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Fragmented Politics and Public Debt

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I N T E R N A T I O N A L M O N E T A R Y F U N D

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Fragmented Politics and Public Debt¹

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Abstract

In this paper, we study the impact of fragmented politics on public debt—in particular, between two consecutive legislative elections. Using data for 92 advanced and developing countries during 1975-2015, we find a positive association between political fragmentation and public debt changes. Corruption magnifies the effects; with higher perceived corruption, political fragmentation has a bigger sway on debt increases. The influence of political fragmentation on debt dynamics is somewhat asymmetric, with larger and more significant effects during periods of debt reduction. Establishment of fiscal councils helps attenuate the negative impact of political fragmentation on public debt dynamics.

JEL Classification Numbers: H11, H62, H63

Keywords: Public debt; political fragmentation; common pool; veto players

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1. Introduction

Rising public debt-to-GDP ratios can be attributed to either large fiscal deficits or weak economic activity. Standard economic wisdom advocates following a countercyclical fiscal policy during recessions and letting public debt grow, and lowering it during economic expansions (Barro, 1979; Lucas and Stokey, 1983). But data since the 1970s show that debt reductions in good times rarely compensate for debt accumulation in bad times.² This could be because other factors are at play, possibly of a political nature (Alesina and Passalacqua, 2015)—the incentives to overspend tend to increase with the number of political actors involved in budget decisions.

This paper uses data for 92 advanced and developing³ countries during 1975-2015 to study the relationship between the key indicators of political fragmentation and changes in public debt. More precisely the questions addressed are: is higher political fragmentation associated with debt increases? Does the presence of veto players make it more difficult to lower debt?

While some scholars have focused on explaining political factors behind large cross-country differences in debt levels, others have focused on short-term variations in debt ratios in a small sample of countries. One weakness with both approaches is that they do not align debt and political dynamics, which typically change every 4-5 years with the change of government. We adopt instead a unique approach in this paper in two dimensions: first, our time frames are legislative periods (those that span between two consecutive elections); and second, we use a large panel dataset with ample variation across space and time. The advantage of following this approach is that it allows us to encapsulate the effects that divided governments, fragmented legislatures and ruling coalitions have on debt dynamics during their entire tenure.

We also focus on the quality of institutions given that earlier studies have found corruption to be positively associated with the accumulation of public debt. Political fragmentation can thus have a distinctive impact on public debt dynamics in societies where corruption is perceived to be high.

We find strong evidence showing that political fragmentation plays a prominent role in explaining public debt dynamics. Our results are consistent with the hypotheses underlying theories of both *common pool* and *veto players*. In addition, we show that prevalence of

² According to Escolano and Gaspar (2016), this debt accumulation bias is a relatively recent, starting precisely after the 1970s. Before that, debt spikes were typically followed by similar periods of debt decline. In their words: “For more than two centuries, the debt ratios of the largest economies of the time (the United States and the United Kingdom) show rare but recurrent large surges due to wars, financial crises and economic downturns, followed by gradual but persistent declines over long periods.”

³ Comprising emerging and low-income economies. Appendix 1 lists the countries.

corruption magnifies the effect of political fragmentation. The impact of political fragmentation on debt dynamics appears to be asymmetric, with larger and more significant effects during periods of debt decrease.

The paper is structured as follows. The next section reviews the relevant literature and discusses the two principal theories in this area. Section 3 presents the empirical model and the data and section 4 discusses the main results. Section 5 explores the differential impact of political fragmentation on public debt dynamics based on the level of perceived corruption and the overall prevailing level of public debt. Section 6 summarizes and concludes.

2. Literature Review

Earlier literature (Barro, 1979; Lucas and Stokey, 1983; Aiyagari and others, 2002) has focused on explaining how the observed pattern of debt accumulation differs from the normative prescription. The school of public choice has argued that “fiscal illusion” and Keynesian policies were behind excessive deficits and resulting debt accumulation (Buchanan and Wagner, 1977). Voters suffer from “fiscal illusion” in that they do not understand the notion of the intertemporal budget constraint and overestimate the benefits of current spending relative to the costs of future taxation. Keynesian policies prescribe spending and deficits during recessions, but the political process creates an asymmetry during expansions, not allowing for spending cuts and higher taxes, ultimately leading to an increase in the size of government and persistent deficits (Alesina and Passalacqua, 2015).

Another strand of recent research has focused on the role of rational actors, voters, lobbyists, politicians, and bureaucrats in deviating fiscal outcomes from the optimal level. Political economy models that assume rational voters show that politicians may only exploit temporarily a certain degree of information asymmetry. Empirically, political budget cycles explain only a small departure from optimal policy around election times, especially in new democracies (Persson and Tabellini, 2000; Brender and Drazen, 2005; Drazen and Eslava, 2010; Alesina and Paradisi, 2014).

Instead, the literature that studies public debt dynamics irrespective of the electoral calendar focuses on how the number of political actors may affect spending, deficits and debt accumulation. Two main theories have been advanced to explain suboptimal behavior: common pool and veto players.

Common Pool

Weingast, Shepsle, and Johnsen (1981) first argued that representative legislatures often pass budgets that give priority to local projects in districts they represent. Often referred to as pork-barrel spending, it is an increasing function of the number of electoral districts. Presented as the law of $1/n$, where total public revenue is a *common pool*, I , available to n

representatives (policymakers or districts), which they overuse proportionally to n in distributing benefits. The deviations of fiscal policy from the optimal—the one maximizing social welfare—will be greater when the number of actors who represent subsets of the national purse (i.e. spending ministers and parties in government) increases. A larger number of actors who thus fail to fully internalize the costs of raising additional revenue will lead to higher than optimal levels of spending and deficit financing (Wehner, 2010).

Veto Players

A government system with a large number of veto players and sharp ideological differences among them on policy options enhances policy stability—that is, it is difficult to change the status quo (Tsebelis, 1995, 2002). The status quo then becomes the preferred policy choice of those involved. Changes will only materialize once a certain number of institutional or partisan actors agree. This makes it difficult to adapt policy to changing circumstances. As the number of veto players increases, fiscal adjustment becomes slower, leading to suboptimal public debt accumulation (Roubini and Sachs, 1989; Alesina and Drazen, 1991; Spolaore, 2004). Similarly, as the ideological distance between the government players increases, the likelihood of any policy change from the status quo decreases (Franzese 2005; Tsebelis and Chang 2004). The presence of a large number of veto players and sharp ideological polarization among them reduces the chances of agreeing on policy changes and stabilizing the magnitude of excessive public debt (Cox and McCubbins, 2001; MacIntyre, 2001; Mian, Sufi and Trebbi, 2014). In contrast to the common pool, the veto player model explains the changes in public debt rather than the actual level of public debt.

3. Empirical Model and Data

The econometric approach followed here relates cross-country variation in public debt with multiple aspects of political fragmentation, including common-pool considerations and the influence of veto actors (Franzese, 2002, 2005; Battaglini, 2011). Unlike in previous empirical models that test the impact of alternative political outcomes on annual changes in public debt (Kagan, 2015) we focus, in addition, on the period between elections for a national legislative body, thus restricting the sample to countries and periods where competitive elections have taken place. We thus test the impact of political fragmentation on changes in public debt that occurred in years between legislative elections. The reason for focusing on multiyear legislatures (which typically last 4 or 5 years between two consecutive elections) is that debt creation is ultimately a decision of parliaments. In countries where there is a debt ceiling (e.g. the United States), Congress has to explicitly approve any new debt limit. In other countries, debt issuance is decided by the executive, but is usually the result of parliaments not passing revenue-raising measures or approving excessive spending.

First, we define debt episodes (the change in government debt) between two legislative election periods, using data from the World Bank's Database of Political Indicators (DPI), which provides years in which those elections were held.⁴

Second, we model cross-country variations in public debt as a function of political fragmentation, controlling for the structure of the economy:

$$\Delta D_{it} = \beta_0 + \beta_1 PF_{it} + \zeta' X_{it} + \varepsilon_{it} \quad (1)$$

where ΔD_{it} denotes the change in public debt, expressed relative to GDP, in country $i = 1, \dots, N$ at period $t = 1, \dots, L$, as defined above; PF denotes political fragmentation variables and X is a vector of controls. For the baseline results, we estimate Eq. (1) using ordinary least squares. The analysis covers 806 episodes of changes in public debt between legislative elections for 92 advanced and developing countries in 1975-2015.

Of concern with this approach is the existence of reverse causality, as it is possible that at least some of the correlations uncovered in this paper are instead generated by: (i) an omitted driving variable (such as an economic crisis or stagnant growth) causing political fragmentation, an increase in public debt, and high levels of unemployment which make it difficult to reduce public debt without significant social cost; or (ii) reverse causation whereby the need for fiscal consolidation engenders political polarization and fragmentation. Thus for robustness, an instrumental variable approach has been used subsequently in estimating Eq. (1), with instruments based on lagged values of the political fragmentation variables (one electoral period back in time), and also including country fixed-effects. Data on gross general government debt, expressed relative to GDP, are drawn from the IMF's historical public debt database.⁵ Figure 1 shows the evolution of public debt over time, and across advanced and developing countries in our sample. The chart indicates large accumulation of public debt in the 1970s and 1980s, in both advanced and developing economies, with debt accumulating at a pace of over 2 percent of GDP on a yearly basis during that period. Alesina and Passalacqua (2015) discuss alternative hypotheses of political distortions behind this sharp increase in public debt among advanced economies during a peace period.⁶ This was followed by fiscal consolidation in the 1990s and a large part of the early 2000s that generally slowed or reduced debt accumulation. The financial crisis of

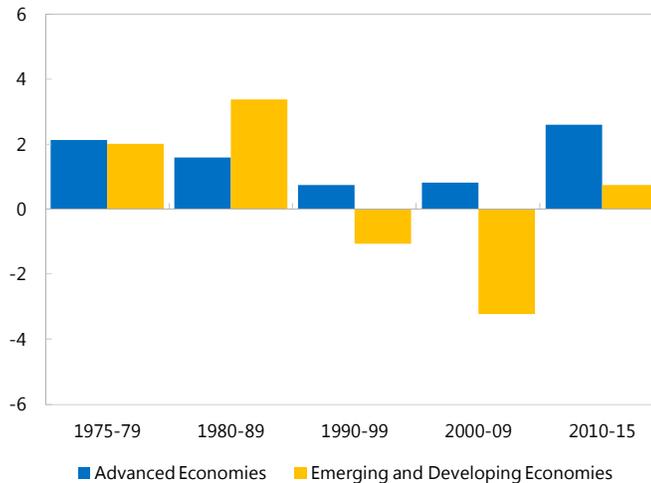
⁴Results are broadly similar for electoral periods that exclude episodes of early or repeated elections.

⁵ Originally compiled in Mauro et al. (2013) and updated using IMF's WEO and IFS data.

⁶ Easterly (2014) suggests that in the early 1970s, many countries did not internalize a secular growth downturn, requiring a reduction of government spending to keep the size of government constant, which ultimately led to an accumulation of debt.

2008/09 again triggered accumulation of government debt, in particular among developed economies.⁷

Figure 1. Change in Public Debt
(Annual averages, in percent)



Sources: WEO, IFS, and Mauro et al. (2013)

Data on political fragmentation relating to the common pool considerations are also drawn from DPI. We consider five alternative indicators from this database to test the hypothesis. First, government terms characterized by larger parliamentary majorities are expected to react faster to the need of fiscal adjustment. To account for this, we include an indicator for *margin of majority*, which is defined as the fraction of parliamentary seats held by the government as a share of total seats. Second, the extreme situation is represented by the case in which the government party has an absolute majority (more than 50 percent of the seats) in the houses that have lawmaking powers, which is tested using a dummy variable ‘*control of parliament*’ that takes the value 1 if this is the case or zero otherwise.⁸ Alternatively, a third indicator for *executive polarization* is tested, which measures the ideological distance between the executive’s party (left-right-center orientation) and the other three largest parties’ orientation.⁹ Finally, an additional predictor of political fragmentation is cabinet fragmentation within the executive branch of government. To account for this we follow

⁷ Descriptive statistics in Figures 1 and 2 do not differ significantly once countries that have received debt relief under the Heavily Indebted Poor Countries (HIPC) initiative are excluded.

⁸ In addition, an indicator for the *number of opposition parties* has been considered.

⁹ The variable takes the value 0 if the legislative index of political competitiveness or the executive index of political competitiveness—both from DPI—are less than 6 (elections are not competitive) and if the chief executive party has an absolute majority in the legislature.

Perotti and Kontopoulos (2002) in considering an indicator for the *size of the cabinet*, measured by the number of ministries, from Seki and Williams (2014).

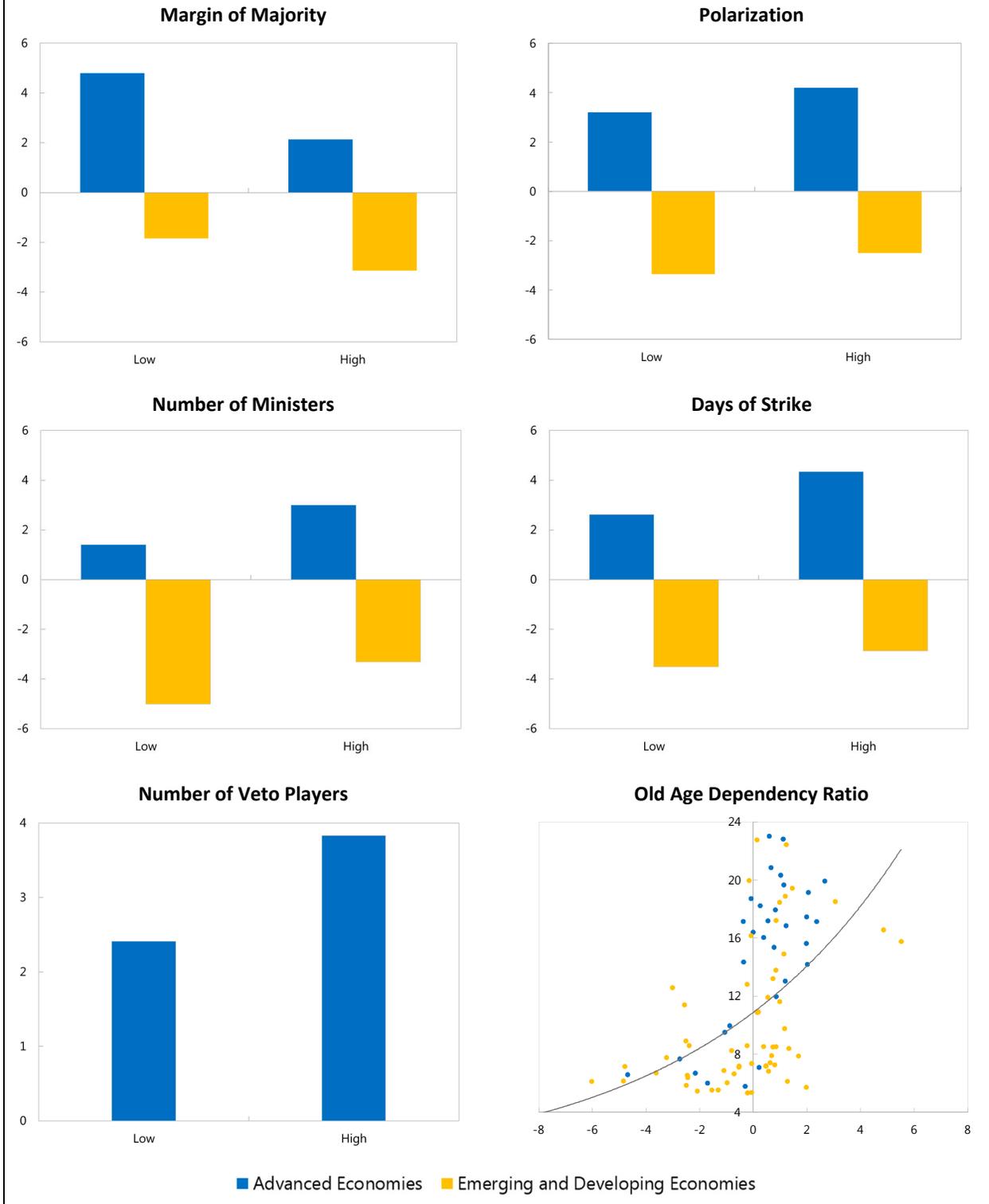
Data on political fragmentation relating to *veto player's theory* are drawn from several sources. The actual *number of veto players* in a given country considers “individual or collective decision makers whose agreement is required for the change of the status quo” (Tsebelis, 2000; 2002). Similarly, we include *checks and balances*, from DPI, that measure the number of political players influencing the government’s decision making. In addition, we consider the *number of working days lost owing to strike*¹⁰ from the International Labor Organization’s Social Dialogue Database, as proxy for social tensions making policy changes more difficult to pass, and thus translating into larger public debt accumulation or slower debt reductions. We also consider *popular support*, from International Country Risk Guide (ICRG), measuring the level of government support (and its leaders), which facilitates the implementation of reforms. Finally, we include the *old age dependency ratio* from the World Development’s Indicators (WDI), defined as the ratio of older dependents—people older than 64—to the working age population (those ages 15-64), to account for possible rigidities in the speed of public debt adjustment, related to a growing share of age-related public spending on health and pensions.

Figure 2 illustrates the impact of selected political fragmentation indicators on debt dynamics, suggesting that indeed larger fragmentation, related to both, the common pool and the veto player theory, are generally associated with higher increases in public debt (or smaller reductions). Among advanced economies, the increase in public debt on average over episodes has been about 3 percentage points of GDP higher in countries with below average margin of majority in the parliament. Among emerging and developing countries, public debt has decreased about 1 percentage point of GDP faster in countries with above average majority in the parliament, or in countries where political polarization is low. Similar magnitudes are found when considering the number of ministries.¹¹ For the selected indicators on the veto player’s theory, the increase in public debt has been about 2 percentage points higher (the decrease about 1 percentage point lower) in developed (emerging and developing) countries facing a large number of days of strike. Also the number of veto players leads to faster accumulation of public debt (about 1½ percentage points of GDP) among developed economies for which this indicator is available. Finally, for both developed and emerging and developing countries, a clear positive correlation emerges between the average accumulation of public debt (horizontal axis) and the average old age dependency ratio (vertical axis).

¹⁰ This indicator counts the days of strike in major economic sectors. If two or more economic sectors conduct strikes in a given day, then the indicator adds each of these sectors, which may result in more than 356 days of strike in a given year.

¹¹ The groups (low/high) for the number of ministries and the number of veto players are computed using the average +/- one standard deviation.

Figure 2. Indicators of Political Fragmentation and Changes in Public Debt
 (Average change in public debt over periods, in percent)



Source: Escolano et al. (2014), ILO, WDI and author's calculations.

We also look at the role of the traditional control variables such as changes in tax revenue and government spending, which affect government debt dynamics.¹² Data are drawn from the World Bank's WDI and the IMF's World Economic Outlook (WEO). These include per capita GDP in constant US dollars (and the change in per capita GDP), the share of agriculture in value added, the degree of trade openness measured as the sum of the shares of imports and exports in GDP, Consumer Price Index (CPI) inflation (and the change in CPI inflation), the change in natural resources rents,¹³ the change in the nominal exchange rate, the change in the unemployment rate, and the share of social spending in GDP. Finally, we also control for the quality of institutions with ICRG corruption, and institutional strength and quality of the bureaucracy indicators. The final sample size varies depending on the specification. Table 1 provides descriptive statistics. The list of countries included in the sample is provided in Appendix 1.

Table 1. Descriptive Statistics

Variable	Avg.	Min.	Max.	Std.Dev.
debt to GDP, percent	50.20	0.97	289.55	37.47
advanced	50.96	1.60	283.96	36.51
developing and emerging	49.56	0.97	289.55	38.25
change in debt to GDP	0.15	-117.25	118.91	10.64
advanced	1.00	-84.97	93.43	6.10
developing and emerging	-0.57	-117.25	118.91	13.30
margin of majority	0.68	0.03	1	0.21
control of parliament	0.52	0	1	0.50
polarization	0.52	0	2	0.83
number of ministries	26.04	1	101	13.08
number of opposition parties	3.16	0	168	11.27
number of veto players	2.29	1	6	1.23
checks and balances	2.93	1	18	1.81
popular support	2.26	0	3.91	0.57
days of strike	381.33	0	12765	869.98
old age dependency ratio	12.22	3.74	41.90	6.82
legislative election	0.23	0	1	0.42
executive election	0.09	0	1	0.29
change in oil rents	0.04	-20.57	34.55	2.39
inflation	0.40	-0.31	156.06	4.41
change in nominal exchange rate	0.85	-1.00	2626.77	39.36
trade openness	65.56	1.33	809.22	50.94
per capita GDP, log	10.89	5.80	17.37	2.38
social spending to GDP, percent	25.33	0	55.51	14.62
control of corruption, percentile rank	53.53	0	100	30.15
quality of bureaucracy	2.15	0	4	1.17
change in unemployment rate	0.01	-12	17	1.14

¹² For a review, see, for example, Crivelli and Gupta (2016), Baunsgaard and Keen (2010), Baldacci et al. (2008), and Rodrik (1998).

¹³ This variable from WDI captures the sum of natural resource rents from oil, gas, coal (hard and soft), minerals, and forests, expressed in percent of GDP.

4. Main Results

This section reports the results of estimating Eq. (1) for all episodes covering changes in public debt between legislative elections in 1975-2015. Table 2 provides the basic results using ordinary least squares for political fragmentation related to the common pool theory, whereas variables capturing the veto players' theory are presented in Table 3. For robustness and ease of comparison with earlier literature, results based on annual changes in public debt, using an instrumental variable estimation approach are presented in Appendix 2 (Tables A1 and A2). For brevity, the full set of control variables is only shown in the appendix's tables and omitted in subsequent tables. These are generally significant in explaining changes in public debt and present the expected sign.

The regressions reveal that the effect of political fragmentation on changes in public debt is generally significant and can be large in magnitude. The estimated coefficients from the common pool theory indicators (Table 2) suggest, for instance, that less fragmentation in the parliament facilitates fiscal consolidation. For each additional 10 percentage points of parliamentary majority, there is an average public debt reduction of about $\frac{3}{4}$ a percentage point of GDP, with the full control of the parliament leading to a reduction in public debt of 6 percentage points of GDP. In contrast, a more polarized political system (which measures the lack of majority and divergent political preferences) can induce larger debt accumulation: our estimated coefficient suggests that the maximum level of polarization creates an average differential in public debt increase over episodes of about 2 percentage points of GDP vis-à-vis minimum polarization, even though the estimated coefficient is not statistically significant. Finally, a more fragmented government, measured in terms of the number of ministries creates scope for faster debt accumulation as the size of the cabinet increases (although the estimated effect seems relatively small).

The indicators on the veto players' theory (Table 3) are significantly correlated with changes in public debt during legislative tenures, and the magnitude of their effect is similarly strong. According to the estimated coefficients, each additional veto player generates an average increase in public debt during a legislative episode of about 1.5 percentage points of GDP. Also, each additional 100 days of strike,¹⁴ explain an increase in public debt of about 0.2 percentage points of GDP. In addition, each additional political actor influencing government's decision making (an increase in the variable checks and balances by $\frac{1}{2}$ a standard deviation) leads to a faster accumulation of public debt by 1 percentage point of GDP. Interestingly also, a decrease in popular support for the government (by 1 standard deviation) also leads to faster debt accumulation by about $3\frac{1}{2}$ percentage points of GDP, during a legislative episode. Finally, each 10 percentage points increase in the old

¹⁴ Note that the average number of strike days in the most recent legislature period under study was 100 days, including all sectors in the economy, as reported by the ILO.

dependency ratio, contributes to an average increase in public debt of 4 percentage points of GDP.

Table 2. Common Pool Theory: Episodes

	(1)	(2)	(3)	(4)	(5)
margin of majority	-8.160** (1.231)				
control of parliament		-6.300*** (2.077)			
polarization			-1.071 (1.581)		
number of ministries				0.146*** (0.054)	
number of opposition parties					0.025 (0.036)
R2	0.286	0.303	0.303	0.542	0.286
F-statistic	7.74	8.25	8.22	10.61	7.61
P-value	0.000	0.000	0.000	0.000	0.000
Observations	359	360	344	238	360
Number of countries	61	61	59	32	61

Notes:

Dependent variable is change in debt-to-GDP ratio. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

Table 3. Veto Players' Theory: Episodes

	(1)	(2)	(3)	(4)	(5)
Veto Players' Theory					
number of veto players	1.451* (0.896)				
days of strike		0.002** (0.0006)			
checks and balances			1.057** (0.482)		
popular support				-5.964*** (2.221)	
old age dependency ratio					0.397** (0.184)
R2	0.447	0.253	0.112	0.400	0.274
F-statistic	7.13	7.02	3.38	10.42	8.59
P-value	0.000	0.000	0.000	0.000	0.000
Observations	99	202	763	257	348
Number of countries	16	57	61	61	60

Notes:

Dependent variable is change in debt-to-GDP ratio. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

5. Robustness tests

In the previous section, we showed that political fragmentation can have a sizeable impact on public debt dynamics. And we showed that these results are robust to alternative definitions of the period under analysis (i.e. public debt changes during multiyear episodes between legislative elections and during annual changes in debt). In this section, we assess the robustness of our results to alternative specifications. We first look at the sensitivity of our results to the simultaneous inclusion of both the common pool and veto player variables. We then also explore the potentially differential impact of political fragmentation on public debt dynamics based on the level of perceived corruption and the prevailing level of public debt.¹⁵ Further robustness tests consist of isolating periods of debt increase and decrease, separately, and looking at the role of independent fiscal institutions in mitigating the impact of fragmentation. In order to address potential endogeneity concerns, all results presented in this section use an instrumental variable estimation approach as discussed above.

Other checks were performed on the results of the previous section. In particular, to control for countries that have received debt relief under the Heavily Indebted Poor Countries (HIPC) initiative, by excluding HIPC countries from the sample. Also given the importance of nominal GDP in driving public debt leverage (especially in developing countries), we try the level of public debt, rather than the public debt-to-GDP ratio, and control for the change in GDP in the regressions. Relatedly, because increases in public debt-to-GDP ratios capture many other factors beyond fiscal profligacy (including for example, because of stock-flow adjustments), an alternative measure was considered using the general government's primary balance. The results for these additional checks are qualitatively identical to those presented in Section 3 and thus have been omitted to preserve space.

The first robustness test consists of exploring the relative importance of the different fragmentation hypotheses more closely. Table 4 reports on the results of including in the regression both the common pool and veto player variables. For this exercise, we only include variables that are not highly correlated within each group.¹⁶ Results are qualitatively similar to those presented in the previous section, and the estimated coefficients are similar in magnitude, which reinforces the importance of considering both aspects of political fragmentation.

¹⁵ In addition to controlling for the level of GDP per capita in all regressions, a further test consisted of exploring the potentially differential effect based on the level of development of the country, by splitting the sample in OECD versus non-OECD countries. The results were inconclusive and have been omitted to preserve space.

¹⁶ We also exclude variables with only a limited number of observations such as the number of veto players, which is only available for advanced economies.

Table 4. Common Pool and Veto Player Variables

	(1)
change in Debt t-1	0.145*** (0.036)
margin of majority	-4.775** (2.477)
number of ministries	0.037** (0.020)
days of strike	-0.001 (0.001)
checks and balances	0.198* (0.124)
old age dependency ratio	0.154** (0.043)
time fixed-effects	yes
R2	0.517
F-statistic	2.99
P-value	0.000
Observations	706
Number of countries	35

Notes:

Dependent variable is change in debt-to-GDP ratio. All control variables included in all regressions. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

The next robustness test consists of assessing whether the effect of political fragmentation on public debt dynamics is influenced by the level of corruption. Earlier evidence has shown that the level of corruption can be positively associated with the level of public debt (IMF, 2016; Cooray and Schneider, 2013), either through a direct increase in public spending (Kaufmann, 2010; Tanzi and Davoodi, 2002), or indirectly by affecting its composition (Gupta et al., 2001; Mauro, 1998), and by reducing the ability of a government to raise tax revenues (IMF, 2016; Schneider et al., 2010; Kaufmann, 2010).

In our analysis we split the sample on the basis of the World Bank corruption indicator, which reflects perceptions of the extent to which public power is exercised for private gain. Table 5 presents the results for countries belonging to the upper 50th percentile of perceived level of control of corruption (i.e., those with the lowest level of corruption), whereas Appendix Table A3 presents results for countries in the lower 50th percentile (high corruption).

A simple comparison of the results of indicators for the common pool theory shows that in countries with low perceived corruption (Table 5), less political fragmentation—as measured by a larger margin of majority or control of parliament—is negatively and significantly associated with changes in public debt. The opposite can be observed in countries with high perceived corruption (Table A3), where a higher margin of majority or even the full control

of parliament is not necessarily associated with reductions in public debt. Interestingly, a more fragmented government, measured in terms of the number of ministries, is associated with much faster debt accumulation in countries with high perceived corruption: the estimated coefficient being some 40 times higher in countries with high perceived corruption as compared to countries with low perceived corruption and is highly significant.

The indicators on the veto players' theory show a similar pattern. The estimated coefficients for the number of days of strike and the old age dependency ratio are larger in magnitude and more significant in Table A3, implying a stronger link between political fragmentation and accumulation of public debt in countries with high corruption. Interestingly, higher popular support is associated with slower debt accumulation in countries with low perceived corruption but faster debt accumulation in countries with high perceived corruption (though this last coefficient is not statistically significant). The only exception is checks and balances, which is positively associated with increases in public debt in countries with low perceived corruption only.

A further robustness test consists of assessing the differential impact of political fragmentation on public debt dynamics, while separately considering periods of decreasing public debt (Table 6) from periods of increasing public debt (Appendix Table A4). A comparison of the results shows an apparent asymmetry. For periods in which public debt decreased, the results are largely as presented in Section 4, that is, more political fragmentation—on both common pool and veto players' theory—is associated with slower reduction in public debt; whereas less political fragmentation—as, for example, measured by a higher margin of majority or attaining control of parliament—is associated with faster debt reduction. With most of the estimated coefficients being statistically insignificant for the common pool theory, however, these results do not necessarily hold in periods in which public debt increased.

Results for indicators on the veto player's theory are similar for both, periods of debt increase and decrease, except that as in the previous case, the estimated coefficients are smaller in size for periods of debt increase. Only the indicator for popular support behaves differently, and it is negatively and significantly correlated with periods of debt increase only, suggesting that weaker popular support can lead to faster debt accumulation.

Table 5. Low Perceived Corruption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in debt t-1	0.059 (0.102)	0.068 (0.096)	0.070 (0.096)	0.090 (0.177)	0.001 (0.021)	0.353*** (0.047)	0.170*** (0.026)	0.026 (0.022)	0.119*** (0.046)	0.029 (0.020)
margin of majority	-4.266** (2.142)									
control of parliament		-1.560** (0.780)								
polarization			0.223 (0.430)							
number of ministries				0.020 (0.019)						
number of opposition parties					0.042 (0.068)					
number of veto players						0.370* (0.222)				
days of strike							0.001 (0.002)			
checks and balances								0.477** (0.208)		
popular support									-0.713* (0.515)	
old age dependency ratio										0.052 (0.124)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.170	0.170	0.200	0.372	0.196	0.519	0.239	0.207	0.391	0.196
F-statistic	2.32	2.59	2.38	1.52	2.84	1.80	3.58	2.34	1.43	3.27
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1513	1611	1551	1258	1561	439	1215	1605	533	1849
Number of countries	90	91	89	41	92	20	58	91	81	83

Notes:

Dependent variable is annual change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**, *) indicate significance at 1(5, 10) percent.

Table 6. Debt Decreases

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in debt t-1	0.007 (0.092)	0.010 (0.084)	0.008 (0.084)	0.160*** (0.021)	-0.060** (0.020)	0.129** (0.069)	0.070* (0.027)	-0.038* (0.021)	0.202*** (0.046)	0.009 (0.084)
margin of majority	-4.778*** (1.735)									
control of parliament		-2.579*** (0.644)								
polarization			1.494*** (0.358)							
number of ministries				0.034* (0.018)						
number of opposition parties					0.052* (0.039)					
number of veto players						0.466* (0.275)				
days of strike							0.001 (0.001)			
checks and balances								0.412* (0.228)		
popular support									0.116 (0.885)	
old age dependency ratio										0.272*** (0.048)
time fixed-effects	yes	yes	yes	yes	Yes	yes	yes	yes	yes	yes
R2	0.123	0.129	0.122	0.419	0.172	0.391	0.117	0.174	0.235	0.153
F-statistic	4.00	4.07	3.79	2.45	3.89	3.69	5.69	3.75	1.47	3.73
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1109	1080	1051	619	1122	165	659	1066	415	1172
Number of countries	90	92	89	41	92	20	59	91	81	92

Notes:

Dependent variable is annual change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**, *) indicate significance at 1(5, 10) percent.

We perform an additional robustness check by analyzing the differential impact of political fragmentation on public debt dynamics once initial conditions are accounted for. For this purpose, we define a debt-to-GDP threshold using the sample average of 50 percent. This level of public debt is used as a threshold above which the economy becomes vulnerable to shocks, and with further increases in public debt potentially affecting economic growth more significantly.¹⁷ The underlying hypothesis is that countries with a ratio of debt-to-GDP above 50 percent, face a hard constraint that may prevent political fragmentation from affecting debt dynamics. The results for countries that are below the defined threshold are almost identical to those presented in Section 4 and are not repeated here to preserve space. When focusing on periods for which countries are above the defined threshold, however, the results become much weaker (Appendix Table A5), which confirms the underlying hypothesis. Only the interactive coefficient for higher fragmentation measured in terms of the number of ministries is positively and significantly correlated with changes in public debt. Among the veto players' indicators, only the interactive coefficient for popular support is significant but positively correlated with public debt changes, suggesting that weaker popular support at high debt levels leads to lower debt accumulation rates. In sum, higher political fragmentation has little impact on further increasing public debt once a high level of public debt has been achieved. Interestingly, however, the opposite is also true, that is, less political fragmentation does not appear to be effective in accelerating public debt consolidation once that level of high public debt has been achieved.

A final robustness check consists of analyzing how the existence of independent fiscal institutions affects the impact of fragmentation on public debt dynamics. A small but growing literature has argued that independent fiscal institutions, such as “fiscal councils,” could improve policymakers' incentives to opt for sound fiscal policies even in the presence of political fragmentation (IMF, 2013). First, by fostering transparency over the political cycle, a fiscal council can improve democratic accountability and discourage opportunistic shifts in fiscal policy (e.g. a pre-electoral spending spree). Second, through independent analysis, assessments, and forecasts, such bodies can raise public awareness about the consequences of unsustainable policy paths resulting from the presence of veto players, or contributing to a stability culture that directly addresses fiscal illusion linked to the common pool problem. Hence a fiscal council can raise the reputational and electoral costs of unsound fiscal policies associated with political fragmentation. Third and finally, a fiscal council can provide direct inputs to the budget process—e.g. forecasts or assessments of structural

¹⁷While below the 60 percent threshold included as criteria (upper limit) in the European Union's Stability and Growth Pact (and also used in Reinhart and Rogoff, 2010), the 50 percent threshold is likely more relevant for developing countries. Results using a 60 percent threshold, however, do not differ significantly.

(continued...)

positions—thereby closing technical loopholes that allow governments to circumvent numerical fiscal rules.

Using the IMF Fiscal Council dataset,¹⁸ we define a dummy variable that takes the value 1 if the fiscal council in a given country has a score that is above the sample average and takes the value zero otherwise (or in the absence of a fiscal council). Appendix Tables A6 and A7 present the results for strong and weak fiscal councils, respectively. The results suggest that the impact of fragmentation on the accumulation of public debt is stronger and more significant in countries without fiscal councils or in countries where fiscal councils are weaker than the average.¹⁹

6. Concluding remarks and policy implications

This paper focuses on the political determinants behind public debt dynamics. Using an empirical approach, we have tested the role of traditional indicators on political fragmentation in explaining changes in public debt. We have done so both by looking at annual data and by introducing a selection of episodes between consecutive legislative elections that is novel to the literature.

Our results show that political fragmentation plays a prominent role in explaining public debt dynamics. The main theoretical hypotheses are confirmed, as both common pool theory and veto player's theory indicators show a positive association between political fragmentation and changes in public debt. In addition, we show that corruption magnifies these effects: in societies perceived to be corrupt, high political fragmentation has a sizeable impact on debt increases. In contrast, low political fragmentation is not effective at reducing public debt in the presence of high corruption

Finally, the impact of political fragmentation on debt dynamics appears to be somewhat asymmetric, with larger and more significant effects of fragmentation in periods of debt decline. This finding only applies, however, to normal times, in which public debt is

¹⁸ See <http://www.imf.org/external/np/fad/council>. The IMF Fiscal Council Dataset describes key features of 39 institutions identified as fiscal councils as of 2014 across the IMF membership. The dataset includes general information such as the name and acronym of the council and its date of creation, the main features of the council's remit, their specific tasks and instruments to influence the conduct of fiscal policy as well as key institutional characteristics such as the existence of formal guarantees of independence, accountability requirements, and human resources. Debrun and Kinda (2014) provide the list and definition of variables included in the Fiscal Council Dataset. It also describes the variety of sources used to assemble the data.

¹⁹ The establishment of fiscal councils is usually preceded by the adoption of fiscal rules, in many instances to ensure that these are followed. As such, the identified impact could be driven by the existence of fiscal rules. We also considered the potential impact of fiscal rules in mitigating the impact of political fragmentation. Results are qualitatively similar but significance generally weakens, potentially suggesting that fiscal rules can indeed mitigate the impact of political fragmentation and help the development of sound fiscal frameworks.

relatively low (below 50 percent of GDP). For countries with a high level of public debt, political fragmentation cannot explain further increases in public debt. In addition, low political fragmentation appears to be ineffective in reducing public debt above that threshold.

The findings of his paper are relevant for policymakers. An environment of political fragmentation is likely to be associated with excessive spending, deficits and debt, regardless of whether such a policy stance is good or bad for the economy. This points to the need for strengthening fiscal institutions (fiscal rules and fiscal councils in particular) to limit the impact that political fragmentation has on government spending. The use of a binding Medium-Term Budget/Fiscal Framework could be considered, which sets for instance binding expenditure ceilings for a number of years, thereby constraining the ability of political players to influence fiscal policy. It points to the need for greater transparency of the decision-making process so that the public can better understand how fiscal and economic decisions are taken in the short run and what their implications are in the long run.

Appendix 1. Countries in the Sample

-Advanced countries: Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Korea, Luxemburg, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, United States.

-Developing Countries:²⁰ Albania, Argentina, Armenia, Bolivia*, Brazil, Bulgaria, Burkina Faso*, Cambodia, Cameroon*, Chad*, Chile, China, Colombia, Congo, Republic of*, Croatia, Cote d'Ivoire*, Ethiopia*, Georgia, Ghana*, Haiti*, Honduras*, Hungary, India, Indonesia, Iran, Jordan, Kazakhstan, Kenya, Lao PDR, Latvia, Lithuania, Madagascar*, Mali*, Mexico, Moldova, Morocco, Mozambique*, Myanmar, Nepal, Nicaragua*, Nigeria, Pakistan, Peru, Philippines, Poland, Romania, Saudi Arabia, Senegal*, Sudan*, Tanzania*, Thailand, Turkey, Uganda*, Ukraine, Uzbekistan, Vietnam, Yemen, Zambia*.

²⁰ Countries denoted with an asterisk are those that have benefited from the HIPC initiative.

Appendix 2. Other Results

Table A1. Common Pool Theory—Annual Data

	(1)	(2)	(3)	(4)	(5)
change in debt t-1	0.122*** (0.027)	0.115*** (0.026)	0.115*** (0.027)	0.166*** (0.029)	0.116*** (0.027)
margin of majority	-5.871** (2.659)				
control of parliament		-1.730** (0.816)			
polarization			0.092 (0.413)		
number of ministries				0.032** (0.015)	
number of opposition parties					0.002 (0.035)
legislative election	0.037 (0.514)	0.014 (0.522)	0.012 (0.546)	0.337 (0.440)	0.061 (0.520)
executive election	0.947 (0.799)	0.837 (0.805)	0.610 (0.851)	1.302* (0.789)	0.971 (0.805)
change in oil rents	-0.291** (0.152)	-0.281* (0.155)	-0.266* (0.158)	1.029** (0.413)	-0.276* (0.154)
change in unemployment rate	0.199 (0.191)	0.144 (0.184)	0.239 (0.202)	-0.029 (0.199)	0.235 (0.190)
share of social spending	0.114 (0.082)	0.158** (0.083)	0.188** (0.087)	0.056** (0.025)	0.122 (0.084)
quality of bureaucracy	-0.428 (0.894)	-0.532 (0.896)	-0.247 (0.897)	-0.400 (0.458)	-0.458 (0.921)
corruption	-0.373 (0.473)	-0.374 (0.481)	-0.407 (0.483)	-0.389* (0.250)	-0.333 (0.480)
inflation	-0.281*** (0.058)	-0.294*** (0.056)	-0.287*** (0.057)	-0.065 (0.051)	-0.277*** (0.058)
change in inflation	0.135*** (0.060)	0.161*** (0.057)	0.147*** (0.059)	0.659*** (0.087)	0.150*** (0.060)
change in nominal exchange rate	0.116*** (0.014)	0.117*** (0.015)	0.123*** (0.015)	0.113*** (0.015)	0.113*** (0.015)
trade openness	0.006 (0.017)	-0.013 (0.017)	-0.010 (0.018)	0.003 (0.004)	-0.013 (0.017)
per capita GDP	0.071*** (0.025)	0.072*** (0.026)	0.086*** (0.027)	0.015 (0.111)	0.081*** (0.026)
change in per capita GDP	-0.679*** (0.086)	-0.700*** (0.084)	-0.759*** (0.089)	-0.948*** (0.103)	-0.679*** (0.086)
constant	-75.256*** (28.977)	-77.952*** (29.329)	-95.313*** (30.228)	-0.568 (2.103)	-87.781*** (29.152)
time fixed-effects	yes	yes	yes	yes	yes
R2	0.297	0.290	0.296	0.493	0.283
F-statistic	1.83	1.88	1.84	2.11	1.76
P-value	0.000	0.000	0.000	0.000	0.000
Observations	1153	1205	1147	750	1193
Number of countries	61	61	59	32	61

Notes:

Dependent variable is change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. Robust standard errors, in parenthesis; ***(**, *) indicate significance at 1(5, 10) percent.

Table A2. Veto Players' Theory—Annual Data

	(1)	(2)	(3)	(4)	(5)
change in debt t-1	0.316*** (0.065)	0.213*** (0.027)	0.160*** (0.028)	0.215*** (0.037)	0.162*** (0.028)
number of veto players	0.837*** (0.306)				
days of strike		0.0005* (0.0003)			
checks and balances			0.619*** (0.225)		
popular support				-0.932* (0.533)	
old age dependency ratio					0.112*** (0.040)
legislative election	-0.052 (0.475)	0.855 (0.611)	-0.018 (0.501)	-0.364 (0.578)	0.397 (0.570)
executive election	1.194 (1.240)	0.452 (1.038)	0.540 (0.796)	1.931** (0.827)	0.744 (0.852)
change in oil rents	-1.227 (1.081)	0.193 (0.337)	-0.361** (0.161)	-0.419*** (0.138)	-0.378** (0.169)
change in unemployment rate	0.966*** (0.292)	0.874*** (0.267)	0.164 (0.182)	0.449** (0.221)	0.321* (0.202)
share of social spending	0.034 (0.157)	0.057 (0.421)	0.089 (0.085)	0.024 (0.113)	0.175 (0.137)
quality of bureaucracy	-2.561 (1.870)	1.165*** (0.407)	-0.186 (0.865)	1.342*** (0.542)	0.896** (0.411)
corruption	0.064 (0.465)	-0.995*** (0.307)	-0.266 (0.452)	-1.200 (0.869)	-1.078*** (0.310)
inflation	-0.333* (0.195)	-0.260*** (0.057)	-0.207*** (0.057)	-0.098 (0.097)	-0.263*** (0.051)
change in inflation	0.048*** (0.017)	0.017* (0.010)	0.097* (0.061)	0.015 (0.090)	0.195*** (0.068)
change in nominal exchange rate	0.007 (0.016)	0.028*** (0.064)	0.137*** (0.017)	-0.435 (2.960)	0.139*** (0.019)
trade openness	0.014 (0.038)	0.008* (0.005)	-0.006 (0.016)	0.015 (0.024)	-0.001 (0.004)
per capita GDP	0.058 (5.504)	0.099 (0.131)	0.064*** (0.025)	0.093*** (0.036)	-0.002 (0.119)
change in per capita GDP	-0.586*** (0.186)	-0.645*** (0.094)	-0.708*** (0.082)	-0.406*** (0.093)	-0.549*** (0.089)
constant	4.109 (57.826)	-4.641 (8.466)	-72.019*** (28.100)	-134.25*** (42.839)	1.064 (1.886)
time fixed-effects	yes	yes	yes	yes	yes
R2	0.675	0.546	0.316	0.377	0.466
F-statistic	1.06	1.25	1.86	1.26	1.38
P-value	0.000	0.000	0.000	0.000	0.000
Observations	210	1063	1149	655	1119
Number of countries	16	57	61	61	60

Notes:

Dependent variable is change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

Table A3. High Perceived Corruption

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Common Pool Theory					Veto Players' Theory			
change in Debt t-1	-0.003 (0.042)	-0.012 (0.095)	0.082** (0.040)	0.006 (0.060)	-0.024 (0.095)	0.009 (0.095)	-0.083 (0.040)	0.102** (0.054)	-0.019 (0.039)
margin of majority	2.805 (3.471)								
control of parliament		-1.328 (1.837)							
polarization			1.348 (1.168)						
number of ministries				0.748** (0.415)					
number of opposition parties					-0.0697 (0.0565)				
days of strike						0.011* (0.006)			
checks and balances							0.128 (0.370)		
popular support								0.202 (0.438)	
old age dependency ratio									0.434*** (0.127)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.380	0.271	0.262	0.903	0.256	0.552	0.287	0.357	0.227
F-statistic	1.81	2.10	2.09	1.29	1.93	1.16	2.00	2.05	1.64
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	545	591	586	76	589	104	558	259	611
Number of countries	50	51	50	7	51	22	51	41	51

Notes:

Dependent variable is change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

Table A4. Debt Increases

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in debt t-1	0.012 (0.089)	0.065* (0.027)	0.085*** (0.028)	0.207** (0.042)	0.078*** (0.030)	0.222*** (0.063)	0.189** (0.084)	0.076** (0.028)	0.057* (0.038)	0.091*** (0.027)
margin of majority	-2.593* (1.862)									
control of parliament		0.750 (0.704)								
polarization			-0.010 (0.418)							
number of ministries				-0.029 (0.026)						
number of opposition parties					-0.070 (0.064)					
number of veto players						0.206* (0.014)				
days of strike							-0.001 (0.001)			
checks and balances								-0.132 (0.197)		
popular support									-0.656* (0.422)	
old age dependency ratio										0.245** (0.113)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.224	0.202	0.195	0.315	0.213	0.409	0.230	0.230	0.327	0.187
F-statistic	11.43	8.77	6.80	25.09	10.69	4.51	5.14	3.36	2.16	5.12
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1052	1125	1086	727	1085	313	658	1097	483	1288
Number of countries	91	92	90	42	92	20	60	92	82	92

Notes:

Dependent variable is annual change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

Table A5. High Level of Public Debt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in debt t-1	0.122*** (0.027)	-0.022 (0.029)	0.113*** (0.027)	0.113*** (0.030)	0.050* (0.027)	0.310*** (0.066)	0.296*** (0.047)	0.155*** (0.028)	0.009 (0.061)	0.115*** (0.028)
margin of majority	-0.027 (1.081)									
control of parliament		-0.814 (1.436)								
polarization			0.506 (0.489)							
number of ministries				0.041** (0.019)						
number of opposition parties					0.188 (0.126)					
number of veto players						0.152 (0.300)				
days of strike							-0.001 (0.002)			
checks and balances								0.209 (0.148)		
popular support									0.812** (0.398)	
old age dependency ratio										0.040 (0.041)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.259	0.256	0.257	0.364	0.258	0.705	0.260	0.334	0.258	0.217
Observations	1153	1032	1147	750	1003	210	583	1149	478	1156
Number of countries	61	72	59	32	72	16	41	68	61	61

Notes:

Dependent variable is annual change in debt-to-GDP ratio. Coefficients represent the differential impact (the interactive term) for public debt-to-GDP ratio above 50 percent. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**, *) indicate significance at 1(5, 10) percent.

Table A6. Strong Fiscal Council

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in Debt t-1	0.160*** (0.053)	0.179*** (0.056)	0.179*** (0.055)	0.180*** (0.073)	0.138*** (0.036)	0.430*** (0.080)	0.151*** (0.063)	0.137*** (0.035)	0.181* (0.086)	0.177*** (0.056)
margin of majority	-1.729* (1.366)									
control of parliament		-0.676** (0.389)								
polarization			0.138 (0.247)							
number of ministries				0.034 (0.45)						
number of opposition parties					-0.032 (0.063)					
number of veto players						0.127 (0.225)				
days of strike							0.0002 (0.0003)			
checks and balances								0.103 (0.123)		
popular support									-0.851** (0.457)	
old age dependency ratio										0.004 (0.032)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.457	0.462	0.455	0.563	0.526	0.727	0.488	0.528	0.625	0.456
F-statistic	11.78	11.23	10.92	6.41	3.15	12.06	8.10	2.99	1.70	11.61
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	589	600	589	420	501	124	426	500	120	588
Number of countries	16	16	16	11	16	5	14	16	15	16

Notes:

Dependent variable is change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

Table A7. Weak or No Fiscal Council

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Common Pool Theory					Veto Players' Theory				
change in Debt t-1	0.017 (0.023)	0.004 (0.022)	0.014 (0.082)	0.190*** (0.028)	0.033 (0.080)	0.305*** (0.057)	0.211** (0.092)	0.046* (0.023)	0.233*** (0.035)	0.033 (0.077)
margin of majority	-2.059 (3.447)									
control of parliament		-1.617* (0.965)								
polarization			-0.062 (0.598)							
number of ministries				0.048* (0.033)						
number of opposition parties					-0.002 (0.018)					
number of veto players						0.503* (0.319)				
days of strike							0.0004* (0.0002)			
checks and balances								0.429* (0.290)		
popular support									-0.387 (0.585)	
old age dependency ratio										0.122*** (0.033)
time fixed-effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
R2	0.180	0.151	0.151	0.380	0.135	0.524	0.240	0.158	0.356	0.145
F-statistic	1.99	1.68	1.59	1.31	1.70	1.95	1.73	1.64	1.20	1.42
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observations	1570	1703	1644	951	1861	323	1046	1762	733	1875
Number of countries	75	76	74	30	76	15	49	76	67	76

Notes:

Dependent variable is change in debt-to-GDP ratio. Instrumental variables approach with instruments based on lagged values of the dependent variable, including country-fixed effects. All control variables included in all regressions. Robust standard errors, in parenthesis; ***(**,*) indicate significance at 1(5, 10) percent.

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