# Political and Institutional Determinants of the Cyclicality of Fiscal Policy: Evidence from the OECD and Latin America

**Nuno Venes**[*]

ISEG and Universidade Lusíada
Rua da Junqueira, 188 a 198, 1349-001 Lisboa, Portugal
nvenes@lis.ulusiada.pt

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## Abstract

In this paper, we analyse the role of political and institutional variables on the cyclical patterns of central government expenditure and revenue. Working with a sample of 38 OECD and Latin-American countries in 1960-2003, we find that higher levels of income inequality are associated with stronger expenditure procyclicality, and that better institutions do not seem to mitigate this effect. IMF interventions are, in general, statistically insignificant in explaining the cyclical behaviour of expenditure, as well as the degree of development of financial systems. On the revenue side, income inequality leads to less procyclical policies. In general, political and institutional variables explain the cyclicality of government expenditure better than that of revenue.

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**Introduction**

In recent years, researchers have been paying greater attention to the behaviour of fiscal policy over the business cycle. According to the Keynesian wisdom, fiscal policy should behave in a countercyclical fashion, with public expenditure acting in such a way as to stabilize the business cycle. Another well-known theoretical statement related to fiscal cyclicality is the "tax-smoothing" hypothesis, according to which tax rates should be held constant over the business cycle for a given path of public expenditure. So, budget surplus should behave procyclically (Barro, 1979). On the expenditure side, the neoclassical literature is relatively weak in offering normative conclusions, since the typical assumption is that public expenses are exogenously determined (Lucas and Stokey, 1983; Blanchard and Fisher, 1989).

In the context of EMU, for example, fiscal policy plays a crucial role of cyclical stabilization in the presence of asymmetric shocks, since it is the last macroeconomic policy under the control of national governments. Given this statement, and also bearing in mind the normative approaches of the previous paragraph, procyclicality is something that should be avoided. However, some important evidence of procyclicality has been found, particularly in some studies covering Latin-American countries (Talvi and Végh, 2005; Stein et al., 1999; Gavin and Perotti, 1997; Gavin et al., 1996).

The aim of this paper is to investigate the influence of political and institutional variables on the cyclicality of fiscal policy, in a group of 38 selected OECD and Latin American countries, between 1960 and 2003. Our fiscal variables are real central government total expenditure and revenue. In order to explain the cyclical pattern of these fiscal variables, we use a large set of determinants including aspects such as socio-political instability, the age and quality of democracies and institutions, electoral rules and forms of government, social polarization or the role of the IMF stabilization programmes.

In relation to most of the literature concerning the cyclicality of fiscal policy, we widen both the geographical coverage (by considering *both* the OECD and Latin America instead of either one or the other) and budget categories (not only government expenditure but also revenue)[1]. Additional contributions are introduced into this present work. First and foremost, we use a much wider set of variables than the related literature, in order to explain fiscal cyclicality. Some of them were also used in other papers, though applied to different dimensions of fiscal policy. For example, our measures of socio-political instability, such as the number of government crises or the number of cabinet changes, were used by Woo (2003) as possible determinants of a deficit bias. We will try to discover if those variables also help to explain fiscal cyclicality. We also propose new variables – for instance, to check the role of the IMF stabilization programmes as a possible determinant of cross-country differences in the cyclical pattern of fiscal policy. Additionally, we have addressed in some detail methodological issues that are often neglected in the literature, such as dealing

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[1] A few previous studies, such as Woo (2005), Persson and Tabellini (2003), and Alesina and Tabellini (2005), also use samples of both OECD and Latin American countries. In addition, Alesina and Tabellini (2005) define the cyclicality of fiscal policy in terms of government expenditure, revenue, and the overall budget deficit.

systematically with outliers, and ensuring coherence between the time span of the several variables involved (fiscal and political/institutional).

In the following section, the related literature will be reviewed. Section 3 presents the data used in our empirical work. In Section 4, we present the empirical strategy. Section 5 contains the main empirical results. Section 6 concludes.


## 2 - Related Literature

In the last decade, an important part of the literature associated with fiscal policy has been addressing the issue of cyclicality. We are able to find both theoretical and empirical developments in this field of research.

One possible explanation for procyclical fiscal policies is given by Gavin and Perotti (1997). They argue that procyclicality, which is more commonly found in Latin American countries, may have to do with the loss of access to external financing during bad times. Hence, countries are unable to borrow in bad times, which require a contractionary fiscal policy.

Talvi and Végh (2005), however, argue that procyclicality in developing countries has much more to do with the variability of the tax base in these countries (between two and four times higher than in G-7 countries). The authors develop an optimal fiscal policy model, including a political distortion according to which there exists an endogenous component of government spending that depends positively on the budget surplus. A government facing strong fluctuations in the tax base will be forced to accept an increase in expenditure in good times, since political pressures become harder to resist. Given this political distortion, the best way to avoid a high growth in expenditure is to lower tax rates. This procyclical behaviour is a second-best response to that political distortion. This explanation contrasts with the one given by Gavin and Perotti (1997). In addition, the authors refer to the contribution of Lane (2003), according to which procyclicality is also present in many OECD countries, for which the lack of access to international credit markets has not been typically an issue.

Alesina and Tabellini (2005) explain the outcome of procyclicality in democratic developing countries through the argument that voters face corrupt governments that can appropriate part of tax revenues for unproductive public consumption (political rents). In good times, voters expect governments to increase political rents, thus pressing politicians to increase social spending (or cut taxes) in order to obtain part of those rents. The closer the electoral period, the *better* the results will be for voters. In addition, the authors criticize the argument related to the supply of credit (borrowing constraints) used by Gavin and Perotti (1997) and Kaminski et al. (2004), among others.

Tornell and Lane (1999) and Lane and Tornell (1998) give an alternative political explanation for the question as to why many countries follow seemingly procyclical fiscal policies. According to these authors, when more resources are available, the common pool problem is more severe and the fight over common resources intensifies, leading to budget deficits. This is what they call the "voracity effect".

Woo (2005) emphasizes the role of social polarization in understanding procyclical fiscal stances often observed in a number of countries. When there is polarization of social preferences over public choices, the incentives become greater for policymakers to implement their preferred policies. This individual rationality may threaten efficiency for the economy. According to the author, such incentives may become particularly strong during boom periods, since increased revenues or new resources make their preferred policies seem easier to implement, thus producing procyclical fiscal policies.

At the same time, some relevant empirical findings have been emerging. Gavin et al. (1996) argue that fiscal outcomes are highly procyclical in Latin America and that this pattern is at its most pronounced during recessions. One important suggestion is that Latin American fiscal surpluses fail to move in a stabilizing manner due to the strong procyclical response of public spending. According to their estimations, a one percent increase in real GDP growth raises real spending of the consolidated central government by about 0.61 percent. Gavin and Perotti (1997) draw attention to the procyclical fiscal policy in Latin America, particularly in periods of low growth. In contrast, in the industrialized economies, policy behaves countercyclically. Mailhos and Sosa (2000) show that fiscal policy in Uruguay was strongly procyclical during the period 1955-1998, as far as both government spending and revenue are concerned. Gupta et al. (2004) found econometric evidence of procyclicality in the government expenditure of developing countries, though the degree of procyclicality varies across spending categories. Kaminski et al. (2004) found that fiscal policy is procyclical for the majority of developing countries. Alesina and Tabellini (2005) find that fiscal policy is procyclical in many developing countries and that this behaviour is mainly due to government spending. Their political argument, according to which voters in such countries face corrupt governments, is reinforced by the strong positive correlation between procyclicality and measures of corruption.

Hallerberg and Strauch (2002) try to investigate to what extent fiscal policy has been playing its stabilizing role, as would be desirable in an EMU context. For this purpose, they estimate the cyclicality of various categories of both government expenditure and revenue. In a subsequent part of their work, the authors extend the model by including political and institutional factors in order to investigate the interaction of these variables with fiscal cyclicality. Their results suggest that political variables exhibit little influence on the cyclical pattern of public finances. Furthermore, the authors find a significant effect of the electoral cycle upon central government budgets. Lane (2003) also addresses the issue of cyclicality in a sample of OECD countries and for a large set of fiscal variables. The main conclusion is that output volatility and the dispersion of political power are important determinants of fiscal procyclicality. Pina (2004) found a procyclical behaviour of public expenditure in Portugal. Public revenue, on the contrary, has reacted to the cycle in a stabilizing way, even when the influence of automatic stabilizers is removed.

Based on a sample of 56 countries, Talvi and Végh (2005) find that while fiscal policy in G-7 countries seems to be consistent with Barro's tax-smoothing hypothesis, in developing countries spending and taxes are highly procyclical. Based on annual information for 96 countries over the period 1960-2001, Woo (2005) found that social polarization, measured by income or educational inequality, is consistently positively associated with procyclicality in fiscal policy.

Different methodological strategies were followed in these empirical works. For example, Lane (2003), Alesina and Tabellini (2005) and Woo (2005) run a two-step estimation strategy, firstly in order to obtain cyclicality coefficients through time-series estimations, and secondly to find the determinants of those cyclical patterns by estimating cross-section regressions. On the other hand, Hallerberg and Strauch (2002) and Persson and Tabellini (2003) use panel data estimations in order to discover significant determinants of cyclicality. As explained in Section 4, we follow the former approach in this paper.

## 3 – Data

Our sample includes 38 countries, selected on the basis of size (at least one million inhabitants in 2003) and data availability (at least 14 observations to estimate the coefficients of cyclicality). Our time span ranges from 1960 to 2003 (the maximum sample length in our sources), though, for some countries, the data interval is shorter.

The main data sources are the International Financial Statistics (IFS), from the IMF, and World Development Indicators (WDI), from the World Bank. Our economic control variables, such as inflation (INFLATION), GDP per capita (GDPPC), openness to trade (TRADE), and the percentage of the total population over 65 (POP65), are obtained from WDI. However, fiscal variables (central government expenditure and revenue) are obtained from IMF-IFS. We use fiscal data relative to central government instead of general government. A natural question is why. The first reason is data availability. Data on general government are available in the Government Finance Statistics (GFS) database of the IMF, but only from the 1970s onwards and for a small set of countries in our sample. The second important reason is data comparability. Since our sample includes OECD and Latin American countries, we tried to obtain, simultaneously, a large time span of data coverage and comparable data found in the IFS-IMF database. Nevertheless, using only central government deficit data could bring problems since a significant part of public expenditure and revenue in some developing countries is attributable to local and regional governments, as in the emblematic cases of Brazil and Argentina[2]. Another important argument sustaining our option is given by Persson and Tabellini (2003), p. 38, where it is argued that in GFS, and for countries where data on general government are available, the correlation coefficient between the size of central government and the size of general government is about 0.9.

As already stated, a large set of political and institutional regressors[3] is considered in order to explain cross-country differences in the cyclical patterns of government expenditure and revenue. Some were used in previous studies on cyclicality (Section 2), others in studies on other dimensions of fiscal policy, whilst yet others are 'new'[4]. These variables were grouped under the following categories (the data appendix provides more detailed information on each variable):

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[2] See Woo (2003), p. 390. However, at least these two countries are not included in our sample.

[3] An appendix to the paper containing summary statistics on these regressors is available from the author upon request.

[4] To some extent, our approach resembles that of Persson and Tabellini (2003), who claim that 'We are not led by sharp theoretical priors but seek to describe systematic patterns in the data' (Persson and Tabellini (2003), p. 236).

### 3.1 – Socio-political instability

Such variables are considered in order to capture the existing socio-political instability, such as the number of cabinet changes (CABCHG), the number of major constitutional changes (CONSTCHG), the number of changes in the effective executive (EXECHG), the number of coups d'état (COUPS), government crises (GOVTCRIS), and revolutions (REVOLS). These variables were all used by Woo (2003) as possible determinants of a deficit bias. Changes in government were also used by Hallerberg and Strauch (2002), but from a different source.

### 3.2 – Quality and age of democracy

The quality and age of democracies is considered through the inclusion of three variables: an index of civil liberties and political rights, measuring the quality of democratic institutions, and produced by Freedom House (GASTIL); a score for democracy, measuring the degree of democratization in a country (POLITY); and an index of democracy age (AGE). Persson and Tabellini (2003) find a significant interaction between GASTIL and the dummies characterizing forms of government and electoral rules; the effects of a presidential regime and majoritarian elections on welfare state spending are also greater in better and older democracies. We seek to discover whether this set of determinants can help to explain the cyclicality of government expenditure and revenue.

### 3.3 – Quality of institutions

We use the variable POLCONIII[5], from Henisz (2002), in order to account for the effects of fiscal constraints. In a certain way, this variable is a proxy for the quality of institutions. Persson et al. (1997) conclude that an improvement in equilibrium outcomes (through the reduction of politicians' rents) can result from a separation of powers with appropriate checks and balances. Thus, a greater dispersion of power (in the sense of checks and balances) may lead to sounder fiscal policy by reducing the harmful effects of polarization on fiscal behaviour. The index is also used by Woo (2005), in this case with higher values of the index (i.e. a greater separation of powers) leading to more countercyclical government spending. POLCONIII (the index used in the present work) is a more recent version of POLCON - see Henisz (2000). Lane (2003) uses POLCON as a *proxy* for the dispersion of political power, but his interpretation of the index is the opposite of the one given by Woo (2005), since Lane (2003) uses it as a *proxy* for the intensity of the voracity effect (see Section 2).

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[5] This (0,1) index is based on the number of veto points in the political systems and the distribution of preferences across and within the different institutions of political power. The greater the number of veto points and the division of control between different political parties, the greater the dispersion of power. Henisz (2000) shows that the index of political constraints is positively associated with economic growth. A greater dispersion of power reduces the ability of the executive branch to introduce legal or constitutional changes.

### 3.4 – *Electoral rules*

A different class of variables included in our work is the one relating to the rules under which members of parliament and the executive are elected in a representative democracy. So, we have a variable MAJ equal to 1 if the lower house in a country is elected under the system of first-past-the-post or plurality rule. In fact, there are several authors who maintain that electoral rules significantly affect fiscal outcomes[6]. Following Persson and Tabellini (2003), we also include interaction variables to test whether the effects of majoritarian elections on the parameters of cyclicality depend on the age and quality of democracies.

### 3.5 – *Forms of government*

Another very important dimension of the electoral systems has to do with the way in which the executive is chosen. We created a variable PRES as a dummy variable for the forms of government, which takes the value 1 if a country has a presidential regime. Several authors use these variables in empirical works on deficit bias and other dimensions of fiscal policy that are different from cyclicality[7]. Again following Persson and Tabellini (2003), we control for the interactions of AGE and GASTIL with the different forms of government in relation to fiscal cyclicality[8]. We also compute the product between MAJ and PRES (MAJPRES) in order to check the global effect on the cyclicality of fiscal policy of a simultaneous shift to a presidential/majoritarian system.

### 3.6 – *Income inequality and social polarization*

According to the existing literature, social polarization, measured by income and/or educational inequality, is an important source of social conflict that may lead to populist fiscal policy[9] [10]. Although some studies analyse the role of social polarization in the evolution of fiscal deficits[11] and the composition of government expenditures,

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[6] Stein et al. (1999) and Woo (2003) found evidence of the effects of electoral rules on budget surpluses expressed as a percentage of GDP. Persson and Tabellini (2003) also present evidence of the link between electoral rules and three different dimensions of fiscal policy: the size of government, measured by central government spending and revenue as a percentage of GDP; welfare state spending; and the budget surplus as a percentage of GDP.

[7] Stein et al. (1999), Woo (2003) and Persson and Tabellini (2003) argue that presidential regimes create considerably smaller governments than parliamentary regimes.

[8] Persson and Tabellini (2003) show that the effect of forms of government on welfare state spending is stronger in older and better democracies (higher values of AGE and lower values of GASTIL). Conversely, older and better democracies are associated with larger welfare states only under parliamentary regimes – proportional electoral rules.

[9] See Rodrik (1996), Kauffman and Stallings (1991), and Berg and Sachs (1988).

[10] Persson and Tabellini (2003) show that higher levels of income inequality affect welfare spending, despite the fact that these pull in opposite directions under different forms of government. Higher levels of inequality are associated with a smaller welfare state in parliamentary democracies, contrary to expectations. In presidential regimes, inequality is instead associated with higher levels of welfare spending.

[11] See, for example, Woo (1999) for the first econometric evidence that income inequality is a significant determinant of public deficits, in a cross-section of 91 countries, for the period 1970-90. See also Woo (2003).

there are few empirical works about the effects of social polarization in fiscal cyclicality[12]. Following Woo (2005), we will check the effect of social polarization on the cyclicality of both government expenditures and revenues, by including three alternative measures of income inequality: AGINIHI80, AGINIHI and AGINI80. Differently from Woo (2005), however, our main measure is AGINIHI80, which includes only coefficients in the 1980s, because data availability is not uniform among the countries, and comparability becomes easier if we take a particular decade average. The 1980s were selected because data availability is higher in this decade, and, at the same time, it is relatively recent. We also interact our income inequality measures with the age and quality of democracies (AGE / GASTIL), in order to check to what extent the influence of these inequalities on fiscal cyclicality is less prominent in older/better democracies. In a similar vein, and following Woo (2005), we also consider three composite indexes of social polarization: SOCPOL1 = AGINIHI * (1-POLCONIII); SOCPOL2 = AGINIHI80 * (1-POLCONIII); SOCPOL3 = AGINI80 * (1-POLCONIII). The purpose of these indexes is to test whether good institutions can, to some extent, alleviate the problem of high polarization.

### 3.7 – *Type of political regime*

A different class of variables has to do with the type of regime (REGIME). To our knowledge, no other works have considered these variables. We consider three types of regime: civilian, military-civilian and military. Again, we interact the type of regime with the age and quality of democracies in order to check if each type of regime produces different effects on the cyclical patterns of fiscal policy in older and better democracies.

### 3.8 – *The role of the IMF programmes*

An innovative contribution of our work is the inclusion of the variable IMFINT. This is a dummy variable taking the value 1 if there was any kind of conditional intervention by the IMF in a country, in the respective year. The main purpose of the inclusion of this variable is to discover whether IMF interventions play any significant role in the cyclical behaviour of public expenditures and revenues. We know that any IMF programme includes a certain degree of conditionality regarding the formulation of economic policy. Fiscal policy can naturally change its guidelines if the Fund is "present" in a country. So, we thought that it would be useful to discover to what extent such interventions can affect the cyclical pattern of government expenditure and revenue. Frequently, when a government calls for the Fund's financial aid, this occurs in "bad times", with reduced or negative real GDP growth rates and large public and external deficits. The traditional IMF formula includes making heavy expenditure cuts and raising tax rates, causing fiscal policy to behave in a procyclical manner. So, IMF conditionality is expected to contribute to a procyclical behaviour of government expenditure and revenue. We interact IMFINT with the age and quality of democracies, the electoral rules and the forms of government. Our purpose is to test whether IMF

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[12] Woo (2005) is an exception. See Section 2.

interventions have a different impact on procyclicality in older and better democracies and in the presence of non-majoritarian electoral rules and parliamentary regimes.

## *3.9 – Development of financial systems*

We should also take into account the possible role played by the degree of development of financial systems in each country. This is particularly interesting since we mix OECD countries with Latin American countries in our sample. In fact, fiscal deficits may be more easily financed by the issuing of bonds (thus avoiding inflationary finance) by countries with more highly developed financial markets. Lane (2003) argues that an extension of his work through the inclusion of some non-OECD countries in the sample would involve developing a framework that was able to take into account the possible role played by international financial crises in inducing forced fiscal procyclicality in some emerging market economies. More highly developed financial systems actually enable countries to better protect themselves from the effects of international financial crises. According to Gavin and Perotti (1997), developing countries are more prone to run procyclical fiscal policies due to a lack of access to international credit markets (see Section 2). Following this idea, we include a variable FINDEPTH[13] – liquid liabilities (M3) expressed as a percentage of GDP (from WDI 2004, World Bank) – as a measure of the degree of development of a financial system[14]. Although there are some empirical works focusing on the effects of this variable on deficit bias, as is the case of Woo (2003), its impact on cyclicality has, to our knowledge, not been empirically studied so far. Following the argument of Gavin and Perotti (1997), we expect that higher values of FINDEPTH (more developed financial systems) have an anti-cyclical effect on fiscal policy. In addition, we interact FINDEPTH with the age and quality of the democracies, the electoral rules and the forms of government.

## *3.10 – Government fragmentation*

A branch of empirical research on fiscal policy focuses on so-called government fragmentation. Woo (2003) considers three ways of measuring government fragmentation[15]: the number of seats held by the largest party in the lower house, a party fractionalization index and a measurement of coalition composition. We will use the

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[13] Woo (2003) uses the same variable, although with a different label (ILLY). According to his conclusions (p. 394), a 10 percent increase in ILLY is associated with an additional deficit of 0.6% (as a percentage of GDP). His argument in defence of this relationship is that countries with highly developed financial markets can more easily finance fiscal deficits by issuing bonds without having to resort to inflationary finance.

[14] According to Pitzel and Uusküla (2005), three main definitions can be used to measure financial depth: the ratio of monetary aggregate to GDP, the ratio of debt to GDP (indebtedness), and the ratio of stock market capitalization to GDP. Although these sets of variables are proxies for the same feature, they should be treated separately in order to capture the role of different structures of financial markets among the countries. For example, stock market capitalization is a proxy for the availability of non-bank finance. Following the suggestion of Woo (2003), we used the first definition, the M3 to GDP ratio.

[15] Volkerink and de Haan (2001) present evidence according to which more fragmented governments have higher deficits.

same variables (SEAT, PARFRACT and COAL) to check their influence on our estimated parameters of cyclicality. These variables are supposed to reflect the possible role played by the voracity effect on the cyclicality of fiscal policy, since features such as a weaker position of the largest party in the legislature, or a more fractionalized parliament, or weaker governments (coalitions/minority governments), tend to intensify the common pool problem (see Section 2).

Kontopoulos and Perotti (1999) broadened this line of research by using the number of spending ministers as a further measure of fragmentation. In our work, we therefore include the variable CABSIZE (the size of the cabinet, referring to the number of ministers). Hallerberg and Strauch (2002) used some fragmentation variables, such as the government ideology, the constellation of parties in government and parliament, the size of the cabinet and the number of policy-actors with veto authority. However, they could not find any systematic interaction of these variables with output fluctuations. Woo (2003) also used some fragmentation variables (number of ministers, party coalitions, party fractionalization and the position of the largest party in the legislature), although in this case in order to study the deficit bias[16].

## 4 - The Empirical Strategy

In order to obtain a pattern of cyclicality of fiscal policy, we begin by running time-series estimations, for each country, of the following model:

$$\Delta \log G_t = a + dt + fD_t + b\left(\Delta \log REALGDP_t - \Delta \log HPTRENDS_t\right) + e_t \qquad (1)$$

The variable $G_t$ corresponds to fiscal aggregates – central government real total expenditure (REALEXP) and real total revenue (REALREVE), for each country. REALGDP is real gross domestic product. HPTRENDS is the trend component of REALGDP obtained through the Hodrick-Prescott filter. A time trend $t$ is also added. $D_t$ are year dummies. $e_t$ is the residual component.

We included a time trend in all estimations. Since it was not always statistically significant, we decided to keep the trend just for the regressions where it is significant at least at a 10% level of significance[17].

We also include year dummies taking the value 1 if, in a given year, the fiscal aggregate (expenditure or revenue) varies by 40% or more[18]. But as we did with the time trends, we considered only those dummies with significant coefficients, at least at a 10% level of significance[19]. To our knowledge, no other studies appear to implement a

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[16] He argues that a larger cabinet size (the number of ministers in the cabinet) is strongly associated with larger public deficits.

[17] Tables A1 and A2 detail when the time trend was retained.

[18] The only exception is Austria in 1980. In fact, in 1980, the variation of the real revenue was about 33%, but since this was clearly a result of a break of comparability in the data, we decided to include the dummy in the revenue regression. An appendix containing graphs of the evolution of real expenditures and real revenues is available from the author upon request.

[19] See Tables A1 and A2.

systematic procedure for dealing with outliers, which are actually quite common in developing countries.

As is clear, our measure of the economic cycle is the first difference in the output gap, and we take the dependent variable as the growth rate of real expenditure (or revenue). We can then interpret the coefficient $b$ as the response of the growth rate of real expenditure (or revenue) to a one percent change in the first difference in the output gap. A positive value of $b$ in the expenditure equation means a procyclical fiscal policy, whilst a negative estimated parameter indicates countercyclicality. In the revenue equation, a positive value of $b$ means countercyclical revenues.

Other authors use similar measures of fiscal cyclicality. Woo (2005) and Lane (2003) use the relationship between the real growth of government spending and the growth rate of real GDP. Arreaza et al. (1999) also use the regression-based estimates of cyclicality in their investigation into the cyclical pattern of fiscal policy in the OECD. Nevertheless, as was noted by Woo (2005), there is no consensus on the most correct way to measure cyclicality. For instance, Talvi and Végh (2005) and Kaminski et al. (2004) used the correlation coefficient between government spending and the HP-filtered output.

Equation (1) is estimated by the ordinary least squares (OLS) method. We corrected for first-order autocorrelation. We clearly have a problem of endogeneity in our measurement of the economic cycle, since the output gap (and its first difference) is influenced by fiscal policy. But we are not interested in the structural-form relationship between fiscal policy and the cycle. According to Lane (2003), if our main goal is to obtain a measurement of cyclicality, the reduced-form relationship may be more appropriate, therefore including any feedback from fiscal variables to the output gap. That is why we use the OLS method instead of instrumental variables estimation[20]. The estimated betas are presented in Tables A1 and A2.

In the following step, we try to explain cross-country variations in the coefficients of cyclicality estimated above, with the following cross-sectional specification:

$$\hat{b}_i = a + fZ_i + lW_i + m_i \tag{2}$$

$\hat{b}_i$ is the vector of the estimated betas in the first step. $a$ is a constant term. $Z_i$ includes some commonly employed economic controls (GDP *per capita*, openness to trade, the share of the population over 65 years old and the rate of inflation). GDP per capita (GDPPC) is included to control for the potential effect of the level of development on fiscal cyclicality. Woo (2003) uses the log of real per capita GDP, however, in order to control for the effects of economic backwardness on public deficits, which is a different policy dimension to the one studied in the present work. Trade openness (TRADE) is important since open economies are more prone to external risks, so that the government should promote consumption smoothing through a

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[20] If we were interested in the structural-form relationship between fiscal policy and the cycle, it would be necessary to use an instrument for our measurement of the cycle.

countercyclical policy, as argued by Rodrik (1998). We also include the share of the population over 65 (POP65), as countries with a large share of retired people will feel greater pressure on their social security systems[21]. Finally, following Woo (2003), we consider INFLATION. In the several estimations of the role of political and institutional variables on the cyclicality of government spending and revenues, we only include the controls that are statistically significant at least at a 10% level of significance.

Finally, $W_i$ includes all the political and institutional variables described in Section 3. These are our relevant regressors. Each regressor is a country average of yearly observations[22]. In some regressions, we consider a dummy LAM equal to 1 if a country is in Latin America.

We run White heteroskedasticity-consistent estimations by OLS. We also reran regressions by weighted least squares (WLS). Indeed, the beta coefficients obtained in equation (1) are estimated with different degrees of precision; for the purposes of a sensitivity analysis, we seek to control for this fact in the second step estimation[23].

## 5 – Estimation Results

Tables A1 and A2 include the estimated coefficients of cyclicality of government expenditure and revenue from equation 1.

Tables B1 to B8 present the OLS estimates when the dependent variable is the vector of the estimated coefficients of cyclicality of government expenditure. Tables C1 to C8 present the same information, but, in this case, when the dependent variable is the vector of the estimated coefficients of cyclicality of fiscal revenue (See, in both cases, equation 2).

### 5.1 – The cyclical behaviour of government expenditure

Concerning the cyclicality of government expenditure, our main result is related to the difference between the pattern found in the OECD and Latin American economies. The left panel of Table A1 presents the estimated cyclicality coefficients for the OECD countries. Although the average parameter is negative (-0.04), there is only scant evidence of countercyclicality. In fact, if we exclude Sweden, which presents the highest absolute value, the average cyclicality of this group of countries becomes positive. Apart from this, there is a great deal of heterogeneity between the estimated betas, and the number of countries exhibiting countercyclicality equals the number of countries with procyclical expenditure. Portugal, New Zealand, Hungary, Germany,

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[21] This control was also used by Woo (2003), although in a study about the deficit bias. We acknowledge that the link between this variable and cyclicality is not clear.

[22] Not all the available observations were used to compute the averages. If, for example, in the estimation of the coefficient of cyclicality, we have only considered observations from 1970 to 1998 for a certain country, all the regressors of the second step for that country are averages of the observations made during the same period, despite the availability of other observations. We believe that this reinforces the coherence of our empirical results.

[23] An appendix with these results is available from the author upon request.

Japan and Switzerland exhibit a clear procyclical pattern, while Sweden, the United Kingdom, Korea, France and Denmark, for example, exhibit countercyclicality.

In Latin America, the results are much more homogeneous among countries (left panel of Table A2). A clear procyclical behaviour of government expenditure can be observed, with Ecuador being the only exception, with an estimated beta of -0.35. The average beta is 1.15, with the maximum estimated coefficient belonging to Guatemala (2.91) and the lowest (excluding Ecuador) belonging to Uruguay (0.17). In general, procyclicality is statistically significant, confirming the results of other related studies (Talvi and Végh, 2005; Stein et al., 1999; Gavin and Perotti, 1997; Gavin et al., 1996).

### 5.2 – Determinants of the cyclicality of government expenditure

Socio-political variables were the first category considered as possible determinants of the cyclicality of fiscal policy and of the differences found between countries. As we can see in Table B1, in general these variables play no significant role. COUPS is an exception: Column 3 shows that a higher number of coups d'état is associated with a lower coefficient of cyclicality.

The age of democracy presents no statistical significance, although in all the specifications (Table B2, Columns 1, 1a and 3) its coefficient presents a negative sign, suggesting that older democracies tend to allow government expenditure to play its Keynesian stabilization role. This result does not hold when we interact the age of democracy with the dummy LAM. According to the results shown in Column 1a, where we consider the dummy LAM to assume the value 1, this effect becomes positive (1.26 = 1.51 – 0.25). The results are similar if we include AGE jointly with the quality of institutions (GASTIL). Column 3 shows these results. Individually considered, AGE and GASTIL do not have a significant impact on estimated betas, but if we analyse the role of AGE in Latin American countries, we can see that when AGE rises by 0.1 the cyclicality coefficient rises by 0.108 ((1.77 – 0.69) / 10). Political constraints have a far more significant impact on cyclicality. According to the results shown in Column 5a, the effect is strongly negative in the OECD countries, with a rise in POLCONIII (Index of political constraints) of 0.1 leading to a decrease of beta of 0.314. If we only consider the Latin American economies, the results change sharply. In fact, the coefficient of POLCONIII becomes slightly positive (0.35), meaning that the contribution of the level of checks and balances leads to less procyclicality only in the OECD economies. The results for the whole sample are statistically insignificant, as we can see from Column 5.

Electoral rules and forms of government tend to be associated with differences across countries in the cyclicality of government spending. Table B3 shows the main results. Jointly considered, the dummies for the electoral rules (MAJ) and the forms of government (PRES) present no significant impact. Nevertheless, Columns 2 and 3 show important results. Majoritarian formulas play opposite roles in the OECD and Latin American countries. In the OECD countries, the shift from a proportional to a majoritarian electoral rule is related to a decrease in the coefficient of cyclicality by 0.38, while in Latin America the same shift is associated with an increase of estimated betas by 0.33 (see Column 2). The form of government is not a significant source of differences in cyclicality, as we can see in Columns 3 and 3a, unless we combine it with

the age of democracies (Column 7). As is clear, the results differ when we distinguish between older and younger democracies. Shifting from a parliamentary to a presidential regime reduces the parameter of procyclicality by close to 1.01 in younger democracies and increases it by close to 0.55 in older democracies. Finally, we can observe a significant impact on cyclicality of a simultaneous shift to a majoritarian formula and a presidential regime. The results shown in Column 4 allow us to conclude that such a political change leads to a reduction of the coefficient of cyclicality by 0.42.

Table B4 presents the relationships between income inequality and the cyclicality of government expenditure. Income inequality, measured by the average of the "high quality" Gini coefficients[24], positively affects the coefficient of cyclicality. In fact, according to the results shown in Column 1, when AGINIHI rises by 10 points, procyclicality rises by 0.7. When we analyse the whole sample separately, we can see that this impact is stronger in Latin America than in the OECD countries, but nonetheless positive in both cases (0.5 and 0.4, respectively). Similar conclusions can be extracted from the analysis of the results in Columns 2 and 3, since AGINIHI80 and AGINI80 are alternative, but quite similar measures of income inequality (see Section 3.6). This procedure reinforces the robustness of the results and confirms the theoretical assumptions according to which high levels of income inequality are an important source of procyclicality in government expenditure (Woo, 2005). These effects also depend on the age of democracies. Columns 4, 5 and 6 show the results of the interaction of our measures of income inequality with the age of democracies. Again, the results are very similar across the three specifications, although the first one presents a weaker statistical significance. For example, from Column 5 we are allowed to conclude that the effects of income inequality on the cyclical behaviour of government expenditure are far stronger in older democracies than in younger ones. An increase by 10 points in AGINIHI80 leads to an increase in the parameter of cyclicality by 1.8 in older democracies (the extreme case being AGE=1) and 0.5 in younger democracies (considering AGE=0). We also tried to discover whether the procyclical effect of income inequality interacts with the quality of democracies, measured by GASTIL. The results shown in Columns 7 to 9 do not support this hypothesis. In Columns 10 to 12 we estimate the impact of our composite indexes of social polarization on the cyclicality of government spending. The main goal is to check whether the quality of institutions is important for defining the impact of Gini coefficients on the estimated cyclicality. In a certain way, this procedure is no more than a robustness analysis in relation to the results reported in Columns 7 to 9 (or even 4 to 9), since we have no strong reason for excluding the hypothesis under which POLCONIII is a reasonable indicator of the quality of institutions, as well as GASTIL (or AGE). In fact, none of the estimated coefficients in Columns 10 to 12 is statistically significant. This clearly means that we could not find any evidence that better institutions mitigate the procyclical impact of income inequality. Thus, in this respect, our results do not support the conclusions obtained by Woo (2005).

We also intended to discover whether there exists any influence of the type of political regime on the cyclicality of government expenditure (Table B5). The results are quite clear. Estimated coefficients are always statistically insignificant in all our specifications, suggesting that the hypothesis according to which civilian, military or

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[24] See Data Appendix.

mixed regimes could lead to different cyclical patterns of government spending does not hold.

Concerning the role of IMF interventions, whose results are shown in Table B6, we can say that, in general, those interventions display no significant link with cyclicality. Considered individually (Columns 1 to 1b), these programmes adopted by the IMF do not exhibit any influence on the cyclical behaviour of government expenditure. In Columns 2 and 2a, the results become slightly more interesting, since when we try to check whether the age of democracies is a determinant of the effect of IMF interventions, the parameter of the interaction variable (IMFINT*(1-AGE)) is statistically significant. For example, from Column 2, we can conclude that IMF programmes are associated with procyclicality only in older democracies (the limit, assuming AGE=1, corresponds to the USA), with the rise in IMFINT of 0.1 leading to an increase of the coefficient of cyclicality by 0.184. In the extreme case of younger democracies (the limit, assuming AGE=0, corresponds to Haiti), the same change in IMFINT decreases the parameter of cyclicality by 0.085. Although the age of democracies is an important source of differences in the role of the IMF, their quality plays no role, as can be seen from the results shown in Columns 3 and 3a. The impact of electoral formulas is also insignificant in determining the influence of IMF interventions on the cyclical properties of government spending. Columns 4 and 4a show evidence supporting this conclusion. Nevertheless, the form of government seems to be important, since from Column 5 we can observe that the estimated beta actually changes when we analyse the role of the IMF in presidential or parliamentary regimes. In fact, an increase in IMFINT by 0.1 decreases the parameter of cyclicality by 0.158 only in presidential regimes, while in parliamentary regimes, this parameter is increased by 0.039.

Table B7 shows the estimated results when the determinant of cyclicality considered is the degree of development of financial systems. Only Columns 1a and 1b present significant results, but the estimated effect is the opposite of what would be expected in theoretical terms (see Section 3.9). According to the results of Column 1a, an increase of 10 points in FINDEPTH leads to an increase of only 0.09 in the estimated betas. As we can see, the effect is not significantly different from zero, but it is positive, suggesting that a higher degree of development of financial systems could be associated with a higher procyclicality of government expenditure. Not only do all the remaining estimated regressions produce insignificant results, but the coefficients of FINDEPTH are also always positive (except in Column 3). In fact, even if we interact FINDEPTH with the age and quality of institutions, and with the electoral formula and type of government, no effects can be found on the cyclicality of government spending.

The hypothesis of the influence of government fragmentation measures on the cyclicality of government expenditure is not supported by the data. Table B8 shows evidence that the position of the largest party in the legislature, the party fractionalization index and the size of cabinet are not relevant variables explaining the cyclical properties of spending since none of the associated coefficients is statistically significant. The exception is the variable measuring party coalitions, but even here the effect is limited. In fact, in Column 3a, we can see that the coefficient of COAL is not statistically significant, but the interaction of COAL with the dummy LAM results in a significant parameter, suggesting that in Latin America some effect can be observed. So, an increase of 1 unit in COAL (for example, from a situation of no coalition – the

case in which COAL=0, to a more than one party coalition government – the case in which COAL=1) increases the coefficient of cyclicality by 0.65 only in Latin American countries. The effect in the OECD countries is statistically insignificant.

Estimations by WLS[25], considering the absolute t-statistics of the first step regressions as weights, produced, in general, quite robust results, meaning that the main conclusions do not change. Income inequality retains its association with more procyclical expenditure and the quality of institutions does not change that relationship. IMF interventions do not play any role in the cyclicality of expenditure, as we had observed from the estimations by OLS. A nuance to the OLS results is that coalition/minority governments seem more prone to engaging in procyclical expenditure.

### 5.3 – *The cyclical behaviour of government revenues*

In terms of government revenues, there are far fewer differences between countries than were found in the case of expenditure. On average, revenues are clearly countercyclical (positive values of estimated betas) in both the OECD (average beta equals 0.67) and Latin American countries (average beta equals 1.03). In Latin America, all the countries exhibit a positive coefficient (right panel of Table A2). In the OECD, there are only four exceptions – Sweden, Ireland, Italy and Australia – but none of these betas are statistically significant (right panel of Table A1). Despite the absence of any heterogeneity in the cyclical pattern of government revenues, there is a question of magnitude that needs to be explained. For example, the estimated coefficient for the Dominican Republic reaches 2.39, while in Venezuela, Belgium and Netherlands that same coefficient is only 0.26.

### 5.4 – *Determinants of the cyclicality of government revenues*

In general, the explanatory power of the regressions is weaker than that obtained through the analysis of the cyclicality of government expenditure. We included the ratio of revenues to GDP in all the revenue regressions in order to control for the effects of the automatic stabilizers, since these are essentially on the revenue side (the results are not reported here). Not only were the coefficients always statistically insignificant (instead of being significantly above zero, as expected), but also the explanatory power of the regressions remained almost unchanged.

From the set of socio-political instability variables, only the number of government crises is significantly associated with the cyclicality of government revenues. Column 1 of Table C1 shows that a unitary increase in GOVTCRIS reduces the estimated betas by 0.69, suggesting that greater instability is associated with higher procyclicality of fiscal policy on the revenue side, as we expected. Column 1a confirms this result and allows us to conclude that the effect of government crises is numerically much greater in Latin American countries, although the coefficient of GOVTCRIS*LAM is not statistically significant. So, in the OECD, an increase of 1 unit

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[25] An appendix with these estimations is available from the author upon request.

in GOVTCRIS reduces the coefficient of cyclicality by 0.62, while in Latin America, this effect increases to 1.94 (corresponding to the absolute value of -0.62 + (-1.32)).

In contrast to what happened in the case of government expenditure, the quality of institutions, measured by GASTIL, influences the cyclicality of government revenues. According to the results shown in Column 2a of Table C2, an increase of 1 point in GASTIL (worse institutions) is associated with an increase of 0.19 percent in the parameter of cyclicality in the OECD. In Latin America, the opposite effect is found. An increase of 1 point in GASTIL is associated with a decrease in the coefficient of cyclicality by 0.1 percent. This suggests that weaker institutions are associated with more procyclical policies on the revenue side in Latin American countries, although the opposite is the case in the OECD countries. The index of democratization (POLITY) is not statistically significant, as is also the case with the political constraints index. We stress once more that POLCONIII was actually a determinant of the cyclicality of government expenditure.

Presidential regimes are a source of less procyclical policy , as we can see in Column 1 of Table C3. Controlling for the electoral rule, a shift from a parliamentary to a presidential regime increases the parameter of cyclicality by 0.44. But when we distinguish between the OECD and Latin America (Column 3) the results are completely different. The effect of presidential regimes in the OECD becomes insignificant, but in Latin America the same shift increases procyclicality. Column 4 shows that a simultaneous shift to majoritarian elections and a presidential regime increases the coefficient of cyclicality by 0.65 (more countercyclical/less procyclical policy). The age of democracies also plays a role in this puzzle. When AGE=1 (older democracies), a shift to a presidential regime reduces procyclicality by 0.97 (Column 7), but when AGE=0 (younger democracies) the effect is not statistically significant. Better institutions also allow presidential regimes to reduce procyclicality (Column 8).

The results of the influence of income inequality are quite different from those obtained in section 5.2. In fact, Column 1 of Table C4 suggests that a rise of 10 percent in AGINIHI leads to an increase of the estimated betas by 0.3 (less procyclicality). The analysis of the effects in both the OECD and Latin America separately produces no statistically significant conclusions (Column 1a). If we consider AGINIHI80 or AGINI80 instead of AGINIHI, the results remain almost unchanged. The age of democracy also exhibits an influence on the impact of income inequality on the estimated betas. In older democracies, the effects of income inequality tend to be lower. Column 4 suggests that when AGE=1, an increase of 10 points in AGINIHI leads to a rise in the estimated beta by 0.9, while when AGE =0, this increase amounts to only 0.1. The results obtained using the alternative measures (Columns 5 and 6) of income inequality (AGINIHI80 and AGINI80) are basically the same. As far as the role of the quality of institutions is concerned, the results of the impact of income inequality on the cyclicality of revenues are quite different. Under the best institutions (GASTIL=1) an increase in AGINIHI of 10 points leads to an increase in the estimated beta by 0.6 (Column 7). But in worse institutions (higher values of GASTIL), this effect results in a decrease in the coefficient of cyclicality (for values of GASTIL higher than 4). This clearly suggests that income inequality is a source of countercyclicality in government revenue only in better institutions (values of GASTIL lower than 4), while the opposite is the case in worse democracies. Once again, results are quite similar in Columns 8 and 9. In Columns 10 to 12, we check to see whether the composite indexes of social

polarization determine the cyclicality of fiscal policy on the revenue side. The procedure is similar to the one adopted in the estimation of the cyclical pattern of expenditure. In fact, as we said before, the interaction of Gini coefficients with the index of political constraints (POLCONIII) is somewhat similar to checking whether the quality of institutions determines the cyclical impact of income inequality. In this respect, our results are not statistically significant, suggesting that political constraints do not change the countercyclical influence of income inequality on the cyclicality of fiscal policy on the revenue side.

As was the case with government expenditure, we were not able to find any relationship between the type of regime and the cyclicality of government revenues. Table C5 shows the results.

In general, IMF interventions have no significant influence on the cyclicality of revenues (Table C6). The most significant result is shown in Column 4, according to which, when IMFINT=1, the coefficient of cyclicality decreases by 2.69 (more procyclical policy on the revenue side) if a country has majoritarian elections. The effect becomes far smaller if a country has proportional elections (only 0.28). Column 3 shows the influence of the quality of institutions. For worse democracies (higher values of GASTIL), IMF interventions lead to more procyclical policies.

The degree of development of financial systems plays a more significant role in the cyclicality of government revenues than in the cyclicality of expenditure. Column 1 of Table C7 shows that an increase of 10 points in FINDEPTH decreases the coefficient of cyclicality by 0.06. This suggests that countries with more developed financial systems are more prone to engage in procyclical policies, although the effect is close to zero. Columns 2 and 2a present the results of the interaction of FINDEPTH with the age of the democracy. In younger democracies (AGE closer to zero) the effect is qualitatively similar to that shown in Column 1, but quantitatively higher. In older democracies (AGE closer to one), the effect is very close to zero (Column 2a). In Column 2, we can see that an increase of 10 points in FINDEPTH leads to an increase in the parameter of cyclicality by only 0.1 (more countercyclical revenues). Column 4 shows that countries with majoritarian elections are more prone to increase the countercyclicality of revenue after an increase in the degree of development of the financial system (-0.0002+0.03). In the presence of proportional elections (MAJ=0), the effect of FINDEPTH becomes very close to zero and statistically insignificant.

Government fragmentation has some effect on the cross-country differences in estimated betas. Column 1 of Table C8 shows that a weaker position of the largest party in parliament is associated with a more procyclical policy. An increase of 1 in SEAT reduces the coefficient of cyclicality by 0.23. Nevertheless, results are different between the OECD and Latin American countries. Column 1a presents evidence that in Latin American countries, the weakness of the largest party is an important source of procyclicality, while in the OECD that effect is not statistically different from zero (and is much lower). From the remaining explanatory variables, only the party fractionalization index (PARFRACT) influences the estimated betas. An increase of 0.1 in the index decreases the coefficient of cyclicality by 0.145, suggesting that a larger number of parties in the legislature is associated with a more procyclical policy on the revenue side.

As was the case with the expenditure regressions, and in order to carry out a sensitivity analysis, we reran the regressions by WLS[26], using the absolute values of *t*-statistics (obtained in the estimations of the coefficients of revenue cyclicality) as weights. The results are reasonably robust, with few changes relative to those estimated by OLS. Variable GASTIL loses its power for explaining the cyclicality of government policy on the revenue side. As far as the remaining results are concerned, the conclusions are basically the same as those obtained by OLS.

## 6 – Conclusions

The aim of the present work was both to obtain the parameters of cyclicality of central government real expenditure and revenue, and to discover whether political and institutional factors are useful for explaining cross-country differences in such patterns of cyclical behaviour. We collected a broad set of variables relating to these political and institutional features, some of which had been used in previous studies on cyclicality (Section 2), others in studies on other dimensions of fiscal policy, while yet others were 'new'.

Government expenditure is procyclical in Latin America, but, on average, weakly countercyclical in the OECD countries. Government revenues are procyclical in both the OECD and Latin America, although the procyclicality is stronger in Latin America.

As far as the determinants of the cyclicality of government expenditure are concerned, some results are worth stressing. Political constraints are a source of less procyclicality, but this can only be noted in the OECD. Majoritarian elections induce more procyclicality in Latin America and less procyclicality in the OECD. A shift from a parliamentary to a presidential regime increases procyclicality in older democracies. Using a different measure of the economic cycle (the first difference in the output gap instead of real output growth), we were also able to confirm some of Woo's (2005) results, according to which high levels of income inequality increase procyclicality. However, unlike that author, we could not find any support for the hypothesis that better institutions mitigate the procyclical effect of income inequality.

In general, IMF interventions have no influence on the cyclical pattern of government expenditure. The 'presence' of the IMF in a country increases expenditure procyclicality only in older democracies and in parliamentary regimes. Likewise, the degree of development of financial systems appears to be unrelated to the cyclicality of expenditure. Furthermore, when its coefficient is statistically significant, it presents the opposite sign of what would be expected. It is also the case that, in general, government fragmentation plays no significant role.

As far as the cyclicality of government revenue is concerned, the most important conclusion to be drawn is that, in general, regressions have a weak explanatory power. Most of the coefficients are statistically insignificant. Nevertheless, we were able to find that higher levels of socio-political instability (measured by the number of government crises) lead to a more procyclical policy, as expected, and that the effect is stronger in

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[26] An appendix with these estimations is available from the author upon request.

Latin America. The quality of institutions is important, in contrast to what happened in the case of government expenditure. Thus, in the presence of worse institutions, governments are more prone to pursue more procyclical policies on the revenue side in Latin America, while the opposite is the case in the OECD. Presidential regimes lead to more procyclical policies only in Latin American countries, but a simultaneous shift both to majoritarian elections and presidential regimes increases countercyclicality. The same effect is produced after a shift to a presidential regime in an environment where there are better institutions. Surprisingly, income inequality leads to less procyclical policies, although the effect is weaker in older democracies. An increase in the degree of development of financial systems leads to greater countercyclicality only in the presence of majoritarian elections. In contrast to what happened in the case of government expenditure, we were able to find evidence of the contribution of higher levels of government fragmentation to a higher degree of procyclicality of fiscal policy on the revenue side. In general, no cyclical influence could be found in the case of IMF interventions.

# Appendix A

**Table A1: Cyclicality coefficients - OECD Countries**

| OECD | Expenditure Regression | | | | | | Revenue Regression | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Number obs. | Beta | t-statistic | Significance | No. of significant dummies | Trend Significant at | Number obs. | Beta | t-statistic | Significance | No. of significant dummies | Trend Significant at |
| Australia | 42 | -0.44 | -1.01 | | - | No trend | 42 | -0.10 | -0.22 | | - | No trend |
| Austria | 34 | 0.09 | 0.39 | | 3 | 5% | 34 | 0.54 | 3.36 | *** | 3 | 5% |
| Belgium | 28 | -0.25 | -0.94 | | - | 1% | 38 | 0.26 | 1.23 | | 1 | 1% |
| Canada | 36 | 0.03 | 0.08 | | - | 1% | 36 | 1.25 | 2.59 | ** | - | 10% |
| Denmark | 34 | -0.54 | -1.17 | | - | 1% | 34 | 1.04 | 1.78 | * | - | 10% |
| Finland | 38 | -0.30 | -0.83 | | - | No trend | 33 | 0.65 | 2.29 | ** | - | No trend |
| France | 25 | -0.58 | -2.50 | ** | - | 1% | 37 | 0.84 | 3.04 | *** | 1 | 1% |
| Germany | 27 | 0.45 | 1.49 | | - | No trend | 27 | 0.98 | 3.43 | *** | - | No trend |
| Greece | 39 | 0.06 | 0.12 | | - | 10% | 31 | 0.69 | 1.65 | | - | No trend |
| Hungary | 22 | 0.68 | 1.75 | * | - | No trend | 22 | 1.28 | 3.78 | *** | - | No trend |
| Ireland | 38 | 0.25 | 0.45 | | - | 10% | 38 | -0.49 | -1.10 | | - | No trend |
| Italy | 38 | -0.13 | -0.64 | | - | 1% | 38 | -0.18 | -1.25 | | - | 10% |
| Japan | 33 | 0.37 | 1.33 | | 2 | 10% | 33 | 0.62 | 1.83 | * | 1 | No trend |
| Korea | 37 | -0.64 | -0.84 | | 1 | No trend | 37 | 1.09 | 2.25 | ** | 1 | No trend |
| Netherlands | 38 | -0.08 | -0.27 | | - | 1% | 38 | 0.26 | 0.73 | | - | 1% |
| New Zealand | 38 | 0.79 | 2.29 | ** | - | 10% | 38 | 1.00 | 2.36 | ** | - | No trend |
| Norway | 37 | 0.16 | 0.33 | | 1 | 5% | 37 | 1.57 | 4.32 | *** | 1 | 10% |
| Portugal | 21 | 1.06 | 1.69 | | - | No trend | 21 | 1.69 | 3.14 | *** | - | No trend |
| Spain | 36 | -0.25 | -0.57 | | - | 1% | 36 | 0.78 | 2.09 | ** | - | 10% |
| Sweden | 41 | -1.80 | -2.92 | *** | - | 1% | 41 | -0.74 | -0.89 | | - | 10% |
| Switzerland | 42 | 0.33 | 0.83 | | - | 1% | 42 | 0.69 | 2.24 | ** | - | No trend |
| Turkey | 14 | 0.59 | 1.10 | | - | No trend | 14 | 0.98 | 2.67 | ** | - | No trend |
| United Kingdom | 39 | -0.67 | -2.08 | ** | - | 10% | 39 | -0.30 | -0.72 | | - | No trend |
| United States | 42 | -0.23 | -0.79 | | - | 10% | 38 | 1.64 | 4.38 | *** | - | No trend |

| | | |
| --- | --- |
| **Mean** | **-0.04** |
| **Max** | **1.06** |
| **Min** | **-1.80** |

| | | |
| --- | --- |
| **Mean** | **0.67** |
| **Max** | **1.69** |
| **Min** | **-0.74** |

**Table A2: Cyclicality coefficients - Latin American Countries**

| Latin America | Expenditure Regression | | | | | | Revenue Regression | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Number obs. | Beta | t-statistic | Significance | No. of significant dummies | Trend Significant at | Number obs. | Beta | t-statistic | Significance | No. of significant dummies | Trend Significant at |
| Chile | 27 | 0.45 | 2.16 | ** | - | 10% | 27 | 0.78 | 3.53 | *** | - | No trend |
| Costa Rica | 32 | 2.00 | 2.84 | *** | - | No trend | 32 | 1.43 | 3.47 | *** | - | No trend |
| Dominican Republic | 38 | 2.26 | 5.63 | *** | - | No trend | 38 | 2.39 | 6.91 | *** | 2 | No trend |
| Ecuador | 38 | -0.35 | -1.03 | | 2 | No trend | 38 | 0.32 | 0.69 | | 1 | No trend |
| El Salvador | 40 | 0.91 | 1.88 | * | - | No trend | 40 | 1.30 | 2.24 | ** | - | No trend |
| Guatemala | 41 | 2.91 | 3.07 | *** | - | No trend | 41 | 1.25 | 1.50 | | - | No trend |
| Haiti | 36 | 0.82 | 0.96 | | 2 | No trend | 36 | 0.96 | 1.15 | | 2 | No trend |
| Honduras | 40 | 0.54 | 1.00 | | - | No trend | 40 | 1.41 | 4.58 | *** | - | No trend |
| Mexico | 23 | 0.41 | 0.62 | | - | No trend | 23 | 0.48 | 1.68 | * | - | No trend |
| Panama | 40 | 1.69 | 5.23 | *** | 1 | 10% | 40 | 0.85 | 3.09 | *** | 1 | 10% |
| Paraguay | 41 | 1.09 | 1.90 | * | - | No trend | 41 | 1.16 | 2.48 | ** | - | No trend |
| Trinidad & Tobago | 21 | 1.65 | 2.05 | * | 1 | No trend | 21 | 1.57 | 2.54 | ** | - | 5% |
| Uruguay | 26 | 0.17 | 1.28 | | - | No trend | 26 | 0.30 | 2.20 | ** | - | No trend |
| Venezuela | 41 | 1.51 | 3.81 | *** | - | No trend | 41 | 0.26 | 0.50 | | 1 | No trend |

| | | |
| --- | --- |
| **Mean** | **1.15** |
| **Max** | **2.91** |
| **Min** | **-0.35** |

| | | |
| --- | --- |
| **Mean** | **1.03** |
| **Max** | **2.39** |
| **Min** | **0.26** |

\* Significant at 10% level
\*\* Significant at 5% level
\*\*\* Significant at 1% level

# Appendix B

TABLE B1
Relationship between socio-political instability and the cyclicality of government expenditure
OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| Control variables | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3(*) | 4 | 4a | 5 | 5a | 6 | 6a |
| | TRADE* POP65*** | TRADE* POP65 | TRADE* POP65*** | TRADE* POP65 | LGDPPC*** INFLATION*** | TRADE* POP65*** | TRADE* POP65** | POP65*** | POP65* | TRADE* POP65*** | TRADE* POP65 |
| GOVTCRIS | -0.07 (-0.21) | -0.01 (-0.04) | | | | | | | | | |
| REVOLS | | | -0.49 (-1.31) | -0.20 (-0.27) | | | | | | | |
| COUPS | | | | | -23.80*** (-5.03) | | | | | | |
| CONSTCHG | | | | | | -1.81 (-0.51) | -4.03 (-1.05) | | | | |
| CABCHG | | | | | | | | -0.75 (-1.43) | -0.59 (-1.27) | | |
| EXECHG | | | | | | | | | | 0.29 (0.37) | 0.66 (0.86) |
| LAM | | 0.44 (0.84) | | 0.65 (1.26) | | | 0.49 (1.09) | | 0.24 (0.44) | | 0.98 (1.20) |
| GOVTCRIS*LAM | | 1.20 (0.52) | | | | | | | | | |
| REVOLS*LAM | | | | -0.30 (-0.24) | | | | | | | |
| CONSTCHG*LAM | | | | | | | 3.32 (0.46) | | | | |
| CABCHG*LAM | | | | | | | | | 0.76 (0.63) | | |
| EXECHG*LAM | | | | | | | | | | | -1.42 (-0.43) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.37 | 0.39 | 0.38 | 0.38 | 0.53 | 0.38 | 0.40 | 0.39 | 0.38 | 0.37 | 0.39 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

(*) We didn't interact COUPS with LAM because in OECD, only Greece and Korea have positive values for COUPS in the sample period.

TABLE B2

Relationship between quality and age of democracies and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| | | | | | Specifications | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 4 | 4a | 5 | 5a |
| Control variables → | TRADE* POP65*** | TRADE POP65 | TRADE* POP65*** | TRADE POP65* | POP65* | TRADE* POP65*** | TRADE POP65** | TRADE** POP65*** | TRADE* POP65*** |
| AGE | -0.08 (-0.20) | -0.25 (-0.54) | | | -0.69 (-1.53) | | | | |
| GASTIL | | | -0.06 (-0.66) | -0.08 (-0.39) | -0.22 (-1.05) | | | | |
| POLITY | | | | | | 0.01 (0.55) | 0.05 (0.70) | | |
| POLCONIII | | | | | | | | -1.83 (-1.13) | -3.14** (-2.45) |
| LAM | | 0.39 (0.72) | | 0.86 (1.40) | | | 0.88 (1.12) | | -1.39 (-0.64) |
| AGE*LAM | | 1.51* (1.98) | | | 1.77*** (2.76) | | | | |
| GASTIL*LAM | | | | -0.05 (-0.22) | 0.15 (0.98) | | | | |
| POLITY*LAM | | | | | | | -0.02 (-0.30) | | |
| POLCONIII*LAM | | | | | | | | | 3.49 (0.74) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 34 | 34 |
| Adj. R-squared | 0.37 | 0.41 | 0.38 | 0.39 | 0.41 | 0.38 | 0.40 | 0.47 | 0.45 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE B3

Relationship between electoral rules and forms of government and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| Control variables → | Specifications | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 2a | 3 | 3a | 4 | 5 | 6 | 7 | 8 |
| | POP65*** INFLATION* | POP65*** INFLATION* | POP65*** INFLATION* | POP65*** | POP65*** INFLATION* | POP65*** | POP65*** | POP65*** | POP65** | POP65** |
| MAJ | -0.20 (-0.93) | -0.38* (-1.73) | -0.20 (-0.92) | | | | 0.06 (0.10) | -0.46 (-1.12) | | |
| PRES | 0.02 (0.10) | | | 0.11 (0.25) | 0.06 (0.24) | | | | -1.01** (-2.34) | 0.20 (0.38) |
| AGE | | | | | | | 0.44 (0.80) | | -0.50 (-0.95) | |
| GASTIL | | | | | | | | -0.21 (-1.41) | | -0.06 (-0.46) |
| MAJ*LAM | | 0.71* (1.73) | | | | | | | | |
| MAJ*AGE | | | | | | | -0.68 (-0.78) | | | |
| MAJ*GASTIL | | | | | | | | 0.10 (0.41) | | |
| MAJ*PRES | | | | | | -0.42*** (-2.92) | | | | |
| PRES*LAM | | | | -0.77 (-1.52) | | | | | | |
| PRES*AGE | | | | | | | | | 1.56** (2.11) | |
| PRES*GASTIL | | | | | | | | | | -0.20 (-0.72) |
| LAM | | 0.12 (0.29) | | 0.85*** (3.54) | | | | | 0.86** (2.24) | 0.69 (1.54) |
| No. Obs. | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| Adj. R-squared | 0.45 | 0.46 | 0.47 | 0.43 | 0.46 | 0.46 | 0.43 | 0.45 | 0.45 | 0.43 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE B4

Relationship between income inequality and social polarization and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| Control variables → | 1 | 1a | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TRADE** | TRADE | TRADE** | TRADE** | TRADE* INFLATION* | TRADE** INFLATION | TRADE*** INFLATION | TRADE* INFLATION* | TRADE** INFLATION | TRADE** INFLATION | | POP65* | POP65* |
| AGE | | | | | -3.37 (-1.48) | -4.92** (-2.45) | -6.01*** (-3.30) | | | | | | |
| GASTIL | | | | | | | | 0.67 (0.88) | 0.94 (1.16) | 0.93 (1.14) | | | |
| AGINIHI | 0.07*** (4.31) | 0.04** (2.49) | | | 0.15*** (3.02) | | | 0.12*** (2.99) | | | -0.002 (-0.02) | | |
| AGINIHI80 | | | 0.07*** (3.84) | | | 0.18*** (4.32) | | | 0.14*** (2.88) | | | -0.03 (-0.25) | |
| AGINI80 | | | | 0.07*** (3.92) | | | 0.21*** (5.98) | | | 0.14*** (3.01) | | | -0.02 (-0.16) |
| AGINIHI*LAM | | 0.01 (0.16) | | | | | | | | | | | |
| AGINIHI*(1-AGE) | | | | | -0.09 (-1.37) | | | | | | | | |
| AGINIHI80*(1-AGE) | | | | | | -0.13** (-2.37) | | | | | | | |
| AGINI80*(1-AGE) | | | | | | | -0.16*** (-3.30) | | | | | | |
| AGINIHI*GASTIL | | | | | | | | -0.02 (-0.90) | | | | | |
| AGINIHI80*GASTIL | | | | | | | | | -0.02 (-1.20) | | | | |
| AGINI80*GASTIL | | | | | | | | | | -0.02 (-1.24) | | | |
| POLCONIII | | | | | | | | | | | 2.34 (0.38) | 1.32 (0.19) | 0.66 (0.09) |
| SOCPOL1 | | | | | | | | | | | 0.11 (0.57) | | |
| SOCPOL2 | | | | | | | | | | | | 0.06 (0.31) | |
| SOCPOL3 | | | | | | | | | | | | | 0.04 (0.22) |
| LAM | | 0.04 (0.01) | | | | | | | | | | | |
| No. Obs. | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 34 | 34 | 34 |
| Adj. R-squared | 0.40 | 0.40 | 0.38 | 0.39 | 0.44 | 0.43 | 0.47 | 0.42 | 0.40 | 0.42 | 0.38 | 0.42 | 0.42 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

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TABLE B5

Relationship between the type of political regime and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| | Specifications | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 3a |
| Control variables → | TRADE** POP65*** | | TRADE* POP65*** | TRADE POP65 | LGDPPC*** | LGDPPC** |
| REGIME | -0.76 | -0.42 | -22.50 | -18.82 | -8.09 | -7.37 |
| | (-1.05) | (-0.12) | (-0.92) | (-0.72) | (-1.52) | (-1.56) |
| AGE | | | 23.40 | 18.56 | | |
| | | | (0.88) | (0.66) | | |
| GASTIL | | | | | -2.22 | -1.79 |
| | | | | | (-1.58) | (-1.41) |
| REGIME*(1-AGE) | | | 23.63 | 18.68 | | |
| | | | (0.89) | (0.66) | | |
| REGIME*GASTIL | | | | | 1.81 | 1.51 |
| | | | | | (1.30) | (1.21) |
| REGIME*LAM | | -1.56 | | | | |
| | | (-0.44) | | | | |
| LAM | | 3.15 | | 0.99* | | 0.87** |
| | | (0.87) | | (1.97) | | (2.28) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.39 | 0.43 | 0.37 | 0.44 | 0.43 | 0.47 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE B6

Relationship between the IMF programmes and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| Control variables → | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 1b | 2 | 2a | 3 | 3a | 4 | 4a | 5 | 5a |
| | TRADE* POP65*** | TRADE POP65* | TRADE POP65 | TRADE** POP65*** | TRADE POP65* | TRADE** POP65*** | TRADE POP65* | POP65*** | POP65*** | POP65** | POP65*** |
| IMFINT | -0.20 (-0.45) | -0.63 (-1.06) | 0.08 (0.08) | 1.84 (1.52) | 1.22 (1.01) | 1.02 (0.97) | 0.46 (0.39) | -1.33 (-1.23) | -0.53 (-0.67) | -1.58** (-2.50) | -0.89 (-1.32) |
| AGE | | | | -0.80* (-1.71) | -0.60 (-1.22) | | | | | | |
| GASTIL | | | | | | 0.16 (1.02) | 0.13 (0.64) | | | | |
| MAJ | | | | | | | | -0.25 (-1.03) | -0.31 (-1.16) | | |
| PRES | | | | | | | | | | 0.20 (0.70) | 0.34 (1.00) |
| IMFINT*(1-AGE) | | | | -2.69* (-1.91) | -2.34* (-1.85) | | | | | | |
| IMFINT*GASTIL | | | | | | -0.47 (-1.32) | -0.41 (-1.10) | | | | |
| IMFINT*(1-MAJ) | | | | | | | | 0.22 (0.19) | -0.17 (-0.17) | | |
| IMFINT*(1-PRES) | | | | | | | | | | 1.97 (1.25) | 0.84 (0.56) |
| LAM | | 0.81 (1.64) | 1.38** (2.57) | | 0.75 (1.47) | | 0.78 (1.57) | 0.65* (1.85) | | 1.01** (2.45) | |
| IMFINT*LAM | | | -1.35 (-1.13) | | | | | | | | |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 34 | 34 | 34 | 34 |
| Adj. R-squared | 0.38 | 0.42 | 0.42 | 0.37 | 0.41 | 0.36 | 0.40 | 0.45 | 0.44 | 0.46 | 0.43 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE B7

Relationship between the degree of development of financial systems and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 1b | 2 | 2a | 3 | 3a | 4 | 4a | 5 | 5a |
| Control variables → | TRADE* POP65*** | TRADE* POP65* | TRADE** POP65 | TRADE* POP65*** | TRADE* POP65* | TRADE* POP65*** | TRADE* POP65* | POP65*** | POP65*** | POP65*** | POP65*** |
| FINDEPTH | 0.004 (1.08) | 0.009** (2.19) | 0.009** (2.41) | 0.009 (0.45) | 0.019 (1.09) | -0.01 (-0.16) | 0.002 (0.03) | 0.006 (1.23) | 0.004 (0.75) | 0.004 (0.59) | 0.002 (0.29) |
| AGE | | | | 0.49 (0.32) | 1.23 -0.99 | | | | | | |
| GASTIL | | | | | | 0.06 (0.15) | -0.04 (-0.11) | | | | |
| MAJ | | | | | | | | -0.15 (-0.13) | 0.10 (0.09) | | |
| PRES | | | | | | | | | | -0.84 (-1.54) | -0.19 (-0.26) |
| FINDEPTH*AGE | | | | -0.008 (-0.29) | -0.02 (-0.80) | | | | | | |
| FINDEPTH*[10-(GASTIL/7)*10] | | | | | | 0.002 (0.22) | 0.001 (0.08) | | | | |
| FINDEPTH*MAJ | | | | | | | | 0.0007 (0.04) | -0.005 (-0.27) | | |
| FINDEPTH*PRES | | | | | | | | | | 0.009 (1.15) | 0.004 (0.41) |
| LAM | | 0.84* (1.97) | 1.03 (0.65) | | 0.95** (2.08) | | 0.87 (1.98) | 0.44 (1.71) | | 0,84*** (3.26) | |
| FINDEPTH*LAM | | | -0.005 (-0.13) | | | | | | | | |
| No. Obs. | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 29 | 29 | 29 | 29 |
| Adj. R-squared | 0.38 | 0.43 | 0.41 | 0.32 | 0.40 | 0.33 | 0.39 | 0.41 | 0.42 | 0.43 | 0.42 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE B8

Relationship between government fragmentation and the cyclicality of government expenditure

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - left panel)

| Control variables → | Specifications | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 3a | 4 | 4a |
| | TRADE* | TRADE | | | | | | |
| SEAT | -0.25 (-1.41) | -0.11 (-0.68) | | | | | | |
| PARFRACT | | | -0.86 (-0.81) | -0.52 (-0.54) | | | | |
| COAL | | | | | 0.33 (1.59) | -0.14 (-0.55) | | |
| CABSIZE | | | | | | | 0.005 (0.26) | 0.005 (0.30) |
| LAM | 1.15*** (4.16) | 2.09** (2.32) | 1.13*** (3.66) | 1.53 (1.25) | 1.28*** (4.86) | -0.49 (-0.62) | 1.22*** (4.27) | 1.35 (0.90) |
| SEAT*LAM | | -0.43 (-1.05) | | | | | | |
| PARFRACT*LAM | | | | -0.64 (-0.30) | | | | |
| COAL*LAM | | | | | | 0.79** (2.10) | | |
| CABSIZE*LAM | | | | | | | | -0.008 (-0.09) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.39 | 0.40 | 0.38 | 0.36 | 0.41 | 0.46 | 0.37 | 0.35 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

# Appendix C

TABLE C1

Relationship between socio-political instability and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel

| Control variables ⟶ | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3(*) | 4 | 4a | 5 | 5a | 6 | 6a |
| | POP65* | POP65** | POP65** | POP65* | | POP65** INFLATION* | POP65* INFLATION | POP65** | POP65* | POP65** INFLATION* | POP65* INFLATION |
| GOVTCRIS | -0.69*** (-2.99) | -0.62** (-2.72) | | | | | | | | | |
| REVOLS | | | -0.63 (-1.38) | -0.48 (-0.76) | | | | | | | |
| COUPS | | | | | 5.03 (1.53) | | | | | | |
| CONSTCHG | | | | | | -0.77 (-0.42) | 0.07 (0.03) | | | | |
| CABCHG | | | | | | | | -0.42 (-1.13) | -0.44 (-0.86) | | |
| EXECHG | | | | | | | | | | -0.55 (-0.73) | -0.40 (-0.42) |
| LAM | | -0.004 (-0.01) | | -0.04 (-0.13) | | | 0.11 (0.28) | | -0.03 (-0.05) | | 0.19 (0.39) |
| GOVTCRIS*LAM | | -1.32 (-1.12) | | | | | | | | | |
| REVOLS*LAM | | | | -0.47 (-0.70) | | | | | | | |
| CONSTCHG*LAM | | | | | | | -1.79 (-0.54) | | | | |
| CABCHG*LAM | | | | | | | | | -0.44 (-0.45) | | |
| EXECHG*LAM | | | | | | | | | | | -0.86 (-0.52) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.15 | 0.14 | 0.11 | 0.07 | 0.03 | 0.08 | 0.02 | 0.10 | 0.06 | 0.09 | 0.03 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

(*) We didn't interact COUPS with LAM because in OECD, only Greece and Korea have positive values for COUPS in the sample period.

TABLE C2

Relationship between quality and age of democracies and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel

| | Specifications | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 4 | 4a | 5 | 5a |
| Control variables → | POP65** INFLATION* | POP65* INFLATION | | | INFLATION* | POP65* INFLATION* | POP65 INFLATION | POP65* | POP65 |
| AGE | -0.03 (-0.07) | -0.21 (-0.35) | | | 0.44 (0.49) | | | | |
| GASTIL | | | 0.11 (1.78) | 0.19** (2.16) | 0.40 (1.69) | | | | |
| POLITY | | | | | | 0.009 (-0.39) | -0.04 (-0.98) | | |
| POLCONIII | | | | | | | | -0.73 (-0.64) | -1.40 (-1.02) |
| LAM | | -0.15 (-0.56) | | 0.99* (1.95) | 1.53 (1.32) | | -0.28 (-0.78) | | 0.90 (-0.75) |
| AGE*LAM | | 0.71 (1.11) | | | -0.27 (-0.19) | | | | |
| GASTIL*LAM | | | | -0.29** (-2.23) | -0.47 (-1.57) | | | | |
| POLITY*LAM | | | | | | | 0.05 (0.97) | | |
| POLCONIII*LAM | | | | | | | | | 1.91 (0.75) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 34 | 34 |
| Adj. R-squared | 0.07 | 0.03 | 0.02 | 0.05 | 0.04 | 0.08 | 0.03 | 0.10 | 0.05 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE C3

Relationship between electoral rules and forms of government and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel)

| Control variables → | Specifications | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 2a | 3 | 3a | 4 | 5 | 6 | 7 | 8 |
| | | POP65* | POP65** INFLATION* | POP65* | | POP65** INFLATION* | POP65** | POP65* | POP65** INFLATION* | INFLATION** |
| MAJ | 0.16 (0.56) | 0.07 (0.21) | 0.13 (0.49) | | | | -0.13 (-0.27) | 0.19 (0.36) | | |
| PRES | 0.44* (1.90) | | | 0.60 (1.37) | 0.42* (1.81) | | | | -0.43 (-1.44) | 1.20** (2.12) |
| AGE | | | | | | | 0.02 (0.04) | | -0.74 (-1.36) | |
| GASTIL | | | | | | | | -0.05 (-0.40) | | 0.48** (2.60) |
| MAJ*LAM | | 0.15 (0.28) | | | | | | | | |
| MAJ*AGE | | | | | | | 0.44 (0.48) | | | |
| MAJ*GASTIL | | | | | | | | -0.06 (-0.31) | | |
| MAJ*PRES | | | | | | 0.65* (1.83) | | | | |
| PRES*LAM | | | | -1.21** (-2.55) | | | | | | |
| PRES*AGE | | | | | | | | | 1.40** (2.32) | |
| PRES*GASTIL | | | | | | | | | | -0.45** (-2.17) |
| LAM | | -0.08 (-0.27) | | 0.54** (2.26) | | | | | | |
| No. Obs. | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 | 34 |
| Adj. R-squared | 0.04 | 0.04 | 0.10 | 0.10 | 0.06 | 0.14 | 0.04 | 0.04 | 0.12 | 0.08 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE C4

Relationship between income inequality and social polarization and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel

| Control variables → | 1 | 1a | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | INFLATION* | INFLATION | | | INFLATION* | INFLATION | INFLATION | INFLATION* | INFLATION* | INFLATION* | INFLATION** | | |
| AGE | | | | | -2.92** (-2.17) | -3.55** (-2.51) | -3.32* (-1.99) | | | | | | |
| GASTIL | | | | | | | | 0.94** (2.43) | 1.01** (2.34) | 0.88* (1.96) | | | |
| AGINIHI | 0.03** (2.72) | 0.04 (1.23) | | | 0.09*** (3.51) | | | 0.08** (2.68) | | | 0.14** (2.02) | | |
| AGINIHI80 | | | 0.02** (2.06) | | | 0.10*** (3.13) | | | 0.08** (2.26) | | | 0.03 (0.51) | |
| AGINI80 | | | | 0.02* (2.00) | | | 0.10** (2.58) | | | 0.07* (1.93) | | | 0.02 (0.48) |
| AGINIHI*LAM | | -0.02 (-0.38) | | | | | | | | | | | |
| AGINIHI*(1-AGE) | | | | | -0.08** (-2.35) | | | | | | | | |
| AGINIHI80*(1-AGE) | | | | | | -0.10** (-2.51) | | | | | | | |
| AGINI80*(1-AGE) | | | | | | | -0.09** (-2.04) | | | | | | |
| AGINIHI*GASTIL | | | | | | | | -0.02** (-2.26) | | | | | |
| AGINIHI80*GASTIL | | | | | | | | | -0.02** (-2.11) | | | | |
| AGINI80*GASTIL | | | | | | | | | | -0.02* (-1.77) | | | |
| POLCONIII | | | | | | | | | | | -4.82 (-1.42) | -1.29 (-0.38) | -0.98 (-0.30) |
| SOCPOL1 | | | | | | | | | | | -0.15 (-1.46) | | |
| SOCPOL2 | | | | | | | | | | | | -0.01 (-0.11) | |
| SOCPOL3 | | | | | | | | | | | | | -0.01 (-0.06) |
| LAM | | 0.67 (0.39) | | | | | | | | | | | |
| No. Obs. | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 34 | 34 | 34 |
| Adj. R-squared | 0.08 | 0.03 | 0.05 | 0.05 | 0.08 | 0.07 | 0.05 | 0.11 | 0.10 | 0.07 | 0.13 | 0.04 | 0.03 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

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TABLE C5

Relationship between the type of political regime and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel)

| Control variables ⟶ | Specifications | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 3a |
| | POP65* | POP65 | POP65 | POP65 | | |
| REGIME | -0.66 | 0.32 | -1.62 | -1.30 | 0.22 | -0.61 |
| | (-0.97) | (0.35) | (-0.12) | (-0.09) | (0.09) | (-0.25) |
| AGE | | | 1.11 | 0.68 | | |
| | | | (0,08) | (0,05) | | |
| GASTIL | | | | | 0.39 | 0.19 |
| | | | | | (0.61) | (0.30) |
| REGIME*(1-AGE) | | | 1.13 | 0.69 | | |
| | | | (0.08) | (0.05) | | |
| REGIME*GASTIL | | | | | -0.23 | -0.10 |
| | | | | | (-0.38) | (-0.17) |
| REGIME*LAM | | -1.02 | | | | |
| | | (-0.90) | | | | |
| LAM | 0.09 | 1.15 | | 0.09 | | 0.41 |
| | (0.31) | (0.83) | | (0.30) | | (1.36) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.07 | 0.05 | 0.04 | 0.01 | -0.02 | -0.004 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE C6

Relationship between the IMF programmes and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel)

| | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 1b | 2 | 2a | 3 | 3a | 4 | 4a | 5 | 5a |
| Control variables ⟶ | POP65* INFLATION* | POP65* INFLATION* | POP65 INFLATION* | | | INFLATION** | INFLATION* | | | | |
| IMFINT | -0.05 (-0.10) | -0.05 (-0.09) | 0.78 (0.90) | 0.56 (0.28) | -0.08 (-0.04) | 1.67 (1.57) | 1.32 (1.14) | -2.69** (-2.05) | -1.78 (-0.99) | -1.09 (-1.20) | -0.54 (-0.78) |
| AGE | | | | -0.19 (-0.29) | 0.005 (0.01) | | | | | | |
| GASTIL | | | | | | 0.40* (2.02) | 0.35* (1.78) | | | | |
| MAJ | | | | | | | | 0.43 (1.25) | 0.46 (1.27) | | |
| PRES | | | | | | | | | | 0.46 (1.00) | 0.70 (1.59) |
| IMFINT*(1-AGE) | | | | -0.26 (-0.11) | 0.08 (0.04) | | | | | | |
| IMFINT*GASTIL | | | | | | -0.65* (-1.72) | -0.58 (-1.56) | | | | |
| IMFINT*(1-MAJ) | | | | | | | | 2.41* (1.95) | 2.42 (1.30) | | |
| IMFINT*(1-PRES) | | | | | | | | | | 1.55 (0.88) | 1.05 (0.61) |
| LAM | | -0.002 (-0.01) | 0.63 (1.04) | | 0.37 (1.03) | | 0.23 (0.69) | 0.64 (1.52) | | 0.60 (1.16) | |
| IMFINT*LAM | | | -1.50 (-1.34) | | | | | | | | |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 34 | 34 | 34 | 34 |
| Adj. R-squared | 0.07 | 0.05 | 0.07 | -0.05 | -0.04 | 0.03 | 0.01 | 0.06 | -0.001 | 0.04 | 0.02 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE C7

Relationship between the degree of development of financial systems and the cyclicality of government revenue

OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel

| | Specifications | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 1b | 2 | 2a | 3 | 3a | 4 | 4a | 5 | 5a |
| Control variables → | | | | | | | | | | | |
| FINDEPTH | -0.006* | -0.003 | -0.002 | -0.03*** | -0.03** | -0.02 | -0.01 | -0.0002 | -0.007 | -0.003 | -0.004 |
| | (-1.81) | (-0.80) | (-0.64) | (-2.84) | (-2.42) | (-0.70) | (-0.34) | (-0.05) | (-1.60) | (-0.48) | (-0.56) |
| AGE | | | | -1.05 | -0.83 | | | | | | |
| | | | | (-1.22) | (-0.98) | | | | | | |
| GASTIL | | | | | | 0.15 | 0.08 | | | | |
| | | | | | | (0.85) | (0.34) | | | | |
| MAJ | | | | | | | | -1.27 | -0.71 | | |
| | | | | | | | | (-1.36) | (-0.74) | | |
| PRES | | | | | | | | | | 0.04 | 0.30 |
| | | | | | | | | | | (0.03) | (0.53) |
| FINDEPTH*AGE | | | | 0.04** | 0.03** | | | | | | |
| | | | | (2.26) | (2.06) | | | | | | |
| FINDEPTH*[10-(GASTIL/7)*10] | | | | | | 0.002 | 0.001 | | | | |
| | | | | | | (0.59) | (0.29) | | | | |
| FINDEPTH*MAJ | | | | | | | | 0.03* | 0.02 | | |
| | | | | | | | | (1.79) | (1.20) | | |
| FINDEPTH*PRES | | | | | | | | | | 0.003 | 0.001 |
| | | | | | | | | | | (0.23) | (0.13) |
| LAM | | 0.26 | 0.66 | | 0.12 | | 0.24 | 0.61 | | 0.24 | |
| | | (0.96) | (0.77) | | (0.40) | | (0.75) | (1.61) | | (0.24) | |
| FINDEPTH*LAM | | | -0.01 | | | | | | | | |
| | | | (-0.48) | | | | | | | | |
| No. Obs. | 33 | 33 | 33 | 32 | 32 | 33 | 33 | 29 | 29 | 29 | 29 |
| Adj. R-squared | 0.03 | 0.02 | -0.007 | 0.11 | 0.08 | -0.03 | -0.05 | 0.07 | 0.004 | -0.03 | 0.001 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

TABLE C8
Relationship between government fragmentation and the cyclicality of government revenue
OLS Estimates - Dependent variable: Estimated • (Reported in Tables A1 and A2 - right panel)

| Control variables → | Specifications | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 1a | 2 | 2a | 3 | 3a | 4 | 4a |
| | | | | | | | POP65* | POP65* |
| SEAT | -0.23** | -0.11 | | | | | | |
| | (-2.41) | (-1.02) | | | | | | |
| PARFRACT | | | -1.45* | -0.68 | | | | |
| | | | (-2.00) | (-0.55) | | | | |
| COAL | | | | | 0.17 | -0.05 | | |
| | | | | | (1.01) | (-0.19) | | |
| CABSIZE | | | | | | | -0.003 | -0.004 |
| | | | | | | | (-0.21) | (-0.26) |
| LAM | 0.30 | 1.28** | 0.26 | 1.19 | 0.41* | -0.42 | -0.09 | -0.29 |
| | (1.49) | (2.37) | (1.27) | (1.09) | (1.91) | (-0.57) | (-0.30) | (-0.34) |
| SEAT*LAM | | -0.45** | | | | | | |
| | | (-2.31) | | | | | | |
| PARFRACT*LAM | | | | -1.48 | | | | |
| | | | | (-0.93) | | | | |
| COAL*LAM | | | | | | 0.37 | | |
| | | | | | | (1.06) | | |
| CABSIZE*LAM | | | | | | | | 0.01 |
| | | | | | | | | (0.23) |
| No. Obs. | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| Adj. R-squared | 0.08 | 0.11 | 0.09 | 0.08 | 0.04 | 0.05 | 0.05 | 0.03 |

Values reported in parentheses are White heteroskedasticity consistent t-statistics.

Asterisks indicates significance levels: ***1%, **5%, *10%.

**Data Appendix**

AGE – Index of the age of a democracy, defined as AGE = (2003-DEMAGE) / 203 and varying between 0 and 1, with the United States being the oldest democracy (value of 1). Source: See DEMAGE.

AGINIHI – Average of all "high quality" available Gini coefficients between 1960 and 1996. By high quality, we mean those values marked as "accept" in the quality evaluation in the database. The coefficients range between 0 and 100, with higher values meaning more inequality in income distribution. Source: Deininger, K. and Squire, L. (1996).

AGINIHI80 – Average of all high quality available Gini coefficients during the 1980s. By high quality, we mean those values marked as "accept" in the quality evaluation in the database. The coefficients range between 0 and 100, with higher values meaning more inequality in income distribution. Source: Deininger, K. and Squire, L. (1996).

AGINI80 - Average of all available Gini coefficients during the 1980s, regardless of their quality. The coefficient ranges between 0 and 100, with higher values meaning more inequality in income distribution. Source: Deininger, K. and Squire, L. (1996).

AUTOC – Indicator of institutionalized autocracy, ranging from 0 to 10. Higher values mean more autocratic institutions.
Source: POLITY IV Project. http://cidcm.umd.edu/inscr/polity/index.htm

CABCHG – Number of cabinet changes. The number of times in a year that a new premier is named and/or 50% of the cabinet posts are occupied by new ministers. Source: CNTS Database.

CABSIZE – Size of cabinet. Refers to the number of ministers of "cabinet rank", excluding undersecretaries, parliamentary secretaries, ministerial alternates, etc. Includes the president and vice-president under a presidential system, but not under a parliamentary system. Heads of state are excluded, except under a presidential system.
Source: CNTS Database.

COAL – Party coalition. 0 = no coalition and no opposition; 1 = more than one party, coalition government and no opposition; 2 = more than one party, coalition government and opposition; 3 = minority government. Source: CNTS Database.

CONSTCHG – Number of major constitutional changes. The number of basic alterations in a state's constitutional structure in a year, the extreme case being the adoption of a new constitution that significantly alters the prerogatives of the various branches of government. Examples of the latter might be the substitution of a presidential regime by parliamentary government or the replacement of monarchic by republican rule. Constitutional amendments which do not have any significant impact on the political system are not counted. Source: CNTS Database.

COUPS – Number of coups d'état. The number of extra-constitutional or forced changes in the top government elite and/or its effective control of the nation's power structure in a given year. The term "coup" includes, but is not exhausted by, the term "successful revolution". Unsuccessful coups are not counted. Source: CNTS Database.

DEFLATOR – GDP Deflator. Index number with 2000=100. Source: IMF-IFS CD ROM 2004.

DEMAGE – First year of democratic rule in a country, corresponding to the first year of a string of positive yearly values of the variable POLITY for that country continuing uninterruptedly until 2003 (the end of the sample), given that the country was also an independent nation during the entire time period. Does not consider foreign occupation during World War II as an interruption of democracy. Source: POLITY IV Project. http://cidcm.umd.edu/inscr/polity/index.htm

DEMOC – Measures the general openness of political institutions. It is an institutionalized democracy index, derived from codings of the competitiveness of political participation, the regulation of

participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. It ranges between 0 and 10, with higher values meaning more democratic institutions.
Source: POLITY IV Project. http://cidcm.umd.edu/inscr/polity/index.htm

EXECHG – Changes in the Effective Executive. The number of times in a year that effective control of the executive power changes hands. Such a change requires that the new executive be independent of its predecessor. Source: CNTS Database.

EXP – Nominal total central government expenditure, in units of the national currency, except in the case of Ecuador (US$). Source: IMF-IFS CD ROM 2004.

FINDEPTH – Indicator of financial depth as a *proxy* for the degree of development of the financial system. Defined as liquid liabilities (M3) as a percentage of GDP. Source: World Bank. WDI 2004.

GASTIL – Average of indexes for civil liberties and political rights, where each index is measured on a 1-to-7 scale with 1 representing the highest degree of freedom and 7 the lowest. Countries whose combined averages for political rights and civil liberties fall between 1.0 and 2.5 are designated "free", those whose averages fall between 3.0 and 5.5 are designated "partly free", and those whose averages fall between 5.5 and 7.0 are designated "not free".
Source: Freedom House, "Annual Survey of Freedom Country Ratings". http://freedomhouse.org

GDP – GDP at current prices, in units of the national currency except in the case of Ecuador (in US$). Source: IMF-IFS CD ROM 2004.

GDPPC – GDP per capita (Parity Purchasing Power) in constant 2000 international $. Source: World Bank. WDI 2004.

GOVTCRIS – Number of government crises in a year. A government crisis means any rapidly developing situation that threatens to bring about the downfall of the present regime – excluding situations of revolt aimed at such overthrow. Source: CNTS Database.

HPTRENDS – Hodrick-Prescott trend values of REALGDP, obtained using the MS-Excel routine for HP Filter, with $\lambda = 100$.

IMFINT – Dummy variable, assuming the value 1 if a country was under an IMF adjustment programme, 0 otherwise. Our sources were the IMF Annual Reports. We checked all existing programmes since 1960, independently of their degree of conditionality. The interventions that were checked included Stand-By Arrangements, Extended Fund Facility, Structural Adjustment Facility, Enhanced Structural Adjustment Facility and Poverty Reduction Growth Facility. Should there be any intervention of the Fund in a country, in a given calendar year, the value 1 was considered for this variable, even if the intervention began close to the end of the year. This is important because the IMF considers fiscal years as ending on April 30th in its Annual Reports, so that the values of this variable could be different if we had considered a year starting on May 1st.
Source: IMF annual reports.

INFLATION – Rate of variation of the consumer price index. Source: World Bank. WDI 2004.

LAM - Regional dummy variable, equal to 1 if the country belongs to Latin America, 0 otherwise. Although Mexico belongs to the OECD, we considered it as a Latin American country.

LEGSIZE – Size of Legislature (Lower House). Source: CNTS Database.

LRGDP – Natural logarithm of REALGDP. Source: See REALGDP.

LGDPPC – Natural logarithm of GDPPC. Source: See GDPPC.

LHPTRENDS – Natural logarithm of HPTRENDS. Source: See HPTRENDS.

MAJ – Dummy variable for electoral systems, equal to 1 if all of the members of the lower house in a country are elected under plurality rule, 0 otherwise. Only legislative elections (to the lower house) are considered. Source: Person and Tabellini (2003) database. http://www.igier.uni-bocconi.it/whos.php?vedi=327&tbn=albero&id_doc=177.

PARFRACT – Party Fractionalization Index, defined as $1 - \sum_{t=1}^{m} t_i^2$, where $t_i$ is the proportion of members associated with the $i_{th}$ party in the lower house of the legislature. Source: CNTS Database. The index is defined as the probability that two randomly chosen legislators belong to different parties, and ranges between 0 and 1. The higher the index, the larger the number of parties in the legislature.

POLCONIII – Index of political constraints. It captures the feasibility of policy change (the extent to which a change in the preferences of any one actor may lead to a change in government policy), or the extent to which the executives face political constraints in implementing their policy. It ranges between 0 and 1. Source: Henisz, W. (2002), The Institutional Environment for Infrastructure Investment, *Industrial and Corporate Change*, 11(2).

POLITY – Score for democracy, computed by subtracting the AUTOC score from the DEMOC score and ranging from +10 (strongly democratic) to -10 (strongly autocratic). Sources: See AUTOC and DEMOC.

POP65 – Population aged 65 and above as a percentage of the total population. Source: World Bank. WDI 2004.

PRES – Dummy variable for forms of government, equal to 1 in presidential regimes, 0 otherwise. Source: Person and Tabellini (2003) database. http://www.igier.uni-bocconi.it/whos.php?vedi=327&tbn=albero&id_doc=177

REALEXP – Real total central government expenditure, obtained by computing (EXP/DEFLATOR)*100.

REALGDP – GDP at constant 2000 local currency prices, obtained by computing (GDP/DEFLATOR)*100.

REALREVE - Real total central government revenue, obtained by computing (REVE/DEFLATOR)*100.

REGIME – Type of regime. 1 – Civilian. 2 – Military-civilian. 3 – Military. Source: CNTS Database.

REVE - Nominal total central government revenue, in units of the national currency except in the case of Ecuador (US$). Source: IMF-IFS CD ROM 2004.

REVOLS – Number of revolutions in a given year. Any illegal or forced change in the top governmental elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government. Source: CNTS Database.

SEAT – Inverse of share in percentage terms of the major party in the legislature, computed as LEGSIZE / SELP. Higher SEAT values represent a weaker position of the largest party in the legislature. Sources: See LEGSIZE and SELP.

SELP – Number of seats held by the largest party in the legislature. Source: CNTS Database.

SOCPOL1 – Composite index of social polarization. It interacts social polarization with institutional quality. The variable is defined as AGINIHI * (1-POLCONIII). Sources: See AGINIHI and POLCONIII.

SOCPOL2 – Composite index of social polarization. It interacts social polarization with institutional quality. The variable is defined as AGINIHI80 * (1-POLCONIII). Sources: See AGINIHI80 and POLCONIII.

SOCPOL3 – Composite index of social polarization. It interacts social polarization with institutional quality. The variable is defined as AGINI80 * (1-POLCONIII). Sources: See AGINI80 and POLCONIII.

TRADE – Total trade as a percentage of current GDP. Total trade includes the exports and imports of goods and services in current US$. Source: World Bank. WDI 2004.

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