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THE CASE FOR RESTRICTING FISCAL POLICY DISCRETION

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ABSTRACT

The Case for Restricting Fiscal Policy Discretion*

This Paper studies how discretionary fiscal policy affects output volatility and the rate of economic growth. Using data on 51 countries we isolate five empirical regularities: (1) Governments that often use fiscal policy make their economies volatile; (2) The use of fiscal policy is explained to a large extent by the presence of political constraints and other political and institutional variables; (3) The volatility of output induced by discretionary fiscal policy lowers economic growth by 0.6 percentage points for every percentage point increase in volatility; (4) There is evidence that the increase in volatility is in part due to electoral cycles; nevertheless, we do find that political constraints restrain fiscal policy beyond their impact on the traditional election-year volatility; (5) Rules-based fiscal policy identified by the degree of automatic stabilizers in the economy helps to stabilize business cycles. The evidence in the Paper argues in favour of imposing institutional restrictions on governments as a way of reducing output volatility and increasing the rate of economic growth.

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1 Introduction

Restricting the scope of discretion that policy makers can exercise comes periodically to the forefront of public debates. With respect to monetary policy the debate has led to the almost universally accepted proposition that monetary policy should be taken away from the government and given to an independent central bank. In the case of fiscal policy, the debate has gained momentum only recently and has not resulted yet in an agreement on mechanisms or institutional changes designed to improve policy outcomes. The proposed measures range from an extreme version of balanced budget constitutional amendments — as in the US — to the less restrictive limits on the budget deficit in EMU, or to discussions on how to build institutions that constrain discretion by the virtue of the political process. This paper focuses only on the last of these propositions. Namely, we study the political and institutional determinants of fiscal policy and their influence on macroeconomic performance.

A key argument for tying governments' hands by imposing various restrictions on fiscal policy is based on the assumptions that discretion in fiscal policy can harm macroeconomic stability.[1] There is, however, some tension in this argument: While its potential of being destabilizing is obvious, it is also clear that fiscal policy can smooth out business cycle fluctuations by expansionary public spending or tax cuts in recessions or contractionary policy in expansions. Hence, policy makers should be left rather unrestricted. One of the main results in this paper is that imposing fiscal prudence by instituting political constraints on governments does indeed work. Figure 1 provides the preliminary evidence. There is clear and statistically significant negative correlation between the degree to which decision-makers are constrained and output volatility. In this plot the measure of political constraints comes from Henisz (2000) and it summarizes the number of veto points in the political process and the time-average of the ideological alignment among various government branches.

[Insert Figure 1 here]

To make the case for restrictions on fiscal policy we address several questions from an empirical perspective:

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[1] Of course, restrictions on fiscal policy can also be justified on the basis of inducing fiscal responsibility on governments that, if left unrestricted, would accumulate excessive debt.

(1) Does discretionary fiscal policy affect macroeconomic performance?

(2) Does government size stabilize output even when discretionary policy is destabilizing?

(3) What are the political and institutional determinants of discretionary fiscal policy?

With regard to the first question, recent work has provided strong evidence that fiscal policy can have significant effects on the economy. Using time series data for the US, Blanchard and Perotti (1999), Burnside, Eichenbaum and Fisher (1999) and Fatás and Mihov (2000) all document that shocks to fiscal policy induce changes in output, consumption, investment or employment. Despite disagreement on the identification of fiscal policy shocks, these papers summarize the consensus in the literature that output responds strongly to government spending shocks. In this paper we also study the macroeconomic effects of fiscal policy but we conduct our study using a different empirical approach. First, we analyze the economic performance in fifty-one countries and by extending the sample beyond one country we utilize both time series and cross-sectional information. The cross-sectional dimension in our data allows us to address in a different framework issues of endogeneity of policy responses. Succinctly, we use the cross-country variation in political and institutional characteristics to instrument for fiscal policy changes. A study based purely on time series data cannot use this information because country's political and institutional characteristics do not change very frequently. Second, the studies of the dynamic effects of fiscal policy analyze how various macroeconomic quantities and prices react to changes in policy stance. In this paper we concentrate only on business cycle volatility. In other words, our first question can be rephrased as: Is discretionary fiscal policy a source of business cycle volatility? Indeed, we find that there is a statistically significant positive relationship between the magnitude of output fluctuations and the use of discretionary fiscal policy. To our knowledge this result is new to the literature.

We use the term discretionary fiscal policy to refer to changes in fiscal policy that do not represent reaction to economic conditions. In theory, it is useful to think about fiscal policy as consisting of three components: (a) automatic stabilizers, (b) discretionary fiscal policy that reacts to the state of the economy, and (c) discretionary policy that is implemented for reasons other than current macroeconomic conditions. The main focus of this paper is on discretionary fiscal

policy understood as only the last component of fiscal policy (i.e. changes in fiscal policy unrelated to macroeconomic conditions). We also provide evidence of the effects of automatic stabilizers, following the work of Galí (1994) and Fatás and Mihov (2001) who study the effect of government size on macroeconomic stability. When addressing this question we confirm the finding of this literature that countries with larger governments have less volatile business cycles. The novelty in this paper is that the result is shown to hold for a large sample of countries (fifty-one), while previous studies were using only OECD data. In addition, we show that the stabilizing effect of government size is present even when we control for the volatility of fiscal policy.

There is yet another strand of literature related to this paper. Several studies have looked at the effects of political instability on macroeconomic performance.[2] However, the focus of these papers is exclusively on growth and they only look at general indicators of political instability without studying the channels through which these effects might take place. Our focus is on the overall volatility of fiscal policy, some of which might of course be caused by political instability.

The finding that macroeconomic volatility is linked to discretionary fiscal policy begs the second question: Why do governments use this type of fiscal policy? If our measure of the economic policy volatility is indeed correct, i.e. it is not driven by fundamental macroeconomic shocks, then why do we observe cross-country dispersion in economic policy volatility? These questions are related to the growing literature on the role of political institutions in shaping economic policy.[3] By now it is widely accepted that if left unchecked politicians may abuse discretionary policy either for purposes of personal reelection or because of ideological beliefs that do not necessarily reflect adequately social preferences. Based on the results in the paper we argue that by putting in place institutions that restrict discretion nations can accelerate the rate of economic growth and reduce macroeconomic instability.

Our methodology is close in spirit to the literature on central bank independence. The well-known inflationary bias in monetary policy can be reduced or removed under certain institutional arrangements. Indeed, in the last fifteen years we have seen a clear trend towards tying governments' hands when it comes to monetary policy. This move was prompted by the theoretical and empirical

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[2] See Alesina, Ozler, Roubini and Swagel (1996) or Barro (1991, 1996).

[3] See for a review Drazen (2000) or Persson (2001).

evidence that governments would use monetary policy for political purposes. In the case of fiscal policy there is clear evidence that it exerts a significant effect on economic activity, but it is not clear whether these effects are welfare-improving from a social perspective. When politicians, for example, engage too often in expansionary fiscal policy before elections, the economy undergoes a period of undesirable increase in output volatility. As in the case of monetary policy, restricting policy by rules can be welfare-improving.

The main results of the paper can be summarized as follows: (1) Discretionary fiscal policy exerts strong destabilizing effect on the economy: (2) The use of fiscal policy is explained to a large extent by the lack of political constraints and by other political and institutional variables; (3) The volatility of output induced by discretionary fiscal policy lowers economic growth by 0.6 percentage points for every percentage point increase in volatility;[4] (4) There is evidence that the increase in volatility is in part due to electoral cycles; nevertheless, we do find that political constraints restrain fiscal policy beyond their impact on the traditional election-year volatility; (5) Rules-based fiscal policy identified by the degree of automatic stabilizers in the economy helps to stabilize business cycles.

The organization of the paper is the following: The next section starts with a discussion of discretionary fiscal policy: Why do governments implement changes in fiscal policy that are unrelated to the macroeconomic conditions in the country? We offer a brief review of the political economy literature that emphasizes the link between country's political and institutional characteristics and the nature of economic policy that the government conducts. In Section 3 we discuss the construction of our measure of discretionary fiscal policy and we report how policy variability affects economic volatility. Section 4 explores the political and institutional determinants of discretionary fiscal policy. Several important issues concerning robustness and possible alternative explanations of our findings are taken up in Section 5. Section 6 reports on the link between the volatility of discretionary policy and economic growth. The last section provides discussion and concluding remarks.

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[4] As we explain below, this result complements the finding of Ramey and Ramey (1995) that output volatility is harmful for growth.

2 Discretionary Fiscal Policy: Effects and Causes

Two strands of theoretical and empirical literature are closely associated with the analysis in this paper. First, standard macroeconomic theory has predictions about the effects of fiscal policy on the economy. Second, our study also builds on the new political economy literature that explores the institutional and political determinants of fiscal policy. In this section we briefly review the literature related to this paper.

The effects of fiscal policy

Mainstream macroeconomic theory predicts that fiscal policy is not neutral with respect to output — changes in spending or taxes exert strong influence on the economy in virtually every macroeconomic model.[5] The channels through which fiscal policy operates are well known and deserve only brief mention here. In the standard Keynesian models, the effect arises from aggregate demand, while in dynamic general equilibrium models of the real business cycle type, output changes because fiscal policy affects the incentives to work and to save. The broad agreement on the non-neutrality of fiscal policy leads one to expect positive association between the volatility of discretionary fiscal policy and output variability.

There is less agreement on the role of automatic stabilizers. While widely accepted textbook treatment of fiscal policy argues that taxes, transfers and possibly other parts of government expenditures stabilize economic fluctuations automatically, it is difficult to construct a general equilibrium model with optimizing behavior in which government spending is stabilizing. Galí (1994) shows that under standard parameterizations the real business cycle model implies destabilizing role for government size — larger governments in terms of spending to GDP ratio are associated with more volatile economies.

In summary, standard macroeconomic theory has two predictions — changes in discretionary fiscal policy unrelated to the state of the economy will be destabilizing, while the presence of automatic stabilizers, which are normally associated

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[5] The Ricardian equivalence is an exception if one is willing to assume that governments have access to lump-sum taxation and one only considers changes in taxes. In the more realistic case when taxes are distortionary or when government expenditures are behind changes in fiscal policy, the statement that fiscal policy affects current economic activity is still valid.

with larger governments might be stabilizing (in the Keynesian models) or might also be destabilizing (in the RBC models). We can frame this discussion in the rules versus discretion debate — automatic stabilizers and systematic reaction to business cycle fluctuations represent rules-type behavior, while discretion is embodied in the part of fiscal policy that is unrelated to current economic conditions.

What determines discretionary fiscal policy?

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 address a second strand of theoretical literature which deals with the political economy of policy making.[6] Most of these papers have studied the question of how different political institutions and different electoral rules can justify different levels of government spending or budget deficits.[7] 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.[8]

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 electoral cycles. Because of the large number of papers, it is hard to do justice here to this literature and, for that reason, we refer the reader to the excellent summaries in 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.

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[6] The recent work of Persson (2001) summarizes some of the arguments developed in this literature to justify why political institutions matter for economic policy.

[7] See, for example, Roubini and Sachs (1989) Alesina and Perotti (1994) or Milesi-Ferretti, Perotti and Rostagno (2001).

[8] Roubini and Sachs (1989) or Alesina and Drazen (1991).

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 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.

Third, and in addition to political budget cycles, governments' inability to respond to economic shocks in a timely manner could be considered as discretionary 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. For example, if economic conditions change so that tax revenues fall short of what was expected (and this is likely to last for a significant long period of time), governments need to adapt by, for example, reducing the level of government expenditures in order to satisfy their intertemporal budget constraint. The absence of such an adjustment because of, say, difficulty in getting a coalition agree on what type of spending to be cut will lead to a persistent budget deficit followed by some likely future adjustment of expenditures (or taxes). This type of non-adjustment may show up as discretionary fiscal policy unexplained by current macroeconomic conditions. Indeed, Persson (2001) and Persson and Tabellini (2001) present evidence that the nature of the political regime and electoral rules determine the degree of reaction to macroeconomic shocks.

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 (2001). Persson (2001) argues that majoritarian systems will have more pronounced electoral cycles because the career concerns of the incumbent become more pronounced 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.[9]

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 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

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[9] Milesi-Ferretti, Perotti and Rostagno (2001) 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 over-reacts to business cycle fluctuations by changing fiscal policy too much.

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 (1992) 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."

3 Discretionary Fiscal Policy and Business Cycles

Constructing a measure of discretionary fiscal policy

The first step in our empirical analysis is to build a quantitative measure of discretionary fiscal policy. As mentioned in the Introduction, we interpret discretionary fiscal policy as changes in fiscal variables that can be considered unrelated to changes in economic activity. It is necessary to state at the outset

that there is no consensus in the literature on the appropriate methodology for the construction of a cyclically-adjusted measure of fiscal policy stance.[10] The difficulty, of course, comes from the simultaneity in the determination of output and the budget. To reduce the bias introduced by this simultaneity we focus only on government spending as opposed to using the budget deficit. There are both theoretical considerations and empirical estimates that support the idea that spending (excluding transfers) does not react contemporaneously to the cycle. On the other hand, there is plenty of evidence that the budget deficit is automatically affected by changes in macroeconomic conditions and therefore more subject to endogeneity problems. This lack of contemporaneous response in the case of government spending will allow us to explore specifications that include only lagged values of output or where we do include the contemporaneous value of output but use past values as instrumental variables to deal with the endogeneity bias.

We estimate the following equation:

$$\log\left(\frac{G}{Y}\right)_{i,t} = \alpha_i + \beta_i \log(Y_{i,t}) + \gamma_i \log\left(\frac{G}{Y}\right)_{i,t-1} + \delta_i \, \text{Oil}_t + \epsilon_{i,t} \qquad (1)$$

where $\frac{G}{Y}$ is the ratio of government spending to GDP and is commonly referred to as government size, Y is real GDP per capita.[11] We add to this regression and index of oil prices (Oil) as an additional control for the state of the business cycle. We interpret the country-specific volatility of $\epsilon_{i,t}$ as a quantitative estimate of discretionary policy. We calculate the volatility as $\sqrt{Var_i(\epsilon_{i,t})}$ and we will denote it as σ_i^ϵ. This variable can be interpreted as the typical size of a discretionary change in fiscal policy for country i.

For our baseline regressions we estimate equation (1) by two methods. In order to allow complete flexibility in the reaction of fiscal policy to output fluctuations first we estimate instrumental variables regressions for each country. We use two lags of GDP, the index of oil prices, and the lagged value of government size to instrument for current GDP. We will refer to these results as *unrestricted* country measures of discretionary fiscal policy.

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[10] See Alesina and Perotti (1995) or Blanchard (1993) for a discussion and criticism of alternative measures.

[11] Macroeconomic data are from the Penn World Tables and from Persson and Tabellini (2001). Data sources are described in a Data Appendix.

We also estimate equation (1) using panel data techniques. We include fixed effects thus allowing for different intercept terms for each country, but the other coefficients are restricted to be the same for all countries, i.e. $\beta_i = \beta, \gamma_i = \gamma$, and $\delta_i = \delta$. It is well known that OLS estimation of panels with lagged dependent variables and fixed effects produces biased and inconsistent results. And although the severity of these problems diminish when the time dimension is relatively large, we decided to deal explicitly with the bias and inconsistency by using instrumental variables. We follow the standard technique of differencing equation (1) and then instrumenting the lagged difference of government size by the second lag of the level of government size.[12] We do instrument also for the current growth rate of output in the differenced equation with two lags of the growth rate, the second lag of government size and the differenced index of oil prices. As before we calculate the volatility of discretionary policy as the standard deviation of the country residuals from this estimation. We will refer to this measure as the *panel* measure of fiscal policy.

The baseline results

To study the link between discretionary fiscal policy and output volatility we exploit the cross-section variation in our data. Figure 2 shows the simple relationship between output volatility and the estimated variability in discretionary fiscal policy. The horizontal axis reports our unrestricted measure of policy volatility obtained by estimating equation (1) for each country. Along the vertical axis we have plotted the standard deviation of the growth rate of output. The correlation is positive and even if the two outliers which are in favor of a positive relationship are removed (Nicaragua and Bolivia), we still obtain statistically significant positive relationship between these two variables.

[Insert Figure 2 here]

The formal regression analysis presented in Table 1 confirms the positive association between policy and output volatility. The general form of the regressions reported in Table 1 is as follows:

$$\sigma_i^y = \alpha + \beta\,\sigma_i^\epsilon + \gamma'\mathbf{X_i} + \nu_i \tag{2}$$

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[12] See Baltagi (1995), Chapter 8 on the consistency properties of this IV estimator known as the Anderson-Hsiao estimator.

The dependent variable is the standard deviation of the annual growth rate of GDP for each of the countries in our sample. The key explanatory variable is the volatility of discretionary fiscal policy constructed on the basis of equation (1) and the additional control variables are government size (gy), real GDP per capita ($gdppc$), and the ratio of imports and exports to GDP ($trade$). Government size is included to control for the stabilizing role of fiscal policy as argued by Galí (1994) and Fatás and Mihov (2001). GDP per capita needs to be added because it is possible that poor countries have more volatile business cycle due to the lack of financial markets, for example, and at the same time poor countries may resort more often to discretionary policy. Finally, trade is included as a standard explanatory variable for output volatility and for fiscal policy as argued by Rodrik (1998).

Table 1. Output Volatility and Fiscal Policy

| | OLS | | | | IV | | | |
| | Unrestricted | | Panel | | Unrestricted | | Panel | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
σ^{ϵ}	25.770	23.543	13.969	12.891	33.094	30.007	17.650	15.761
	(0.001)	(0.010)	(0.001)	(0.012)	(0.000)	(0.011)	(0.000)	(0.014)
gy	-	-0.030	-	-0.042	-	-0.071	-	-0.100
		(0.170)		(0.072)		(0.101)		(0.016)
gdppc	-	-0.086	-	0.032	-	0.371	-	0.593
		(0.786)		(0.922)		(0.372)		(0.190)
trade	-	0.824	-	0.793	-	1.054	-	1.127
		(0.033)		(0.057)		(0.351)		(0.002)
R^2	0.342	0.41	0.345	0.41	0.304	0.35	0.302	0.327

Sample: 1960-1999. p-values in parentheses. All regressions include an intercept.

The first four columns in Table 1 present the results from estimating equation (2) by OLS. The measure of policy volatility is constructed using both country-specific regressions for equation (1) (columns (1) and (2)), and using the panel estimates (columns (3) and (4)). In all cases we obtain strong statistical association between policy and output volatility. All regressions indicate significance at better than the 1.2% level of significance. The coefficients for the

panel are about one half of the size of the coefficients for the measure constructed on the basis of the country-specific unrestricted regressions. This discrepancy is a result of the restrictions implicit in panel regressions that force coefficients for each country to be the same. While this restriction may seem extreme, it does provide a useful robustness check for our main estimates. It is interesting to note that the significance levels of the coefficients in the unrestricted and panel regressions are very similar, which indicates that although the average variance is higher in the panel-based measures the significance of the cross-sectional covariation between output volatility and policy measures is about the same.

The results from the OLS estimation must be taken with some caution. Despite the use of a relatively unresponsive fiscal indicator (government spending) and despite the use of instrumental variables in equation (1), we cannot completely rule out that some of the volatility of the policy measure is still driven by output volatility. To eliminate this possibility for reverse causation we employ instrumental variables estimation in columns (5)-(8). To reduce the chance that the instruments themselves are driven by output volatility, we select variables that are linked to the institutional characteristics of the countries in our sample: the nature of the electoral system (majoritarian versus proportional, maj), the nature of the political system (presidential versus parliamentary, $pres$), the presence of political constraints (number of veto points in the government and the distribution of ideological preferences, $polcon$), and the number of elections (both for the executive and legislative branches, $nelec$).[13] We use these political and institutional variables to instrument for the volatility of discretionary policy and for government size. The results, as revealed by the last four columns are striking from a statistical point of view. One may expect *a priori* that these institutional characteristics explain only a small portion of the cross-sectional variation in discretionary fiscal policy, which will lead to a sharp deterioration of statistical significance of the IV regressions. In fact for our key regressor (σ^{ϵ}) there is no noticeable change in the significance or in the magnitude of the coefficient. While the other variables do undergo some changes, in most cases the p-values decline, which indicates tighter association between output volatility and our set of regressors.

Does discretionary fiscal policy affect output? Table 1 provides evidence that the effect is strong and significant. The interpretation of the coefficients can

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[13] The use of these instrumental variables and the results from the first-stage regressions are discussed in detail in the next section of the paper.

be facilitated by some calculations. Let's consider a country with an average ratio of government spending to output at 25% and average policy volatility of about 0.09. If we preserve the average size of government while implementing a one-standard-deviation increase in policy volatility (which in the cross-section is about 0.04) then we will add 1% to the volatility of the ratio of government spending to GDP.[14] This increase will raise output volatility by 30.0 x 0.04 = 1.2%. Below we investigate how an increase in volatility of this magnitude can be detrimental for growth. Even if we consider only the effect of policy volatility on the second moments of output series, it is clear from these results that discretionary fiscal policy, shaped to a large extent by institutional and political factors, does induce significant fluctuations in economic activity.

Rules versus discretion

The results reported in Table 1 highlight the negative effects of discretion in fiscal policy but they also confirm the stabilizing effects of government size. In all of our regressions above, government size has a negative and significant coefficient. This result is consistent with the work of Galí (1994) and Fatás and Mihov (2001) who present similar evidence for a sample of OECD economies and U.S. states. Our results corroborate the robustness of this finding in a larger sample of countries. In addition, we control for discretionary fiscal policy and we use political economy variables to instrument for government size in an attempt to reduce possible endogeneity bias. We interpret government size in these regressions as a proxy for automatic stabilizers, i.e. rules-based fiscal policy. The reason for this interpretation is that there is ample evidence that government size is positively related to the degree of automatic stabilizers both in a cross section of countries (van den Noord (2000)) and U.S. states (Fatás and Mihov (2001)). Under this interpretation, Table 1 can be seen as providing evidence that, in fiscal policy, rules and discretion have opposite effects with respect to the volatility of the business cycles. Automatic stabilizers reduce the volatility of output while discretion leads to an increase in the amplitude of the business cycle.

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[14] The regressions are in logarithms so 0.04 points increase in the logarithm of government size corresponds to about 1% increase at the mean.

4 POLITICAL AND INSTITUTIONAL DETERMINANTS OF DISCRETIONARY FISCAL POLICY

The use of political and institutional characteristics as instruments in the previous regressions requires some elaboration. First, it is necessary to probe deeper in the determinants of discretionary policy to ensure that the use of these variables is justifiable and, second, the link between institutions and policy outcomes is of independent interest to economists. Indeed, a still-growing empirical and theoretical literature summarized by Drazen (2000), Persson (2001), and Persson and Tabellini (2001) explores how policy is shaped by the characteristics of the electoral and political systems. Using our data set of fifty-one countries we will document the impact of institutions on discretionary policy and provide analysis in the light of recent theoretical advances in this area.

The regression that we run in this section is the following:

$$\sigma_i^\epsilon = \alpha + \beta' \mathbf{X_i} + u_i \tag{3}$$

This can be interpreted as the first-stage regression in the IV estimation from the previous section. The set of variables X_i that we include to explain the use of discretionary fiscal policy is based in our literature review of Section 2 and can be easily mapped to some of the theories that analyze how institutions and political systems determine policy outcomes.

• **Electoral systems.** We use a standard measure of the electoral system from Persson and Tabellini (2001). The variable maj takes value 1 for majoritarian and 0 for proportional electoral systems. As discussed before, from a theoretical point of view, the effect of the electoral system on policy is not clear. On the one hand, governments in countries with proportional systems are often based on coalitions, which may slow down the process of adjustment when the economic environment changes. This implies that majoritarian systems will be conducive to lower volatility in *discretionary* policy. On the other hand, exactly because governments with majoritarian elections are in less need of consensus, their hands will be free to change policy as they desire thus inducing higher volatility.

• **Political system.** We also include a dummy variable to determine whether the country has a presidential or parliamentary system. The variable ($pres$) takes value 1 for presidential systems and 0 for parliamentary systems. Presidential systems are associated with more discretion in fiscal policy — even when the

legislature has some veto powers, the mere fact that the office of the president derives its legitimacy directly from the electorate implies that often the veto can be overruled by the president or that the key decision maker is the president.

• **Political constraints.** *Polcon* is the indicator of political constraints constructed by Henisz (2000) that captures the extent to which the executive faces political constraints to implement his or her policy. The variable is based on a time-invariant or at least rarely changing coding of the number of veto points among various branches of government (executive, legislature, judiciary) and also on the ideological alignment across branches. Obviously the ideological alignment component can change with every election or every new appointment, but the main cross-sectional variation comes from the number of institutionally embedded veto powers.

• **Number of elections.** We include the average number of legislative and executive elections for each country in our sample in order to control for the obvious possibility that discretionary policy is driven by the electoral cycle and also to determine the importance of accountability of politicians. Again, the two factors work in opposite directions — the number of elections should be positively associated with policy volatility if the standard electoral cycle theory is correct but also the number of elections will improve accountability and restrain politicians thus reducing the volatility of discretionary fiscal policy.

Table 2. Determinants of Fiscal Policy

	Unrestricted						Panel			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
polcon	-0.084 (0.000)	-	-	-	-0.049 (0.006)	-0.137 (0.002)	-	-	-	-0.059 (0.046)
maj	-	-0.017 (0.139)	-	-	-0.012 (0.167)	-	-0.028 (0.146)	-	-	-0.022 (0.160)
pres	-	-	0.038 (0.001)	-	0.034 (0.002)	-	-	0.068 (0.002)	-	0.078 (0.000)
nelec	-	-	-	-0.011 (0.823)	-0.098 (0.031)	-	-	-	-0.055 (0.515)	-0.244 (0.012)
R^2	0.335	0.039	0.235	0.001	0.459	0.261	0.034	0.211	0.007	0.443

Sample: 1960-1999. p-values in parentheses. All regressions include an intercept.

Table 2 displays the result from running a regression using as dependent variable either the policy measure from the unrestricted regressions (columns (1) through (5)) or the measure based on the panel regression (columns (6) through (10)). When included separately only two of the variables are significant irrespective of the dependent variable — the nature of the political system (*pres*) and the degree of political constraints (*polcon*). The explanatory power of political constraints is particularly striking: Alone it can explain between 26 and 33.5% of the cross-sectional variation in the policy measure. Running the regressions with all variables (column (5) and column (10)) changes the results slightly for *polcon* and *pres* and makes the number of elections significant. From the results it is clear that there is significant correlation between the degree of political constraints and the nature of the political system, which can be expected as the nature of the political system is capturing often the number of veto points. Indeed, the unconditional correlation between the two variables is negative, which indicates that presidential systems face fewer political constraints.

How do these results match up with the basic politico-economic theories? The nature of the electoral system — majoritarian or proportional — does not seem to affect discretionary fiscal policy significantly. The sign is always negative though, which lends mild support to the claim that coalition governments that are normally observed in countries with proportional electoral rules adjust slowly to changes in the economic environment and thus create more volatility in discretionary policy. Again, the result should not be over-interpreted as it is not statistically significant from zero at conventional levels. The results for the other two variables — political constraints and political systems — conform with our priors. Presidential systems are more volatile while countries with a large number of political constraints experience less volatility in discretionary fiscal policy. Finally, the number of elections seems to conform with the "accountability" theory, rather than with the electoral cycle. Of course, this result does not disprove the presence of electoral cycles as we discuss in the next section.[15]

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[15] It is worth pointing out that in the sample of OECD countries only, the significance and the sign of the coefficients is sensitive to the specification of the regression and the dependent variable. Only the measure of political constraints is significant under a wide range of specifications.

5 ROBUSTNESS

Some specification issues

In this section we explore whether the results are sensitive to some obvious variations in the specification of our key equations. The basic concern is whether the measure of discretionary fiscal policy based in equation (1) captures the inherent volatility in government spending that is unrelated to the business cycle. We have explored various modifications of equation (1) — more lags of the dependent variable, no oil price index, more lags as instruments for current growth, etc. — and in all cases the strong correlation between policy and output volatility survives. In Table 3a we report the results for four of these sensitivity studies. To reduce clutter we report only the coefficients on the standard deviation of discretionary fiscal policy (row σ^ϵ) and on government size (gy). The regressions in all columns are equivalent to the IV estimation from column (8) in Table 1 with the appropriate change in specification. In all cases the following features are preserved: (i) the initial regression is based on dynamic panel estimation with fixed effects and with the lagged difference of the depended variable properly instrumented by the second lag of the level of the depended variable; (ii) the second-stage regression is based on equation (2) and includes as controls openness and GDP per capita; and (iii) the second-stage regression is estimated by IV regression with both the measure of discretionary policy and the measure of government size being instrumented with the political and institutional instruments discussed in the previous section.

Table 3a. Robustness: Specification

	Basic	Levels	VAR	Trade	AB
σ^ϵ	15.761	0.499	16.510	13.785	9.332
	(0.014)	(0.007)	(0.018)	(0.025)	(0.048)
gy	-0.100	-0.160	-0.098	-0.094	-0.192
	(0.016)	(0.002)	(0.013)	(0.003)	(0.011)
R^2	0.327	0.359	0.333	0.19	-

Sample: 1960-1999. p-values in parentheses.
All regressions include an intercept.

The first column repeats the results from column (8) in Table 1 in order to facilitate comparison. Column (2) reports coefficient estimates when the measure

of policy volatility is based on a panel regression with government size in levels (as opposed to log-levels). The change in the size of the coefficient reflects mostly rescaling effects - the increase in volatility by one standard deviation still does lead to the same 1.2% increase in output volatility. The column denoted 'VAR' uses as a measure of discretionary fiscal policy the standard deviation of the residual from a panel regression that uses a VAR(1) specification of government spending and output in which government spending is ordered before output. The results are almost identical to the baseline results.[16] In the next column we include openness in the first-stage regression following Persson and Tabellini (2001). Again, there is no significant change in the results. The final column estimates the first-stage regression by GMM using the Arellano-Bond methodology. The key difference is the use of all lagged values as instruments in the estimation of the dynamic panel. Although the magnitude of the both coefficients changes slightly, it is still true that the results are significant at the 5% level. Overall, standard sensitivity analysis does not indicate any vulnerability of our key results to changes in the econometric specification.[17]

Alternative explanations. The electoral cycle.

A more intriguing exploration of the robustness of our results involves the role of political economy variables. We start first by considering how political and institutional variables affect *the level* of government spending. Again, we run the regression based on equation (1) for the same panel specification as before but we add now political economy variables as regressors. The rationale for this alteration is the following: If there is a relationship between the level of government spending and political and institutional variables, any change to those variables over time will result in changes in the level of government spending. By adding the political and institutional variables in our *initial* regression these changes in government spending would not be captured anymore in the residual and will not be part of our measure of discretionary fiscal policy. For some of the political variables this is not an issue because they are almost constant over the sample period, but for others (such as a dummy for the election year or political

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[16] The logic of the ordering in the VAR is that government spending does not react contemporaneously to output changes.

[17] All basic regressions from Table 1 have also been estimated by a robust minimum absolute deviation technique to check for the possibility that outliers are driving any of our results. In all five regressions the coefficient on policy volatility remained positive and significant.

constraints), there are changes from year to year. We realize that by adding these variables we are eliminating some of the discretionary changes in fiscal policy that we indeed want to capture and this might weaken our results. To take this argument to an extreme, let us assume that all discretionary changes in fiscal policy were contemporaneous increases in government spending on election years. By adding an election-year dummy in our initial regression our measure of discretionary fiscal policy (the residual of that regression) would not capture any of the relevant changes in fiscal policy and our main results would disappear. In that sense, this is more than a robustness test of our results, we are also testing if shutting down some of the possible channels through which discretionary fiscal policy takes place has any effect on our results.

Table 3b. Robustness: Political and Institutional Variables

	polcon	maj	pres	elec	all
σ^ϵ	15.691	16.184	16.419	12.495	12.741
	(0.016)	(0.013)	(0.014)	(0.020)	(0.020)
gy	-0.100	-0.098	-0.100	-0.083	-0.826
	(0.016)	(0.016)	(0.016)	(0.034)	(0.034)
R^2	0.327	0.340	0.326	0.330	0.328

Sample: 1960-1999. p-values in parentheses.
All regressions include an intercept.

The results from the estimation in Table 3b are very similar to our baseline results. The first four columns report results when the σ^ϵ measure is based on a panel that includes the variable at the top of each column as a regressor, while the last column uses the measure that has in the panel regression all four political variables as regressors. The results again confirm the robustness of our finding but they also suggest that the use of discretionary policy is not trivially linked to the degree of political constraints or the electoral cycle. Possibly, countries that lack political constraints resort to discretionary fiscal policy more often, but this practice does not generate a continuous link between policy, elections and institutions. Clearly the results warrant some further investigation of the particular channel through which institutions affect policy outcomes.

Another possibility often discussed in the literature is that the institutions affect the reaction of fiscal authorities to current developments in the economy. In

election years, for example, tight fiscal policy even though being appropriate in a particular situation from a macroeconomic point of view, might be completely infeasible from political perspective — hence the coefficient in the first stage regression (β_i) might depend on particular institutional characteristics (Persson and Tabellini, 2001). If this dependence slows down the adjustment to shocks, then we will observe high volatility in discretionary fiscal policy.

Table 3c. Robustness: Interactions

	polcon	maj	pres	elec	all	all2
σ^ϵ	14.373	16.817	13.647	13.163	13.200	14.033
	(0.013)	(0.012)	(0.014)	(0.024)	(0.026)	(0.016)
gy	-0.098	-0.096	-0.100	-0.080	-0.079	-0.090
	(0.017)	(0.018)	(0.017)	(0.045)	(0.049)	(0.024)
R^2	0.336	0.340	0.335	0.364	0.356	0.390

Sample: 1960-1999. p-values in parentheses.
All regressions include an intercept.

To investigate whether the non-adjustment to shocks is the key driving force behind our measure of policy, we repeat the exercise from Table 3b, but now the additional regressors are the interaction terms between political variables and GDP. This interaction terms allows the slope coefficient on growth to vary across countries with the political and institutional variables. The high significance of the association between policy and output volatility is still maintained. Furthermore if we include in the last column (*all2*) both the interaction terms and all political variables as regressors we still obtain a highly significant link between discretionary policy and the magnitude of the business cycle.

It is also worth mentioning that in the three tables above, the coefficient on government size remained significant and similar in size to our baseline regression, highlighting also the robustness of our hypothesis that rules-based fiscal policy has stabilizing effects.

Overall, the battery of tests in Tables 3a to 3c has provided additional evidence in favor of the robustness of our main results. There are still some issues raised by these three tables that produce new questions on what the key force is behind discretionary fiscal policy. It is clear from the literature on political business cycles that policy is shaped by the electoral calendar or by the restrictions imposed by various institutional characteristics. Our study, however,

suggests that our measure of discretionary policy captures more than these effects. Our findings suggest that governments that face few political constraints use discretionary fiscal policy more often than other countries, but this usage is not easily captured by a first-stage linear regression in the spirit of our equation (1).

Also the link between elections, political constraints and discretionary fiscal policy might not be well captured by a direct contemporaneous linear relationship between all these variables. In other words, elections lead to undesirable fluctuations in economic activity through changes in fiscal policy but this relationship is not as direct and there might be interactions with political institutions or current economic conditions. We found some evidence of this type of interactions when we looked carefully at the electoral cycle in our data set. Indeed when we use the level of government size, there is a very clear and significant effect of the election year on spending. Furthermore, if we include the interaction term between elections and growth, there is a marginally significant negative coefficient on this term. This result suggests that a decline in growth in an election year is met by a larger-than-usual increase in government spending.

6 The Effect of Policy Volatility on Growth

There are reasons to believe that the mean level of output growth is related to the overall volatility of the economy. Theories emphasizing irreversible investment imply that countries with higher volatility will have lower levels of investment and eventually lower growth. Alternatively high growth economies might be based on risky technologies and observe sharp shifts in economic volatility. These arguments have been tested by Ramey and Ramey (1995) in their empirical study of the link between volatility and growth. The setup of their investigation is somewhat similar to ours — they use the squared innovation of the residuals from a government spending equation to fit a process for the volatility of the residual from a growth equation and then study the effects on average output growth. Although the question we approach here is similar, our main concern is whether political and institutional factors that shape discretionary fiscal policy can be responsible for business cycle volatility that is harmful to growth. This focus imposes some restrictions on the sample of countries where testing this

hypothesis. Our sample of fifty one countries (smaller than the sample of Ramey and Ramey (1995)) only includes countries that are considered democracies by Persson and Tabellini (2001) — in these countries concepts like the electoral cycle or the number of veto points can be expected to make a difference in the operation of the government.

[Insert Figure 3 here]

In our sample there is no clear association between average growth rates $(\overline{\Delta y_i})$ and output volatility (σ_i^y) as Figure 3 illustrates. The correlation is mildly negative, but clearly there is no pattern to be easily discerned. To investigate closer this relationship we run the following regression:

$$\overline{\Delta y_i} = \alpha + \lambda \, \sigma_i^y + \beta' \mathbf{X_i} + u_i \tag{4}$$

Even when we introduce standard controls ($\mathbf{X_i}$) like the initial level of GDP per capita (*gdppc*60), the accumulation of human capital measured as the percentage of males over 25 with primary (*prim*) and secondary (*sec*) education — as in column 2 of Table 4 — we do not find significant relationship between growth and volatility.

We are interested only in the extent to which output fluctuations induced by policy volatility are harmful for growth. Thus to evaluate the importance of discretionary fiscal policy we run again a battery of regressions using our measures of policy volatility as instruments for output volatility and we report the coefficient on output volatility (λ). In the main result (reported in column 3) we use as instrument the measure of policy volatility, which is based on a first-stage panel regression that includes all political variables both as regressors and as interaction terms with the level of GDP, i.e. the same setup as we use in the last column of Table 3c. The reason for selecting this measure as opposed to the baseline ones is that our main interest is in the effect of the politico-institutional setup on discretionary fiscal policy and thus indirectly on economic outcomes. It is possible that the electoral systems or political constraints have effects on economic growth that are not mediated by fiscal policy. One attempt to isolate only the policy volatility channel is to orthogonalize discretionary policy to variations in the political and electoral systems, political constraints and elections. This is what we have done in column 3 of Table 4 — the measure

of policy volatility is based on residuals that are orthogonal to the political and institutional variables from our data set.

The estimates of column 3 show a coefficient on output volatility that preserves its negative sign and now becomes significant. Volatility in output induced by discretionary fiscal policy has negative consequences for growth.

Table 4. Growth and Fiscal Policy

	(1)	(2)	(3)	(4)
σ^y	-0.035	-0.035	-0.598	-
	(0.830)	(0.816)	(0.021)	
$\widehat{\sigma^y}$	-	-	-	-0.908
				(0.001)
gdppc60	-	-1.112	-1.390	-1.511
		(0.015)	(0.004)	(0.000)
prim	-	0.036	0.029	0.034
		(0.015)	(0.077)	(0.0121)
sec	-	0.044	0.036	0.032
		(0.062)	(0.223)	(0.003)
R^2	0.002	0.174	-	0.373

Sample: 1960-1999. p-values in parentheses.
All regressions include an intercept.

Column 4 of Table 4 presents yet another way of judging the importance of political variables in determining policy and output volatility and, through this channel, economic growth. We construct first a fitted value for our discretionary fiscal policy measure based on a political economy regression that includes the four politico-institutional variables. In other words, we are constructing a measure of fiscal policy volatility explained solely by these four variables. On the basis of this measure we construct the fitted value for output volatility from a simple cross-country regression of the standard deviation of output growth on the fitted policy volatility. This artificial construct — the portion of output volatility explained by the institutionally determined policy volatility — is used as a regressor $(\widehat{\sigma^y})$ in a standard cross-sectional growth regression. The results in column 4 confirm our previous finding that output volatility induced by discretion in fiscal policy has a strong negative effect on economic growth. Figure 4 presents

in graphical form this link between policy-induced output volatility and economic growth.

[Insert Figure 4 here]

How does this compare to the findings of Ramey and Ramey (1995)? In their paper they use two samples — one with 92 countries and a smaller sample of the OECD economies. The reported coefficients for the 92 countries are never significant at the 5% level, but for the OECD economies they often are. More interestingly, despite the differences in methodology and sample definitions our results are very close to theirs. The range for (λ) in Ramey and Ramey (1995) is from -0.53 to -0.43, while in most of the regressions we obtain estimates of around -0.6 with the exception of the fitted-volatility regression when the magnitude of the coefficient increases to -0.9. If we take as a baseline regression the one reported in column 3, we can claim that a 1% increase in the volatility of output caused by discretionary fiscal policy will reduce the average long-term growth rate by about 0.6% — the result is both statistically and economically significant.

7 CONCLUSION

This paper presents a set of stylized facts about the effects of fiscal policy in a cross-section of countries. We first look at the effects of discretionary fiscal policy, measured as changes of fiscal policy that are not related to the business cycle. Based on this measure, our results suggest that the use of discretionary fiscal policy by governments amplifies business cycle fluctuations and harms growth. To avoid any endogeneity bias caused by the fact that the variable that captures discretionary fiscal policy might contain changes in fiscal policy in response to business cycle conditions, we use instrumental variables. Our instruments come from the political economy literature on the determinants of fiscal policy and, in doing so, we also explore the causes and mechanisms of discretionary fiscal policy. The use of these instruments together with a large battery of additional tests confirms the robustness of our result. In all cases, more discretionary fiscal policy is associated with a more volatile business cycle. Although this result is not surprising from a theoretical point of view, we see it as a confirmation of

the recent work by Blanchard and Perotti (1999), Burnside, Eichenbaum and Fisher (1999) and Fatás and Mihov (2000) about the effects of fiscal policy changes in output. Our results complement those of these papers and provide a quantification of the effects of discretion in fiscal policy.

A careful look at our use of instruments reveals interesting connections between political economy variables and discretionary fiscal policy. We present evidence that more political constraints lead to less frequent use of discretionary fiscal policy. To the extent that reduced volatility of the business cycle has negative welfare effects, we conclude that our results show the benefits of introducing restrictions on fiscal policy discretion.

All along our empirical analysis also confirms the evidence of Galí (1994) and Fatás and Mihov (2001) about the stabilizing effect of government size. We interpret government size as a proxy for automatic stabilizers and we conclude that while discretion in fiscal policy destabilizes output, rules-based fiscal policy (automatic stabilizers) helps reduce the volatility of the business cycle.

Finally, we go beyond the volatility of the business cycle and ask whether discretionary fiscal policy also has negative growth effects. Our approach is similar to Ramey and Ramey (1995) but here we include the insights from our analysis of the political and institutional determinants of fiscal policy to identify more accurately exogenous volatility in the business cycle. Our results confirm that there is a large and significant negative effect of discretionary fiscal policy on growth through the volatility that it adds to the business cycle.

There are still many open questions that are unanswered by our analysis. The most important one is how to design institutions that restrict fiscal policy without eliminating any of the automatic stabilizer effects identified in our empirical results. While a similar analysis in monetary policy led to the conclusion that monetary policy had to be made independent of governments, in the case of fiscal policy, its goals are much more complex and touch on many macroeconomic aspects that go beyond the stabilization of business cycles. For our recommendations to be implementable it is necessary to be able to separate between the stabilizing and the other roles of fiscal policy before restrictions can be discussed in a meaningful manner.

One possible criticism of the paper is that institutions are endogenous and the observed heterogeneity in the political and institutional setup is a reflection of differences in social preferences. Nations select their institutions to maximize a

welfare function that consists of various trade-offs. One trade-off, as in monetary policy, is between flexibility and discipline. Indeed volatility might be undesirable but the society might like to give the government more flexibility so that societal concerns about a sharp increase in inequality, for example, can be met immediately by a change in fiscal policy. If institutions are too rigid, then it may take too long to induce an institutional change that will respond to the social demands for greater redistribution. In this logic, it is entirely plausible that fiscal policy is granted some discretion to respond in a timely manner to changes in social preferences.

This potential criticism although valid simply pushes the researcher to probe deeper — what is the social welfare function that can justify the institutional heterogeneity that we observe across countries? We believe that together with the new political economy literature the evidence in this paper is only the start of an investigation in the direction of understanding institutions and their role for macroeconomic performance.

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9 DATA APPENDIX

The sample consists of fifty-one countries and is based on Persson and Tabellini (2001). From their list we had to exclude ten countries because some of the required series for these countries were not available. The excluded countries are: Bahamas, Barbados, Belize, Cyprus, Fiji, Gambia, Luxembourg, Malta, Iceland, and St. Vincent and the Grenadines. The countries in our sample are:

List of Countries

ARGENTINA	GERMANY	PAPUA N. GUINEA
AUSTRALIA	GREECE	PARAGUAY
AUSTRIA	GUATEMALA	PERU
BELGIUM	HONDURAS	PHILIPPINES
BOLIVIA	INDIA	PORTUGAL
BOTSWANA	IRELAND	SINGAPORE
BRAZIL	ISRAEL	SPAIN
CANADA	ITALY	SRI LANKA
CHILE	JAPAN	SWEDEN
COLOMBIA	MALAYSIA	SWITZERLAND
COSTA RICA	MAURITIUS	THAILAND
DENMARK	MEXICO	TRINIDAD & TOBAGO
DOMINICAN REP.	NEPAL	TURKEY
ECUADOR	NETHERLANDS	UNITED KINGDOM
EL SALVADOR	NEW ZEALAND	UNITED STATES
FINLAND	NICARAGUA	URUGUAY
FRANCE	NORWAY	VENEZUELA

The data sources are:

GDP per capita — from Summers-Heston dataset (version 6.0).

Government spending — from Persson and Tabellini (2001)

Openness — from Persson and Tabellini (2001)

Index of oil prices — from International Financial Statistics (IMF).

Political system — from Persson and Tabellini (2001)

Electoral system — from Persson and Tabellini (2001)

Political constraints — from Henisz (2000)

Elections — from Beck et al. (2001)

Primary and secondary schooling for males over 25 — from Barro and Lee (2000).
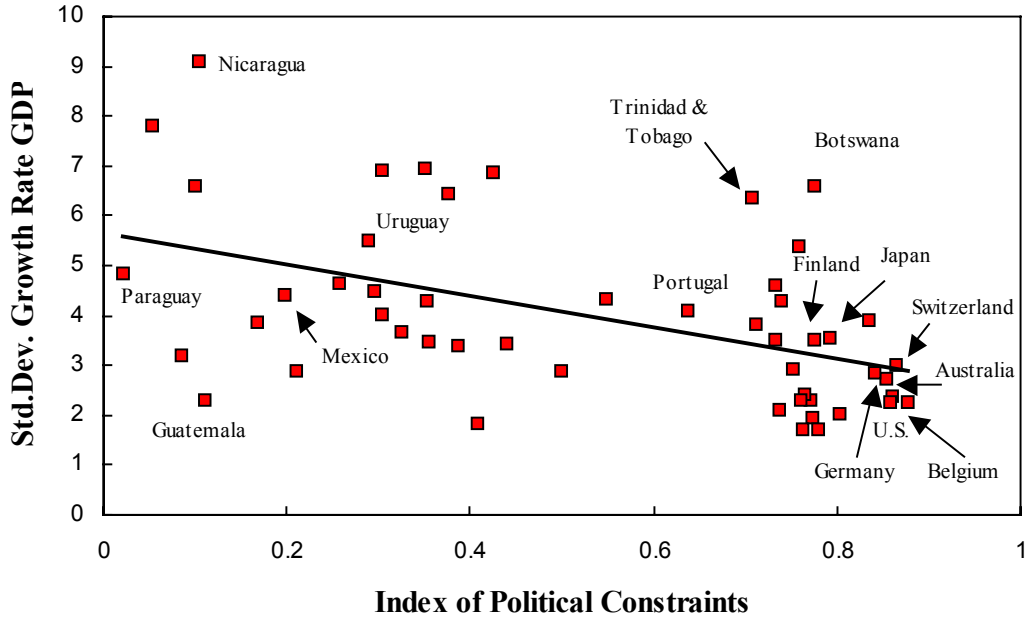
Figure 1. Output Volatility and Political Constraints

Std.Dev. Growth Rate GDP (y-axis)
Index of Political Constraints (x-axis)

Nicaragua, Trinidad & Tobago, Botswana, Uruguay, Paraguay, Mexico, Guatemala, Portugal, Finland, Japan, Switzerland, Australia, U.S., Germany, Belgium

Figure 2. Output Volatility and Fiscal Policy

Std.Dev. Growth Rate GDP (y-axis)
Discretionary Fiscal Policy (x-axis)

Singapore, Nicaragua, Argentina, Uruguay, Thailand, Bolivia, Canada, Finland, Portugal, France, U.S., Colombia
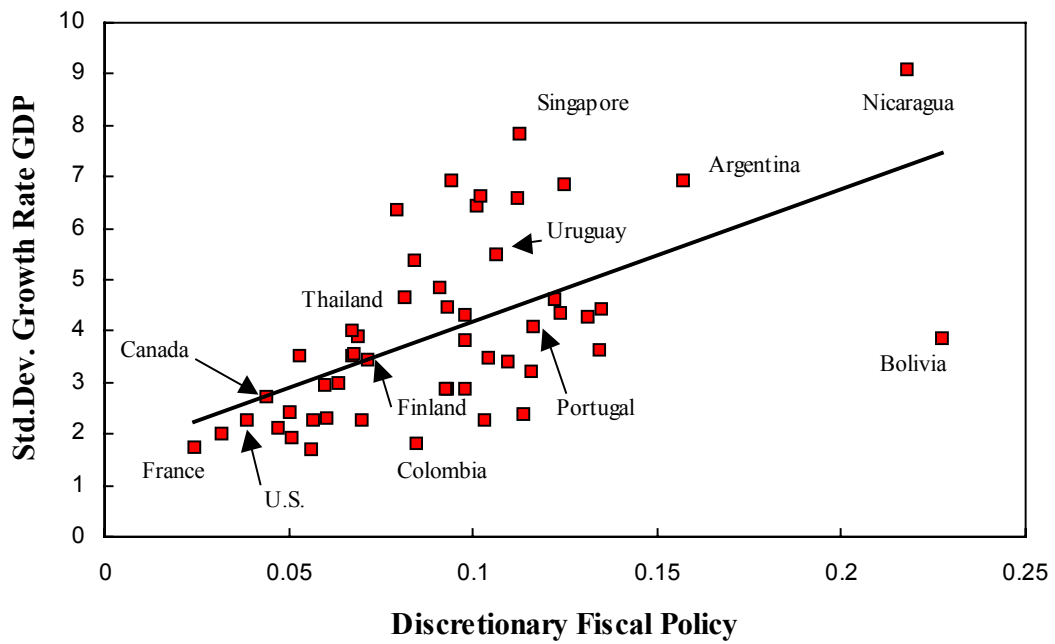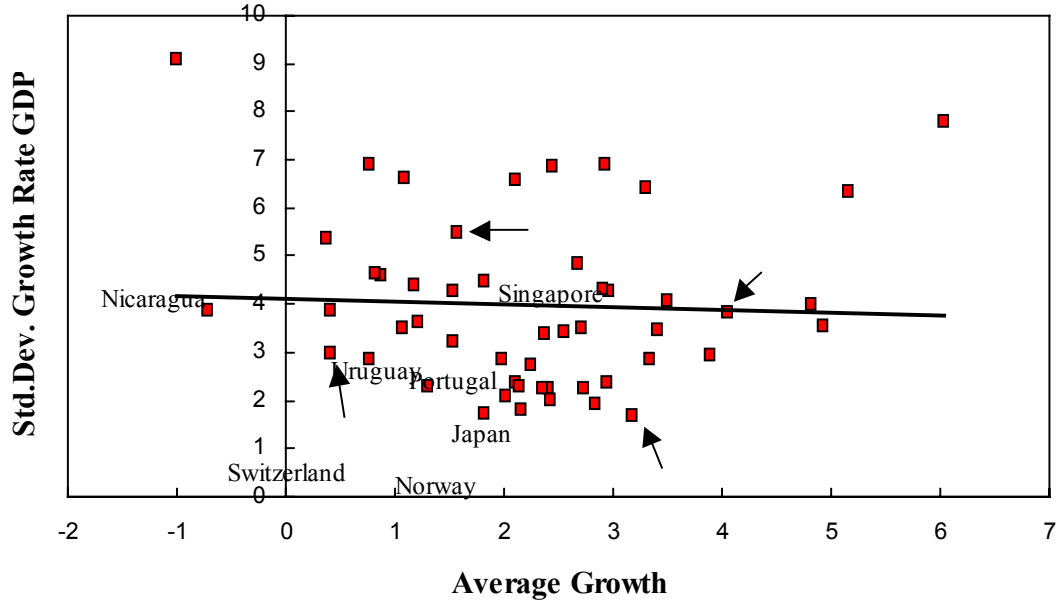
Figure 3. Growth and Output Volatility

Figure 4: Growth and policy-induced volatility
(partial correlation)