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Institutional Constraints on Profligate Politicians: The Conditional Effect of Partisan Fragmentation on Budget Deficits

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Abstract: The literature on the common pool resource problem in budgeting has thus far not explored the likely interaction between 'size fragmentation' (the number of decision makers) and 'procedural fragmentation' (the structure of the process in which they interact). The argument put forward in this paper is that the effects of these two types of fragmentation should not be additive, but multiplicative, since theory suggests that the impact of size fragmentation on fiscal policy is conditional on the extent of procedural fragmentation. Using panel data for 57 countries over the period 1975 to 1998, I empirically investigate this interaction in the legislative context and find strong evidence that partisan fragmentation is associated with higher deficits only when it is not moderated by limits on parliamentary amendment authority.

Balancing the budget is like going to heaven. Everybody wants to do it.
They just don't want to do what you have to do to make the trip.

US Senator Phil Gramm[1]

The common pool resource problem can severely undermine prudent fiscal policy. The literature highlights diverse aspects of this problem, including the role of budget institutions (Von Hagen, 1992; Alesina *et al.*, 1999) and partisan variables (Volkerink & De Haan, 2001; Perotti & Kontopoulos, 2002). Perotti and Kontopoulos (2002, p. 192) contribute an analytically valuable distinction between 'size fragmentation' (the number of decision makers) and 'procedural fragmentation' (the structure of the process in which they interact). Surprisingly, however, their empirical work does not consider the interaction between these two types of fragmentation, although the theoretical case for doing so is very strong. Several other papers consider different facets of the fragmentation hypothesis, but similarly fail to account for this possibility, including Volkerink and De Haan (2001), Woo (2003), Fabrizio and Mody (2006), and Elgie and McMenamin (2008). As a result, we still know very little about whether budgetary procedures can mitigate the adverse fiscal effects of multiple fiscal decision makers.

In this paper, I argue that the fiscal impact of size fragmentation should be conditional on procedural fragmentation, and empirically investigate this hypothesis. The conceptual discussion explains how the interaction of these different types of fragmentation should produce distinct fiscal outcomes. I offer an empirical test based on a panel dataset comprising 57 countries over the 1975 to 1998 period. Other studies of the common pool resource problem in budgeting have tended to focus on much smaller samples of countries in Western Europe or Latin America, or members of the Organization for Economic Cooperation and Development (OECD). Therefore, the analysis in this paper contributes both a unified conceptual approach as well as a broadly based empirical test to the literature. The paper has three main parts: a discussion of the different types of fragmentation; an overview of the variables, data, and some methodological issues;

followed by the empirical model and the results. The conclusion points out policy implications and possibilities for further research.

1. Types of fragmentation

Theoretical work on the common pool resource problem in budgeting highlights that a proliferation of fiscal decision makers gives rise to fiscal indiscipline (Weingast *et al.*, 1981; Von Hagen & Harden, 1995; Velasco, 2000). However, institutional arrangements can mitigate fiscal illusion by vesting strategic power in actors who are likely to internalize costs, such as the finance minister or prime minister (Von Hagen & Harden, 1995). This suggests that the fiscal impact of fragmented decision making depends on two types of fragmentation (Perotti & Kontopoulos, 2002, p. 192): the number of decision makers, or 'size fragmentation', and the structure of the process in which they interact, or 'procedural fragmentation'. Depending on the relevant decision making unit, size fragmentation can refer to the number of individual policy makers or political parties. Procedural fragmentation refers to the degree to which the design of the budget process allows the finance minister to protect the revenue pool from special interest claims.

Early cross-national studies tended to focus on one of these types of fragmentation. For instance, Von Hagen and Harden (1995) present results for 12 European Union countries that show an association between budget institutions and deficit and debt during the 1980s (see also Von Hagen, 1992). Alesina, Hausmann, Hommes, and Stein (1999) apply a similar approach to 20 Latin American and Caribbean countries. They find an association between budget institutions and primary deficits in the 1980s and early 1990s (see also Stein *et al.*, 1998). In contrast, Volkerink and De Haan's (2001) study of deficits in 22 OECD countries over the 1971 to 1996 period includes several measures of size fragmentation in the legislature and the executive, with some significant results. However, they ignore the structure of the budget process.[2]

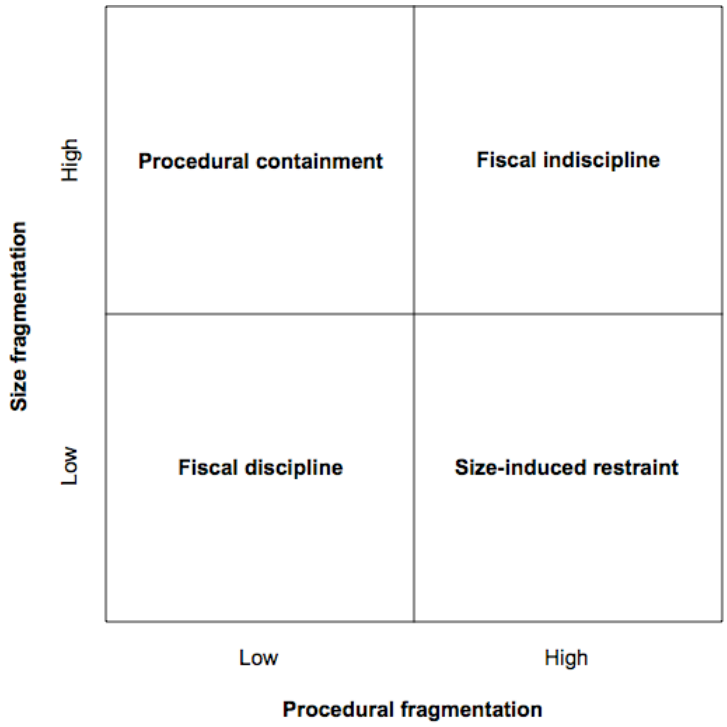
Only more recently have some authors begun to incorporate measures of both size and procedural fragmentation into their analyses. Notably, Perotti and Kontopoulos (2002) consider

the association of the number of parties in a coalition and the number of spending ministers with several fiscal indicators in 19 OECD countries over the 1970 to 1995 period. They also include procedural variables, namely the use of fiscal targets and the nature of negotiations between the finance minister and spending ministers. However, they ignore the legislative arena and, crucially, do not explore the possible interaction between their measures of size and procedural fragmentation. Woo (2003) runs a battery of regressions with a sample of 57 countries between 1970 and 1990 to investigate the association of a range of economic, political, and institutional variables with deficits. The interaction between size and procedural fragmentation is not considered. Fabrizio and Mody (2006) study the determinants of primary balances in ten Eastern European countries between 1997 and 2003, including a measure of government fragmentation as well as a detailed index of budget institutions borrowed from the work of Gleich (2003) and Yläoutinen (2004). Despite explicitly setting out to investigate whether budget institutions counteract political indiscipline, Fabrizio and Mody (2006) do not investigate the interaction between these variables. Some cross-national studies have considered how budget institutions interact with other variables (Hallerberg & Marier, 2004; Alt & Lassen, 2006), but the interaction between size and procedural fragmentation has yet to be explored.

Figure 1 offers a simplified representation of the likely interaction between the two concepts of fragmentation distinguished by Perotti and Kontopoulos (2002). The vertical axis measures size fragmentation, i.e. the number of budgetary decision makers. The horizontal axis measures procedural fragmentation, i.e. the extent to which strategic power is centralized in the hands of an actor with incentives to internalize costs. Figure 1 helps to clarify under what conditions size fragmentation can be expected to lead to fiscal indiscipline. First, consider the possible outcomes when procedural fragmentation is low. Where both size fragmentation and procedural fragmentation are low, there is no threat at all to fiscal discipline. When size fragmentation is high but the design of the budget process centralizes decision making, adverse fiscal effects can be contained. Now consider the two groups of possible outcomes with high procedural fragmentation. Where procedural fragmentation is high but size fragmentation is low, the budget process could potentially favor loose fiscal policy. However, the theory of common pool resources suggests that the limited number of decision makers induces fiscal restraint, as they

internalize a large share of the costs. However, when many decision makers operate without institutional safeguards, the common pool resource problem leads to fiscal indiscipline.

Figure 1: Types of fragmentation and fiscal performance



Hence, contrary to what much of the empirical literature at least implicitly suggests, the argument put forward here is that neither size nor procedural fragmentation per se need to give rise to fiscal indiscipline. Rather, it should be the coincidence of both types of fragmentation that produces this outcome. Put differently, the effects of size fragmentation and procedural fragmentation should not be additive, but multiplicative, since the impact of size fragmentation on fiscal policy is conditional on the extent of procedural fragmentation in the budget process.

2. Variables, data, and methods

For the empirical investigation, I use a panel of 57 countries over the 1975 to 1998 period. Dictatorship and authoritarian rule are inimical to the representative function of political actors

that underpins the logic of the common pool resource problem. For instance, a military dictator might suspend the legislature or replace its members with appointed cronies. Hence, I exclude years of strongly impaired democracy or non-democracy as indicated by a Freedom House score larger than 3.5.[3] The dependent variable is the central government budget deficit. The economic controls include the natural logarithm of inflation and annual GDP growth (as in Hallerberg & Marier, 2004), as well as trade openness measured as the sum of exports and imports divided by GDP (see Alesina *et al.*, 1999). Inflation can affect budgets in various ways, although the direction is hard to predict. For instance, an associated increase in interest rates may push up debt servicing costs, while bracket creep and delayed adjustment of non-indexed spending items help to improve the budget balance. Economic growth is likely to increase tax revenues and at the same time reduce the demand for some types of social spending in particular, resulting in a positive impact on the budget balance. Trade openness can help to reduce deficits by generating trade-related revenues such as import and export duties. Moreover, exposure to market forces may compel governments to adopt a more prudent fiscal stance than under limited openness.

In addition, I add several political variables. Notably, to account for electoral budget cycles (Franzese, 2002; Brender & Drazen, 2005), I use a dummy to indicate years of legislative elections. I also speculate that left parties in government might be more profligate than administrations from the centre or the right of the political spectrum (Volkerink & De Haan, 2001) and control for a head of government from a left-of-centre party. Finally, I include a dummy set equal to one for the 12 original Eurozone members in each year starting with 1992, when the adoption of the Maastricht Treaty paved the way for monetary union. This process is associated with improvements in the budget balance, although the sustainability of this effect is contested (Milesi-Ferretti, 2003; Koen & Van den Noord, 2005). Refer to Appendix 1 for full variable definitions and data sources.

Measures of procedural fragmentation are hard to come by for this unusually large sample. Existing surveys of budget institutions cover a much smaller number of countries and shorter time periods. To obtain a relevant measure of procedural fragmentation in the legislative budget process, I collected data on budgetary amendment rules for all countries in the dataset, using constitutions, legislative rules, as well as secondary sources (see Table 1). There are very good

reasons for using this variable to indicate procedural fragmentation in the legislature. First, a minimum of two separate sources for the relevant provisions in each country ensures a high degree of confidence in the accuracy of the data. Moreover, this is the only variable that consistently features in every cross-national index of budget institutions to capture the role of the legislature in fiscal policy decisions (Von Hagen, 1992; Alesina *et al*., 1999; Gleich, 2003; Hallerberg & Marier, 2004; Yläoutinen, 2004; Fabrizio & Mody, 2006; Hallerberg *et al.*, 2007 and forthcoming). Other indicators of procedural fragmentation in the legislature have been suggested, such as reversionary budget provisions (Alesina *et al.*, 1999), the structure of the committee system (Crain & Muris, 1995), bicameralism (Heller, 1997), and the sequencing of the voting process in the legislature (Von Hagen, 1992). However, these are not uniformly used in empirical work, and the relevance of some of these features is contested.[4] Hence, there is an exceptionally high degree of consensus in the literature that powers of amendment are central to understanding the role of the legislature in fiscal policy decisions.

The data in Table 1 yield different measures of procedural fragmentation in the legislature. First, I construct a dummy variable indicating whether legislative amendments are unfettered or limited. If there is a limit on changes during the approval stage of the budget process, the executive has agenda setting powers and can contain legislative profligacy. I also construct two dummies to separate those restrictions that do not allow the legislature to increase expenditures from those that prohibit the approval of a higher deficit than in the draft budget. There is anecdotal evidence that deficit-based restrictions may be less effective. For instance, Brazilian legislators have circumvented a constitutional prohibition to increase deficits through unrealistic upward revisions of revenue estimates (Blöndal *et al.*, 2003, p. 118). The distinction between these two main types of amendment constraints provides an additional robustness check for the empirical analysis.

Table 1: Legislative powers to amend the budget

Country	Amendment limit	Country	Amendment limit
Argentina	None / Deficit [a]	Ireland	Spending [c]
Australia	Spending	Italy	None
Austria	None	Japan	Spending [d]
Bahamas	Spending	Luxembourg	None
Barbados	Spending	Malaysia	Spending
Belgium	None	Malta	Spending
Belize	Spending	Mauritius	Spending
Bolivia	None	Mexico	Deficit
Botswana	Spending	Nepal	Spending [c]
Brazil	Deficit	Netherlands	None
Canada	Spending	New Zealand	Spending [e]
Chile	Spending	Nicaragua	Deficit
Colombia	Spending	Norway	None
Costa Rica	Deficit	Papua New Guinea	Spending
Cyprus (G)	Spending	Paraguay	None
Denmark	None	Peru	None / Spending [f]
Dominican Republic	Spending [b]	Philippines	Spending
Ecuador	Spending	Portugal	None
El Salvador	Spending	Spain	Spending
Fiji	Spending	Sri Lanka	Spending
Finland	None	Sweden	None
France	Spending	Switzerland	None
Gambia	Spending [c]	Thailand	Spending
Germany	None	Turkey	Spending [g]
Greece	None	United Kingdom	Spending
Guatemala	None	Uruguay	Spending
Honduras	None	United States	None
Iceland	None	Venezuela	Spending
India	Spending		

Sources: Constitutions, parliamentary standing orders, Inter-Parliamentary Union (1986), Von Hagen (1992), Döring (1995), Alesina *et al.* (1996), OECD (1998 and 2002), Haggard & McCubbins (2001), Santiso (2004), Filc & Scartascini (2006), International Budget Project (2006), Wehner (2006).

Notes: [a] Restriction since 1993 (Alesina *et al.*, 1996; Stein *et al.*, 1998). [b] Legislative amendments require a two-thirds majority, unless initiated by the executive (Art. 115(3) of the Constitution; Alesina *et al.*, 1996; Filc & Scartascini, 2006). [c] No amendment power, can only accept or reject. [d] There is a legal dispute about the extent to which the Diet can amend the budget (Sakurai, 2004). [e] Since 1996 the Crown has a financial veto over amendments with more than a 'minor impact' on allocations or fiscal aggregates; previously as in the UK (Standing Orders 312-316; Inter-Parliamentary Union, 1986; OECD, 1998; Wehner, 2006). [f] Restriction since 1991 (Alesina *et al.*, 1996; Stein *et al.*, 1998). [g] Restrictions apply in the plenary (Art. 162 of the Constitution; OECD, 1998; Kraan *et al.*, 2007).

Unfortunately, there is no similarly comprehensive information on the strategic power of the minister of finance vis-à-vis her cabinet colleagues. Different surveys of budget institutions are diverse in terms of countries, time periods, and measurement. Alesina, Hausmann, Hommes, and Stein (1996, Appendix B) asked budget directors in Latin American and Caribbean countries: 'Does the minister of finance have more authority than the spending ministers regarding the budget?' Although there is some overlap with the sample used here, there is insufficient variation, as 18 out of 20 respondents indicated that these powers were 'considerabl[y] greater… (formally and in practice)'. Moreover, as Hallerberg and Marier (2004, p. 578) point out, this measure reveals nothing about the way in which the power of finance ministers differs across countries. Building on the work by Von Hagen (1992), Hallerberg, Strauch, and Von Hagen (2007 and forthcoming) document the evolution of several institutional features to assess the authority of European Union finance ministers, for example the power to impose ceilings on the bids of spending ministers during the budget drafting process, and authority to block the disbursement of funds during budget execution. However, overlap with the dataset used here is limited to 15 countries and only a part of the sample period. There is relevant work on budget institutions in Central and Eastern European countries (Gleich, 2003; Yläoutinen, 2004; Fabrizio & Mody, 2006), but these recent democracies are not included in the dataset used here. Finally, Perotti and Kontopoulos (2002, pp. 220-221) experiment with indicators of spending limits and the nature of intra-executive budget negotiations. However, these are very selective and again limited to a subset of OECD countries.

Due to the lack of comprehensive cross-national data on procedural fragmentation in the executive, the focus here is on the legislative arena. The theory of common pool resources suggests that a legislature has greater potential for profligacy than a cabinet, because it typically comprises substantially more actors.[5] Hence, my expectation is that the interaction between size fragmentation and procedural constraints in the legislative arena should be highly relevant for fiscal policy outcomes. If the analysis finds evidence for this argument despite the limitations of the available data, this would signal that further empirical work is warranted to test the full implications of the interactive logic. Hence, an important task for future work would be to

contribute an analysis of the interaction of size and procedural fragmentation in the cabinet. To carry out such work with large samples requires new and more extensive institutional datasets.

There are different possible approaches to measuring size fragmentation, depending on whether the relevant decision making unit is a political party, an individual politician, or both. In the legislative arena, the number of seats is hardly changing or completely time-invariant in most countries, and therefore highly correlated with the country fixed effects in the empirical approach pursued here (see below). Hence, my focus is on partisan fragmentation, which varies much more within countries over time. Moreover, in most countries it is reasonable to assume a degree of party discipline. In the political science literature, a popular measure of party political fragmentation is Laakso and Taagepera's (1979) 'effective number of parties' (ENOP):

$$\text{ENOP} = \left(\sum_{i=1}^{n} \text{Party}_i^2\right)^{-1}$$

In this equation, $Party_i$ denotes the share of seats of political party i in the lower house of the legislature (or unicameral parliament) and n is the total number of parties represented. This measure has gained a high degree of acceptance, although it is not without its quirks (Dunleavy & Boucek, 2003). One of its undesirable properties is that it has no predefined upper bound, which can result in extreme positive skews in the distribution of this variable. This makes the measure problematic for some datasets, in particular those that are not narrowly focused on the traditional set of Western European or OECD countries.[6] For this reason, I prefer another Herfindahl-like index of partisan fragmentation:

$$\text{Partisan fragmentation} = 1 - \sum_{i=1}^{n} \text{Party}_i^2$$

This equation generates values between zero (one-party rule) and very close to one (every seat in the lower house or unicameral parliament is held by a different political party or independents). By giving less weight to small parties, this measure is better at dealing with extreme outliers at the upper end of the distribution.[7] Also, this size-weighted measure is preferable to the unweighted number of parties, which is equally bad at dealing with outliers as Laakso and

Taagepera's ENOP. Moreover, large parties are also likely to internalize a large share of the cost of their actions, so the theory of common pool resources implies the use of a size-weighted measure (Franzese, 2008). As a robustness check, I include the equivalent variable for the executive. Ideally, the partisan fragmentation of the cabinet should be calculated with data on the party affiliation of individual spending ministers. However, this information is not readily available. Assuming that portfolios are typically distributed with consideration of the relative seat shares of the governing parties in the legislature, the *Government partisan fragmentation* variable used here serves as a proxy. The data for these two variables are from the World Bank's April 2008 update of the Database of Political Institutions (Beck *et al.*, 2001).

With regard to estimation, the possibility that fiscal performance affects the choice of budget institutions can make it difficult to identify causal effects. This issue is well known in the political economy literature, but has proven difficult to address (Acemoglu, 2005; Fabrizio & Mody, 2006, p. 703). Alesina and Perotti (1996, p. 4) point out that institutional features that are costly to change and adjusted rarely can be considered exogenous 'at least in the short to medium run'. In this case, there is hardly any over-time variation in legislative amendment powers, which are constant over the sample period in all countries except for changes in Peru (1991), Argentina (1993), and New Zealand (1996). Moreover, the reform in New Zealand is inconsequential for the coding scheme used here (see Table 1 for details). A fixed effects approach is desirable, as it mitigates concerns about unobserved heterogeneity by eliminating bias from time-constant omitted variables. In this instance, the unit fixed effects will also absorb much of the explanatory power of the rarely changing institutional variables, but there is sufficient within-country variation in partisan fragmentation. Hence, the focus here is on how changes in partisan fragmentation affect deficits, given a particular institutional setting.

3. Empirical model and results

The discussion in section one unequivocally points to an interactive model (Brambor *et al.*, 2006; Kam & Franzese, 2007). Accordingly, I model the central government budget deficit in country *i* at time *t* as follows:

$$\text{Deficit}_{i,t} = \beta_0 + \beta_1(\text{Partisan fragmentation}_{i,t}) + \beta_2(\text{Amendment limit}_{i,t}) + \beta_3(\text{Partisan fragmentation}_{i,t} \times \text{Amendment limit}_{i,t}) + \beta_4(\text{Deficit}_{i,t-1}) + \beta_5(\text{Controls}_{i,t}) + \text{Country}_i + \text{Year}_t + \varepsilon_{i,t}$$

Here, β_0 is the constant. The coefficient β_1 represents the effect of a one-unit increase in partisan fragmentation when there are no amendment limits, while β_2 captures the effect of the imposition of such a limit under perfect one-party rule. The coefficient β_3 indicates by how much the effect of partisan fragmentation on deficits changes with the imposition of an amendment limit. I include the set of controls discussed in the previous section, as well as a lagged dependent variable, since a fiscal outcome in any given year is to a large extent determined by the outcome in the preceding year (Davis *et al.*, 1966). A Hausman test indicates that random effects are not appropriate. Hence, I use the OLS fixed effects estimator, where the unit fixed effects capture any country-specific unchanging features.[8] Given the rarely changing nature of the institutional conditioning variable, it is highly correlated with the country fixed effects. Therefore, the focus here is on β_1 and β_3. The year dummies control for common shocks and ε is an error term.

The above regression equation can be used to identify the marginal effect of partisan fragmentation:

$$\partial(\text{Deficit}_{i,t}) / \partial(\text{Partisan fragmentation}_{i,t}) = \beta_1 + \beta_3(\text{Amendment limit}_{i,t})$$

In this analysis, the conditioning variable is binary and simply indicates the presence or absence of limits on legislative amendments to the budget. Unlike in purely linear-additive models, β_1 has to be interpreted as a conditional coefficient representing the effect of a one-unit increase in

partisan fragmentation on the deficit when such an amendment constraint is absent (i.e. *Amendment limit* = 0). Conversely, the sum of β_1 and β_3 captures the effect of a one-unit increase in partisan fragmentation in the presence of such a constraint (i.e. *Amendment limit* = 1). The discussion in this paper leads me to expect a positive sign for β_1, since in the absence of an effective amendment limit an increase in the number of decision makers is predicted to lead to higher deficits (the dependent variable is coded so that a positive value represents a deficit and a negative value represents a surplus). As the presence of an amendment constraint is predicted to dampen this effect, I expect a negative sign for β_3 so that $(\beta_1 + \beta_3) < \beta_1$.

Table 2 presents the results. In column (1), I add only *Partisan fragmentation* and *Amendment limit* to the set of controls. The coefficient for partisan fragmentation has a negative sign and is far from significant. In column (2), I interact the two variables, as specified in the statistical model. According to the results, a switch from one-party rule to full partisan fragmentation increases deficits by a massive 5.6 percentage points of GDP when there are no limits on legislative amendments. More realistically, an increase from two to three parties with equal seat shares in the legislature (i.e. an increase in partisan fragmentation from .5 to .67) is predicted to add .94 percentage points to the deficit to GDP ratio. This effect is significant at the 1% level. Under these institutional conditions, partisan fragmentation results in fiscal indiscipline. As expected, the interaction term has a negative sign, and it is also significant at the 1% level. To assess the effect of an increase in partisan fragmentation in the presence of an institutional constraint, the bottom of Table 2 also presents the additionally required conditional coefficient(s) and standard error(s) for each interactive model. The relevant coefficient reported in column (2) has a negative sign but is not significant at conventional levels. In other words, when legislative amendment authority is circumscribed, an increase in partisan fragmentation has no significant effect on budget deficits. Apart from the lagged dependent variable, the estimates for the controls show that deficits increase in election years and that trade openness improves fiscal performance. None of the other control variables achieve statistical significance at conventional levels.

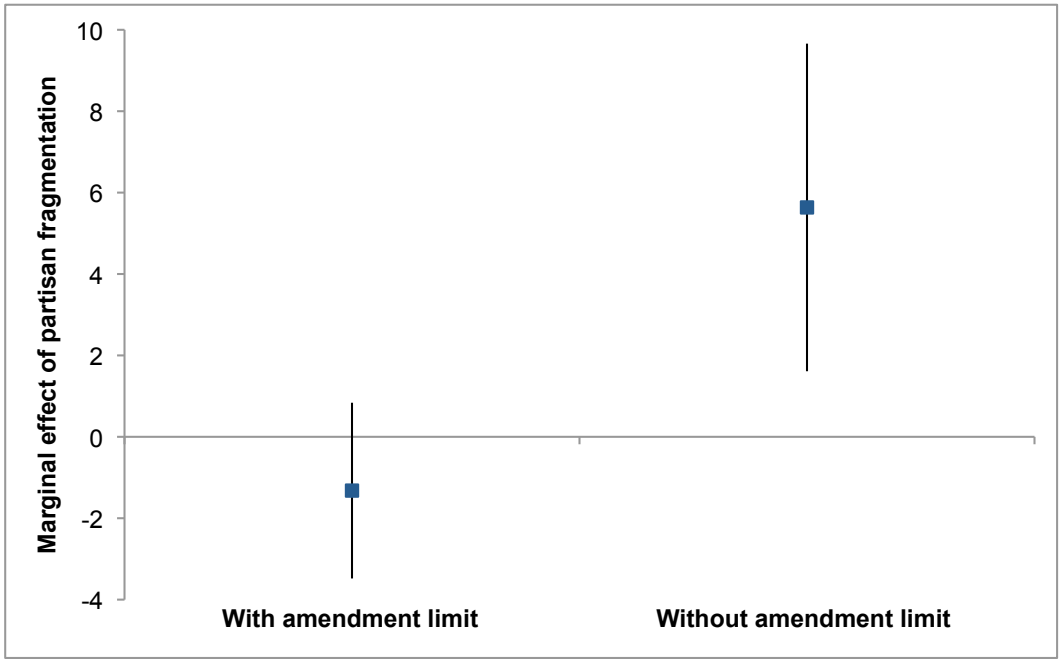
Table 2: Results

	(1)	(2)	(3)	(4)	(5)	(6)
Partisan fragmentation	-0.447	5.636	7.071	5.308	5.297	5.828
	(0.966)	(2.009)***	(1.537)***	(2.306)**	(2.041)**	(1.977)***
Amendment limit	-1.354	2.926	1.951		2.798	
	(1.194)	(1.821)	(1.513)		(1.799)	
Partisan fragmentation × Amendment limit		-6.957	-9.422	-5.991	-6.752	
		(2.256)***	(2.167)***	(2.589)**	(2.208)***	
Government partisan fragmentation					0.170	
					(0.567)	
Spending limit						0.054
						(1.568)
Partisan fragmentation × Spending limit						-7.193
						(2.314)***
Deficit limit						3.863
						(1.836)**
Partisan fragmentation × Deficit limit						-6.448
						(2.734)**
Lagged deficit	0.645	0.637	0.682	0.656	0.638	0.637
	(0.053)***	(0.054)***	(0.037)***	(0.050)***	(0.054)***	(0.054)***
Legislative elections	0.317	0.317	0.287	0.188	0.316	0.312
	(0.166)*	(0.165)*	(0.154)*	(0.178)	(0.165)*	(0.165)*
Left chief executive	0.244	0.225	0.139	0.360	0.243	0.208
	(0.298)	(0.295)	(0.258)	(0.292)	(0.312)	(0.294)
GDP growth	-0.038	-0.039	-0.045	-0.019	-0.039	-0.038
	(0.030)	(0.031)	(0.034)	(0.040)	(0.030)	(0.031)
Log of inflation	-0.002	0.015	0.062	0.060	0.013	0.024
	(0.094)	(0.097)	(0.110)	(0.152)	(0.095)	(0.097)
Trade openness	-0.020	-0.020	-0.014	-0.031	-0.020	-0.020
	(0.010)*	(0.010)*	(0.013)	(0.013)**	(0.010)*	(0.010)*
EU12	-0.457	-0.525	-0.453		-0.535	-0.524
	(0.525)	(0.513)	(0.486)		(0.527)	(0.513)
Constant	3.867	-0.116	0.093	1.956	0.059	1.368
	(1.222)***	(1.620)	(1.386)	(1.118)*	(1.573)	(1.485)
Partisan fragmentation | Amendment limit = 1		-1.321	-2.351	-0.683	-1.455	
		(1.078)	1.516	(1.126)	(1.173)	
Partisan fragmentation | Spending limit = 1						-1.365
						(1.164)
Partisan fragmentation | Deficit limit = 1						-0.620
						(2.348)
Observations	964	964	776	662	964	964
Countries	57	57	40	57	57	57
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Age ≥ .1	Year ≤ 1990	Full	Full

Notes: Standard errors clustered by country in parentheses. Only observations where Freedom ≤ 3.5 are included.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

Graphical exposition can aid the interpretation of conditional marginal effects (Kam & Franzese, 2007). Figure 2 summarizes the marginal effect of partisan fragmentation on deficits by institutional setting, based on the results in column (2). With an amendment limit, the 95% confidence interval includes zero. Conversely, with unfettered amendment powers, the marginal effect of partisan fragmentation is statistically distinguishable from zero. Moreover, there is no overlap between the two sets of confidence intervals. This indicates that the marginal effect of partisan fragmentation is statistically distinguishable across the two institutional groups. These results are fully in line with the expectations summarized in Figure 1: Under conditions of procedural fragmentation, size fragmentation leads to fiscal indiscipline. However, with procedural constraints, this effect is contained – and very effectively so, these results suggest.

Figure 2: The conditional marginal effect of partisan fragmentation on deficits



Note: Based on the results in column (2) of Table 2. The lines indicate 95% confidence intervals.

The remaining columns in Table 2 present several robustness checks. One possible critique is that formal institutional arrangements and partisan fragmentation may not be as relevant in weakly entrenched democracies (Acemoglu, 2005; Elgie & McMenamin, 2008). In column (3), I restrict the sample to countries that have a score of .1 or higher on the *Age* variable calculated by

Persson and Tabellini (2003), which measures the age of democracy. This cut-off limits the sample to countries that had democratized by 1980. Indeed, the hypothesized effect is stronger in countries with consolidated democracy. Also note that trade openness does not have a significant effect in this sample. In column (4), I limit the sample period to all years from 1975 up to and including 1990. This means that the institutional conditioning variable is completely time invariant and fully absorbed by the country fixed effects. The results for the variables of interest are substantively similar to those in column (2). Interestingly, legislative elections have no significant effect in column (4), which may suggest that electoral manipulation plays a greater role in more recent years. As explained above, in the absence of a measure of procedural fragmentation in the cabinet, the interactive argument cannot be explored in the executive context. However, in column (5) I include a measure of partisan fragmentation in the government. This variable is not significant and its inclusion does not substantively affect the results. Finally, I distinguish spending and deficit-based amendment constraints.[9] Column (6) suggests that both counteract the effect of an increase in partisan fragmentation, and there is no significant difference in the size of the coefficients for the two interaction terms.

I conducted additional robustness checks, which are not reported here to conserve space. One possible critique is that the impact of the European Monetary Union is not adequately modeled. In effect, I have assumed that Maastricht resulted in an immediate structural shift in budget balances in the first 12 countries to enter into monetary union. It is more likely that any effect of Europe's fiscal rules was gradual (Volkerink & De Haan, 2001, p. 236). Hence, I also allowed for the average effect of Maastricht on these 12 countries to differ for each year in the run-up to monetary union. The results suggest that monetary union had a significant negative effect on deficits in the EU12 only in the two years immediately prior to 1999, when the euro became a real currency. While this finding is of interest on its own, most important in this context is that the estimated conditional coefficients for partisan fragmentation are not affected. As a final robustness check, I ran a jackknife test in which I estimated model (2) 57 times, each time excluding all observations from one of the countries. The results remained stable no matter which country was excluded. In sum, there is robust evidence that partisan fragmentation in the legislature is associated with fiscal indiscipline only when constraints on amendments are absent.

Conclusions

The literature on the common pool resource problem in budgeting has explored the fiscal impact of a variety of aspects of fragmented decision making. However, previous empirical work pays insufficient attention to the likely interaction between size and procedural fragmentation. The argument put forward in this paper is that the effects of these two types of fragmentation should not be additive, but multiplicative, since the impact of size fragmentation on fiscal policy is conditional on the extent of procedural fragmentation in the budget process. Using panel data for 57 countries over the period 1975 to 1998, I find consistent evidence that partisan fragmentation in the legislature is associated with higher deficits only when it is not moderated by limits on parliamentary amendment authority.

This finding has potentially far-reaching policy implications. Notably, electoral reformers should consider very carefully how the broader institutional environment might condition the economic effects of a possible change in partisan fragmentation. For example, if a country were to undertake reforms that increase representation, by switching from a plurality rule electoral system to one based on proportional representation with a low threshold, then the results presented here suggest that the likely fiscal ramifications of this reform depend on the budgetary powers of the legislature. Moreover, given that these powers are highly durable, initial constitutional choices can shape fiscal policy outcomes for decades to come. Hence, in particular in the context of fundamental regime change, when there is a unique window of opportunity to reconsider and design a range of political structures, attention needs too be paid to the likely interaction between voter preferences, electoral systems, and budget institutions.

Further work is warranted. Notably, this analysis lacked an indicator of procedural fragmentation in the executive to replicate and complement the analysis of the legislative arena. While the literature on the common pool resource problem in budgeting has identified a number of relevant variables, suitable data are simply not available for a larger set of countries and over an extended time period. With comprehensive data on procedural fragmentation in the executive as well as the legislature, the interactive argument could be tested more fully. Moreover, it would be

possible to take the underlying logic even further, for instance by exploring the interaction of fragmentation at different stages of the budget process. This requires new data gathering efforts to obtain more fine-grained institutional measures for a large number of countries. The results presented here suggest that the payoffs of such work for our understanding of fiscal policy outcomes could be substantial. In the next generation of research on fiscal performance, these multiplicative relationships deserve thorough attention.

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Appendix 1: Variable definitions and sources

AGE: Age of democracy, defined as: AGE = (2000 – first year of democratic rule) / 200 and varying between 0 and 1, with the US being the oldest democracy (value of 1). Source: Persson & Tabellini (2003; corrected version dated June 2003).

AMENDMENT LIMIT: Dummy variable, equal to 1 if either Spending limit or Deficit limit equal to 1, 0 otherwise. Source: Table 1.

DEFICIT LIMIT: Dummy variable, equal to 1 if legislative amendments can increase spending but not the deficit in the executive's budget proposal, 0 otherwise. Source: Table 1.

DEFICIT: Central government budget deficit (if positive) or surplus (if negative), as a percentage of GDP. Source: Variable SPL in Persson & Tabellini (2003; corrected version dated June 2003), multiplied by -1.

EU12 IN 199X: Dummy variable, equal to 1 for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain for the year 199x, zero otherwise, where $1 < x < 9$.

EU12: Dummy variable, equal to 1 for Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain from 1992 onwards, zero otherwise.

FREEDOM: Freedom House combined average scores, ranging from 1 (free) to 7 (not free). Source: www.freedomhouse.org (accessed May 2008).

GDP GROWTH: GDP growth (annual per cent). Source: World Bank (2007).

GOVERNMENT PARTISAN FRAGMENTATION: The probability that two deputies picked at random from the governing parties in the legislature will be of different political parties. Source: Beck *et al.* (2001; April 2008 update).

LEFT CHIEF EXECUTIVE: Dummy variable, equal to 1 if the head of government is from a political party at the left of the ideological spectrum. Source: Author's calculations based on the variable EXECRLC in Beck *et al.* (2001; April 2008 update).

LEGISLATIVE ELECTIONS: Dummy variable for legislative elections, equal to 1 in the year the legislature is elected. Source: Persson & Tabellini (2003; corrected version dated June 2003).

LOG OF INFLATION: Natural logarithm of consumer price inflation (annual per cent). Source: World Bank (2007).

PARTISAN FRAGMENTATION: The probability that two deputies picked at random from the legislature will be of different political parties. Source: Beck *et al.* (2001; April 2008 update).

SPENDING LIMIT: Dummy variable, equal to 1 if legislative amendments cannot increase the spending total in the executive's budget proposal, 0 otherwise. Source: Table 1.

TRADE OPENNESS: Sum of exports and imports of goods and services measured as a share of GDP. Source: Persson & Tabellini (2003; corrected version dated June 2003).

Appendix 2: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Amendment limit	1230	0.620	0.486	0	1
Deficit	1067	3.385	4.354	-22.631	21.057
Deficit limit	1230	0.057	0.232	0	1
EU12	1230	0.068	0.252	0	1
Partisan fragmentation	1153	0.620	0.165	0.000	1.000
Freedom	1230	1.809	0.841	1.000	3.500
GDP growth	1223	3.390	3.739	-14.803	26.139
Government partisan fragmentation	1161	0.235	0.282	0.000	1.000
Left chief executive	1167	0.329	0.470	0	1
Legislative elections	1229	0.277	0.448	0	1
Log of inflation	1216	2.103	1.337	-4.074	9.372
Spending limit	1230	0.563	0.496	0	1
Trade openness	1206	72.065	38.868	8.868	208.643

Note: Only observations where Freedom ≤ 3.5 are included.

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[1] Quoted from the New York Times, September 17, 1990. Available: www.nytimes.com.

[2] Based on a different theoretical argument, the literature on delayed adjustment considers the hypothesis that coalition governments find it difficult to modify fiscal policy in the wake of economic shocks (Roubini & Sachs, 1989; Edin & Ohlsson, 1991; De Haan *et al.*, 1999). Franzese (2008) provides an overview and critiques the dominant empirical approach.

[3] This is also Persson & Tabellini's (2003) 'narrow' definition of democracy.

[4] Notably, Von Hagen (1992, p. 36) initially argued that a global vote on the size of the budget prior to allocative decisions contains total spending. However, Ferejohn and Krehbiel (1987) demonstrate that such a two-step process may result in relatively large budgets. Von Hagen later revised his view (Hallerberg & Von Hagen, 1997; Ehrhart *et al.*, 2007).

[5] In practice, there are always fewer cabinet members than legislators. Moreover, a cabinet is also likely to contain fewer partisan actors than the legislature, with possible but rare exceptions such as governments of national unity.

[6] For instance, Nepal prior to the 1991 election had a 'non-party' system of *panchayats* (councils). For these years, the Database of Political Institutions counts each member of the legislature as equivalent to a representative of a unique political party, resulting in scores for the (effective) number of parties of up to 140. This produces an extreme outlier in this sample.

[7] Results with a logged version of ENOP are very similar and available upon request.

[8] In dynamic models with fixed effects, a potential problem is Nickell bias (Nickell, 1981). However, Beck and Katz (2004, p. 15) conclude that this is less of a concern with time-series-cross-section data where the number of time periods is twenty or more.

[9] Note that *Spending limit* and *Deficit limit* are defined here as mutually exclusive types of amendment constraints.