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## **IS LISBON FAR FROM MAASTRICHT? TRADE-OFFS AND COMPLEMENTARITIES BETWEEN FISCAL DISCIPLINE AND STRUCTURAL REFORMS**

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# IS LISBON FAR FROM MAASTRICHT?

## TRADE-OFFS AND COMPLEMENTARITIES BETWEEN FISCAL DISCIPLINE AND STRUCTURAL REFORMS

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## **ABSTRACT**

### **Is Lisbon far from Maastricht?**

#### **Trade-offs and Complementarities between Fiscal Discipline and Structural Reforms\***

While according to the so-called “Brussels-Frankfurt consensus” sound fiscal policies and structural reforms support each other, it is often claimed that the EU fiscal framework, by reducing the budgetary room of manoeuvre and the political capital of governments, may deter reforms. The aim of this paper is to explore which factors determine the relation between fiscal discipline and reforms. By means of a simple model we show that, depending on the time horizon of the government, structural reforms may either be complement or substitute with fiscal discipline. If governments are forward-looking, substitution is more likely; if governments are short-sighted, reforms and fiscal discipline may become complement. We provide empirical evidence supporting this argument. In a sample of EU-15 countries over the past three decades, the introduction of the Maastricht constraints at the beginning of the 1990s does not seem to have affected the probability of labour market reforms on average, but had a positive and significant impact on countries with governments facing elections in the current or forthcoming year (which are hence assumed to behave myopically). Our results suggest that if governments are short-sighted, then the expectation that relaxing fiscal constraints may help to boost structural reforms may be ill-founded.

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## 1. Introduction

There is widespread agreement among economists and policy makers that structural reforms are needed in Europe to raise growth potential and lower structural unemployment. The political consensus towards the need of more “growth and jobs” in Europe is at centre of the revamped Lisbon Agenda (European Commission (2005)). There is also agreement that more flexible labour markets are needed to respond to idiosyncratic shocks in euro-area countries and hence ensure a smooth functioning of the monetary union (European Commission (2006)).

Are these objectives in line with the approach to EMU followed so far by European institutions? In particular, is the focus on fiscal stability of Maastricht and the Stability and Growth Pact (SGP) consistent with the goal of reforming European economies to achieve higher potential growth and lower structural unemployment? Are the nominal convergence criteria for EMU, focused on macroeconomic stability, compatible with the Optimal Currency Area criteria, with their emphasis on structural features of economies’ product and factor markets? Is the recent reform of the SGP going in the direction of strengthening the possible elements of complementarity between fiscal discipline and structural reforms?

In this paper we analyze whether the fiscal discipline objectives of the SGP and the reform objectives of Lisbon are complement or substitute in a unifying framework for analysis bringing together various strands of literature.

Two broadly opposite views have been expressed in the recent debate on the relations between fiscal policy and structural reform. At one extreme, there is a “either/or view”: structural reforms and deficit reduction are hardly compatible, so that policy authorities may be left with a dilemma. According to this view, excessively tight constraints to fiscal policy may be incompatible with the reform objectives of the Lisbon agenda, and the elements of flexibility for reforms introduced in the SGP with the 2005 reform are well-founded and need to be fully utilized.<sup>1</sup> At the opposite extreme, there is the “Brussels-Frankfurt consensus”, as dubbed in Sapir et al. (2004): fiscal discipline and reforms not only are not incompatible, but tend to go hand in hand. A tight implementation of the EU fiscal rules could therefore be in line with the Lisbon objectives.

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<sup>1</sup> On the provisions regarding structural reforms contained in the 2005 SGP reform see, e.g., European Commission (2005), Deroose and Turrini (2005), Buti (2006).

Several different arguments have been put forward in support of the “either/or view”.<sup>2</sup> Firstly, reforms may, at least temporarily, worsen budget balances due to direct budgetary costs. Notable examples are that of tax reforms or systemic pension reforms shifting social contributions to funds classified outside the government sector (Razin and Sadka (2002)). Secondly, a supportive fiscal stance may be needed in the short term to obviate to the temporary widening output gap associated with reforms. Indeed, while potential output is boosted by reforms, actual economic activity may only adapt gradually (Saint-Paul (2002), Hughes Hallett et al. (2004)). This argument is strengthened by the claim that structural reforms, reducing tax progressivity and trimming welfare benefits, may lower the effectiveness of automatic stabilizers, thereby requiring discretionary fiscal policy to step in, in order avoid a sub-optimal degree of fiscal stabilization (Mabbett and Schelkle (2005)). Finally, there are “political economy” considerations. Resistance to reforms coming from reform-losers can be overcome by means of compensation packages having a cost on the budget (Pierson (2001)). Furthermore, given that governments may dispose of “political capital” in limited supply to enact unpopular measures, calling for further fiscal consolidation may use the political capital which could be better used for reforms (Eichengreen and Wyplosz (1998)). Beetsma and Debrun (2004) show that if reforms are costly in the short run, the government is partisan and discount heavily the future, a deficit bias and a bias against reforms emerge. Fiscal constraints reduce the deficit bias but accentuate the reform bias. Hence, there may be a case for designing numerical deficit rules in such a way to account for the budgetary impact of growth enhancing structural reforms.

Several arguments have also been advanced in support of the “Brussels-Frankfurt consensus”. Firstly, there is the so-called “There-Is-No-Alternative (TINA) argument”: there are instances in which there may simply be no alternative, and any well-conceived policy package needs to include both measures to redress budgetary imbalances and to re-launch growth (Rodrik (1996), Bean (1998), Calmfors (2001)). Secondly, strong fiscal discipline may also act as a signaling device which reduces the resistance to reform (Deroose and Turrini (2005)). Moreover, reforms of tax and benefit systems do not necessarily lead to lower the smoothing power of automatic stabilizers when the tax burden is very high (Buti et al. (2003)).

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<sup>2</sup> For an account of recent contributions see, e.g., Alho (2006).

Regarding empirical evidence, there is no firm view on a possible trade-off between structural reforms and budgetary discipline. The impact of reforms on economic activity has been estimated to be positive over the medium-to-long term horizon, but in the specific case of labour market reforms there could be short-run output losses (IMF (2004)). Existing cross-country econometric work indicates that fiscal consolidations may discourage labour market reforms, while no trade-off is found between tight budgets and product market or financial market reforms (IMF (2004), Annett and Debrun (2004), Duval and Elmeskov (2005), Duval (2005), Heinemann (2005)). The budgetary impact of reforms is generally not highly significant, with some stronger evidence of budgetary deteriorations following labour market reforms (Deroose and Turrini (2005)). There is instead evidence that reforms are in general followed by a reduction in the share of government expenditure on GDP (Hoeller et al. (2005)).

This paper builds upon the diverging views expressed in the policy debate and on the existing empirical evidence to address a series of questions. Could the opposite views on the relationship between fiscal discipline be reconciled in a unified framework? Under which conditions tight budgets and structural reforms are more likely to be substitute, under which are instead more easily complement? Which impact has the imposition of fiscal constraints on deficits and reforms?

The point of departure of our analysis is that the relationship between budgetary policy and structural reforms needs to take into account the different time horizon over which the impact of the two policies produce effects on the level of economic activity. While higher deficits usually stimulates output in the short run at the expense of long-run potential output, reforms are very likely to boost potential output in the long term, but have more ambiguous effects on short-run economic activity. How the effects of fiscal policy and reforms are weighted against each other therefore crucially depend upon the time horizon of governments.

We develop this idea via a simple two-period model of a country in monetary union whose government decides about fiscal policy and structural reforms subject to a deficit constraint. Reforms are assumed to carry both a possible cost in term of temporary aggregate demand loss and a political cost. We show that reforms may either stimulate short-run economic activity or have temporary costs, the net effect depending on the short-run output costs of reforms and on the gains in

competitiveness, and on the strength of the extent to which the improvement in potential output is accompanied by an accommodating monetary policy stance. The hardening of fiscal constraint leads unambiguously to lower deficits but may lead either to a more or to a less activist reforms stance. We show that complementarity or substitutability between structural reforms and fiscal discipline depends crucially on the time horizon of the government and on the short and long-run impact of fiscal policy and structural reforms on economic activity. In particular, if governments are forward-looking, substitution is more likely to arise, the reason being that both fiscal discipline and structural reforms improve potential output in the medium-to-long run, so that they are substitute over the long term. If governments are instead short-sighted, reforms and fiscal discipline may become complement: by limiting the room for manoeuvre for expansionary fiscal policy, budgetary constraints may trigger structural reform programs as an alternative policy tool to boost output in the short-to-medium run. A necessary condition for this complementarity relationship to materialize is that reforms need to have an expansionary effect on output already in the short run.

We provide empirical evidence supporting this argument. We use labor market structural indicators used in IMF (2004) and perform probit regressions to analyse the determinant of reforms in a sample of EU-15 countries over the 1971-1998 period. We show that the introduction of the EU fiscal framework of the Maastricht Treaty in 1994 (the so-called phase II of EMU) did not have a significant impact on the probability of labor market reforms. However, it appears to have a positive and significant impact on those governments facing elections in the current or forthcoming year which are considered to operate under a higher discount rate (myopic governments).

The remainder of the paper is structured as follows. The next section illustrates the set up of the theoretical model and its solution. Section 3 performs comparative statics analysis aimed at evaluating the impact on deficits and reform activity ensuing from a hardening of fiscal constraints. Section 4 contains the empirical analysis. Section 5 concludes.

## **2. The model**

### **2.1. Model set up**

Our aim is to build a framework for analysis general enough to fit different types of possible reforms, notably reforms affecting the functioning of product or factor

markets, which affect developments in economic activity over time, thereby interacting this way with government decisions regarding fiscal policy. To focus the analysis on the analytically most interesting cases, we do not consider reforms which have a direct impact on public finances (e.g., tax reforms, public expenditure reforms).<sup>3</sup>

We build on a model by Fitoussi and Saraceno (2004) which has some features similar to ours.<sup>4</sup> We consider an inter-temporal decision problem of a government of a country belonging to a currency area which aims at achieving a certain output target by means of a mix of fiscal policy and structural reforms subject to some form of budgetary constraints akin to those of the SGP. To keep the analysis simple, we consider a two-period framework: period 1, representing a short-to-medium term time frame, and period 2, which corresponds to events taking place over the medium-to-long run. Furthermore, although the country under consideration is assumed to be big enough to affect average inflation in the currency area (thereby leading to a possible reaction by monetary authorities), in the analysis we switch off cross-country spillovers when solving for the government problem and assume a "passive behaviour" on the part of the governments of other countries. This assumption simplifies the analysis without affecting qualitative results under most likely parameter configurations.

Output is determined by aggregate demand and a Phillips curve, and monetary authorities pursue an inflation target. While in the short-to-medium run inflation surprises are possible, so that the Phillips curve is positively sloped and actual output can differ from potential, over the medium-to-long run, inflation expectations adjust to the target of monetary authorities: this rules out differences between actual and potential output in period two. We further assume that potential output is affected by government policies, both by structural reforms and by fiscal policy.

The government minimizes a loss function that depends on an output target, a deficit target, and adjustment costs due to reforms. The exact way in which such considerations enter the objective function of the government is not known a priori

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<sup>3</sup> Although cases of public sector restructuring associated with improved growth potential have been documented (e.g., Schuknecht and Tanzi (2005)), the aim in this paper is to analyse indirect links between reforms and fiscal discipline rather than the mere fact that the reforms themselves consist of changes in government revenues or expenditures.

<sup>4</sup> For a simplified version of the model see Buti and Pench (2004). A model distinguishing government's behaviour according to its degree of myopia is developed by Alho (2006). His results are however different than ours.

and becomes known only at the moment government choices are made. Prior to that, agents can only take decisions on the basis of expectations.

The government has two instruments at its disposal, fiscal policy and structural reforms. Decisions on both policy instruments take place in period 1 only. Period-2 fiscal policy is determined residually by inter-temporal budget constraint of the government. Reforms decided and implemented at period 1 carry over to period 2 and are assumed to be irreversible. Both instruments have effects both on actual and potential output. Fiscal policy stimulates current demand, thus affecting positively actual output in the short term, but has also a negative effect on future potential output (for instance, due to the fact that the necessary debt stabilization will take place, to some extent, via increased distortionary taxation). Structural reforms have a direct positive effect on future potential output. Regarding the impact of reforms on present potential output, we assume the impact to be positive, even though things are less clear cut in this case. Certain structural reforms may lead to a temporary reduction in potential output due to an increase in the NAIRU associated with the reallocation of activities and adjustment costs. For instance, labour market reforms may lead to increased job destruction and job reallocation and to reduced real wages.<sup>5</sup> In the remainder of the analysis we will consider a reference case in which there is a direct positive impact of reforms on potential output in the short term, even though we will also discuss how results would change should this impact be negative instead.

Reforms also have an impact on short-term aggregate demand. This impact is both direct and indirect. Neither positive nor negative direct effects of reforms on aggregate demand can be excluded a-priori. On the one hand, reforms could temporarily increase unemployment or reduce real wages, thus leading to lower consumption demand. On the other hand, reforms may increase confidence thereby boosting investment and consumption, especially if there is a widespread perception that low growth and high unemployment are structural problems that cannot be tackled via short-term fixes. In the analysis, we will admit both a positive or a negative short-run impact of structural reforms on aggregate demand. Structural reforms also tend to increase aggregate demand via indirect effects. The positive impact of reforms on current potential output reduces inflationary pressures, thus

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<sup>5</sup> A possible direct negative impact of structural reforms on short-run output has been reported in recent analyses (e.g., IMF (2004)).

permitting a more accommodating monetary policy stance and improving competitiveness. Both the indirect interest rate and competitiveness channel tend to boost aggregate demand in the short-to-medium term.

In forming its decisions, the government takes into account the aggregate demand and supply response of the private sector, the monetary policy response of the common central bank and an inter-temporal government budget constraint.

All model variables are expressed as log changes from baseline. The behavioral equations of the private sector in period 1 are given by an aggregate demand equation:

$$(1) \quad Y_1 = \phi_1 D - \phi_2 \pi_1 - \phi_3 (i_1 - \pi_1^e) - \phi_4 R,$$

where  $\phi_1$  could be either positive or negative. In the remainder of the paper, if not stated otherwise, will be assumed a reference case in which the impact is positive, i.e.,  $\phi_1 > 0$ .

Aggregate demand ( $Y_1$ ) responds positively to the deficit ( $D$ ) and negatively to the real interest rate ( $i_1 - \pi_1^e$ , where  $\pi_1^e$  is expected inflation), and a loss of competitiveness generated by a positive differential between domestic ( $\pi_1$ ) and foreign inflation (assumed to be zero). As mentioned previously, it is also assumed that structural reforms,  $R$ , have a direct short run effect on demand. We use the minus sign in front of parameter  $\phi_4$ , denoting a negative impact on aggregate demand. However, as stressed previously, it cannot be excluded a positive direct impact from reforms (in such a case,  $\phi_4 < 0$ ). In the remainder of the analysis, we will consider the benchmark case  $\phi_4 > 0$  if not explicitly mentioned otherwise.

Aggregate supply is determined by a standard Phillips curve, which allows output to deviate from potential as long as actual inflation differs from expected inflation:

$$(2) \quad Y_1 = Y_1^* + \omega(\pi_1 - \pi_1^e),$$

where  $Y_1^*$  is potential output in period 1. Potential output in the long run (period 2) responds positively to structural reforms. Moreover, because of distortionary tax

financing or cuts in "productive" expenditure to finance the accumulated debt, it responds negatively to the deficit of period 1. In the short run (period 1), the impact of structural reforms on potential output is a-priori ambiguous, and fiscal policy is assumed not to produce any impact on potential output. Hence, potential output, respectively, in period 1 and 2 is given by:

$$(3) \quad Y_1^* = \theta_1 R , \quad Y_2^* = \theta_2 R - \theta_3 D ,$$

The nominal interest rate is set by a common central bank which adheres to an inflation targeting rule. The interest rate set at period 1 is as follows:

$$(4) \quad i_1 = r_1 + \lambda \mu (\pi_1 - \pi^T) ,$$

where  $r_1$  is the equilibrium real interest rate and  $\pi^T$  is a time-invariant inflation target. The central bank sets the interest rate taking into account the inflation of the currency area as a whole, so it responds to changes in inflation in our country only to the extent it affects the average inflation of the monetary union. Hence, size matters. In (4),  $\lambda$  (which varies between 0 and 1) represents the relative size of the economy in the currency area, while  $\mu$  captures the degree of 'activism' of the central bank. Notice however that the size of the economy matters also in other respects, in particular it is likely to be (negatively) related to the impact of changes in the real exchange rate within the currency area (captured by  $\pi_1$ ) on aggregate demand: the smaller the country, the more open is the economy to foreign competition and then the more sensitive to inflation differentials. Hence, parameter  $\phi_2$  is expected to be larger for small countries.<sup>6</sup>

Concerning the sequence of actions we assume the following in period one. First, inflation expectations are formed. These expectations may not be realized ex-post due to the fact that wage and price setters are uncertain ex-ante on the exact form of the objective function of the government, so that they cannot solve backward for the

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<sup>6</sup> The negative impact of inflation on demand could also be interpreted as arising through changes in real money balances. In this case, the link of parameter  $\phi_2$  with country size would be less obvious.

inflation rate that would prevail after having solved the government problem. Second, the objective function of the government becomes common knowledge and the government chooses fiscal policy and structural reforms anticipating the response of the common central bank in terms of interest rates. Finally, the central bank chooses the interest rate. Regarding period two, inflation expectations are revised taking into account the available information on the government objective function. Since the common central bank credibly commits itself to the inflation target, actual and expected inflation will coincide, so that  $\pi_2^e = \pi_2 = \pi^T$  and output will be equal to potential, i.e.,  $Y_2 = Y_2^*$ . To ease notation, in the following we will set  $\pi^T = 0$ .

Since the central bank credibly commits to its inflation target for period 2, the equilibrium output in both periods can be expressed as a function of period 1 government policy choices,  $D$  and  $R$ :

$$(5) \quad Y_1 = \Omega_1 D + \Omega_2 R \quad Y_2 = \theta_2 R - \theta_3 D ,$$

where  $\Omega_1 = \frac{\phi_1}{1 + \omega(\phi_2\mu\lambda + \phi_3)}$  and  $\Omega_2 = \frac{(\phi_2\mu\lambda + \phi_3)\omega\theta_1 - \phi_4}{1 + \omega(\phi_2\mu\lambda + \phi_3)}$  are the short-run multipliers of the deficit and structural reforms respectively. While the multiplier of fiscal policy is always positive, that of reforms has an ambiguous sign. In particular, it is surely negative if the short-term impact of reforms is negative both on aggregate demand ( $\phi_4 > 0$ ) and on potential output ( $\theta_1 < 0$ ). More generally, the necessary and sufficient condition for a positive sign of the short-run multiplier is:

$$(6) \quad \phi_4 < (\phi_2\mu\lambda + \phi_3)\omega\theta_1 .$$

Condition (6) says that the short-to-medium term impact of reforms on output is more likely to be positive: the more strongly positive the impact of reforms on potential output over the short-to-medium run ( $\theta_1$ ); the higher the degree of labour market flexibility ( $\omega$ ); the larger the impact of real interest rates and competitiveness on aggregate demand (respectively,  $\phi_2$  and  $\phi_3$ ); the stronger the reaction of monetary

authorities ( $\mu\lambda$ ). Country size has a-priori an ambiguous effect. On the one hand, via  $\lambda$  it raises the reaction of monetary authorities, thereby increasing the probability of a positive short-run reform multiplier. On the other hand, country size is negatively related to the degree of openness of the economy, so that parameter  $\phi_2$  is expected to be smaller for large countries.

Figure 1 represents graphically the macroeconomic equilibrium at given policies in period one. The equilibrium output in period one is obtained at the intersection of the negatively sloped aggregate demand locus ( $AD$ ) and the positively sloped aggregate supply curve ( $AS$ ) in the  $(\pi, Y)$  space. Expansionary fiscal policy shifts the  $AD$  curve upward and to the right, and equilibrium moves from point  $E$  to  $E'$ . Under the assumption that structural reforms have a direct negative impact on output ( $\phi_4 > 0$ ), they shift the aggregate demand curve downward and to the left (the indirect negative effect of reforms), while the  $AS$  curve moves rightward, since reforms increase short-term potential output. Equilibrium shifts to a point like  $E''$ , which may exhibit either a lower or a higher level of economic activity, depending on whether the direct or the indirect effects of structural reforms prevail.

Figure 2 illustrates the short-run (period 1) and the long-run (period 1) macroeconomic equilibria in terms of the  $AS$  and  $AD$  curves. While in the short run both the inflation rate and output are determined at the intersection of the  $AS$  and  $AD$  curves (equilibrium  $E_1$ ), in the long run inflation is equal to the level to which the central bank credibly pre-commits, and output is determined on the  $AS'$  curve, i.e., the  $AS$  curve for period 2 incorporating the impact of reforms and deficits chosen in period one (equilibrium  $E_2$ ). Since expected and actual inflation are equal, output in the long term equals potential. Figure 2 depicts a situation in which structural reforms and fiscal policies in the initial period combine to boost potential output.

[Insert Figures 1 and 2 here]

## 2.2. Government policies

The government chooses a level of the deficit and a structural reform effort considering the trade-off between three different objectives. First, an output target, denoted by  $\hat{Y}$ . Second, a deficit target, set for convenience equal to zero. Third, the

minimisation of “political costs” associated with structural reforms, which are likely to be higher the stronger the change in the reform stance. Such objectives can be captured by a convex loss function as follows:

$$(7) \quad \min_{D,R} L = \frac{1}{2} \{ [ (Y_1 - \hat{Y})^2 + \gamma_1 D^2 + \gamma_2 R^2 ] + \beta(Y_2 - \hat{Y})^2 \}$$

where  $Y_1 = \Omega_1 D + \Omega_2 R$  and  $Y_2 = \theta_2 R - \theta_3 D$  (equation (5)),  $\gamma_1$  and  $\gamma_2$  are the weights attached to the deficit target and the political cost of reforms relative to the output target, and  $\beta$  is the discount factor.<sup>7</sup>

Notice that the discount factor  $\beta$  permits to rank governments concerning their degree of myopia: very short-sighted governments will value the present very highly and can be characterized by a small  $\beta$ ; more forward looking governments will have instead a large value of  $\beta$ . Since the government problem only concerns first-period values for deficits and reforms, henceforth we will omit the time subscripts for these variables.

The optimal solution for  $D$  and  $R$  is given by

$$(8) \quad D^* = \frac{1}{|\Omega|} \{ \beta [(\Omega_1 \theta_2 + \Omega_2 \theta_3)(\theta_2 - \Omega_2)] + \gamma_2 (\Omega_1 - \beta \theta_3) \} \hat{Y}$$

$$(9) \quad R^* = \frac{1}{|\Omega|} \{ \beta [(\Omega_1 \theta_2 + \Omega_2 \theta_3)(\theta_3 + \Omega_1)] + \gamma_1 (\Omega_2 + \beta \theta_2) \} \hat{Y},$$

where  $|\Omega| = \beta(\theta_2 \Omega_1 + \Omega_2 \theta_3)^2 + \gamma_1(\Omega_2^2 + \beta \theta_2^2) + \gamma_2(\Omega_1^2 + \beta \theta_3^2) + \gamma_1 \gamma_2$ .

It is evident from expressions (8) and (9) that the value of the chosen deficit and reform effort crucially depends upon the degree of government myopia and on the

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<sup>7</sup> The above loss function permits to derive a well-behaved decision problem for the government but it implies the well-known problem that deviations from the output target from above and from the debt target from below are equally disliked by the government as deviations of the opposite sign. In the following, we restrict the analysis to parameter constellations implying the most likely case in which the solution of the government problem yields a level of output which is below target in both periods and a level of debt above target in period 1.

multipliers for fiscal policy and reforms. Moreover, both positive and negative values for deficits and reform efforts are possible.

### **3. Fiscal discipline and structural reforms: substitutes or complements?**

#### **3.1. The impact of fiscal constraints: comparative statics**

The model illustrated in the previous section permits to evaluate which impact would have on the level of deficits and on the structural reform effort the introduction of fiscal arrangements like those operating in EMU. In terms of our model, the effects of the numerical fiscal rules introduced with the Maastricht Treaty and the SGP can be captured by an increase in the parameter  $\gamma_1$ , i.e., would correspond to a higher weight attached by governments to fiscal discipline concerns.

Comparative statics analysis can conveniently be performed graphically using the first order conditions for the government's problem. The first order conditions for  $D$  and  $R$ , respectively write as follows:

$$(10) \quad (\Omega_1^2 + \gamma_1 + \beta\theta_3^2)D_1 + (\Omega_1\Omega_2 - \beta\theta_2\theta_3)R_1 = (\Omega_1 - \beta\theta_3)\hat{Y},$$

$$(11) \quad (\Omega_1\Omega_2 - \beta\theta_2\theta_3)D_1 + (\Omega_2^2 + \gamma_2 + \beta\theta_2^2)R_1 = (\Omega_2 + \beta\theta_2)\hat{Y},$$

and can be rearranged to yield the following pair of “reaction functions” in the  $(D,R)$  space (see Figures 3 and 4):

$$(12) \quad R = \frac{-(\Omega_1^2 + \gamma_1 + \beta\theta_3^2)}{(\Omega_1\Omega_2 - \beta\theta_2\theta_3)} D + \frac{(\Omega_1 - \beta\theta_3)}{(\Omega_1\Omega_2 - \beta\theta_2\theta_3)} \hat{Y}, \quad (DD \text{ schedule})$$

$$(13) \quad R = \frac{-(\Omega_1\Omega_2 - \beta\theta_2\theta_3)}{(\Omega_2^2 + \gamma_2 + \beta\theta_2^2)} D + \frac{(\Omega_2 + \beta\theta_2)}{(\Omega_2^2 + \gamma_2 + \beta\theta_2^2)} \hat{Y}, \quad (RR \text{ schedule})$$

where the first equation defines which level of the deficit would be chosen for any level of reforms (the *DD* schedule in Figures 3 and 4), while the second equation is the locus of points defining the optimal reaction of the reform effort to given deficits (the *RR* schedule).

Parameter  $\gamma_1$  only appears in the expression of the  $DD$ . An increase in this term, reflecting government's deficit concerns becoming stronger, tilts the  $DD$  schedule upward (respectively, downward) in the  $(D,R)$  space if the denominator of the deficit coefficient in equation (12) is negative (respectively, positive). How an increase in  $\gamma_1$  affects deficit and reforms depends both on the absolute and relative slopes of the  $DD$  and  $RR$  schedules, which is in turn determined by several factors, notably the short run impact of reforms on the level of economic activity (i.e., whether multiplier  $\Omega_2$  is positive or negative) and by the rate of time preference of the government. By differentiating expressions (8) and (9) for the equilibrium values of  $D$  and  $R$  with respect to  $\gamma_1$ , after some algebraic manipulations one obtains:

$$(14) \quad \frac{\partial D^*}{\partial \gamma_1} = -\frac{(\Omega_2^2 + \beta\theta_2 + \gamma_2)}{|\Omega|} D^*$$

$$(15) \quad \frac{\partial R^*}{\partial \gamma_1} = \frac{(\Omega_1\Omega_2 - \beta\theta_2\theta_3)}{|\Omega|} D^*.$$

Equations (14) and (15) show that the sign of  $\partial D^* / \partial \gamma_1$  and  $\partial R^* / \partial \gamma_1$  depends on the sign of the equilibrium deficit. It can be shown that the relative slope of the  $DD$  and  $RR$  curve are in relation with the sign of  $D^*$ : the slope of the  $DD$  schedule is larger in absolute value than that of the  $RR$  schedule if and only if  $D^* > 0$ . Henceforth, we will assume this to be the case, since this ensures well-behaved comparative statics results such that deficits are reduced at equilibrium after an increase in parameter  $\gamma_1$ , i.e.,  $\partial D^* / \partial \gamma_1 < 0$ . As far as  $\partial R^* / \partial \gamma_1$  is concerned, two cases need to be distinguished.

**Case 1:  $\Omega_2 < 0$ , or  $\Omega_2 > 0$  and  $\Omega_1\Omega_2 < \beta\theta_2\theta_3$ .** **Substitution between structural reforms and fiscal discipline**

In this case, both the  $DD$  and the  $RR$  schedules are positively sloped: a higher degree of fiscal discipline induces a less ambitious effort in terms of structural reforms; a more active structural reform stance induces a laxer fiscal stance. Under these conditions, as illustrated in Figure 3, an upward shift in the  $DD$  curve associated with a tighter constraint on deficits (a large value for the  $\gamma_1$  parameter) will result into lower deficits but will also entail a lower structural reform effort (the equilibrium shifts from  $E$  to  $E'$ ).

The intuition is as follows. In the long run, reforms and fiscal discipline are unambiguously substitutes: stronger fiscal discipline triggered by a more stringent fiscal framework benefit output in the long term and reduces the need for reforms. In the short-run, results are a-priori ambiguous. When the impact multiplier of reforms is negative ( $\Omega_2 < 0$ ), a stronger degree of fiscal discipline, which induces short-term output losses, needs to be compensated by a less ambitious reforms stance, since reforms produce short-run output losses in this case. So, when  $\Omega_2 < 0$  there is substitution between fiscal discipline and reforms both in the short and in the long run. Conversely, when  $\Omega_2 > 0$ , there is substitution between fiscal discipline and reforms in the long run, while complementarity prevails in the short-run. The overall substitution effect prevails if  $\Omega_1\Omega_2 < \beta\theta_2\theta_3$ , namely if long-run factors prevail over short-run factors in the government decision. Indeed, substitution is more likely to prevail the longer the time horizon of the government (i.e., the higher is  $\beta$ ), the stronger the positive impact of reforms on long-term potential output (parameter  $\theta_2$ ), the stronger the negative impact of deficits on long-term potential output (parameter  $\theta_3$ ), and the smaller the combined impact of reforms and deficits on output in the short run (the smaller the term  $\Omega_1\Omega_2$ ).

[Insert Figure 3 here]

### **Case 2: $\Omega_2 > 0$ and $\Omega_1\Omega_2 > \beta\theta_2\theta_3$ . Complementarity between structural reforms and fiscal discipline**

In this case, reforms have a positive short-term impact on output so that in the short-run there is a complementarity relationship between structural reforms and fiscal discipline. The condition  $\Omega_1\Omega_2 > \beta\theta_2\theta_3$  ensures that the complementarity relation arising in the short run prevails over the long-term substitution relationship. A government that is mostly concerned about the short term (low  $\beta$ ) will find it convenient to accompany a tight fiscal policy with a programme of structural reforms that expand output. This case is depicted in Figure 4. The first order conditions for the government problem yield negatively sloped reaction functions: a higher degree of fiscal discipline induces a more ambitious effort in terms of structural reforms; a more

active structural reform stance triggers a tighter fiscal stance. Under these conditions, the hardening of fiscal constraints, by tilting the *DD* curve downward, leads both to a lower equilibrium level of the deficit and to more reforms.

[Insert Figure 4 here]

The above analysis helps reconcile the opposite views that have circulated in the policy debate in the EU in recent years. Case 1 illustrated above supports the "either/or view" according to which fiscal discipline and reforms are hardly compatible objectives, while Case 2 provides a rationale for the "Brussels-Frankfurt consensus" which sees tight budgets and reforms as complementary. This is an element of novelty of our analysis compared with previous analogous models (e.g., Fitoussi and Saraceno (2004)), due to explicit modeling of the indirect competitiveness and interest channels that may give raise to an overall positive short-run impact of reforms on output in spite of a possibly negative direct effect.

### **3.2 The interplay between fiscal constraints and the pursuit of the Lisbon growth objectives: some numerical simulations**

In this section, we discuss the impact of the Lisbon agenda in terms of our analytical framework. There are different ways in which the impact of Lisbon could be modelled. First, Lisbon could be modelled via a weaker perceived cost of reforms (lower  $\gamma_2$ ). In terms of Figures 3 and 4, a lower  $\gamma_2$  tilts the *RR* schedule upward. As in the case of a tighter fiscal constraint, whether fiscal discipline and reforms are substitute or complement depends crucially on the time horizon of governments. In any case, a lower value for parameter  $\gamma_2$  raises reforms, while deficits are increased in Case 1 outlined above and reduced under governments' myopia as expressed in Case 2.

An alternative impact of Lisbon could be that of raising the output target by the government. In terms of Figures 3 and 4 both the *DD* and the *RR* schedules shift upward, thus leading to more reforms, while the impact on the deficit is ambiguous, irrespective of the slope of the *DD* and the *RR* schedules (i.e., irrespective of whether Case 1 or Case 2 is realized).

A further question is as follows: which impact do fiscal constraints have on the use of fiscal policy and reforms as alternative tools to achieve a higher growth objective in line with the Lisbon agenda? To address this question, since analytical comparative statics are cumbersome and in general ambiguous, we proceed by means of numerical simulations. This analysis permits to shed light on the substitution/complementarity between the SGP and the Lisbon objectives. Moreover, it permits to assess whether the sign restrictions that we have imposed on the slope coefficients of the *DD* and *RR* schedules (equation (14)) are consistent with empirically plausible parameter values of the demand and supply elasticities.

The simulations compare model results arising from a 10 per cent increase in the government output target  $\hat{Y}$  arising with alternatively a more or a less tight fiscal constraint (i.e.,  $\gamma_1 = 2$  or  $\gamma_1 = 1$ ). When the output target goes up, both "reaction functions", the *DD* and the *RR* schedules shift upward; this permits to evaluate their slope in the  $(R, D)$  space. Simulation results and the value of calibrated parameters are reported in Table 1. Simulation results are expressed as the difference of the change that takes place with a tight fiscal constraint compared with that emerging with a less tight one.

[Insert Table 3 here]

Aggregate demand parameters are chosen in such a way to obtain a short-run fiscal policy multiplier of 0.6, which is consistent in magnitude with recent VAR estimates (e.g., Perotti (2002)) and DSGE models for euro-area countries (e.g., Smets and Wouters (2003), Ratto, Roeger and In't Veld (2006)). The elasticity of aggregate demand with respect to the change in competitiveness (parameter  $\phi_2$ ) is equal to 0.3, a value consistent with price elasticities found in empirical trade equations. The value of the interest rate elasticity is also in line with available estimates ( $\phi_3 = 0.5$ ). The effect of structural reforms on demand is more difficult to pin down, this is why this parameter is allowed to vary in order to obtain the three cases discussed in section 2. The aggregate supply elasticity is consistent with Phillips curve estimates for the euro area.

By setting the output cost of reforms positive and sufficiently high ( $\phi_4 = 0.3$  in our case), the short-run multiplier of reforms is negative, so that comparative statics behave as in the first subcase of Case 1 illustrated in the previous section (Case 1a) in Table 1). Both reaction functions are positively sloped and the *DD* is steeper. Assuming a discount factor by the government of  $\beta = 0.1$ , the fiscal stance is less expansionary with a tight fiscal constraint and there is also less reform activism. Overall, output growth (as measured by the change in  $Y_1$ ) in the first period is slightly lower with tight fiscal constraints, but long-run growth is higher, thanks to less distortions associated with deficits.

By reducing the value of parameter  $\phi_4$  sufficiently or setting it negative, a positive short-term reform multiplier is obtained. Two cases need to be distinguished. For a high discount factor ( $\beta = 1$  in our simulations) we are still in a situation in which, in spite of a positive short-run reform multiplier, the *DD* and the *RR* schedules are upward sloping (Case 1 b)). In this case, again, the presence of a tight fiscal constraint makes the fiscal stance less expansionary and reduces the degree of reform activism. Again, short-term growth is lower while long-term growth is higher with tight fiscal constraints.

Finally, we analyse a case in which the short-term reform multiplier is positive and governments are myopic. In this case, both reaction functions are downward-sloping and the *DD* steeper (Case 2). Under tight fiscal constraints there is a less expansionary fiscal stance coupled however with more reform activism. The same results as in the previous cases are obtained regarding how growth changes over time by hardening fiscal constraints.

Overall, the analysis shows that, also from this perspective, the time horizon of the government, is key to assess the link between reforms and fiscal discipline.

## 4. Empirical evidence

### 4.1. Empirical strategy and data

In this section of the paper, our attempt is to substantiate this prediction with empirical evidence. We focus on labour market reforms because these are the type of reforms that most closely fit the assumptions of the model. These reforms are likely to yield relevant benefits in terms of potential output in the medium-to long run but also

some form of trade-off with fiscal discipline in the short run. Structural reforms in the labour market may induce, more than other reforms, temporary demand losses related with temporarily higher unemployment or lower real wages.

A major difficulty with the measurement of structural reforms is the quantification of the degree of intensity of policies of very different types. Several attempts have been made in recent times by the academia, research centers, and international institutions to collect data on economic reforms and to develop indicators for the measurement of the effectiveness of such reforms.

A first approach for measuring reforms consists of constructing indicators based on information on actual policies that have been implemented in given sectors, periods, and countries. Information is generally provided on the number of policy measures of certain types, possibly accompanied by an evaluation of such policies according to pre-defined criteria. This approach permits to obtain information on the action taken by governments with the purpose of reforming the functioning of markets or state institutions.<sup>8</sup>

A second approach consists of constructing indicators measuring the extent of existing distortions associated with government policies, for instance, the distortions associated with taxation or with the presence of regulations in particular markets.<sup>9</sup> The impact of reforms is measured in this case by the change in the level of the indicator measuring the degree of distortions. This second approach does not account directly for government reform initiatives, but permits to gauge the impact of such initiatives on the structural conditions of the different sectors considered. This approach also permits to assess the extent to which reforms are needed. Whenever the indicator reveals a high degree of distortions in particular sectors (as compared with other countries or periods) there is indication of a stronger need to carry out reforms.

In the following analysis, indicators for labour market reforms are constructed on the basis of labour market structural indexes measuring the degree of policy-induced distortions used in IMF (2004). The Labour Market Index consists of the un-weighted average of indicators of employment restriction, unemployment benefit replacement

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<sup>8</sup> Databases on policy measures of different types are constructed and maintained by national and international policy institutions and by independent research centres (e.g., Rodolfo de Benedetti Foundation (RDB) and European Commission, LABREF, see, e.g., Arpaia et al. (2005), for what concerns labour market policies).

<sup>9</sup> Abundant work in this area has been done by the OECD. See, for instance, Nicoletti and Pryor (2001) and Nicoletti and Scarpetta (2003).

rates and unemployment benefit duration. The index is normalized in such a way to be between 0 and 1 and to increase as labour market restrictions are reduced. The source of the original data is Nickell and Nunziata (2001) and OECD (2003).<sup>10</sup> Data for all EU-14 countries except Greece are available over the 1970-1998 period.

Using the IMF structural indexes, reforms can be measured in two ways. A first, direct way is just to look at time changes in the index. The bigger the increase in the index, the stronger the reduction in structural rigidities, and the bigger the magnitude of reforms. This approach however does not account for the discrete nature of structural reforms. Policy makers are normally faced with discrete decisions: either a reform is undertaken or the status quo prevails. In order to capture this discrete nature of the reform process we construct a reform indicator consisting of a dicotomic variable taking value 1 if the structural indicator has a positive change bigger than the median positive change observed across the sample.

Another crucial measurement issue to test our theoretical model is disposing of a measure of governments' myopia. There is no obvious indicator for the time horizon of governments. A particularly convenient way to measure governments' myopia is to make use of data on elections. The idea is that governments having to take decisions with imminent elections are less likely to put high weight on medium and long term issues.<sup>11</sup> Information on election permits to have variation in the data both along the cross-country and the time-series dimension. We use data on election years of the executive taken from the World Bank Database on political Institutions to construct a myopia indicator consisting of country/year combinations in which elections take place either in the current or in the forthcoming year.

Our investigation strategy is as follows. First, we describe the frequency of labour market reforms over different time periods across EU countries. We do that by distinguishing between myopic and non-myopic governments and between periods before the run-up to EMU, as captured by the start of the so-called second phase of EMU, i.e., 1994, when the process of fiscal convergence actually started. In a later step we perform regression analysis to investigate whether, taking other factors into account, the frequency of reforms before and after the run-up to EMU changed, and

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<sup>10</sup> See IMF (2004), Ch. IV., Appendix.

<sup>11</sup> The "electoral budget cycle" has been extensively studies in the past years. For a synthesis of the debate and an application to EMU's early years, see Buti and van den Noord (2004).

whether it matters for such change whether governments were myopic or forward looking.

## 4.2. Results

Figure 5 shows that after the start of fiscal convergence labour market reforms were on average more frequent compared with the previous decades. More interestingly, by splitting the sample between reforms taking place with forward-looking or myopic governments it appears that the increase in the frequency of reforms is much higher in the case of myopic governments. This *prima-facie* evidence seems in line with the prediction of the theoretical model. When external constraints related with the run up to EMU started constraining the behaviour of fiscal authorities, forward-looking and myopic governments reacted differently: the former do not appear to have undertaken significantly more reforms, while for the latter the average annual frequency of labour market reforms more than doubled.

The evidence in Figure 5 however does not take into account all the factors that may have affected the probability of carrying out reforms other than the introduction of fiscal constraints. In order to control for these factors, we estimate labour market reform equations via multivariate regression analysis. The approach is akin to that followed in IMF (2004). The empirical equation needs to be interpreted as a reduced form of a system of equations in which both structural reforms and budgets are determined simultaneously, as shown in our theoretical model. The explanatory variables may either impact labour market reforms directly, or indirectly, via their impact on public budgets.

The dependent variable is a dicotomic variable taking value 1 or 0 according as labour market reforms were carried out in a particular country in a particular year. The estimation methodology is panel Probit regressions.

Turning to the explanatory variables, a first set of regressors is aimed at capturing structural factors that affected the probability of labour market reforms. These factors are captured by country-specific time trends.

A second set of explanatory variables relates to the political costs and benefits to carry out structural reforms. The (lagged) output gap variable has an *a-priori* ambiguous sign (see, e.g., IMF (2004)). On the one hand, in line with the “There is No Alternative” argument, reforms may be more politically acceptable under economic

crises (negative sign expected); on the other hand, the political capital available to governments is likely to be larger in “good times” (positive expected sign). The change in the primary cyclically-adjusted budget balance (CAPB) captures the reduction in the political capital available to governments associated with fiscal consolidation (negative expected sign). Election dummies are expected to be negatively associated with reforms since myopic governments are less concerned by the objective of boosting potential output in the long run.

Some variables are included as determinants of government budget balances, thus having an indirect impact on structural reforms. These are the variables that are generally included in fiscal reaction functions: the lagged CAPB, the lagged debt, the lagged output gap, all having a positive expected sign on the CAPB. Our model suggests that the impact of these variables on reforms is *a-priori* ambiguous since reforms and budget balances may either be substitutes or complements. A further difficulty is that both the lagged debt and the lagged output gap have both an indirect (via budget balances) and a direct impact on reforms. The case of the output gap has been discussed previously. Regarding debt, a high debt/GDP ratio could be positively related to the perceived benefits of structural reforms, so that a positive sign for the regressions coefficient could be expected (see, e.g., European Commission (2005)).<sup>12</sup> Finally the “run up to EMU” dummy is also expected to have an impact on reforms. As shown by the theoretical model, a stricter budget constraint unambiguously reduces budget balances but has an ambiguous impact on reforms. What the theoretical model instead predicts unambiguously is that stricter budget constraints would have a more positive impact in the case of myopic governments. To test this prediction, we allow the coefficient for the run-up to EMU dummy to vary between forward-looking and myopic governments. To that purpose, the “run-up-to-EMU” dummy is interacted with a “myopia” dummy, taking value 1 if elections take place in the current or forthcoming year. The EMU variable so interacted captures the different impact of the introduction of fiscal constraints on myopic compared with forward-looking countries (while the non-interacted EMU dummy measures the coefficient for forward-looking governments).

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<sup>12</sup> Furthermore, election variables are also often included among the explanatory variables of budget balances. Hence, this variable is also likely to capture both a direct effect on reforms and an indirect one, via budget balances.

Table 2 reports regression results. The first column assumes the coefficient for the EMU dummy to be equal for both forward-looking and myopic governments; in the second columns the coefficient for the EMU dummy is allowed to vary according to the degree of governments' myopia. Results show that the explanatory variables have generally the expected sign even though coefficients are not always statistically significant. While the lagged CAPB is positive and non-significant, the debt/GDP ratio is positive and highly significant. This is an indication that the debt is most likely to have not only an indirect effect on reforms, via their impact on budget balances, but also a significant direct impact: high debt/GDP ratios are positively associated with the perceived benefits of reforms. A similar reasoning applies to the lagged output gap, which turns out to have a positive impact on the probability of labour market reforms. Results in column (1) indicate that the impact of EMU is on average negative but non-significant statistically. However, when the coefficient is permitted to be different in the case of forward-looking and myopic governments (column (2)), the hypothesis of a more positive coefficient for myopic governments is accepted at the 90 per cent level. The EMU dummy coefficient turns out to be significantly negative for forward-looking countries, while the coefficient is estimated to be positive for myopic governments (given by the sum of the EMU dummy coefficient and the coefficient of the EMU dummy interacted with the myopia dummy).

[Insert Table 2 here]

The purpose of the regressions presented in Table 3 is to further check whether the impact of governments' time horizon also depends on the extent of the perceived medium/long-term costs of fiscal profligacy. The model shows that the effect of a more severe constraint on budgets is more likely to reduce reforms the higher is parameter  $\theta_3$ , which measures the negative impact of fiscal expansions on first and second-period potential output (equations (12)-(13) and (15)). We chose the debt/DGP ratio as a proxy for  $\theta_3$ , based on the argument that the higher the accumulated debt/GDP ratio, the higher the degree of tax distortions and the crowding-out of "productive expenditure" for debt financing. Hence, we repeat the Probit regressions displayed in Table 2 separately for low and high-debt countries. Low (resp., high)

debt countries are identified as those with an average debt/GDP ratio below (resp. above) that of the median country over the sample period. The expectation that the governments' time horizon has a stronger impact in case of high-debt countries results confirmed. While EMU dummy is not significantly different for myopic governments in case of low-debt countries, the difference is highly significant for high-debt countries. This provides further empirical support to the channels highlighted in the theoretical model.

[insert Table 3 here]

Robustness issues are addressed in Table 4. Probit regressions are performed considering alternative specifications of the baseline empirical equation presented in Table 2. The regressions reported in columns (1) and (2) are aimed at checking the robustness of results with respect to alternative specifications of the structural determinants of labour market reforms. In specification (1) country-specific time trends are replaced by country fixed effects. The result that the EMU dummy is negative for forward-looking governments and positive for myopic governments is confirmed. Specification (2) includes the lagged dependent variable among the regressors. The coefficient for the lagged reform indicator is highly significant, revealing a degree of inertia in the reform process. The qualitative results regarding the impact of the run up to EMU are broadly confirmed: the coefficient is higher for myopic governments, with a borderline level of significance (p value is 0.11). Specifications (3) and (4) exclude, respectively, the change in the CAPB and the lagged debt among the set of explanatory variables to have a better insight in the interpretation of the baseline results.

The run up to EMU was associated with increased consolidation efforts in most EU countries. Therefore, since the run-up-to EMU dummy is likely to be associated with positive changes in the CAPB, it could be worthwhile checking whether results are confirmed after eliminating the change in the CAPB among the set of explanatory variables. Column (3) in Table 4 shows that the impact of the EMU variable remains robust in this alternative specification.

As shown in the regressions in Table 3, the debt variable could capture the perceived cost of fiscal profligacy, which matters for the way myopia interplays with fiscal

constraints. However, even after eliminating the debt variable from the set of regressors the result that myopic governments are more positively affected by the EMU dummy is confirmed.

Finally, column (5) displays results obtained by estimating the baseline specification in table (2) with OLS using the change in the labour market indicator as an alternative dependent variable. Qualitative results are confirmed. The coefficient for the EMU dummy is significantly larger for myopic countries also with this different definition of the dependent variable.

[Insert Table 4 here]

## 5. Conclusions

In this paper we have analysed the relationship between fiscal discipline and structural reforms in a unified framework and shown that the such relationship is probably more complex than often assumed. In some existing analyses, it is emphasized the substitution relationship between fiscal constraints and reform activity related with the necessity by governments to compensate for the short-run costs of reforms via the budget. Conversely, it has also been put forward the opposite view that a credible framework for sound fiscal policies could favour structural reforms because the need to take measures to address at the roots growth and sustainability becomes more evident and more urgent under such conditions.

Our model embeds both the above arguments. It is shown that the prevalence of one or the other view crucially depends upon the short-term impact of reforms and the time horizon of governments. If reforms have an overall negative impact on economic activity in the short run, then the argument that tighter fiscal constraints may entail a less active reform stance holds. However, even admitting that reforms may reduce directly aggregate demand in the short term (e.g., due to increased job destruction and job reallocation, firm restructuring, etc.) the overall effect on output is ambiguous, since the stimulus to potential output also induces a more accommodating monetary policy stance and improves export competitiveness. When the positive indirect effects on short-term output dominate, a possible complementarity between fiscal discipline and reforms emerges since under these conditions reforms are alternative policy tools

to boost short-run output. The emergence of a complementarity relationship is more likely the more short-sighted is the government: the complementarity relationship is indeed a short run phenomenon, while in the long-run both fiscal discipline and reforms are likely both to increase potential output, being therefore substitute.

In short, whilst looser fiscal constraints may boost reforms when governments have a long time horizon, they are more likely to lead to the opposite effect when governments are myopic and focus on boosting output in the short term.

We provide in the paper some empirical evidence supporting these findings. In a panel of EU countries over the period 1971-1998, we find that the introduction of the EU fiscal framework seems to have discouraged labour market reforms in governments far from elections (therefore likely to be relatively forward-looking) and to have encouraged instead reforms in the labour market for governments facing elections in the current or subsequent year (therefore likely to be relatively myopic).

Our analysis provides insights regarding the impact that the 2005 reform of the SGP and the revamped Lisbon agenda may have had on the complementarity/substitution relation between structural reforms and fiscal discipline.

We shed light on which implications for reforms may arise from the implementation of the reformed SGP. The SGP was reformed in such a way to cater for a possible trade-off between reforms and budgetary discipline. However, in order to prevent moral hazard and a dilution of the Maastricht deficit threshold, the conditions under which more flexibility would be granted in exchange of reforms are tight. Our analysis shows that such restrictive conditions are well grounded if government short-sightedness prevails: in this case, a “soft” application of the Pact may actually discourage rather than trigger reforms. Analogously, our analysis shows that the revamped Lisbon focused on growth and jobs, by raising the output target of governments would raise reforms efforts by governments, with an impact on deficits that would instead again crucially depend on governments’ time horizon (more fiscal discipline in case of myopic governments). Additionally, we show by means of numerical simulations that in the case of myopic governments there could a more ambitious reform effort to reach the Lisbon objectives when fiscal constraints are tighter.

Indirect evidence that governments’ time horizon may actually be quite short is provided by the observation that less budgetary constraints in the early years of EMU

(when the threat of exclusion from the first wave of euro-area membership had vanished) was associated with a relaxation of the reform effort in most countries, especially for what concerns labour market reforms (see, e.g., Duval and Elmeskov (2005)). A notable exception was the adoption of the so-called Hartz IV tax and benefit reform in Germany in 2004. In line with the results of our model, this took place at the end of the second Schroeder term, when the pressure for bringing back the deficit towards the limit of the SGP grew stronger.

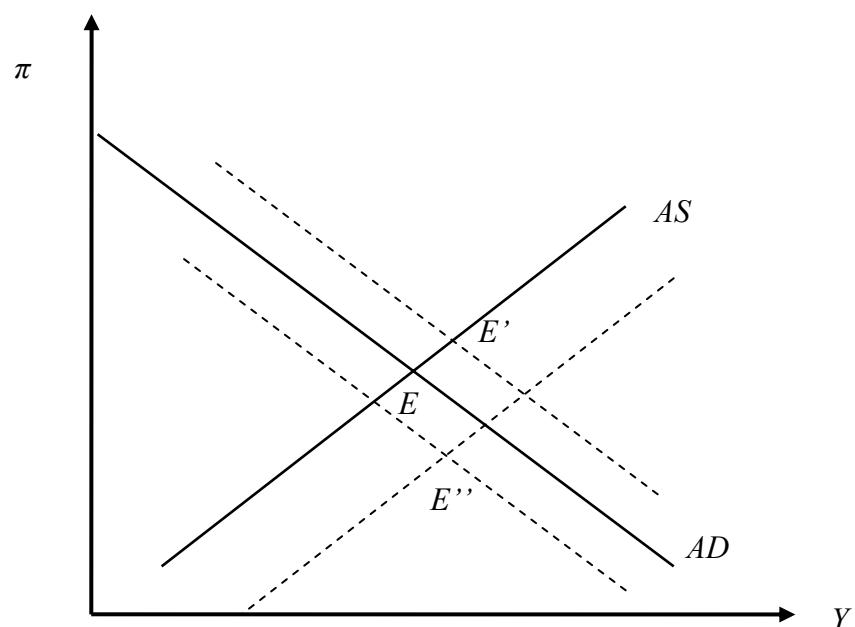
## References

- Alho, K. E. O. (2006), "Structural Reforms in the EU and the Political Myopia in Economic Policies", EPLA Discussion Paper, 1050.
- Annett, T., and X. Debrun, (2004), "Implementing Lisbon: Incentives and Constraints", in Euro Area Policies: Selected Issues. IMF Staff Country Report, 04/235, IMF, Washington D.C.
- Arpaia, A., D. Costello, G. Mourre and F. Pierini (2005) "Tracking Labour Market Reforms in the EU Member States: An Overview of Reforms in 2004 based on the LABREF Database", European Commission, European Economy Economic Papers, 239.
- Bean, C. (1998),"Monetary Policy under EMU", *Oxford Review of Economic Policy*, 14: 41-53.
- Beetsma, R., and X. Debrun (2004), "Reconciling Stability and Growth: Smart Pacts and Structural Reforms", *CEPR Discussion Paper*, 3930.
- Buti, M. (2006), "Will the New Stability and Growth Pact Succeed? An Economic and Political Perspective", European Commission, European Economy Economic Papers, 241.
- Buti, M., C., Martinez-Mongay, K. Sekkat, and P. Van den Noord, (2003), "Automatic Fiscal Stabilisers in EMU: A Conflict between Efficiency and Stabilisation?", *CESifo Economic Studies* 49: 123-140.
- Buti, M., and L. Pench, (2004), "Why Do Large Countries Flout the Stability Pact? And What Can Be Done About It?", *Journal of Common Market Studies*, 47: 1025-1032.
- Buti, M., and P. Van den Noord (2004), "Fiscal Discretion and Elections in the Early Years of EMU", *Journal of Common Market Studies*, 42: 737-756.
- Calmfors, L., (2001), "Unemployment, Labour Market Reform and Monetary Union", *Journal of Labor Economics*, 19: 265-289.

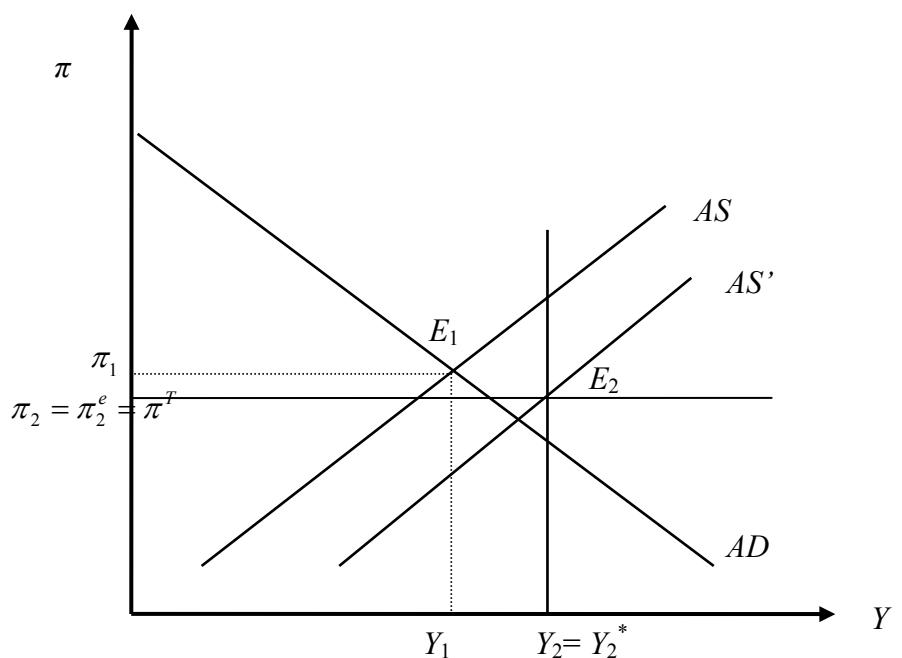
- Deroose, S., E. Flores, and A. Turrini, eds (2006), eds., Proceedings of the ECFIN Workshop "Budgetary Implications of Structural Reforms", European Commission, European Economy Economic Papers, 248.
- Deroose, S. and A. Turrini (2005), "The Short-term Budgetary Impact of Structural Reforms. Evidence from a Panel of EU Countries", CEPR Discussion Paper, 5217.
- Duval, R. and J. Elmeskov (2005), 'The Effects of EMU on Structural Reforms in Labour and Product Markets', OECD Economics Department Working Papers, 438.
- Duval, R. (2006), "Fiscal Positions, Fiscal Adjustment and Structural Reforms in Labour and Product Markets", in Deroose et al. (2006).
- Eichengreen, B., and Wyplosz, C. (1998), "The Stability Pact: More than a Mirror Nuisance?", *Economic Policy* 26: 67-104.
- European Commission (2005), Public Finances in EMU, European Economy, 3, Brussels.
- European Commission (2006) , EU Economy Review, European Economy, 6, Brussels.
- Heinemann, F., (2006), "How Distant is Lisbon from Maastricht? The Short-run Link between Structural Reforms and Budgetary Performance", in Deroose et al. (2006).
- Hoeller, P., C. Giorno, and P. van den Noord, (2005), "Nothing Ventured, Nothing Gained: The long-run Fiscal Reward of Structural Reform", ", in Deroose et al. (2006).
- Hughes Hallet, A., S. E. Hougaard Jensen, and C. Richter (2004), "The European Economy at the Cross Roads: Structural reforms, Fiscal Constraints, and the Lisbon Agenda", mimeo, CEBR, Copenhagen Business School.
- IMF (2004), World Economic Outlook, April 2004, Washington, D.C.
- Mabbett, D. and W. Schelkle (2005), "Bringing Macroeconomics Back in to the Political Economy of Reform: the Lisbon Agenda and the 'Fiscal Philosophy' of EMU", Birbeck College, mimeo.
- Nickell, S. and L. Nunziata (2001), 'Labour Market Institutions Database', LSE, London, available at <http://cep.lse.ac.uk/pubs/download/data0502.zip>.

- Nicoletti, G., and F. L. Pryor (2001), "Subjective and Objective Measures of the Extent of Governmental Regulations" *Journal of Economic Behaviour and Organization*, 59: 433-449.
- Nicoletti, G. and S. Scarpetta (2003), "Regulation, Productivity and Growth: OECD Evidence", *Economic Policy*, 18: 9-72.
- OECD, (2003), The Sources of Economic Growth in OECD Countries, OECD, Paris.
- Perotti, R., (2002), "Estimating the Effects of Fiscal Policy in OECD Countries", ECP Working Paper, 168 .
- Pierson, P. (2001), *The New Politics of the Welfare State*, Oxford University Press, Oxford.
- Sapir, A., P. Aghion, G. Bertola, M. Hellwig, J. Pisani-Ferry, D. Rosati, J. Viñals. and H. Wallace, with M. Buti, M. Nava and P. M. Smith (2004), *An Agenda for a Growing Europe. The Sapir Report*, Oxford University Press, Oxford.
- Ratto, M., W. Roeger, and J. in't Veld (2006), "Fiscal Policy in An Estimated Open Economy Model for the Euro Area", European Economic Papers, 266.
- Razin, A. and E. Sadka (2002), "The Stability and Growth Pact as an Impediment to Privatizing Social Security", CEPR Discussion Paper, 3621.
- Rodrik, D. (1996), "Understanding Economic Policy Reforms", *Journal of Economic Literature*, 34: 9-41.
- Saint Paul, G. (2002), "Employment Protection, Innovation, and International Specialization", *European Economic Review*, 46: 375-395.
- Schuknecht, L., and V. Tanzi (2005) "Reforming Public Expenditure in Industrialized Countries: Are there Trade-Offs?" ECB Working Paper, 435.
- Smets, F., and R. Wouters (2003), "An Estimated Dynamic Stochastic General Equilibrium Model of the Euro Area", *Journal of the European Economic Association*, 1: 1123-1175.

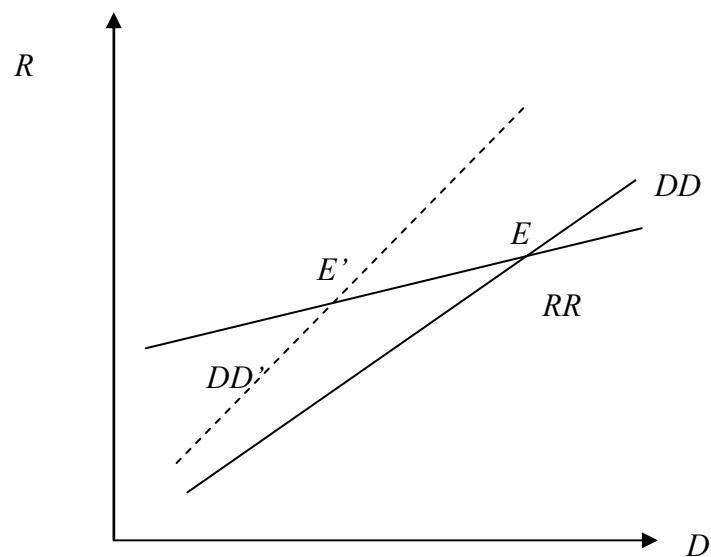
**Figure 1. Short-run macroeconomic equilibrium at given government policies: the impact of D and R**



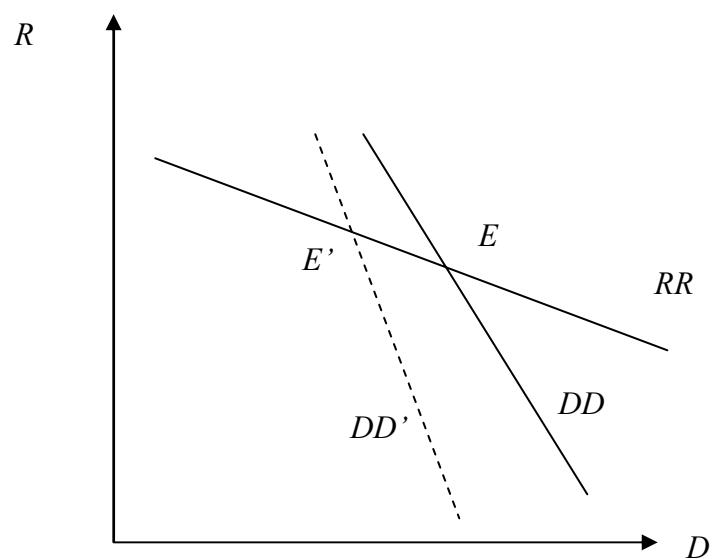
**Figure 2. Short and long-run macroeconomic equilibria**



**Figure 3. Substitution between fiscal discipline and reforms**



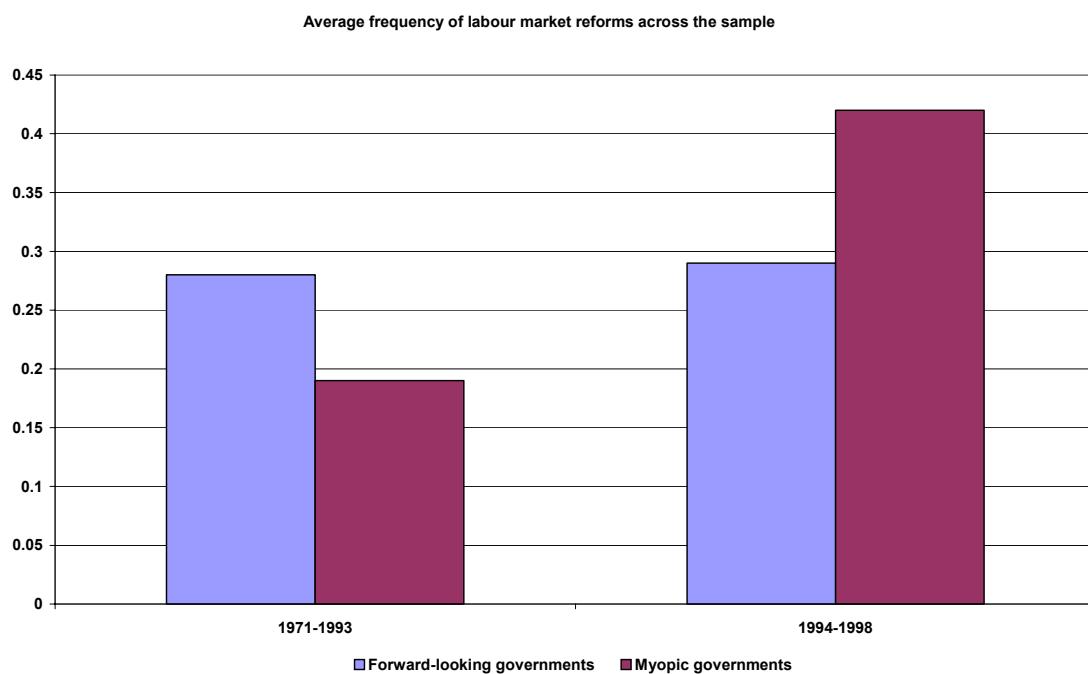
**Figure 4. Complementarity between fiscal discipline and reforms**



**Table 1: Tightening fiscal constraints: some numerical results**

	Case 1 a)	Case 1 b)	Case2
$\Omega_2 < 0$	$\Omega_2 > 0$	$\Omega_2 > 0$	
$(\Omega_1\Omega_2 - \beta\theta_2\theta_3) < 0$	$(\Omega_1\Omega_2 - \beta\theta_2\theta_3) < 0$	$(\Omega_1\Omega_2 - \beta\theta_2\theta_3) > 0$	
$\phi_4 = .3$	$\phi_4 = .2$	$\phi_4 = 0$	
$\beta = 0.1$	$\beta = 1$	$\beta = 0$	
Slope $DD$	38	141	-31
Slope $RR$	1	0.02	-0.1
$\Omega_1$	.6	.6	.6
$\Omega_2$	-.013	.034	.13
$\Delta D$	-.017	-.015	-.013
$\Delta R$	-.003	-.0008	+.0027
$\Delta Y_1$	-.0098	-.009	-.0067
$\Delta Y_2$	+.0007	+.0013	+.002
Values of parameters used in the calibration	Aggregate demand Aggregate supply Taylor rule Potential output Government loss function	$\phi_1 = 1.2, \phi_2 = .3, \phi_3 = .5$ $\omega = 2.$ $\lambda = .1, \mu = 1.5$ $\theta_1 = 0.25, \theta_2 = 0.3, \theta_3 = 0.1$ $\gamma_1 = 1., \gamma_2 = 0.1$	
Simulation	Increase in $\hat{Y}$ by 10%. Reported values are the difference of the impact between a case where $\gamma_1 = 2$ and one in which $\gamma_1 = 1$		

**Figure 5. Frequency of labour market reforms in EU over different time periods: myopic and forward-looking governments (EU-14 except Greece)**



**Table 2. The determinants of structural reforms with myopic and forward-looking governments. Evidence from Probit regressions.  
(EU 14 countries except Greece. 1971-1998)**

Dependent variable: 1 if reform undertaken in current year, 0 otherwise.	(1)	(2)
Lagged primary CAB	0.019 (0.02)	0.019 (0.02)
Lagged debt	0.007*** (0.001)	0.006*** (0.001)
Lagged output gap	0.019* (0.01)	0.020* (0.010)
Year on year change in primary CAB	-0.018 (0.02)	-0.017 (0.022)
Election in current year	-0.052 (0.04)	-0.096** (0.04)
Election in forthcoming year	-0.097* (0.05)	-0.135*** (0.04)
EMU dummy (Year>=1994)	-0.140 (0.07)	
EMU dummy, forward looking governments		-0.227* (0.06)
EMU dummy, $\Delta$ myopic-forward-looking governments		0.336* (0.20)
No obs	299	299
McFadden R sq.	0.21	0.22

Probit coefficients represent the marginal contribution of the explanatory variables (measured at sample mean) to the probability of reforms being carried out. A reform corresponds to a change in the structural index bigger than the median change over the sample. Myopic governments are identified by elections taking place in the current or forthcoming year.

In the Probit estimation, some observations could be automatically dropped if predicting perfectly success or failure. Robust standard errors are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at 90, 95, and 99% confidence.

Coefficients of country-specific time trends are not reported.

Primary CABs and output gaps are expressed as shares of potential output, debt as a share of GDP.

**Table 3. The determinants of structural reforms with myopic and forward-looking governments. Evidence from Probit regressions. High and low-debt countries (EU 14 countries except Greece. 1971-1998)**

Dependent variable: 1 if reform undertaken in current year, 0 otherwise.	Low-debt countries	High-debt countries
Lagged primary CAB	0.036 (0.02)	0.0008 (0.01)
Lagged debt	$7 \cdot 10^{-4}$ (0.009)	0.010*** (0.002)
Lagged output gap	0.003 (0.01)	0.035 (0.02)
Year on year change in primary CAB	-0.004 (0.03)	-0.028 (0.02)
Election in current year	-0.109 (0.06)	-0.067 (0.07)
Election in forthcoming year	-0.117 (0.07)	-0.153 (0.09)
EMU dummy (Year >= 1994)		
EMU dummy, forward looking governments	-0.145 (0.17)	-0.275** (0.07)
EMU dummy, $\Delta$ myopic-forward-looking governments	0.171 (0.27)	0.57** (0.26)
No obs	169	130
McFadden R sq.	0.22	0.27

Probit coefficients represent the marginal contribution of the explanatory variables (measured at sample mean) to the probability of reforms being carried out. A reform corresponds to a change in the structural index bigger than the median change over the sample. Myopic governments are identified by elections taking place in the current or forthcoming year.

In the Probit estimation, some observations could be automatically dropped if predicting perfectly success or failure. Robust standard errors are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at 90, 95, and 99% confidence.

Coefficients of country-specific time trends are not reported.

Primary CABs and output gaps are expressed as shares of potential output, debt as a share of GDP.

**Table 4. The determinants of structural reforms with myopic and forward-looking governments. Robustness checks (EU 14 countries except Greece. 1971-1998)**

	Probit regressions. Dependent variable: 1 if reform undertaken in current year, 0 otherwise.				Least squares. Dependent variable: year on year change in labour market structural indicator
	(1)	(2)	(3)	(4)	(5)
Lagged primary CAB	-0.007 (0.01)	0.017 (0.01)	0.022 (0.02)	0.024 (0.01)	-0.0008 (0.0006)
Lagged debt	0.011*** (0.002)	0.005*** (0.001)	0.006*** (0.001)		0.0002*** (0.00008)
Lagged output gap	0.029** (0.01)	0.007 (0.01)	0.020* (0.01)	0.009 (0.01)	0.0007 (0.0005)
Year on year change in primary CAB	-0.041* (0.02)	-0.018 (0.02)		0.001 (0.02)	-0.0014* (0.0008)
Election in current year	-0.092** (0.06)	-0.067 (0.05)	-0.091* (0.04)	-0.104** (0.04)	-0.001 (0.002)
Election in forthcoming year	-0.127** (0.04)	-0.114* (0.05)	-0.139*** (0.04)	-0.139*** (0.03)	-0.002 (0.003)
EMU dummy, forward looking governments	-0.197** (0.06)	-0.239** (0.06)	-0.227* (0.06)	-0.095 (0.09)	-0.005 (0.004)
EMU dummy, $\Delta$ myopic-forward-looking governments	0.323* (0.20)	0.360 (0.23)	0.337* (0.21)	0.32* (0.20)	0.008* (0.004)
Lagged dependent variable		0.438*** (0.04)			
Country-specific time trends	No	Yes	Yes	Yes	Yes
Country-specific fixed effects	Yes	No	No	No	No
No obs	299	291	299	312	321
McFadden R sq.	0.23	0.33	0.22	0.13	
R sq.					0.17

Probit coefficients represent the marginal contribution of the explanatory variables (measured at sample mean) to the probability of reforms being carried out. A reform corresponds to a change in the structural index bigger than the median change over the sample. Myopic governments are identified by elections taking place in the current or forthcoming year.

In the Probit estimation, some observations could be automatically dropped if predicting perfectly success or failure. Robust standard errors are reported in parentheses. \*, \*\*, and \*\*\* denote, respectively, significance at 90, 95, and 99% confidence.

Coefficients of country-specific time trends are not reported.

Primary CABs and output gaps are expressed as shares of potential output, debt as a share of GDP.