The Determinants of the Volatility of Fiscal Policy Discretion

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Abstract

This paper investigates the determinants of the volatility of fiscal policy discretion. Using a linear dynamic panel data model for 113 countries from 1980 to 2006 and a system-GMM estimator, we find that an increase in the number of episodes of government crisis, less democracy and presidentialist systems raise the volatility of the discretionary component of fiscal policy. Additionally, we show that countries with larger populations and less flexible exchange rate systems are more insured against uncertainty about the conduct of fiscal policy. Our results are robust to various regional dummy variables, different subsets of countries and the presence of high inflation and crisis episodes.

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Policy points

- Countries can restrict fiscal policy discretion by improving the quality of their institutions.
- Better conditions for government stability reduce the volatility of fiscal policy.
- A movement towards democratic regimes and parliamentary systems leads to a more prudent fiscal stance.

I. Introduction

Although fiscal prudence is typically seen as a precondition for sustainable growth, fiscal deficits have been growing in a wide range of developed and developing countries over the last 30 years. More recently, the severity of the financial crisis associated with the burst of the sub-prime mortgage market forced many governments to design rescue packages and implement large fiscal stimuli.[1] This, in turn, saw significant counterparts in the accumulation of high deficits and in substantial fiscal volatility, and represented an important test to the long-term sustainability of public finances,[2] as recent developments in government bond markets suggest.[3]

While fiscal policy can help to dampen business-cycle fluctuations, many economists generally recognise that tying governments' hands can eliminate undesirable uncertainty and, as a result, there is a case for restricting the discretionary component of fiscal policy.[4] In fact, as the first signs of stabilisation started to materialise, the need to adopt fiscal consolidation measures was soon advocated by many policymakers.

Yet the literature on fiscal policy has typically focused attention on the determinants of responsiveness to the business cycle,[5] on dependence on its own past history[6] and on the macroeconomic effects of discretion.[7] Additionally, the substantial heterogeneity that is observed across countries suggests that other dimensions, such as institutional background, may play a relevant role, as economic reality is influenced by a complex set of different factors.[8]

[1]Agnello and Nerlich, 2012.

[2]Hughes Hallett, 2008; Hughes Hallett and Lewis, 2008.

[3]For instance, the literature has recently taken interest again in the relationship between macroeconomic variables, wealth and asset returns (Sousa, 2010) and, in particular, government bond yields (Sousa, 2012).

[4]Fatás and Mihov, 2003.

[5]Lane, 2003; Gali and Perotti, 2003; Akitoby et al., 2004; Talvi and Vegh, 2005; Darby and Melitz, 2007.

[6]Afonso, Agnello and Furceri, 2010.

[7]Agnello, Furceri and Sousa, 2013a and 2013b.

[8]North, 1990; Keefer and Knack, 1995; Persson and Tabellini, 1996; Wagner, 1997; Persson, 2002; Aisen and Veiga, 2013.

In this context, Gavin and Perotti (1997) justify the responsiveness of fiscal policy to the business cycle via the supply of credit, which increases during booms (allowing public spending to increase) and falls in bad times (when governments cannot run deficits or can only do so at the cost of very high interest rates). Persson and Tabellini (2001) and Persson (2002) find that political and institutional variables matter for fiscal responsiveness. Hallerberg and Strauch (2002) and Sørensen, Wu and Yosha (2001) highlight the pro-cyclicality of fiscal policy during election years, while Lane (2003) focuses on the dispersion of political power and the output volatility. Fatás and Mihov (2003 and 2006) show that political constraints can reduce pro-cyclicality. Alesina, Campante and Tabellini (2008) argue that the fiscal policy pro-cyclicality that is observed in many developing countries is the outcome of a political agency problem and high levels of corruption: because voters observe the state of the economy and not the rents appropriated by governments, they will demand an increase in public spending (or a fall in taxes) during economic booms, thereby 'starving the Leviathan' to reduce those rents. Afonso, Agnello and Furceri (2010) show that while country and government sizes and income have negative effects on the discretionary component of fiscal policy, they tend to increase fiscal policy persistence.

Some authors have also uncovered the main drivers of public deficit. Alesina and Perotti (1995) and Persson and Tabellini (1999) maintain that a deterioration of the fiscal stance is more likely to occur in countries with proportional as opposed to majoritarian electoral systems and with presidentialist regimes. Woo (2003) emphasises the role of political factors (government fragmentation, political instability and institutions), social polarisation (ethnic division and income inequality) and institutional factors (budgetary procedures and rules, bureaucratic efficiency and democracy). Henisz (2004) suggests that the presence of institutional checks and balances may improve economic outcomes, while Leachman et al. (2007) investigate the importance of strong fiscal budgeting institutions. Hughes Hallett and Lewis (2008) emphasise the role of fiscal discipline, despite acknowledging its temporary time dimension, and Hughes Hallett (2008) shows that fiscal leadership is an effective way to maintain sustainable public finances. Carmignani, Colombo and Tirelli (2011) consider a broad set of variables that simultaneously affect the volatility of output growth and the public-expenditure-to-GDP ratio, including financial depth, capital account openness, the de facto exchange rate regime, the de facto degree of central bank independence, and measures of government accountability such as the electoral rule and system.

In this paper, we investigate the major determinants of the volatility of fiscal policy discretion. In doing so, we use a two-step procedure. First, we follow the work of Fatás and Mihov (2007) and estimate, for each country

included in our analysis, a fiscal policy rule for the general government budget deficit, government revenue and government spending in order to extract the discretionary component of fiscal policy over the period 1980–2006. Second, we estimate a dynamic panel data model to assess the political, institutional and macroeconomic drivers of the volatility of fiscal policy discretion as computed over three-year non-overlapping time windows.

We find that an increase in the level of political instability (as measured by a greater number of government crises) and a fall in the level of democracy (proxied by the polity scale index) raises the discretionary component of fiscal policy. Additionally, we show that parliamentary systems are associated with less volatility of fiscal policy discretion than presidentialist systems, but the number of political constraints faced by the government does not seem to have a statistically significant impact on the fiscal stance.

The empirical findings also suggest that country size acts as a buffer against the volatility of fiscal policy discretion, that more flexible exchange rate regimes raise uncertainty about the conduct of fiscal policy and that fiscal policy volatility displays a reasonable degree of persistence.

Our results are robust to various regional dummy variables, subsets of countries and outliers associated with high inflation and crisis episodes. In particular, we find that the impact of political instability and the effects of the size of the country on the volatility of fiscal discretion are quantitatively larger for non-OECD countries, developing countries and non-EU27 countries. Presidentialist regimes typically imply greater fiscal discretion in these countries. Finally, while inflation appears to be an important source of instability for the revenue side of the fiscal stance, debt crisis episodes tend to increase the volatility of the discretionary component of the budget balance, possibly reflecting their long-lasting nature.

The research presented in this paper is highly indebted to the work of Fatás and Mihov (2007), who also assess the main drivers of fiscal policy volatility and highlight the importance of some economic and political–institutional indicators, such as political constraints, population and GDP per capita. We follow their approach in terms of using the standard deviation of a residual estimated from a fiscal rule, as a measure of discretionary fiscal policy. However, we depart from their work in various dimensions. First, we focus not only on government spending volatility but also on the volatility of the budget balance and of government revenue. Second, while Fatás and Mihov analyse the impact of discretionary fiscal policy on economic growth and output volatility and then look at the political and institutional determinants of discretionary fiscal policy (in particular, political constraints, whether the regime is majoritarian or not, whether the country has a presidential or a parliamentary system, and the frequency of elections),

we concentrate on the second question and focus on a different set of political and institutional regressors – namely, a country's level of democracy, the number of cabinet changes and the number of government crises – in addition to the political system and the stability of the legislature. Third, we also consider the importance of country size effects, as well as the impact of a set of economic variables (such as the degree of trade openness, the degree of financial openness and the exchange rate regime) on fiscal policy volatility. Fourth, we cover a larger set of countries and control for potential endogeneity.

The remainder of the paper is organised as follows. Section II presents the estimation methodology, while Section III describes the data and discusses the results. Section IV assesses the robustness of the results from the baseline model and Section V concludes.

II. Econometric methodology

We follow Fatás and Mihov (2007) and extract the discretionary components of the general government real budget deficit, real government revenue and real government spending by estimating fiscal policy rules for each country.[9,10] More specifically, we use an instrumental variable (IV) approach and the same set of instruments as adopted by Fatás and Mihov,[11] and run the following model:

$$(1) \qquad \Delta F_t = \alpha + \gamma \Delta F_{t-1} + \delta GAP_t + \boldsymbol{\Gamma} \mathbf{Z}_t + \xi_t^F$$

where F_t denotes the real budget balance (BB_t) or its components (real government revenue (R_t) or real government spending (S_t)), GAP_t is the output gap,[12] $\mathbf{Z}_t$ is a vector of control variables including a time trend, inflation and inflation squared,[13] α is a constant, γ is the parameter that captures the persistence of the fiscal policy instrument, δ is the parameter that tracks the responsiveness of fiscal policy to the business cycle, $\boldsymbol{\Gamma}$ is the

[9]Taylor (2000) and Blanchard and Perotti (2002) also compute fiscal policy discretion from the estimated residuals of a fiscal policy rule.

[10]The nominal series of the general government budget deficit, government revenue and government spending are converted to real terms by using the GDP deflator provided by the International Financial Statistics (IFS) of the International Monetary Fund (IMF).

[11]As in Fatás and Mihov (2003 and 2007), we instrument the output gap using its own lags (1 and 2), lagged inflation and the index of real oil prices. As before, the series of the index of nominal oil prices is converted to real terms by using the GDP deflator provided by the IFS of the IMF.

[12]In accordance with Ravn and Uhlig (2002), a Hodrick–Prescott filter with $\lambda = 6.25$ is employed to extract the cyclical component from the annual GDP data.

[13]As Fatás and Mihov (2003 and 2007) point out, the inclusion of inflation guarantees that the occurrence of high inflation episodes (for instance, due to monetary instability) does not influence the relationship between fiscal policy and output. Similarly, the inclusion of inflation squared controls for potential non-linearities in the relationship between fiscal policy and inflation.

vector of coefficients associated with the control variables and ξ_t^F is the discretionary component of the fiscal policy.

Then we estimate a dynamic panel data model for standard deviations of the discretionary component of the real general government budget deficit, real government revenue and real government spending for consecutive, non-overlapping, three-year periods, $\overline{T}_{[t,t+3]}$, from 1980 to 2006, i.e.[14,15]

$$(2) \qquad \sigma(\xi_{i,t}^F) = \beta_0 \sigma(\xi_{i,t-1}^F) + \mathbf{Y}'_{i,t}\boldsymbol{\beta}_1 + \beta_2 Pop_{i,t} + \mathbf{X}'_{i,t}\boldsymbol{\beta}_3 + v_i + \varepsilon_{i,t}$$

where $\sigma(\xi_{i,t}^F)$ is the standard deviation of the fiscal policy instrument of country i for the three-year non-overlapping period, $\mathbf{Y}_{i,t}$ is the set of political and institutional variables, $\mathbf{X}_{i,t}$ is the set of macroeconomic variables and $Pop_{i,t}$ denotes population. The vector $\boldsymbol{\beta}$ includes all the parameters to be estimated, v_i accounts for fixed effects and $\varepsilon_{i,t}$ is an i.i.d. (independent and identically distributed) error term.

When model (2) is estimated using ordinary least squares (OLS), fixed effects (FE) or random effects (RE), the lagged dependent variable, $\sigma(\xi_{i,t-1}^F)$, is correlated with the error term $\eta_{i,t} = v_i + \varepsilon_{i,t}$, and the parameters will be biased if the number of time observations is small.[16,17]

[14]The periods are 1980–82, 1983–85, ..., 2001–03 and 2004–06. We start by considering 180 countries for which we have collected annual fiscal data (budget balance, government revenue and government spending) over the period 1980–2006. For a number of countries, data are only available since 1980 and, in a few cases, since 1990. As a result, for those countries where the number of instruments is larger than the number of observations, the estimation of the first-stage regression (i.e. the fiscal rule) cannot be performed. This ultimately reduces the number of observations in the second-stage estimation (i.e. the linear dynamic panel data model). In addition, the number of observations over the three-year non-overlapping windows is further reduced when at least a single missing observation falls into the window of reference.

[15]We use an approach that is similar to the one found in works by Aisen and Veiga (2006, 2008 and 2013). Interestingly, however, they use it in different contexts. In fact, while Aisen and Veiga (2006) assess whether political instability leads to higher inflation, Aisen and Veiga (2008) analyse the effects of the quality of institutions, political instability and social polarisation on inflation volatility. Moreover, we focus on the behaviour of the discretionary component of the dependent variable (in our case, the fiscal stance) rather than the dependent variable per se. This is particularly relevant for developing countries, because there is evidence of substantial volatility in their trend growth rates (see Aguiar and Gopinath (2007)), which might, in turn, be transmitted to fiscal variables, especially government revenue.

[16]Nickell, 1981.

[17]The use of generalised method of moments (GMM) estimators is recommended in linear dynamic panel data models where the number of cross-sectional units (N) is large and the number of time-series observations (T) is relatively small (Arellano and Bond, 1991; Arellano and Bover, 1995; Blundell and Bond, 1998), as in the current paper ($N = 113$ and $T = 9$). Consequently, if we had considered the standard deviations of the discretionary component of fiscal policy for consecutive, non-overlapping, two-year periods, the definition would have been rather imprecise and more vulnerable to the influence of outliers. Moreover, the number of time-series units would have been relatively large (13), thereby reducing the validity of the employed econometric model. In contrast, if we had computed the standard deviations of the discretionary component of fiscal policy for consecutive, non-overlapping, four-year periods, the time

Therefore, we use the generalised method of moments (GMM) estimator advocated by Holtz-Eakin, Newey and Rosen (1988), which eliminates the endogeneity that is due to the correlation between the country-specific effects and the explanatory variables, i.e. we first-difference (2) and estimate the following equation:

$$(3) \qquad \Delta\sigma(\xi^{IC}_{i,t}) = \beta_0 \Delta\sigma(\xi^{IC}_{i,t-1}) + \Delta\mathbf{Y}'_{i,t}\boldsymbol{\beta}_1 + \beta_2 \Delta Pop_{i,t} + \Delta\mathbf{X}'_{i,t}\boldsymbol{\beta}_3 + \Delta\varepsilon_{i,t}.$$

Arellano and Bond (1991) show that this procedure needs to be complemented with an instrumental variables estimator when the explanatory variables are not strictly exogenous. As a result, the authors recommend that the differenced endogenous variables are instrumented by the levels of the dependent and endogenous variables lagged two or more periods and that the predetermined variables are instrumented by the levels of the predetermined variables lagged one or more periods, while the exogenous variables can be used as their own instruments.

Finally, when the series are very persistent, the lagged levels may be weak instruments for first differences.[18] In this case, lagged values of the first differences can be used as valid instruments in the equation in levels[19] and efficiency is increased by regressing equations (2) and (3) with the use of a system-GMM estimator.[20,21]

III. Data and empirical results

1. Data

We start by using a panel data set consisting of 180 countries for which annual series for the budget balance, government revenue and government spending over the period 1980–2006 are retrieved from the World Economic Outlook (WEO) of the International Monetary Fund (IMF).[22]

However, for a number of emerging countries, fiscal data are only available for a few years and, for some of them (23 out of 180), the number of instruments to be used in the first-stage regression (i.e. the fiscal rule) is larger than the number of observations. As a result, for these countries, the

series dimension would have been small (six) and the measure would 'smooth out' sharp changes in fiscal discretion.

[18]Blundell and Bond, 1998.

[19]Arellano and Bover, 1995.

[20]Blundell and Bond, 1998.

[21]The list of instruments that we use in the regressions includes institutional and political variables (such as the polity scale, cabinet changes, government crises, the political system and political constraints), demographic variables (i.e. population) and macroeconomic variables (namely, trade openness, financial openness and the exchange rate regime).

[22]The countries included in the study are listed in Table A1 of the online appendix (available at http://www.ifs.org.uk/docs/fsmar14_agnello&sousa_appendix.pdf).

estimation of equation (1) cannot be performed and the discretionary part of fiscal policy cannot be extracted. Therefore, we drop them from the second-stage estimation (i.e. the linear dynamic panel data model).[23]

The macroeconomic variables are provided by the WEO of the IMF, the World Development Indicators (WDI) of the World Bank and based on the works of Ilzetzki, Reinhart and Rogoff (2008) and Ito and Chinn (2012). The political and institutional variables are gathered from the Cross-National Time-Series Data Archive (CNTS), the Database of Political Institutions (DPI) of the World Bank and the Polity IV Database (Polity IV). More specifically, we consider the following set of regressors:[24]

- Variables that account for the quality of government institutions and capture political instability (**Y**):
  - *Polity scale* (Polity IV). We use the variable Polity2 from Polity IV, which describes how democratic a country is. It subtracts the country's score on an 'autocracy' index from its score on a 'democracy' index and produces a polity scale ranging from –10 (strongly autocratic) to +10 (strongly democratic). The level of democracy should be negatively related to the volatility of fiscal policy discretion and, in a relatively close context, Tavares and Wacziarg (2001) show that the 'polity scale' variable negatively impacts on economic growth.[25]
  - *Cabinet changes* (CNTS). This annual frequency variable counts the number of times that a new premier is named and/or 50 per cent of cabinet posts are occupied by new ministers. Therefore it allows us to assess the effect of ministerial turnover on fiscal policy volatility. When the number of times a premier is named increases and cabinet changes are frequent, agents struggle to respond optimally to the magnitude and timing of fiscal policy, which increases the inefficiency of economic decisions and amplifies the distortions generated by temporary measures.[26] Persson and Tabellini (1999) show that large deficits and debts are more common in countries with higher government turnover. In this context, greater political

[23]We also remark that the number of observations in the second-stage estimation is further reduced when at least a single missing observation falls into the three-year non-overlapping window of reference.

[24]A wide range of variables are available in the above-mentioned data sources. In accordance, we checked the statistical significance of the inclusion of many of those economic, institutional and political factors, but the results did not corroborate their inclusion.

[25]Thiessen (2003) nicely shows that the empirical relationship between fiscal decentralisation and capital formation, economic growth and total factor productivity growth is non-linear, being positive when decentralisation is increasing from low levels, after which it reaches a peak and the linkages become negative. Therefore, fiscal policy volatility may be detrimental for human capital.

[26]For a discussion of governments' failures as sources of instability, see King (1994).

instability should be associated with greater uncertainty about the fiscal stance.

- *Government crises* (CNTS). This counts the number of any rapidly developing situations that might lead to the fall of the current regime and remove a particular government from power, with the exclusion of situations of revolt. An increase in the number of episodes of crisis should raise the volatility of the discretionary part of fiscal policy.
- *Political system* (DPI). This variable characterises the political system. A value of 0 is given for a presidential system, a value of 1 is allocated in the case of an assembly-elected presidential system, and a value of 2 is associated with a parliamentary system. Persson and Tabellini (2001) argue that parliamentary systems imply less volatility in fiscal policy, because of the threat of a no-confidence vote from the parties that support the executive in parliament. In contrast, in presidential systems, the president can change policy with fewer constraints and, as a result, these regimes should display more volatile discretionary policy. Thus a negative coefficient should be associated with this variable.
- *Political constraints* (DPI). This counts the percentage of veto players who drop from the government in a specific year and, as such, it provides information about the veto points in the decision-making process and the constraints that governments face in the course of policy implementation. Persson, Roland and Tabellini (1997) show that a reduction in the rents extracted by politicians can be achieved with agenda-setting rules and the separation of powers. Along the same lines, Fatás and Mihov (2007) argue that, despite (i) the fact that the analysis in previous works centred on the composition and size of government expenditure and (ii) the possibility that the political ideology might change with new elections, it is likely that countries where governments face more political constraints will be associated with less volatility in fiscal policy discretion.

- The population (*Pop*) (Penn World Tables). This controls for country size effects. Afonso, Agnello and Furceri (2010) find a negative relationship between population and government spending volatility. On the one hand, a larger country size helps to insure against idiosyncratic shocks. On the other hand, it spreads the cost of financing government spending over more taxpayers. Therefore, population should have a negative impact on the volatility of fiscal policy discretion.
- Macroeconomic variables (**X**):
  - *Trade openness* (WDI). This is measured as the log of the ratio of national trade to GDP. Rodrik (1998) suggests that the positive

correlation between openness and public spending is due to the fact that a large government size acts as an optimal response to the increased risks associated with greater openness. Therefore a positive coefficient is expected between trade openness and the discretionary component of fiscal policy.

- *Financial openness* (Ito and Chinn, 2012). This index measures a country's degree of capital account openness and assesses the restrictions on cross-border financial transactions. As pointed out by Fatás and Mihov (2003), it is likely that low-income countries have shorter and more volatile business cycles due to less-developed financial markets and weaker economic institutions. At the same time, these countries may resort more often to discretionary fiscal policy, as argued by Rand and Tarp (2002). This suggests that fiscal policy volatility should be negatively correlated with the country's income. Moreover, Azzimonti, de Francisco and Quadrini (2012) argue that financial integration and capital liberalisation positively affect governments' incentives to issue debt, because when governments act in their citizens' interests, each country's elasticity of the interest rate to the supply of its own government debt is lower. In this case, a higher degree of financial openness might lead to larger volatility of fiscal policy discretion.
- *Exchange rate regime* (Ilzetzki, Reinhart and Rogoff, 2008). This variable takes higher values in the case of more flexible exchange rate regimes.[27] We test whether an increase in the degree of flexibility of the exchange rate regime acts as a shock that makes the conduct of fiscal policy more uncertain (i.e. raises the volatility of the discretionary component of fiscal policy). We expect a positive link between the two variables.

Each of the above-mentioned variables is transformed over the three-year non-overlapping windows before entering the dynamic panel model. In Table 1, we report the main descriptive statistics and provide details about their transformation.

[27]When the classification of exchange rate regimes constructed by Ilzetzki, Reinhart and Rogoff (2008) runs in value from 1 (a hard peg, no separate legal tender) to 13 (freely floating), it can measure the degree of flexibility in the exchange rate regime. The classification code 14 (freely falling) seems to be less flexible than 13, while the classification code 15 (dual market in which parallel market data are missing) can be observed in relatively fixed regimes. As a result, codes 14 and 15 do not imply necessarily highly flexible regimes. Consequently, we recode the original exchange rate indicator and set freely falling as 13, freely floating as 14, and omit 15.

TABLE 1

Descriptive statistics

Variable	*No. of obs.*	*Mean*	*Standard deviation*	*Minimum*	*Maximum*	*Type of transformation over the window* $\overline{T}_{[t,t+3]}$	*Source / Derivation*
Variables included in the estimation of the fiscal policy rule							
BB_t (log)	3,934	–0.13	0.25	–5.39	1.27	Not applicable	WEO-IMF
R_t (log)	3,940	–0.70	3.21	–9.43	8.22	Not applicable	WEO-IMF
S_t (log)	3,936	–0.56	3.22	–9.16	8.23	Not applicable	WEO-IMF
Output gap	4,574	0	0.03	–0.45	0.31	Not applicable	Authors' calculation
Inflation	4,382	16.26	41.38	–70.36	559.11	Not applicable	IFS-IMF
Oil price	6,102	25.77	11.78	12.74	65.14	Not applicable	IFS-IMF
Variables included in the estimation of the volatility of fiscal policy discretion							
$\xi_{i,t}^{BB}$	3,559	0.01	0.13	–4.38	1.37	Volatility	WEO-IMF / Equation (1)
$\xi_{i,t}^{S}$	3,562	0.03	0.14	–1.85	3.41	Volatility	WEO-IMF / Equation (1)
$\xi_{i,t}^{R}$	3,565	0.04	0.19	–5.07	2.72	Volatility	WEO-IMF / Equation (1)
Polity scale	3,512	1.72	7.28	–10	10	Average	Polity IV
Cabinet changes	3,509	0.44	0.58	0	4	Average	CNTS
Government crises	3,833	0.13	0.41	0	5	Average	CNTS
Political system	4,269	0.78	0.92	0	2	Level at time t	DPI-WB
Political constraints	4,191	0.12	0.28	0	1	Average	DPI-WB
Population (log)	6,336	15.64	2.76	8.92	22.6	Average	WDI-WB
Trade openness	4,509	80.27	48.55	3.84	440.4	Average	WDI-WB
Financial openness	4,116	0.01	1.53	–1.86	2.46	Average	Ito and Chinn, 2012
Exchange rate regime	3,694	7.19	4.23	1	14	Average	Ilzetzki et al., 2008

Note to Table 1
The descriptive statistics refer to the variables in levels.
CNTS: Cross-National Time-Series Data Archive.
DPI-WB: Database of Political Institutions – World Bank.
IFS-IMF: International Financial Statistics – International Monetary Fund.
Polity IV: Polity IV Database.
WDI-WB: World Development Indicators – World Bank.
WEO-IMF: World Economic Outlook – International Monetary Fund.

TABLE 2

Volatility of budget balance discretion in the baseline model

	Budget balance volatility				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*[a]
Lagged dep. var.	0.180***	0.195**	0.227**	0.201*	0.191
	(0.051)	(0.081)	(0.108)	(0.102)	(0.136)
Polity scale	–0.003***	–0.003***	–0.003***	–0.003***	–0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cabinet changes	0.015*	0.015**	0.019**	0.018**	0.011
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)
Government crises	0.059**	0.061**	0.051**	0.047**	–0.005
	(0.025)	(0.024)	(0.021)	(0.022)	(0.005)
Political system	–0.014***	–0.014***	–0.015***	–0.015***	–0.005*
	(0.004)	(0.003)	(0.004)	(0.005)	(0.003)
Political constraints	0.006	0.006	0.011	0.017	0.031*
	(0.024)	(0.022)	(0.024)	(0.022)	(0.017)
Population		–0.011***	–0.008***	–0.009***	–0.004*
		(0.003)	(0.002)	(0.003)	(0.002)
Trade openness			0.000	0.000	–0.000*
			(0.000)	(0.000)	(0.000)
Financial openness			0.005	0.006	–0.001
			(0.003)	(0.004)	(0.002)
Exchange rate regime				0.005***	0.001
				(0.001)	(0.001)
Constant	0.054***	0.224***	0.163***	0.145***	0.095***
	(0.009)	(0.058)	(0.041)	(0.051)	(0.035)
No. of observations	569	568	550	477	477
No. of countries	113	113	113	102	102
Hansen (p-value)	0.41	0.53	0.40	0.88	0.35
AR2 (p-value)	0.28	0.26	0.26	0.26	0.19

[a]Excludes inflation and inflation squared from the IV approach.
Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous).* The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals.*

2. Empirical results

In this subsection, we discuss the results of the baseline model. In Table 2, we assess the link between the volatility of the discretionary component of the budget balance and the political, institutional and macroeconomic determinants; in Table 3, we examine the drivers of the volatility of general government revenue; and in Table 4, we look at the explanatory variables for general government spending volatility. For each group of estimations, we start by looking at the political and institutional variables (column 1). Then we analyse the significance of the population (column 2), after which we look at macroeconomic variables, such as trade and financial openness (column 3). Subsequently, we control for variation in the exchange rate regime (column 4). Finally, we assess the robustness of the empirical findings, by excluding inflation and inflation squared from the instrumental variable (IV) approach (column 5).[28]

It can be seen that fiscal policy volatility displays substantial persistence, as the coefficient associated with the lagged dependent variable is statistically significant, particularly for the discretionary component of government revenue. This result both provides support for the employment of a dynamic panel data model and highlights the importance of inertia in the budgetary process.[29]

The political and institutional variables are statistically significant determinants of budget balance volatility and have the expected theoretical signs. Thus, a higher level of ministerial turnover and a lower level of democracy are typically associated with higher volatility of budget balance discretion: a new incoming signal of government crisis increases the standard deviation of the discretionary component of the budget balance by a factor of between 0.05 and 0.06, while a one-point increase in the polity scale (greater democracy) reduces it by between 0.002 and 0.003. Interestingly, parliamentary systems seem to have a more stable budget balance than presidentialist systems, but the number of veto points in the decision-making process does not have a statistically significant impact on the volatility of the general government budget balance.[30]

[28]Taylor (2000), Lane (2003) and Chadha and Nolan (2007) also estimate fiscal policy rules that do not include such a polynomial of inflation.

[29]The inclusion of the lagged dependent variable can also be justified by the fact that changes in government revenue tend to lead to changes in expenditure. Nevertheless, spending increases are easier to accommodate than spending reductions. As a result, in the context of revenue volatility, there is a bias in favour of deficits, which, in turn, generates persistence in budget balance volatility.

[30]This result is in contrast to the findings of Fatás and Mihov (2003), who show that political constraints have a statistically significant and negative impact on the volatility of the budget balance. However, we note that their model only controls for three political and institutional variables (the political system, political constraints and the frequency of elections) and that the authors do not account for the persistence of fiscal policy discretion, which we do, by including the lagged dependent variable among the set of regressors. As a result, the lack of significance of political constraints in our model may reflect (i) the fact that we account for the effects of a wider set of control variables, thereby being less prone to

Concerning the two sides of the fiscal stance, our results suggest (i) that general government revenue volatility is lower in more democratic regimes and higher in the context of an increase in the number of cabinet changes

TABLE 3

Volatility of government revenue discretion in the baseline model

	Government revenue volatility				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*[a]
Lagged dep. var.	0.130*	0.157	0.289**	0.330***	0.502**
	(0.070)	(0.109)	(0.124)	(0.124)	(0.204)
Polity scale	–0.002***	–0.002***	–0.002**	–0.002***	–0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cabinet changes	0.013*	0.013*	0.009	0.010	0.005
	(0.007)	(0.007)	(0.007)	(0.008)	(0.010)
Government crises	0.030	0.034	0.021	0.025	0.066*
	(0.030)	(0.032)	(0.033)	(0.036)	(0.039)
Political system	–0.008	–0.008	–0.006	–0.009	–0.014
	(0.005)	(0.006)	(0.007)	(0.009)	(0.009)
Political constraints	0.026	0.022	0.034	0.038	0.005
	(0.026)	(0.025)	(0.027)	(0.030)	(0.024)
Population		–0.007	–0.007**	–0.008*	–0.009*
		(0.005)	(0.003)	(0.005)	(0.004)
Trade openness			–0.000	0.000	0.000
			(0.000)	(0.000)	(0.000)
Financial openness			–0.002	0.001	0.010
			(0.005)	(0.006)	(0.006)
Exchange rate regime				0.001	0.004**
				(0.002)	(0.002)
Constant	0.045***	0.158*	0.154***	0.157**	0.131*
	(0.008)	(0.082)	(0.049)	(0.070)	(0.070)
No. of observations	570	569	551	478	478
No. of countries	113	113	113	102	102
Hansen (p-value)	0.30	0.32	0.20	0.31	0.73
AR2 (p-value)	0.19	0.22	0.50	1.00	0.06

[a]Excludes inflation and inflation squared from the IV approach.

Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous)*. The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals*.

omitted variable bias and (ii) the potential correlation between political constraints and the lag of the volatility of fiscal policy, whereby political constraints may largely reflect the inertia in the budgetary process. As a result, including both the lag of the volatility of fiscal policy discretion and the political constraints among the set of explanatory variables – as is done in our paper – is a way of disentangling the effects of the inertia in the budgetary process and the effects of the constraints that governments face in the course of policy implementation.

and (ii) that general government spending volatility is largely explained by the level of democracy and the political system.

When we add the population variable to the set of institutional and political determinants, we can see that it is typically significant and has the expected negative sign in the equations for budget balance volatility and revenue volatility, implying that smaller countries have more volatile budget balances and government revenue as a result of their wider exposure to idiosyncratic shocks and larger output volatility.

TABLE 4

Volatility of government spending discretion in the baseline model

	Government spending volatility				
	(1)	*(2)*	*(3)*	*(4)*	*(5)*[a]
Lagged dep. var.	–0.015	–0.023	–0.026	–0.144	0.291
	(0.043)	(0.041)	(0.145)	(0.144)	(0.395)
Polity scale	–0.002**	–0.002***	–0.001	–0.002**	–0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cabinet changes	0.010	0.010	0.008	0.010*	0.003
	(0.007)	(0.006)	(0.007)	(0.006)	(0.006)
Government crises	0.004	0.006	0.004	–0.005	–0.009
	(0.008)	(0.008)	(0.009)	(0.007)	(0.008)
Political system	–0.011***	–0.011***	–0.010***	–0.013***	–0.007**
	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Political constraints	0.021	0.022	0.013	0.019	0.019
	(0.014)	(0.014)	(0.013)	(0.013)	(0.026)
Population		–0.006	–0.003	–0.005	–0.004
		(0.004)	(0.004)	(0.004)	(0.005)
Trade openness			0.000	–0.000	–0.000
			(0.000)	(0.000)	(0.000)
Financial openness			–0.005*	–0.003	0.000
			(0.003)	(0.002)	(0.002)
Exchange rate regime				0.003***	–0.000
				(0.001)	(0.001)
Constant	0.050***	0.145**	0.097	0.114	0.101
	(0.006)	(0.062)	(0.081)	(0.077)	(0.093)
No. of observations	570	569	551	478	478
No. of countries	113	113	113	102	102
Hansen (p-value)	0.08	0.00	0.05	0.50	0.15
AR2 (p-value)	0.82	0.01	0.88	0.65	0.65

[a]Excludes inflation and inflation squared from the IV approach.

Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous).* The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals.*

Accounting for the degree of trade openness and financial openness, we find that the impact of these variables on fiscal policy volatility does not seem to be statistically significant.

The results show that more flexible exchange rate regimes lead to more volatile budget balances. This effect appears to operate via the discretionary component of government spending, as no statistically significant impact is found for the volatility of government revenue discretion.

Finally, the main empirical findings remain broadly unchanged when we exclude inflation and inflation squared from the IV approach that is used to estimate the fiscal policy rule and extract the discretionary component of fiscal policy.

IV. Robustness analysis

We analyse the sensitivity of the results across different dimensions. First, we consider various regional dummy variables and subsets of countries. Second, we control for the role played by high inflation. Finally, we account for the importance of crisis episodes.

We start in Table 5 by either adding regional dummies (Asia and Pacific, South America and West Indies, Middle East, Africa and Europe) to the baseline model or considering different subsets of countries (non-OECD countries, developing countries and non-EU27 countries). The results corroborate the previous findings regarding the effects of political, institutional and macroeconomic variables on fiscal policy volatility. In fact, fiscal policy instability is typically associated with a lower level of democracy, incoming signals of government crises, presidentialist regimes and more flexibility in the exchange rate regime. Moreover, a few regional dummies are statistically significant and, consequently, play some role in explaining fiscal policy volatility. This result is particularly important for Africa and the Middle East.

In addition, the results show that there is little change in the quantitative nature of our findings – in particular, regarding the effects of the polity scale variable and the exchange rate regime. Nevertheless, we find that: the impact of government crises is larger for non-OECD countries, developing countries and non-EU27 countries, as a new incoming signal of government crisis significantly increases budget balance volatility; the presidentialist regimes are associated with larger fiscal policy instability in non-OECD countries, developing countries and non-EU27 countries; and the effects of the size of the country are, in general, quantitatively more important for non-OECD countries, developing countries and non-EU27 countries.

Finally, we find that the degree of persistence in the volatility of the fiscal policy instruments – in particular, government revenue volatility – is

TABLE 5

Fiscal policy volatility for different regions and subsets of countries

	Budget balance volatility				Government revenue volatility				Government spending volatility			
	Regional dummies	*Non-OECD*	*Developing countries*	*Non-EU27*	*Regional dummies*	*Non-OECD*	*Developing countries*	*Non-EU27*	*Regional dummies*	*Non-OECD*	*Developing countries*	*Non-EU27*
Lagged dep. var.	0.215**	0.211*	0.254*	0.197*	0.320***	0.379***	0.355**	0.370***	–0.150	–0.027	0.034	–0.077
	(0.107)	(0.110)	(0.131)	(0.105)	(0.119)	(0.136)	(0.146)	(0.140)	(0.137)	(0.165)	(0.110)	(0.149)
Polity scale	–0.002**	–0.003***	–0.004***	–0.003***	–0.001	–0.002*	–0.001	–0.002**	–0.002**	–0.001	–0.001	–0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Cabinet changes	0.014*	0.019*	0.020**	0.018**	0.009	0.010	0.008	0.010	0.010*	0.011	0.010	0.009
	(0.008)	(0.010)	(0.009)	(0.009)	(0.008)	(0.009)	(0.010)	(0.010)	(0.006)	(0.008)	(0.007)	(0.007)
Government crises	0.037*	0.072*	0.096**	0.065**	0.027	0.024	0.025	0.037	–0.005	–0.011	–0.008	–0.007
	(0.019)	(0.038)	(0.042)	(0.029)	(0.032)	(0.073)	(0.068)	(0.055)	(0.007)	(0.015)	(0.013)	(0.011)
Political system	–0.013***	–0.021**	–0.023***	–0.019***	–0.007	–0.008	–0.003	–0.007	–0.011**	–0.010*	–0.010**	–0.011**
	(0.004)	(0.008)	(0.008)	(0.007)	(0.009)	(0.014)	(0.012)	(0.012)	(0.005)	(0.005)	(0.004)	(0.005)
Political constraints	0.020	0.015	0.021	0.012	0.037	0.015	0.052	0.023	0.019	0.017	0.019	0.012
	(0.020)	(0.040)	(0.041)	(0.033)	(0.030)	(0.046)	(0.042)	(0.041)	(0.013)	(0.019)	(0.017)	(0.017)
Population	–0.005	–0.009**	–0.008**	–0.010***	–0.007	–0.008	–0.008	–0.008	–0.004	–0.003	–0.002	–0.006
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)	(0.004)
Trade openness	0.000	0.000	0.001*	0.000	0.000	–0.000	–0.000	–0.000	0.000	–0.000	–0.000	–0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Financial openness	0.007*	0.005	0.009	0.005	0.002	–0.002	–0.002	0.001	–0.003	–0.002	–0.004	–0.004*
	(0.004)	(0.005)	(0.006)	(0.004)	(0.007)	(0.007)	(0.008)	(0.007)	(0.002)	(0.003)	(0.002)	(0.003)
Exchange rate regime	0.005***	0.006***	0.008***	0.006***	0.001	0.000	0.001	0.001	0.003***	0.004**	0.003***	0.003**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)

Table continues on next page

TABLE 5 continued

	Budget balance volatility				Government revenue volatility				Government spending volatility			
	Regional dummies	*Non-OECD*	*Developing countries*	*Non-EU27*	*Regional dummies*	*Non-OECD*	*Developing countries*	*Non-EU27*	*Regional dummies*	*Non-OECD*	*Developing countries*	*Non-EU27*
Constant	0.033	0.141**	0.075	0.154***	0.138*	0.163*	0.164*	0.153**	0.103	0.078	0.059	0.123
	(0.058)	(0.064)	(0.071)	(0.055)	(0.081)	(0.088)	(0.088)	(0.076)	(0.103)	(0.096)	(0.093)	(0.076)
Asia &	0.000				–0.010				–0.002			
Pacific	(0.012)				(0.012)				(0.018)			
S. America	0.018				–0.004				0.005			
& W. Indies	(0.011)				(0.013)				(0.018)			
Middle East	0.069***				0.028				0.003			
	(0.026)				(0.052)				(0.023)			
Africa	0.049***				0.007				0.005			
	(0.017)				(0.027)				(0.023)			
Europe	0.021*				–0.012				–0.004			
	(0.012)				(0.014)				(0.017)			
Observations	477	321	339	370	478	322	340	371	478	322	340	371
Countries	102	72	77	79	102	72	77	79	102	72	77	79
Hansen (p-value)	0.81	0.88	0.83	0.91	0.39	0.54	0.42	0.43	0.50	0.50	0.53	0.53
AR2 (p-value)	0.28	0.26	0.25	0.26	0.97	0.94	0.93	0.95	0.68	0.43	0.38	0.47

Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous)*. The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals*.

significantly higher for non-OECD countries, developing countries and non-EU27 countries (0.36–0.38, compared with 0.20 for the countries we consider in Table 2). A possible explanation for this result is that these countries are more exposed to external shocks. Consequently, governments may try to insure against them by using fiscal policies that end up increasing the persistence of volatility. The finding for other countries – such as the EU27 countries – is in accordance with the work of Hughes Hallett and Lewis (2008). They study the evolution of fiscal policies in three periods – the pre-Maastricht phase, the run-up to monetary union and the Stability Pact

TABLE 6

Fiscal policy volatility excluding high inflation episodes

	Budget balance volatility	*Government revenue volatility*	*Government spending volatility*
Lagged dep. var.	0.208**	0.323**	–0.076
	(0.100)	(0.124)	(0.108)
Polity scale	–0.003***	–0.002***	–0.002**
	(0.001)	(0.001)	(0.001)
Cabinet changes	0.018**	0.010	0.008
	(0.008)	(0.008)	(0.006)
Government crises	0.048**	0.026	–0.006
	(0.022)	(0.036)	(0.007)
Political system	–0.015***	–0.010	–0.012***
	(0.005)	(0.009)	(0.004)
Political constraints	0.015	0.037	0.018
	(0.022)	(0.030)	(0.013)
Population	–0.009***	–0.008*	–0.004
	(0.003)	(0.005)	(0.004)
Trade openness	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
Financial openness	0.006	0.001	–0.002
	(0.004)	(0.006)	(0.002)
Exchange rate regime	0.005***	0.001	0.003***
	(0.001)	(0.002)	(0.001)
Constant	0.143***	0.155**	0.104
	(0.051)	(0.070)	(0.068)
No. of observations	471	472	472
No. of countries	102	102	102
Hansen (p-value)	0.87	0.34	0.57
AR2 (p-value)	0.26	0.97	0.52

Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous)*. The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals*.

phase – and show that fiscal discipline increased up to 1997 and was the product of the sanction of being denied entry to the euro. This, in turn, would explain the smaller government revenue volatility in EU27 countries.

The second robustness exercise consists of evaluating the importance of high inflation episodes. More specifically, we estimate the baseline model after excluding from the sample the countries that have experienced very high levels of (average) inflation (i.e. average inflation higher than 120 per cent) over the three-year non-overlapping windows.

Table 6 summarises the main findings. As before, the results are in accordance with the baseline model and show that some political and institutional variables (such as the polity scale and the political system), the demographic variable (i.e. population) and a macroeconomic variable (namely, the exchange rate regime) enter significantly in the various regressions of fiscal policy volatility. Moreover, both the signs and the magnitudes of the coefficients are similar to the baseline model for the level of democracy, the political system and the population. The impact of an incoming signal of a government crisis and the effect of variation in the exchange rate regime on budget balance volatility are only slightly weaker than in the baseline model. In addition, the persistence of the volatility of the discretionary component of government revenue appears to be smaller after dropping high inflation episodes, which suggests that inflation might be an important source of instability for the revenue side of the fiscal stance. We do not find any statistically significant effects for the degree of trade openness, the degree of financial openness or the political constraints.

As a final sensitivity check, we assess whether the empirical findings of the baseline model hold after excluding the occurrence of rare events, such as crisis episodes. For this purpose, we follow the classification of Reinhart and Rogoff (2009), and rerun the various models after dropping (from the sample) the non-overlapping windows that are immediately preceded by the occurrence of (a) at least one crisis episode, (b) a banking crisis, (c) a currency crisis or (d) a debt crisis.[31]

Table 7 provides a summary of the results, which are both qualitatively and quantitatively in line with those found for the baseline model. In particular, excluding crisis episodes from the sample does not affect the impact of the level of democracy, cabinet changes, the political system and the population of the country on the volatility of the discretionary component of the budget balance. Similar results hold when we exclude banking crises and currency crises from the regressions. Interestingly, the persistence of the

[31]Interestingly, Cerra and Saxena (2008) assess the impact of banking and currency crises on the behaviour of output. They construct an exchange market pressure index (EMPI) to identify currency crises, and obtain banking crisis data from the works of Kaminsky and Reinhart (1999) and Caprio and Klingebiel (2003). In our case, we follow Reinhart and Rogoff (2009) and, as a result, our crisis episodes data set is more up-to-date and also covers a wider typology of crises. Consequently, the sample size is reduced by around 8 per cent in case a, by 6 per cent in cases b and c, and by 1 per cent in case d.

budget balance volatility falls markedly after excluding debt crisis episodes, which suggests that such episodes tend to have long-lasting effects and bring an important amount of uncertainty about the conduct of fiscal policy. Finally, the effect of an incoming signal of a government crisis is amplified in the absence of banking crises – that is, in the absence of this kind of rare event, any rapidly developing situation that threatens to lead to the downfall of the regime importantly raises budget balance volatility.

TABLE 7

Fiscal policy volatility excluding crisis episodes

	Budget balance volatility			
	No crises	*No banking crises*	*No currency crises*	*No debt crises*
Lagged dep. var.	0.215***	0.232**	0.207**	0.179*
	(0.068)	(0.099)	(0.103)	(0.096)
Polity scale	–0.004***	–0.003***	–0.003***	–0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Cabinet changes	0.021**	0.016*	0.018**	0.020**
	(0.010)	(0.009)	(0.009)	(0.008)
Government crises	0.066	0.068**	0.045*	0.045*
	(0.043)	(0.027)	(0.026)	(0.024)
Political system	–0.016**	–0.016***	–0.015**	–0.015***
	(0.007)	(0.005)	(0.006)	(0.005)
Political constraints	0.041	0.024	0.025	0.013
	(0.033)	(0.027)	(0.025)	(0.022)
Population	–0.008*	–0.009**	–0.009***	–0.008**
	(0.004)	(0.003)	(0.003)	(0.003)
Trade openness	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Financial openness	0.010	0.009**	0.007*	0.007
	(0.006)	(0.004)	(0.004)	(0.004)
Exchange rate regime	0.005***	0.005***	0.005***	0.004***
	(0.002)	(0.001)	(0.002)	(0.001)
Constant	0.136*	0.139**	0.147**	0.132**
	(0.080)	(0.062)	(0.058)	(0.052)
No. of observations	285	400	407	462
No. of countries	84	102	100	101
Hansen (p-value)	0.86	0.80	0.83	0.83
AR2 (p-value)	0.31	0.42	0.23	0.23

Note: Estimation method is Blundell and Bond (1998). Heteroscedasticity and serial correlation robust standard errors are given in parentheses. * denotes statistically significant at the 10 per cent level, ** at the 5 per cent level and *** at the 1 per cent level. The null hypothesis of the Hansen J-test of over-identifying restrictions is H_0: *Model specification is correct and all over-identifying restrictions (all over-identified instruments) are correct (exogenous).* The null hypothesis of the AR2 is H_0: *There is no second-order serial correlation in residuals.*

V. Conclusion

In this paper, we estimate fiscal policy rules for the general government budget deficit, government revenue and government spending and use the standard deviations of the residuals of those equations as a proxy for the volatility of fiscal discretion. Then we investigate the political, institutional and macroeconomic drivers of the volatility of the discretionary component of fiscal policy.

Using a dynamic panel data model for a large set of countries and modern econometric techniques, we show that more political instability (as expressed by an incoming signal of a government crisis), less democracy and presidentialist systems (relative to parliamentary ones) increase the likelihood of fiscal discretion. Additionally, we find (i) that the larger a country is, the more insured it is against uncertainty about the conduct of fiscal policy and (ii) that a more flexible exchange rate regime raises the volatility of fiscal policy discretion. Moreover, the impact of political instability tends to be larger in the case of non-OECD countries, developing countries and non-EU27 countries. Also in these countries, presidentialist regimes imply greater fiscal discretion.

Our results are robust to the presence of high inflation and crisis episodes. Finally, the empirical findings suggest that debt crises have persistent effects on the volatility of fiscal policy discretion and substantially increase the uncertainty surrounding the conduct of fiscal policy.

We believe that this paper's analysis and conclusions are a valuable contribution to academics and policymakers alike. Our work suggests that by improving the quality of their institutions, creating conditions for government stability and moving towards democratic regimes and parliamentary systems, countries can restrict fiscal policy discretion.

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