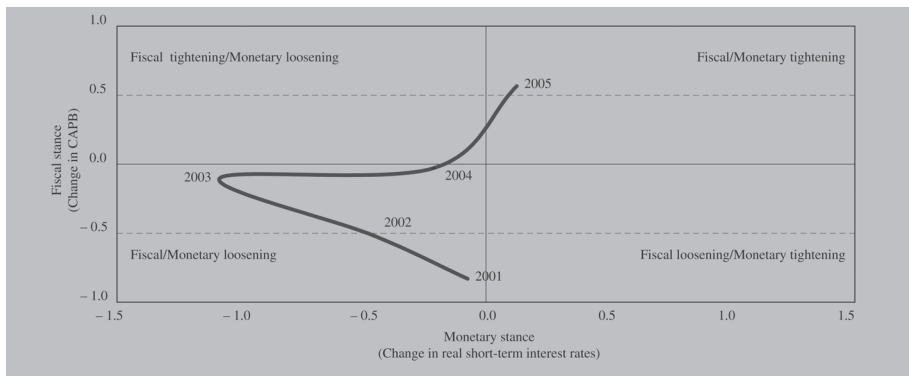
In Figure 1, the average behaviour of the EMU governments fiscal stances appears to be highly pro-cyclical even using the CAPB, a method of measuring the fiscal authorities' behaviour we have questioned as it might underestimate the width of fiscal restrictions. Furthermore, after that pro-cyclical fiscal stances in bad times have been complemented by the turn to higher interest rates by the ECB, Figure 2 witnesses that the monetary *and* fiscal policy mix in the EMU has recently become restrictive.

Figure 1: Euro-area fiscal stance and cyclical conditions, 2001–2007



Source: European Commission

Figure 2: Euro-area policy-mix, 2001–2005



Source: European Commission

This empirical evidence is more in line with the view put forward in this paper, whereby the SGP requirements prove unable to help the EMU governments in orienting their fiscal stance to overcome the possible trade-off between output stabilization and debt consolidation. The SGP fails to differently evaluate and regulate different causes for discretionary fiscal policy, as indicated by a deviation from the CAPB. As a matter of fact, the several failures manifested by the EMU governments in their attempts to abide by the public deficit and debt / GDP ratios not necessarily are a proof of a tendency to renege on the SGP commitments. A deviation of the fiscal stance from the value corresponding to the compliance with the Tax Smoothing fiscal rule can derive from many causes: an excessive expenditure leading to a primary deficit (at the numerator of the public balance / GDP ratio), or from a variation in the debt service after a variation of the interest rate, or from a sluggish growth (at the denominator).

Overall, the econometric estimates conducted in this paper refuted the hypothesis that the Maastricht criteria and the SGP have never worked as an impediment for the fiscal stance to pursue output stabilization and that debt consolidation was implemented only under the threat to be excluded from the euro. Our interpretation is that a lower pro-cyclicality from Maastricht on indicates that in the upswing of the second half of the 90s, due to the rush to compliance with the two fiscal policy requirements for the admission to the euro, public expenditures were reduced and governments were using fiscal revenues for debt consolidation. During a downswing, however, the obligation to abide by the SGP creates a trade-off between the two objective of fiscal policy. The problem is magnified in the case of the government of a “high debt” country, which in addition to cope with large interest payments has to give priority to debt consolidation with respect to output stabilization. Since these countries are more exposed to the infringement of the 3% limit, a public budget on balance in the medium-term could imply a severe fiscal retrenchment during a downswing by “sterilizing” the functioning of automatic stabilizers.

After the “Twin Towers” shock, due to the fall in the growth causing a fast worsening of the total deficit / GDP ratio, compliance with the Tax

Smoothing rule obliged governments to solve the trade-off between output stabilization and debt consolidation mainly by renouncing to the first objective. The recession occurred at the inception of the monetary union has slowed down the formation of additional revenues, and the room for fiscal manoeuvre has narrowed accordingly. From the sign of the independent variables in the regressions we infer that, during downturns, the Tax Smoothing may impede the pursuing of the objective of output stabilization.

Some EMU governments acknowledged that the SGP does not allow for a violation of the 3% limit due to an unexpected reduction in fiscal revenues, and kept using fiscal revenues for debt consolidation. However, some other EMU governments proved unwilling to curb automatic stabilizers. Fiscal authorities auto-absolved from the “sin” to postponing debt consolidation, and implementing the discretionary interventions needed for output stabilization through higher public expenditure and/or tax cuts. Many “high debt” EMU countries, however, even when refraining from discretionary fiscal policies during the recession followed to the “Twin Towers”, have been unable to reduce their public debt.

Our evaluation of fiscal stances indicates that the difficulties encountered by the EMU governments to pursue at the same time output stabilization and debt consolidation are also to be traced back to the weaknesses of the SGP. Because of its theoretical foundation in the Tax Smoothing Principle, which concerned with the short-term, the SGP is poorly endowed for achieving the long-term objective of fiscal sustainability.

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Notes

- ¹ In particular, the SGP added to 3% limit to the deficit / GDP ratio of the Maastricht Treaty an enforcement device, consisting of a pecuniary sanction in case of infringement (though it was decided that for a short period the 3% limit could have been waived under some exceptional circumstances). The most important revision introduced in the following years was the more stringent objective of zero structural (i.e. cyclically adjusted) deficit in the medium-term. In March 2005, the European Commission has warranted a prolonged tolerance of a level above the 3% for the deficit / GDP ratio to countries with a public debt / GDP ratio below the Maastricht limit of 60%.
- ² The computation of the fiscal authorities' discretionary fiscal policy by insulating the so-called structural component of the variation of the primary balance from the *ex post* observed overall variation neglects any distinction - in terms of the different size of positive spillovers on output - across public expenditures. The absence of the "golden rule" in the recent reform of the SGP, that is the denial to introduce a specific exemption for the investment expenditures from the 3% limit, is a telling example. The skepticism by which the Keynesian "deficit spending" strategy is nowadays surrounded also stems from the measurement of the amplitude of the fiscal multiplier. BLANCHARD AND PEROTTI (2002) find a positive impact on income and consumption of public expenditures. On the other hand, PEROTTI (2004) obtains much lower effects of public budget shocks on income and consumption after 1980; he also considers monetary policy, by inserting the interest rate in the VAR estimates. These two findings suggest that a structural break has happened with the EMS, whereby the crowding-out effect has been magnified by the high levels reached by interest rates during the EMS period, possibly stemming from the tight (anti-inflationary) monetary stances and/or the interest differentials with respect to Germany which opened in most EMS countries, that is a stronger response to fiscal shocks (PEROTTI, 2004).
- ³ However, we have also run the regression model by substituting the difference between the national and the German long term interest rate with the national real interest rate. In the following, we do not show tables for these estimates, as the results for the other variables do not change.
- ⁴ In particular, the coefficient linking the output gap to the cyclically-adjusted primary spending falls and is significant for the EMU countries but not for two control groups (one of them being the three EU countries not participating in the EMU), and the same coefficient for the cyclically-adjusted primary revenues present an increase for the two control groups but not for the EMU countries.

Política fiscal na Europa e o Pacto de Estabilidade e Crescimento

Resumo – O artigo investiga como as autoridades fiscais européias se comportaram nas últimas décadas, vale dizer, sob a restrição colocada pelos Sistemas

Monetários Europeus durante os anos 1980, o Tratado de Maastricht durante os anos 1990, e o Pacto de Estabilidade e Crescimento (PEC) posteriormente, também levando em consideração interações entre políticas monetárias e fiscais. Argumentamos que a medida tradicional utilizada para avaliar a política fiscal – o orçamento público ajustado ciclicamente (OPAC) – é um indicador muito grosseiro da postura fiscal como uma função dos dois objetivos de estabilização do produto e diminuição da dívida. Construímos duas avaliações teóricas da regra fiscal perseguida pelo governo – suavização tributária e suavização do gasto – e as utilizamos como variáveis dependentes em nossas estimativas econômicas. Sob condições bastante plausíveis, a obediência ao limite de 3% para a razão dívida pública/PIB imposta pelo PEC poderia implicar a renúncia, em uma contração do produto, não apenas a se perseguir uma política fiscal discricionária como também à estabilização por estabilizadores automáticos. Concluimos que a sustentabilidade fiscal – isto é, a obediência à restrição ao orçamento público intertemporal que é requerida das autoridades fiscais da União Monetária Européia (UME) – enfatiza o objetivo de redução do déficit, desse modo gerando um tradeoff com o objetivo de estabilização do produto, especialmente nos países da UME com dívidas elevadas.

Palavras-chave – postura fiscal, regras fiscais, sustentabilidade fiscal, interações entre políticas monetárias e políticas fiscais, União Monetária Européia.

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