

# Fiscal Discipline, Volatility and Growth

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## Executive Summary

### **Increased interest in fiscal policy**

Budget deficits have increased in the US as well as in many European countries. The Stability and Growth Pact is in a state of crisis. Among developing countries, fiscal policy is in many cases associated with the failure of government to achieve real progress in economic reforms. How can governments achieve fiscal discipline in order to maximize confidence and boost macroeconomic performance? This paper presents a broad empirical study of the behavior of fiscal policy in a large sample of countries. The focus of the paper is in understanding the macroeconomic costs of bad fiscal policy management.

### **Bad fiscal management and macroeconomic outcomes**

There is plenty of evidence that fiscal policy is not conducted by benevolent governments trying to maximize a social welfare function. Fiscal policy is too volatile; in some countries we observe acyclical or even procyclical policies; the lack of internalization of spending decisions leads to growing deficits and accumulation of debt. This behavior has macroeconomic costs. At business cycle frequency we show that this behavior leads to excessive macroeconomic volatility. In turn, this volatility affects the long-term growth of the country.

### **Restrictions on fiscal policy (explicit or implicit) reduce this volatility and provide measurable macroeconomic benefits**

Our empirical analysis shows that the behavior of fiscal policy depends on the political and institutional environment. Governments that face more constraints are less likely to use discretionary fiscal policy. The possible costs of restrictions, namely the lack of flexibility to deal with economic fluctuations, are either negligible or dominated by the previous effects. Restrictions improve macroeconomic performance: those countries where governments face more restrictions display lower volatility and higher growth rates. Our results strongly support proposals to set limits to fiscal policy.

### **Despite these benefits, the recent experience of EMU shows that restrictions are difficult to implement politically**

The recent failure of the Stability and Growth Pact among EMU countries provides an interesting case study of how restrictions on fiscal policy can be difficult to implement. What went wrong? What have we learnt?

### **The EMU experience shows that getting the goals right is key to success**

The goal of the EMU fiscal framework was narrow: enforce debt sustainability without addressing other issues such as volatile or procyclical fiscal policy. Its implementation through a simple numerical rule has shown that a loose long-run definition of sustainability is bound to face serious tensions when economic conditions deteriorate. Proper enforcement requires constant monitoring, ensuring that fiscal policy behaves well even in good times when debt levels are improving. In other words, the practical implementation requires a broader agreement on what constitutes poor or good fiscal

management. The lack of continuous short-term monitoring designed to ensure that the country will meet its loosely-defined long-term goal is likely to lead to loss of credibility.

**Numerical rules are simple but they come at a cost: lack of flexibility**

Strict numerical rules on budget balances of government debt have the advantage of being simple and transparent. But because of their inability to adapt to changing economic conditions, they are likely to lead to credibility crises. There is an almost perfect parallel with fixed exchange rate regimes as simple rules to conduct monetary policy.

**Our results suggest that implicit constraints can deliver the same benefits with a smaller cost in terms of flexibility**

Fiscal rules are not the only way to impose discipline on fiscal policy. As documented in our empirical results, institutional and political constraints are also effective to impose fiscal discipline. In addition, institutions can have the flexibility that rules do not have. One again, the parallel with monetary policy serves as an illustration: credible institutions such as independent central banks are preferable to strict rules such as constant money growth targets or fixed exchange rates. Because of the complexities of the budgetary process, future research should be aimed at studying alternative institutional arrangements for the conduct of fiscal policy.

## I. Introduction: The Impact of Fiscal Policy on Macroeconomic Performance

The recent deterioration of budget balances in the US and Europe has increased the interest of policy makers and academics in fiscal policy. The debate on the role of fiscal discipline has become particularly intense on the issue of how appropriate are the rules contained in the Stability and Growth Pact. In the case of the U.S., a surplus that vanished into one of the largest postwar deficits has added arguments to a long-standing debate on constraining fiscal policy; a debate that in the past has been focused around the proposals for a balanced budget amendment.

Among developing countries, these debates are not new either. The volatile behavior of governments and fiscal policy and the associated loss of credibility have often been responsible for their recurrent crises. Fiscal policy is in many cases associated with the failure of government to achieve real progress in economic reforms.<sup>1</sup>

These events have sparked a debate on how to achieve fiscal discipline in order to maximize confidence and boost macroeconomic performance. This is a difficult debate because we do not have a precise definition of what constitutes good fiscal policy management beyond some simple recipes such as ensuring long-term sustainability and avoiding short-term procyclicality. For this debate to move forward we need to advance our knowledge along three dimensions. First, we need to characterize empirically what constitutes poor fiscal policy management and understand better its costs. Second, we need to understand the origins of that behavior: What are the circumstances that lead to poor management beyond bad political decisions? Are there any institutional characteristics that favor one type of fiscal outcomes more than others? Third, and related to the previous point, how can we avoid the recurrence of this behavior? There is now a growing literature that analyzes explicitly the effects of fiscal policy rules or, more generally, the effects of constraining the behavior of governments. Naturally, the debate has become quite heated because the potential benefits of constraints and rules need to be weighed against the costs associated with the lack of flexibility. While this debate is not new to macroeconomic analysis as it has been central in the rules-versus-discretion debate on monetary policy, the implications of constraints are much less explored theoretically and empirically in the case of fiscal policy.

There is indeed a clear opposition to restrictions or limits on fiscal policy based on the argument that fiscal policy is a powerful tool to control business cycles and that tying government's hands leads to an increase in the amplitude of business cycles. This argument frequently appears in the public debate as summarized by the following quotes:

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<sup>1</sup> See for example, a recent speech by Anne Krueger on reforms in developing countries ("Meant Well, Tried Little, Failed Much: Policy Reforms in Emerging Market Economies", New York, March 23, 2004). Her discussion on the recent crises of Argentina and Turkey highlight the role of fiscal policy in their recent crises. Also, the World Development Report 2000/2001 (World Bank) provides evidence that fiscal policy is a significant driver of business cycles for Latin America.

*“These so-called built-in stabilizers limit declines of after-tax income and purchasing power. To keep the budget balanced every year would aggravate recessions”* -- Petition signed in the U.S. by 1,100 economists in opposition to a balanced budget rule, February 1997.

*“The Balanced Budget Amendment could turn slowdowns into recessions, and recessions into more severe recessions or even depressions”*--- Robert Rubin, White House Briefing on the Balanced Budget Amendment, Federal News Service Transcript, February 24, 1995.

This paper attempts to contribute to the above debate by presenting a broad empirical analysis of the behavior of fiscal policy in a large sample of countries. We follow the analysis of our previous work (Fatás and Mihov (2003, 2004)), and structure the paper in the following manner. After a brief review in the next section of the key arguments for restrictions on fiscal policy and a short discussion of the literature, we start in Section III with the characterization of fiscal policy. We then move, in Section IV to the analysis of how fiscal policy is affected by different institutions; to what extent different institutional and political environments lead to different policy outcomes. Section V studies the macroeconomic impact of different fiscal policies and assesses the importance and benefits of various proposals for fiscal policy reforms. In this section we address the debate on the relative costs and benefits of fiscal policy restrictions by seeking an answer to the questions: Do restrictions smooth or exacerbate the business cycle? Do they affect the elasticity of fiscal policy? In Section VI we put all of our results together and look at policy implications. We do so by reviewing and analyzing alternative proposals for fiscal policy reforms both in developed and in developing countries.

## II. Fiscal Policy Biases and the Need for Discipline

What constitutes poor fiscal policy management and what are its costs? The issue of optimal fiscal policy is obviously a complex one around which there are both microeconomics and macroeconomic arguments that are relevant. We will focus on the macroeconomic aspects of fiscal policy and in addition we will ignore issues such as the composition of taxes or spending. The center of our discussion are the macroeconomic biases of fiscal policy. By biases we mean behavior that has been documented in the literature and to which we can attach macroeconomic costs. To simplify the analysis, we group these biases into three categories.

**a. Volatile fiscal policy.** Changes in fiscal policy have an effect on macroeconomic outcomes and, as a result, bring undesirable volatility to the economy. We focus on a narrow definition of discretionary fiscal policy, which identifies changes in fiscal variables that are unrelated to economic conditions. These changes cannot be attributed to the normal functioning of automatic stabilizers, or to the usual response of fiscal policy to business cycle fluctuations. Examples of discretionary fiscal policy can be changes in taxes or spending around election times (either for reelection purposes or because of ideological changes in the government). They can also be the result of other political events that lead to a demand for different levels of government spending or taxation (e.g.

the increase in government spending around the process of German unification). Furthermore, such changes can occur because, as Stokey (2002) argues, not all governments are “as benevolent and clever as a Ramsey government”. Incompetent or greedy politicians can generate substantial volatility in fiscal policy instruments.<sup>2</sup>

The empirical evidence on discretionary fiscal policy leads to two main conclusions. First, there are significant politically-motivated changes in fiscal policy. By using data for a large sample of countries recent works by Persson (2001) and Shi and Svensson (2001) present convincing evidence in favor of an opportunistic political business cycle. Second, the macroeconomic effects associated to these changes are large. There is also a growing literature that has documented the effects of exogenous changes in fiscal policy (Blanchard and Perotti (2002), Fatás and Mihov (2001) Burnside, Eichenbaum and Fisher (1999), Mountford and Uhlig (2002), Perotti (2004) or Galí, Lopez-Salido and Valles (2002)). This literature presents a dynamic analysis of the effects of discretionary changes in fiscal policy on output, consumption or investment. The results are consistent across papers as there is strong evidence that these discretionary changes have a non-trivial effect on business cycle fluctuations. In our empirical analysis we will document these effects following a complementary approach, one that we have pursued in our previous work (Fatás and Mihov (2003)). Instead of looking at dynamic effects for a given country, we present cross-country evidence that countries, where governments use extensively discretionary fiscal policy, experience unnecessary economic volatility, which might lead to lower growth in the long run.

**b. Procyclical fiscal policy.** The second bias that can be harmful for the economy is procyclical fiscal policy. In response to economic fluctuations, fiscal policy should be countercyclical, i.e. in order to smooth out fluctuations in income budget balances should increase in booms and decrease in recessions. There is evidence, however, that in many cases fiscal policy behaves in a procyclical manner. The argument is that in good times spending increases in excess of the increase in taxes. Most Latin American economies, for example, display procyclical fiscal policy as documented in Gavin and Perotti (1997) and explained in terms of the voracity effect in Tornell and Lane (1999). The evidence for OECD and European economies is somewhat mixed. While there is some evidence of procyclical behavior, in most cases policy is either acyclical or only slightly countercyclical. Lane (2003) and Wyplosz (2002) present evidence on the cyclical properties of fiscal policy for this group of countries and recently the European Commission in their analysis of EU members budgetary plans have stressed the importance of avoiding procyclicality in fiscal policy.

What are the macroeconomic effects of procyclical fiscal policy? There is a parallel with the effects of discretionary fiscal policy. In both cases we have a fiscal stance that does not correspond to the cyclical position of the economy, either as a pure exogenous change in fiscal policy or as a cyclical change which runs opposite to what it would be appropriate given the circumstances. As such, procyclical fiscal stance amplifies economic fluctuations because it reduces the effectiveness of automatic stabilizers (as argued by Melitz (2000) or Perry (2002)).

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<sup>2</sup> In Section IV we provide a more detailed discussion of the theoretical literature on political budget cycles.

**c. Excessive deficits.** The build up of public debt in most industrial countries after the mid-1970's and the difficulty of some developing countries to contain government indebtedness, has led to a large literature on the bias towards large deficits and excessive debt. This bias is a result of the fact that governments do not internalize fully the cost of additional debt. Persson and Tabellini (2001a) summarize some of the main theoretical arguments of this literature. Most of these arguments are indeed related to the 'dynamic common-pool problem' where different groups (parties in a coalition, or spending ministers) decide on part of public spending. This decentralized process often leads to excessive spending. Another reason for a transitory accumulation of debt is the postponement of fiscal adjustment after a cyclical downturn.

What are the macroeconomic consequences of excessive deficits? There are two scenarios to be considered: the accumulation of debt leads either to default or to a large fiscal adjustment to return to a sustainable path. In both cases we expect negative effects on economic volatility and the business cycle as a consequence of the crisis or the large fiscal adjustment. Therefore, even if the notion of excessive deficits is one that refers to long-term sustainability, in many cases the build up of excessive deficits leads to scenarios that can be a source of business cycle volatility.<sup>3</sup>

In summary, our approach to the analysis of the three macroeconomic biases that we just described is to focus on a macroeconomic costs that is common to all of them: their effects on the business cycle, and in particular on economic volatility. This is obviously a partial analysis and we are aware that we are ignoring additional macroeconomic (or even microeconomic) costs.

How large are the costs of additional output volatility? Does it simply represent an increase in uncertainty or does this translate into longer-term effects on output growth rates? Although the link between volatility and growth is easily found in the policy literature (e.g. that volatility leads to lower growth, see Perry (2002)), it is a source of debate in the academic literature. From a theoretical point of view, we know that in a standard neoclassical model where agents (firms) are risk neutral, investment should increase with uncertainty (at least in prices) because of the concavity of the profit function. There are several ways of modifying the analysis so that volatility and uncertainty become detrimental for investment and long-term growth. The first is very mechanical and consists of thinking about fluctuations as being asymmetric. What if more fluctuations meant deeper recessions relative to unchanged expansions? Rodrik (1991), for example, considers the case of policy reform and the uncertainty introduced by the possibility that reform is reversed. In his model, additional uncertainty not only increases risk, but also lowers the average return to investment, because it is assumed that no reform leads to larger distortions.<sup>4</sup> Another possible source of asymmetry is the

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<sup>3</sup> For a longer and more general discussion of the welfare costs of excessive deficits see Fatás, Hughes Hallett, Siebert, Strauch and von Hagen (2003).

<sup>4</sup> Another example is the analysis of political uncertainty. Political uncertainty is usually measured by variables such as the number of revolutions and military coups or the number of political assassinations. An

accumulation process. What if the negative effects of recessions on learning by doing are stronger than the positive effects of booms? This is the spirit of the model developed by Martin and Rogers (1997). In this case, there is also a negative relationship between volatility and growth.

Several papers analyze the relationship between volatility and growth from an empirical standpoint. The first group of papers looks directly at the relationship between volatility and growth without focusing on a specific channel through which the effects take place. This group includes Ramey and Ramey (1995), Kormendi and Meguire (1985), and Martin and Rogers (2000). A second strand of the literature explores specific sources of uncertainty and how this uncertainty has affected long-term growth. For example, Alesina et al. (1996) study the effects of political instability on growth, while Judson and Orphanides (1999) analyze the effects of the volatility of inflation on growth. Most of these papers present evidence in favor of the hypothesis that volatility, uncertainty, or political instability hurts growth. Finally, Fatás (2002) provides evidence that the relationship between volatility and growth could be negative and significant for poor countries but it is negligible and not significant for high income countries.

From all these studies we conclude that, even if the theoretical link between cycles and growth is not clearly established, there is enough empirical evidence of a negative relationship between volatility and growth in a cross-section of countries. As a result, in our empirical analysis we study whether the possible effects of bad fiscal management on the business cycle has an effect on long-term growth rates. By identifying a very specific source of volatility (i.e. the volatility resulting from fiscal policy changes) we are able to isolate better the link between cycles and growth.

### III. Characterizing Fiscal Policy

The first step in our empirical analysis is to characterize fiscal policy outcomes in a way that allows us to compare them to the biases from the previous sections. We need to stress, once again, that our focus is on the effects of these biases on macroeconomic volatility and our characterization of fiscal policy will reflect this focus. If our concern was a different one, for example, if the focus was on issues related to long-term sustainability problems, then our analysis would be around measures of the budget deficit or, even better, the stock of government debt and its evolution.

A key issue in our empirical strategy is how to separate reactions of fiscal policy to the cycle (presumably implemented to smooth cyclical fluctuations) from exogenous changes in policy stance. One possibility is to remove from our analysis the reactive components like taxes and transfers and to concentrate only on the autonomous components of spending. Admittedly this is a crude way of adjustment that might throw away important information, but we will use this approach as a first pass on the key questions in our investigation. An alternative method is to construct a 'cyclically-adjusted' fiscal balance

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increase in both of these variables does not simply represent more volatility around a constant mean, but rather indicates more volatility and a lower mean.

as is the current practice at the IMF and the OECD. The adjustment is carried out by establishing a benchmark cyclical indicator (an output gap, for example) and relating the deficit to the state of the cycle relative to the benchmark.<sup>5</sup> An interesting contribution to this literature is a paper by Blanchard (1993). He also argues that an indicator of discretionary fiscal policy must be relative in nature. The procedure outlined in his paper requires selecting a pre-specified benchmark and estimating elasticities of the different components of the budget with respect to a representative set of macroeconomic variables. The response of the budget deficit to current economic conditions is then constructed by using the estimated elasticities. The difference between this value and the actual budget deficit is a measure of discretionary fiscal policy.

In this study we will use only government spending for the empirical analysis of fiscal policy. There are at least two reasons for this choice. First, most of the fluctuations on the revenue side of the budget come from automatic reaction of tax revenues to the state of the economy. In general spending reacts much less to the cycle and, as a result, some of the endogeneity problems that we discussed above are less severe. As an example, in the calculation of the structural budget balance in the Chilean fiscal rule, the cyclical elasticity of spending is assumed to be zero. Second, it seems that a finding that spending behavior is affected by the presence of fiscal rules or implicit constraints on fiscal policy is as challenging and policy relevant as the finding that the budget is affected by such rules.

In our empirical characterization of fiscal policy we use annual data for ninety-one countries over the period 1960-2000 to estimate the following equation for each country:

$$\Delta G_{i,t} = \alpha_i + \beta_i \Delta Y_{i,t} + \gamma_i \Delta G_{i,t-1} + \delta_i W_{i,t} + \varepsilon_{i,t} \quad (1)$$

where  $G$  is the logarithm of real government spending,  $Y$  is the logarithm of real GDP.<sup>6</sup>

We characterize fiscal policy outcomes by three empirical estimates: (a) the elasticity of government spending with respect to output growth  $\beta_i$ ; (b) the persistence of changes in government spending  $\gamma_i$ ; and (c) the country-specific volatility of  $\varepsilon_{i,t}$ . A more complete list of policy characteristics will also include (d) the level and (e) the composition of government spending, as well as characteristics of taxation and public debt. Since we analyze spending, the natural question is why we leave out (d) and (e). The basic reason is that these two characteristics have been researched extensively in the political economy literature, while the ones from (a) to (c) have received much less attention. The motivation for choosing this vector of policy variables is as follows: Our basic hypothesis is that fiscal policy is constrained in two ways -- by explicit rules, which are usually

<sup>5</sup> See Alesina and Perotti (1996) for a discussion and criticism of these measures.

<sup>6</sup> The choice of our sample is dictated by data availability. We started the sample with 109 countries listed in Appendix C in Jones (2002). We had to drop eighteen countries from our sample either because fiscal data were not available or because the time span was too short for a meaningful estimation of equation (1). We kept ninety-one countries for which we had at least twenty-five years of data. The list of countries and data sources are described in a Data Appendix available from the authors. We add to this regression various controls for government spending as well as deterministic components like time trends  $W$ .

quantitative in nature, and by implicit restrictions, which are coming from the nature of political institutions. These rules and restrictions can affect the elasticity of spending because they may impose explicitly (e.g. a limit on the budget deficit) or implicitly (by the nature of decision making and presence of veto points) how fiscal policy should behave over the cycle. Second, any change in fiscal policy might be more or less persistent as a function of the institutional environment; for example, countries with significant policy constraints may find it difficult to implement a policy change, but once it is implemented, the change is more or less permanent. Third, these restrictions can also have an effect on the use of discretion in fiscal policy. As a quantitative estimate of discretionary policy we use the volatility of the residual. We calculate this volatility as  $\sqrt{Var_i(\varepsilon_{i,t})}$  and we denote it as  $\sigma_i^\varepsilon$ . This variable can be interpreted as the typical size of a discretionary change in fiscal policy for country  $i$ . The interpretation of  $\varepsilon_{i,t}$  as a discretionary spending shock is not new. Similar frameworks have been employed by Blanchard and Perotti (2002) using quarterly US data, and Alesina et al. (2002) with annual OECD data. The novelty of our approach is to focus on the average *aggressiveness* of discretionary policy, which we measure by the volatility of the spending shock.

In our baseline specification of equation (1) we include the contemporaneous value of output growth and we use past values as instrumental variables to avoid possible endogeneity bias. We instrument for current output growth with two lags of GDP growth, the index of oil prices, lagged inflation, and the lagged value of government spending growth. In the baseline regressions we estimate equation (1) for each country including as additional controls a time trend, inflation and inflation squared.<sup>7</sup> As a result of the first-stage estimation we preserve three variables for each country:  $\beta_i$ ,  $\gamma_i$  and  $\sigma_i^\varepsilon$ . Table 1 presents some summary statistics related to these characteristics of fiscal policy. The results are sensible: European countries like France, Austria, and Germany have stable fiscal policy, while countries like Nicaragua, Argentina and Congo have very volatile fiscal policy. Among the group of countries with most procyclical government spending are most of the Latin American countries, which is consistent with the findings of Gavin and Perotti (1997). In the analysis below we will investigate how rules and implicit constraints affect these characteristics of national fiscal policies, and we will also investigate how these characteristics, possibly shaped by the institutional environment in the country, affect macroeconomic performance in terms of output volatility and output growth.

**[Insert Table 1 here]**

## IV. The Effects of Institutions and Restrictions on Fiscal Policy

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<sup>7</sup> We include inflation to ensure that our results are not driven by high-inflation episodes in which the comovement between real government spending and output might be due to monetary instability rather than fiscal policy. Inflation squared is included to control for possible non-linear relationship between inflation and spending. See Fatás and Mihov (2003) for further discussion of this specification.

#### *IV.A. Review of the literature*

There is a large literature that has looked into the political and institutional determinants of different fiscal policy outcomes. Most of the papers analyze the circumstances or motivations for some of the biases described in Section II. Why do we see discretionary changes in fiscal policy? Why is fiscal policy procyclical? Why do governments accumulate excessive deficits? The answers are found in the political economy literature where political choices are linked to the budgetary process, the electoral process or the political system. We summarize here some of the main arguments in relation to the first two biases. These arguments serve as motivation for the empirical analysis we will do in the coming section.

We start with the volatility of discretionary changes in government spending. The argument that there is a component in fiscal policy that does not represent reaction to macroeconomic conditions raises the question of what motivates governments to use discretionary fiscal policy. To investigate the incentives for fiscal authorities to intervene in the functioning of the economy, we go to the theoretical literature which deals with the political economy of policy making.<sup>8</sup> Most of the papers in this area have studied the question of how differences in political institutions and electoral rules can explain differences in the level of government spending, in composition of spending or in the size of the budget deficit.<sup>9</sup> There are, however, some papers that have also studied more dynamic issues on how differences in political institutions affect the response of fiscal policy to economic shocks or to the electoral calendar.<sup>10</sup>

To summarize the insights of this large literature we have to address two questions. First, we must explain why we observe changes in fiscal policy. Second, we need to understand the characteristics of the political system or the institutional environment that justify why some governments are more likely to use discretionary fiscal policy than others.

What is the origin of discretionary changes in fiscal policy? The first candidate is the electoral cycle. Because of the large number of papers on this topic, it is hard to do justice here to this literature. We refer the reader to Alesina, Roubini and Cohen (1997) and Drazen (2000) for a thorough analysis of the theoretical foundations and the empirical validity of the electoral cycle. In brief, there are two types of political budget cycles. The first --- called opportunistic --- states that in order to maximize its chances for re-election, the incumbent party runs larger than usual budget deficits in the election year. Although there are some questions about the empirical relevance of the opportunistic cycle, recent work by Persson (2001) and Shi and Svensson (2001) present convincing evidence in favor of an opportunistic political budget cycle in a large sample of countries. The presence of electoral cycles would justify the observed changes in spending and taxes around the time of elections. Furthermore, Shi and Svensson (2001) argue that a

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<sup>8</sup> The recent work of Persson (2001) summarizes some of the arguments developed in this literature to justify why political institutions matter for economic policy.

<sup>9</sup> See, for example, Roubini and Sachs (1989) Alesina and Perotti (1994) or Milesi-Ferretti, Perotti and Rostagno (2002).

<sup>10</sup> Roubini and Sachs (1989) or Alesina and Drazen (1991).

key variable that determines the size of the electoral cycle is the magnitude of the rents from remaining in power. To the extent that there is cross-country variation in the rents from political offices we should observe also variation in the volatility of discretionary fiscal policy.

Discretionary changes in fiscal policy may also arise from changes in the preferences of the political party in power, as in Alesina (1987). This argument forms the basis for the second type of political budget cycle --- the partisan cycle. Although the timing of these fiscal policy changes might be related to elections, the reason why they occur is unrelated, in general, to the business cycle.

Finally, governments may change policy for reasons not related to the electoral cycle or to inability to form a coalition for policy response to macroeconomic shocks. For example, concerns about redistribution or raising inequality may prompt a policy change. Similarly, public demands for larger provision of certain public goods like security may increase total government spending. Interestingly, in all three cases --- political budget cycles, non-adjustment to shocks, and idiosyncratic policy change --- a key explanatory variable should be the degree of political constraints, i.e. to what extent the executive branch is at liberty to change policy.

Given our description of why discretion is used in fiscal policy, now we ask the question of what institutional settings are more conducive to the use of this discretion. By answering this question we hope to provide theoretical justification for the empirical specification used in the next sections. We start with the characteristics of the political and electoral systems. The effects of the electoral system on fiscal policy are discussed in Persson (2001) and Milesi-Ferretti, Perotti and Rostagno (2002). Persson (2001) argues that majoritarian systems will have more volatile electoral cycles because the career concerns of the incumbent are more pronounced in such systems as a result of higher individual accountability. This prediction is consistent with Alesina and Perotti (1994) who argue that proportional systems lead to coalitions and fiscal deadlocks which delay stabilizations. On the other hand, majoritarian systems can create excessive volatility of policies because the party in office is not moderated by the fact that it has to deal with partners in a coalition.<sup>11</sup>

Electoral rules can also affect the likelihood and the shape of partisan business cycle. Which electoral systems are more vulnerable to changes in the dominant ideology of the executive branch? Although there is no clear-cut conclusion in the literature, it is worth emphasizing the key mechanisms affecting policy discretion. We might expect that majoritarian systems, where single party governments are more likely, will lead to more pronounced changes in ideology of the executive and therefore larger changes in fiscal

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<sup>11</sup> Milesi-Ferretti, Perotti and Rostagno (2002) predict that proportional governments will react more, using fiscal policy, to economic shocks. It is not clear how to compare this prediction to the previous ones. First, their model is not dynamic and therefore cannot fully account for changes in fiscal policy. Second, changes in fiscal policy in response to business cycles is not what we are after. We admit, however, that the effects that we are trying to capture could be similar to those caused by a government that sometimes over-reacts to business cycle fluctuations by changing fiscal policy too much.

policy. At the same time, if coalition governments --- which are typical for proportional systems --- postpone adjustment to shocks, we can expect this non-adjustment to result in a large unexplained component of fiscal policy. Therefore, according to our definition of discretionary fiscal policy proportional electoral rules will lead to larger volatility of policy.

The type of political system (presidential versus parliamentary) can also have an effect on fiscal policy. The model of Persson (2001) predicts that presidential systems have smaller governments and display smaller electoral cycles. One can hypothesize, however, that presidential systems have fewer veto points. This implies that any significant policy change will be easier to implement in a presidential democracy rather than a parliamentary one.

The second set of variables, which are not necessarily independent of the ones discussed in the previous paragraphs, are the ones that attempt to measure directly the constraints faced by governments in the process of policy implementation. Governments where power is more concentrated and who face fewer veto points will be less constrained in the implementation of fiscal policy changes. Although these constraints might be linked to electoral rules and the concentration of power in governments (single-party versus coalitions), they are much broader than that as they also consider how the institutional setting introduces veto points along the decision process. There is plenty of empirical evidence in favor of the idea that constraints matter for fiscal policy. Roubini and Sachs (1989) present evidence for OECD economies that governments where power is more concentrated create an excessive response of fiscal policy to economic shocks. Similar evidence exists for US states. Both Poterba (1992) and Alt and Lowry (1994) show that divided state governments display a less reactive fiscal policy to changing economic conditions. In our analysis we will use a measure of political constraints that captures the limits that governments face to implement their economic policies. This measure has been constructed by Henisz (2000) and summarizes in one variable the "number of independent veto points over policy outcomes and the distribution of preferences of the actors that inhabit them."

Elections also matter by keeping policy makers accountable and disciplined (as in Ferejohn (1986)). However, this positive effect of elections might be fully offset by the temptation to use pre- or post-electoral policy manipulation to obtain re-election or to change the policy direction set by the previous government. Therefore the net effect of elections on policy volatility is ambiguous.

So far, our discussion has focused on the first of the three fiscal policy biases --- volatility of fiscal policy. But budgetary procedures and political constraints also affect cyclicity of fiscal policy (the second of the biases identified before). One way to think about these effects is to consider the governments' ability or inability to respond to economic shocks in a timely manner, which will have an effect on the procyclical or countercyclical nature of fiscal policy. In some countries the nature of the budgetary institutions is such that the fiscal authority cannot adjust promptly to changes in economic conditions. This type of non-adjustment may show up as procyclical (or, at the other extreme as excessively

countercyclical) fiscal policy. Indeed, Persson (2001) and Persson and Tabellini (2001b) present evidence that the nature of the political regime and electoral rules determine the degree of reaction to macroeconomic shocks. This analysis is related to Lane (2003) who presents evidence that political constraints (measured by the same index as in Henisz (2000)) affect the cyclicity of fiscal policy; countries that face more political constraints display more procyclical fiscal policy.

Finally, regarding the third of the biases, that of excessive deficits, the theoretical literature has established a link between deficits and the degree of decentralization or to the concentration of power in the budgetary institutions. This theoretical claim is corroborated by many empirical studies. There is evidence that weak budgetary procedures and dispersion of power can lead to high deficits, as documented in Von Hagen and Harden (1995), Kontopoulos and Perotti (2002), Alesina and Perotti (1994), Poterba (1994) and Poterba and von Hagen (1999).

#### *IV.B. The Effects of Institutions and Political Constraints on Policy: Empirical Results.*

Based on the previous paragraph we focus on four political and institutional characteristics: *Political constraints* is a continuous variable from 0 to 1 with the highest value signifying extensive veto points in the decision-making process; the electoral system is captured by a dummy variable (*Majoritarian*) that takes a value of 1 for majoritarian systems, and 0 for proportional; the political system is coded with the variable *Presidential*, which takes a value of 1 for presidential systems and 0 for parliamentary; and finally the effect of elections is captured by the variable *Number of elections*. We will use these variables in an attempt to explain policy volatility, elasticity and persistence. In addition to the main variables of interest we use a set of controls which by now have become standard in cross-sectional studies. First we control for the average GDP per capita in order to capture income effects that might be correlated with institutions and affect policy volatility at the same time. Second, we use urbanization, the dependency ratio and average population to control for key social characteristics that affect fiscal policy directly. Finally, we include also openness because openness can be correlated with the institutional setup in the country and policy volatility via its effect on government size (Rodrik (1998)).

##### *1. Volatility of discretionary fiscal policy.*

To establish the link between policy volatility and the institutional environment in the country we run the following regression:

$$\text{Log}\sigma_i^\varepsilon = \alpha + \lambda P_i + \delta X_i + \eta_i \quad (2)$$

The vector  $P$  includes the institutional and political variables discussed in the previous paragraph while  $X$  are the economic and social controls. The results from estimating equation (2) by least squares are reported in Table 2.

**[Insert Table 2 here]**

The first column documents the strong and highly significant effect of political constraints on policy volatility. Interestingly the presence of political constraints alone can explain over 50% in the cross-country variation of policy volatility. The conclusion that political constraints are significant determinants of spending variability is corroborated by the regressions in columns (5) and (6) where the rest of the institutional variables and the economic controls are also included. None of the other variables are significant when we control for the economic and social characteristics of the country. At the same, column (6) shows that richer and more populous countries have less volatile fiscal policy.

### *2. What Affects Policy Persistence?*

One of the well-recognized pitfalls of discretionary fiscal policy is the possibility that certain increases in spending are hard to reverse, i.e. fiscal consolidations are politically difficult because they require cuts in spending that are not easy to implement. Fiscal restrictions might also help in this case by forcing policy makers to retrench faster an earlier spending increase.

**[Insert Table 3 here]**

The connection between policy persistence and policy institutions are determined by the following regression:

$$\gamma_i = \alpha + \lambda P_i + \delta X_i + \eta_i \quad (3)$$

The persistence parameters  $\gamma$  are based on regression (1) and they are estimated for each country. The results are reported in Table 3, which is organized in a similar way to Table 2 --- we use the same controls and the same set of variables. A country with persistent government spending will have higher  $\gamma$ . The univariate regressions in columns (1) to (4) show that there are some links between policy persistence and the institutional environment --- constraints make policy more persistent, while presidential regimes with proportional representation have less persistent spending changes. Unlike the volatility regressions, however, in the case of persistence controlling for the characteristics of the country destroys the significance of the link between institutions and persistence. Furthermore, the fit of the regression is rather poor with the highest  $R^2$  around 15%.

### *3. What Affects Policy Elasticity?*

So far, our analysis has focused on the component of fiscal policy that is orthogonal to the business cycle and on the persistence of policy changes. Discretionary fiscal policy, in our view, is a source of business cycles and restrictions on fiscal policy can help reduce its costs. On the other side of the debate are those who oppose restrictions on fiscal policy by arguing that these restrictions have a negative effect on the economy through the limits they impose on counter-cyclical fiscal policy. A standard measure of cyclicity of fiscal policy is the elasticity of government spending with respect to output

growth as it is estimated in equation (1). We now take on this claim and look at whether these elasticities are affected by the same institutions that we have found have an effect on discretionary fiscal policy.<sup>12</sup>

The connection between policy elasticity and budget rules are determined by the following regression:

$$\beta_i = \alpha + \lambda P_i + \delta X_i + \eta_i \quad (4)$$

The elasticities are based on regression (1) and they are estimated for each country.

**[Insert Table 4 here]**

Table 4 reports the results and it is organized in a similar way to Tables 2 and 3 --- we use again the same controls and the same set of institutions. To facilitate the interpretation of the results in Table 4, we emphasize that higher a  $\beta$  corresponds to more *pro-cyclical* fiscal policy. It is clear from the table that none of the institutional variables that we consider can help in explaining the cross-country variation in elasticities. In other words, the presence of constraints, that reduces the use of discretionary fiscal policy does not have a significant effect on the cyclical properties of spending. This empirical fact contradicts the claim by those who oppose constraints on fiscal policy because their main argument is based on the assumption that these restrictions will exacerbate business cycle volatility by reducing policy elasticity.

## V. The Macroeconomic Consequences of Different Fiscal Policy Institutions

After establishing the link between institutions and policy characteristics in the previous section, we now ask the question: How do these policy characteristics --- volatility, persistence, and elasticity --- affect business cycle fluctuations and economic growth? The main goal of this section is to establish how macroeconomic stability (measured as the standard deviation of output growth,  $\sigma_i^y$ ) is affected by policy. To document the link between economic stability and the three characteristics of fiscal policy we run the following regression.

$$\text{Log} \sigma_i^y = \alpha + \lambda_v \text{Log}(\sigma_i^e) + \lambda_e \beta_i + \lambda_p \gamma_i + \delta X_i + \eta_i \quad (5)$$

In addition to the three variables of interest (volatility, persistence and elasticity), we include also as controls government size, openness, and average GDP per capita. One problem with this regression is the possibility that there is reverse causation running from output volatility to fiscal policy. To deal with this problem we will estimate equation (5)

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<sup>12</sup> A similar analysis has been done by Lane (2003) in a smaller sample (OECD countries). Cyclicalities of government spending varies greatly across countries and it is shown that political constraints tend to make fiscal policy more *procyclical* for certain components of spending.

by instrumental variables. The list of instruments includes the four institutional characteristics (political constraints, presidential, majoritarian, and number of elections), and also variables capturing social characteristics of each country (population, dependency ratio, urbanization).

**[Insert Table 5 here]**

Columns (1) to (3) present univariate OLS regressions in order to describe the correlation between output volatility and our three policy characteristics. There is clear positive correlation between volatility of discretionary fiscal policy and output volatility. This correlation survives in various iterations of the specification and in different estimation methods. Columns (4) and (7) present IV estimates, which deal with potential reverse causation from output to policy volatility. In all cases the link between policy and output volatility is highly significant.

Persistence of fiscal policy is also significantly linked to output volatility in the univariate regression, but once GDP per capita is included as a control, the significance disappears. There is very high correlation between income per capita and persistence of fiscal policy in the data. One possible explanation is that policy reversals in poor countries are much more common than in rich ones. In any case, this fact merits further investigation, which is beyond the scope of the current paper. The elasticity of fiscal policy is not related in any way to output volatility. Again this finding questions the received wisdom that fiscal policy restrictions and in particular political constraints will have a significant negative impact on the volatility of business cycles.

The main conclusion from Table 5 is that aggressive use of discretionary fiscal policy creates macroeconomic volatility. From Section IV we know that the aggressiveness of fiscal policy can be mitigated by institutional arrangements that create constraints on the policy-makers. The next question to ask is how detrimental is this macroeconomic volatility for long-term economic growth. Previous studies have found at best mixed results between output volatility and growth. Our conjecture is that the reason for the mixed finding is that there is a two way causation between output volatility and growth. Higher economic growth often is related to more volatility because high growth comes from adoption of risky technologies and implementation of risky investment projects. On the other hand, however, macroeconomic volatility can be potentially damaging for investment and growth because it increases uncertainty. In Table 6 we start with the link between output volatility and growth.

**[Insert Table 6 here]**

There is slightly insignificant link between output volatility and growth, as it is indicated by the first column. This negative correlation is driven by a couple of outliers and an estimation performed using quantile regressions does not find any significant correlation. Once we control, however, for standard determinants of growth, a clear negative correlation between output volatility and growth appears, as column (2) indicates. The possibility for reverse causation from growth to volatility prompts us to use IV estimation

in columns (3) and (4). Initially we omit the investment ratio from the regression, and we find a statistically significant negative link between volatility and growth. Consistent with our argument that OLS is biased because of reverse causation, we find now a four-fold increase in the absolute value of the coefficient on output volatility.

Why does volatility affect growth? As we mentioned before our conjecture is that it works predominantly through investment. To check this hypothesis in column (4) we include the investment ratio as a regressor. There is a sharp fall in the value of the coefficient in absolute value from -3.50 to -2.27. This implies that indeed part of the predictive power of output volatility is through investment. It is interesting to note however, that output volatility is still highly significant in statistical and economic sense. This implies that there are also other channels through which volatility affects growth, or that the link between investment, volatility and growth is non-linear.

**[Figure 1 about here]**

To investigate closer the relationship between investment and output volatility we graph the raw data on Figure 1. As with growth, the link between investment and volatility can be both positive and negative. And indeed Figure 1 documents that there is no clear pattern. The univariate regression of investment on volatility produces an  $R^2$  of 0.006, and the coefficient is highly insignificant. Next, we want to look only at the volatility of output generated by policy volatility. To this end, we regress first output volatility on policy volatility and we construct the predicted value of output volatility. Then on Figure 2 we plot this predicted value of output volatility against investment (in other words we report in graphical form the IV regression of investment on output volatility using policy volatility as an instrument). The resulting plot is quite convincing -- countries with higher policy-generated volatility have lower investment rates. Our interpretation of this finding is that aggressive discretionary policy leads to more volatility of output, which in turn lowers investment rates and leads ultimately to slower economic growth.

**[Figure 2 about here]**

## VI. Policy Implications: How to Restrict Fiscal Policy

The empirical results that we have presented in Sections IV and V can be summarized as follows:

- a. There is evidence of a significant exogenous (or discretionary) component in fiscal policy and, confirming previous results in the literature, there is also evidence that fiscal policy is procyclical (or only slightly countercyclical) for a good number of countries in our sample.
- b. Poor fiscal management (a combination of excessive use of discretionary fiscal policy and procyclical fiscal policy) adds to the volatility of the business cycle and hurts long-term growth. In other words, the macroeconomic costs are large.

c. The behavior of fiscal policy depends on the institutional settings under which policy is implemented. We find that constraints on policy makers lead to less use of discretionary fiscal policy and, therefore, to lower volatility of output and higher growth.

From a policy point of view, these results support the idea that restricting fiscal policy can improve macroeconomic performance. While the empirical support might be strong, the recent experience of EMU countries or the failure of the fiscal responsibility laws in Peru and Argentina illustrate the difficulties in establishing constraints that are effective and credible. Why are constraints so difficult to implement? Is there a way to design fiscal policy restrictions in a way that they survive economic and political tensions? What have we learned from the EMU experience? In this section we address all these issues as we translate our empirical results into a framework for implementation of restrictions on fiscal policy. Although we will use the recent European experience as an illustration of some of the arguments, we believe that our conclusions are broader and do not apply exclusively to developed economies.

#### *What do we mean by restrictions?*

The discussion of restrictions requires that we first clarify the broad categories in which constraints can be grouped. In our view, there are three categories: (1) explicit budgetary rules like the balanced budget requirements or spending limits in several U.S. states, EMU countries or developing countries such as Chile; (2) the structure of political and electoral institutions that establishes checks and balances across policy-makers and (3) the ideological alignment across policy-making institutions, which can be determined by voters via split-ticket voting.

In our data set, and because of the presence of few explicit limits on fiscal policy, we have characterized constraints as implicit constraints embedded in the political process ((2) and (3) above). Some of the most recent debates about fiscal policy constraints are about explicit (and not implicit) constraints. In parallel work (Fatás and Mihov (2004)) we have also looked at explicit rules in the context of the U.S. States. The variation of strict rules among U.S. states makes them an ideal sample to test whether explicit restrictions on fiscal policy increase or reduce the amplitude of the business cycle. Our results confirm the hypothesis that restrictions (whether implicit or explicit) induce less volatility in fiscal policy and improve macroeconomic performance. We will come back to the issue of explicit versus implicit constraints at the end of this section.

#### *Two lessons from the recent EMU experience*

There are two key lessons from the EMU experience that highlight the difficulties in implementing certain type of fiscal policy restrictions: the need to establish transparent goals and how to keep a balance between discipline and the necessary flexibility to deal with automatic stabilizers.

(a) The need to establish transparent goals. What are the goals in setting up constraints for fiscal policy? Following our previous analysis, we can think of fiscal rules that

address some or all of the biases that we have identified. Is the main goal to ensure sustainability? Or is it to avoid procyclicality and additional volatility? It is fair to say that most of the recent cases in which we have seen an adoption of a fiscal rule, this adoption tends to originate in the need for ensuring credibility from a longer-term perspective and to limit the possibility of default or, at least, the necessity of large fiscal adjustments in response to exploding debt. For example, the Maastricht Treaty and the Stability and Growth Pact, which set strict numerical limits on budget deficits and debt for countries members of EMU, justifies these limits with the notion that to safeguard the value and the credibility of the single currency and the European Central Bank there is a need to protect monetary policy from pressures coming from unsustainable debt paths. The notion of procyclicality or even excess volatility of fiscal policy seems absent from both the Treaty and the Pact.

The importance of defining the goal and making this goal transparent can be illustrated by following the evolution of the EMU constraints. The failure of the deficit and debt rules in European countries has led to a debate with two very different interpretations on what went wrong and, as a consequence, with two set of proposals for reform. Those who stress that the original goal of these restrictions was to ensure sustainability and those who want to extend the goals to a broader concept of good fiscal management. Those who focus on sustainability would like to focus on limits that refer to the debt burden rather than to the annual deficit. Debt rules would allow stronger fiscal expansions when sustainability is not threatened. Pisani-Ferry (2002), for example, suggests that the deficit criterion might be loosened for countries with low debt ratios. This proposal implies making the current rules looser under the assumption that the current restrictions are too rigid given their goals.

There is a different reading of the experience of the last years that starts by highlighting the difficulties of establishing transparent medium-term goals in an effective manner. While the notion of overseeing debt-to-GDP ratios is sound from a theoretical point of view, countries may avoid making the necessary efforts during good times and will be under enormous political pressure during bad times to sacrifice long-term sustainability in favor of short-term stability. This is one lesson from these years: limits were unable to guarantee good fiscal policy in good times, which left countries with little room to absorb the effects of a recessionary environment during the years 2001 to 2003. In other words, fiscal policy was procyclical (or not countercyclical enough) in the boom years of 1999 and 2000. The European Commission, aware of this problem, tried to move the system towards a stricter vigilance of budgetary plans through the implementation of yearly discussions around the Broad Economic Policy Guidelines where the issue of avoiding procyclical fiscal policy was clearly present. Also, there was a strong emphasis on the notion that countries should move towards balanced budgets (or even a surplus) on a yearly basis, a system that resembles the fiscal rule adopted by Chile but without an explicit definition of close to balance or in surplus budgets. What we see in the evolution of the fiscal framework in EMU is a move away from a simple rule to a more judgemental and short-term analysis of fiscal positions motivated by the (implicit) inclusion of additional goals.

The lessons are clear: there is a need to establish a transparent and explicit set of goals. If the goal is narrow, such as enforce long-term sustainability, limits on debt or deficits might be appropriate from a theoretical point of view but its implementation will be difficult because of the inherent difficulty in monitoring on a short-term basis a commitment that is only relevant in the long run. If monitoring is only in place when debt levels are considered to be too high, the necessary adjustment might be too difficult to be accepted politically. The alternative, stricter monitoring in the sense that budgetary plans are also subject to criticisms and punishments even when debt levels are not high, is not viable unless the goal is broadened and includes other biases such as procyclical policy. But as the goal is broadened, numerical rules become too simple as they are unable to take care of circumstances that cannot be foreseen when the rule is established. This is our next point.

(b) The tradeoff between flexibility and discipline. Even if the benefits of discipline are accepted, the lack of flexibility implied by strict fiscal rules cannot be ignored. It is fair to say that most of the opponents of the adoption of fiscal rules base their arguments in the assumption that restricting fiscal policy increases output volatility.<sup>13</sup> Our empirical results above do not lend support to this view. Even if there is evidence that in some cases the adoption of strict balanced budget rules can bias fiscal policy towards being more procyclical (this is the case of U.S. States as documented in Fatás and Mihov (2004)), this cost is outweighed by the decrease in the volatility of discretionary fiscal policy and, as a result, business cycles are smoothed in the presence of constraints (and not exacerbated as the opponents of these rules would argue). But even if this is the case, there is still room to debate on what type of rules or restrictions provide discipline at a minimum cost or, in other words, which rules control discretion without having a significant impact in the functioning of automatic stabilizers.

There are several issues that are central to this debate. The first and probably most important one is to define targets for budgets which are cyclically adjusted. Although this might be an obvious point, as a counterexample, it was not considered in the original Maastricht Treaty as limits to budget deficits were set without taking into account the cyclical position of the economies. Over time, and given the increasing sense of failure of the system, the European Commission introduced flexibility in the way these balances were computed and moved towards a systematic application of the concept of structural balances in EMU. This is the approach of the Chilean system that targets a one per cent structural surplus (as a ratio to GDP) and therefore allows for balances to fluctuate during the cycle. While this is a fundamental issue, it is very much of a technical nature: how to measure the fiscal stance. We refer to some of the references discussed in Section III for a detailed discussion of this issue.

There is a second related issue: what to include in the calculations of the budget. Should all expenditures and revenues be included? One possible approach is to exclude from the budget investment expenditures with the logic that their benefits spread over several generations and that they are needed to build the productive capacity of coming years.

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<sup>13</sup> See Levinson (1998) for the case of U.S. States or many of the recent criticisms of the Stability and Growth Pact in EMU.

This is the approach called the golden rule, which is embedded, e.g., in the German constitution and in the current fiscal framework followed by the UK government. A variant of this has recently proposed by Blanchard and Giavazzi (2002) to replace the Stability and Growth Pact.<sup>14</sup>

If we now summarize the experience of EMU countries regarding the the two issues described above, we see that the original approach was one of having a simple rule where judgement was absent in order to provide a transparent and credible fiscal framework. This fiscal framework was intended to ensure debt sustainability of EMU members. The experience shows that is an unavoidable tension between strict rules and flexibility. It becomes difficult to design rules that are simple and transparent but at the same time allow enough flexibility to let automatic stabilizers do their job. Controlling for the business cycle, deciding what gets included in the calculations of the budget, taking into account exceptional circumstances can only be done properly with a rule that is complex enough to take into account any foreseeable future event. Given that this is unlikely to be the case, the rule will be under pressure to be rewritten too frequently. For example, the original rules of the Stability and Growth Pact in EMU were simple but they faced a difficult test when these economies suffered low growth rates combined with a desire to lower tax rates and start public sector reforms. The increasing number of qualifications added to the 3 percent and 60 percent limits and the way exceptional cases are allowed contradict the very idea of a simple fiscal rule and allow for political bargaining. Ultimately the system becomes more flexible but at the cost of not restricting fiscal policy at all.

#### *Explicit versus implicit constraints*

There is an alternative to fixed rules (explicit constraints): to allow flexibility within an institutional environment that can also provide the desired discipline. Will this be enough? Can discipline be achieved without strict rules? Our empirical results suggests that this is possible. We need to stress, once again, that in our data set we were looking at implicit institutional and political constraints and that these types of constraints are indeed effective to restrict fiscal policy and improve macroeconomic performance. We have plenty of additional evidence that institutions matter for fiscal policy. We have described some of these studies before. Political and electoral systems, budgeting procedures, and political constraints faced by governments have been shown to have significant effects on different dimensions of fiscal policy. The empirical studies by von Hagen (1992), von Hagen and Harden (1995), Alesina and Perotti (1996) von Hagen et al. (2002), and Fatás and Mihov (2003), show that the design of budget processes (e.g. relative power assigned to the Finance minister and the importance given to budgetary targets), different degrees of political constraints (e.g. number of veto points in the budgetary decisions) have a significant impact on fiscal outcomes such as the budget deficit, the success of fiscal consolidations, and the volatility of discretionary changes in the budget. So thinking about institutions is natural when it comes to fiscal policy. And,

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<sup>14</sup> An alternative approach would be the Permanent Balance Rule proposed by Buiter and Grafe (2002), which emphasizes differences across countries in terms of initial conditions and tries to move away from the arbitrariness of any numerical target.

as such, we are seeing an increasing number of proposals that take this idea seriously and even a small number of countries that start applying it. For example, Von Hagen and Harden (1995), Eichengreen, Hausman and von Hagen (1999) or, more recently, Wyplosz (2002) or Fatás, Hughes Hallett, Siebert, Strauch, von Hagen (2003), all propose the creation of independent committees or boards that ensure that fiscal policy is consistent with the goals set by the political power.<sup>15</sup>

Does an institutional solution to the credibility problem of fiscal policy sound unrealistic? The experience of monetary policy in the past decades shows that this is not the case. The analysis of monetary policy in the 1970s and 1980s showed that discretion in monetary policy leads to an inflation bias and to unnecessary volatility. The outcome of this analysis was not a rigid rule (such as a constant money growth target), the outcome was an institutional reform that delegates monetary policy to an independent central bank that has no reason to produce any bias in the conduct of monetary policy. The experience of the last 20 years, in many countries, developed or developing, shows that such an institutional arrangement can deliver discipline without eliminating flexibility.

Is an institutional solution implementable? Once again, we refer to our empirical results where institutional and political constraints were effective in providing the necessary fiscal policy discipline. But, of course, this was not done by design so the question on whether a properly designed institutional framework to ensure fiscal policy discipline could be implemented remains valid. However, there are many examples of institutional settings that resemble our proposal. At the supranational level, we can think of the IMF or the European Commission playing a strong monitoring role when it comes to national fiscal policy of the countries they oversee. While their actions might not be as effective as one would like, their monitoring is likely having an effect on fiscal policy outcomes.<sup>16</sup>

At the national level, there are also examples of committees or boards that oversee and monitor budgetary plans. There are such committees or councils in Belgium, Austria or Sweden. In other cases, the institutional arrangement comes from budgetary processes in which the finance minister has the power to set a ceiling for the annual deficit at the outset of the process (see von Hagen et al., 2001).

These are just examples that illustrate how institutions designed to enforce fiscal discipline are feasible and politically viable. These examples are probably not the final answer to all the issues discussed in this paper but they are experiments from where lessons will be learned. These lessons will help us understand better the relationship between institutions and fiscal discipline and move forward in our challenge to design an institutional framework for fiscal policy that can provide the necessary discipline while

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<sup>15</sup> Just as a clarification, from a procedural point of view, and unlike in the case of monetary policy, these independent committees do not have an instrument (such as the interest rate) to achieve a certain goal (such as an inflation target in the case of monetary policy). Instead, they use judgment to assess whether the budgetary goals of the governments are consistent with a pre-defined set of goals (i.e. a mandate) and has an enforcement mechanism to make sure that the actions of the government correspond to these goals.

<sup>16</sup> For example, in the case of Europe, even if several countries have breached the 3% deficit limits, it is likely that in the absence of the yearly discussions on their budgetary plans with the European Commission, their deficits would be even higher than they are now.

keeping enough flexibility. Flexibility that is needed to minimize the economic costs of restrictions and, more importantly, to make the system politically and economically viable.

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Table 1. Summary statistics for volatility, elasticity and persistence

	Mean	Std. dev	Minimum	Maximum
Volatility (log)	2.062	0.742	0.476	3.533
Countries with low volatility	France, Austria, Sweden, Japan, Switzerland, Netherlands, Belgium, Germany, US, UK			
Countries with high volatility	Nicaragua, Burundi, Mali, Nigeria, Zambia, Gabon, Congo, Malawi, Bangladesh, Argentina			
	Mean	Std. dev	Minimum	Maximum
Elasticity	0.409	1.363	-4.646	3.444
Countries with most counter-cyclical elasticity	Malawi, Mali, Korea, Madagascar, Burundi, Bangladesh, Dominican Rep., Nicaragua, Sri Lanka, Canada			
Countries with most pro-cyclical elasticity	Bolivia, Paraguay, Brazil, Uruguay Haiti, Trinidad and Tobago, South Africa, Colombia, Venezuela, Jamaica			
	Mean	Std. dev	Minimum	Maximum
Persistence	0.025	0.253	-0.601	0.969
Countries with low persistence	Zimbabwe, Bolivia, Madagascar, Haiti, Egypt, Sri Lanka, Uruguay, Indonesia, Mali, Zambia			
Countries with high persistence	Mauritius, Finland, Benin, Japan, Netherlands, Philippines, US, Ireland, Korea, South Africa			

Table 2. What Determines Volatility of Fiscal Policy?

$$\text{Log}\sigma_i^\varepsilon = \alpha + \lambda P_i + \delta X_i + \eta_i$$

Dependent variable: Volatility of Government Spending ( $\sigma^\varepsilon$ )

	(1)	(2)	(3)	(4)	(5)	(6)
Political constraints	-1.869 (0.000)	-	-	-	-1.377 (0.000)	-0.727 (0.039)
Majoritarian	-	-0.116 (0.569)	-	-	-0.004 (0.969)	0.056 (0.562)
Presidential	-	-	0.942 (0.000)	-	0.415 (0.030)	0.107 (0.527)
Number of elections	-	-	-	-1.065 (0.135)	-1.219 (0.049)	-0.317 (0.533)
Population	-	-	-	-	-	-0.138 (0.008)
Urbanization	-	-	-	-	-	0.007 (0.046)
Dependency ratio	-	-	-	-	-	0.398 (0.544)
Openness	-	-	-	-	-	-0.202 (0.230)
GDP per capita	-	-	-	-	-	-0.365 (0.001)
Adjusted $R^2$	0.538	-0.006	0.349	0.012	0.55	0.651
Number of observations	90	88	90	90	88	88

The p-values in the parentheses are based on heteroscedasticity-robust standard errors. All regressions include an intercept.

Table 3. What Determines the Persistence of Government Spending?

$$\gamma_i = \alpha + \lambda P_i + \delta X_i + \eta_i$$

Dependent variable: Persistence of Government Spending ( $\gamma$ )

	(1)	(2)	(3)	(4)	(5)	(6)
Political constraints	0.335 (0.000)	-	-	-	0.333 (0.002)	0.172 (0.229)
Majoritarian	-	0.119 (0.053)	-	-	0.106 (0.085)	0.097 (0.104)
Presidential	-	-	-0.141 (0.006)	-	0.008 (0.911)	0.085 (0.409)
Number of elections	-	-	-	0.167 (0.484)	0.164 (0.435)	-0.06 (0.836)
Population	-	-	-	-	-	0.015 (0.535)
Urbanization	-	-	-	-	-	-0.002 (0.244)
Dependency ratio	-	-	-	-	-	0.123 (0.739)
Openness	-	-	-	-	-	0.035 (0.628)
GDP per capita	-	-	-	-	-	0.129 (0.060)
Adjusted $R^2$	0.14	0.037	0.058	-0.006	0.153	0.156
Number of observations	90	88	90	90	88	88

The p-values in the parentheses are based on heteroscedasticity-robust standard errors. All regressions include an intercept.

Table 4. Do Institutions Affect Policy Responsiveness?

$$\beta_i = \alpha + \lambda P_i + \delta X_i + \eta_i$$

Dependent variable: Elasticity of Government Spending ( $\beta$ )

	(1)	(2)	(3)	(4)	(5)	(6)
Political constraints	0.007 (0.987)	-	-	-	0.096 (0.896)	-1.398 (0.114)
Majoritarian	-	-0.328 (0.286)	-	-	-0.342 (0.267)	-0.307 (0.283)
Presidential	-	-	0.018 (0.947)	-	0.02 (0.968)	0.015 (0.976)
Number of elections	-	-	-	-0.157 (0.891)	-0.371 (0.790)	-2.738 (0.095)
Population	-	-	-	-	-	-0.06 (0.608)
Urbanization	-	-	-	-	-	0.02 (0.054)
Dependency ratio	-	-	-	-	-	5.457 (0.004)
Openness	-	-	-	-	-	-0.319 (0.335)
GDP per capita	-	-	-	-	-	0.905 (0.017)
Adjusted $R^2$	-0.011	0.001	-0.011	-0.011	-0.034	0.113
Number of observations	90	88	90	90	88	88

The p-values in the parentheses are based on heteroscedasticity-robust standard errors. All regressions include an intercept.

Table 5. Output volatility and fiscal policy characteristics

$$\text{Log}\sigma_i^y = \alpha + \lambda_v \text{Log}(\sigma_i^\varepsilon) + \lambda_e \beta_i + \lambda_p \gamma_i + \delta X_i + \eta_i$$

	OLS			IV			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Volatility of Fiscal Policy ( $\sigma^\varepsilon$ )	0.477 (0.000)	-	-	0.798 (0.000)	-	-	0.749 (0.010)
Persistence of Fiscal Policy ( $\gamma$ )	-	-0.608 (0.000)	-	-	-1.694 (0.141)	-	-0.26 (0.718)
Elasticity of Fiscal Policy ( $\beta$ )	-	-	0.008 (0.823)	-	-	0.217 (0.039)	0.002 (0.985)
Government Size	-	-	-	0.176 (0.697)	-0.953 (0.190)	-0.388 (0.503)	0.09 (0.842)
GDP per Capita	-	-	-	0.123 (0.226)	-0.013 (0.931)	-0.265 (0.001)	0.13 (0.457)
Trade	-	-	-	0.098 (0.552)	0.425 (0.039)	0.271 (0.108)	0.122 (0.431)
Adjusted $R^2$	0.482	0.082	-0.011	-	-	-	-
Test of OID (p-value)	-	-	-	(0.387)	(0.281)	(0.122)	(0.164)
Number of countries	91	91	91	88	88	88	88

The p-values in the parentheses are based on heteroscedasticity-robust standard errors. In the IV estimation the OID test reports p-value from a test that the instruments are uncorrelated with the residuals. All regressions include an intercept.

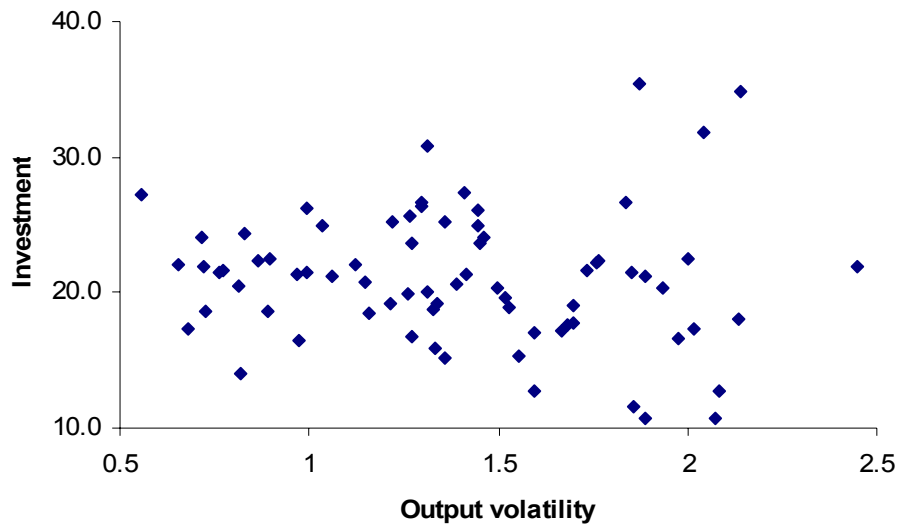
Table 6: Growth and Fiscal Policy

$$\Delta y_i = \alpha + \lambda \text{Log}(\sigma_i^y) + \beta X_i + \mu_i$$

	OLS		IV	
	(1)	(2)	(3)	(4)
Volatility ( $\sigma^y$ )	-0.984 (0.051)	-0.875 (0.025)	-3.504 (0.006)	-2.267 (0.001)
GDP per Capita	-	-0.685 (0.047)	-0.989 (0.018)	-0.847 (0.014)
Government size	-	0.022 (0.971)	0.153 (0.894)	0.048 (0.945)
Primary Education	-	0.016 (0.051)	0.013 (0.382)	0.008 (0.434)
Secondary Education	-	0.024 (0.125)	0.015 (0.556)	0.011 (0.516)
Trade	-	-0.145 (0.686)	0.852 (0.366)	0.039 (0.934)
Investment ratio	-	0.226 (0.000)	-	0.233 (0.000)
Adjusted $R^2$	0.054	0.544	-	-
Number of observations	74	74	74	74

The p-values in the parentheses are based on heteroscedasticity-robust standard errors. All regressions include an intercept.

**Figure 1. Volatility and Investment**



**Figure 2. Policy-Induced Volatility and Investment**

