

# Populist Fiscal Policy

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## Abstract

Political economy explanations for fiscal profligacy are dominated by models of bargaining among organized interest groups over group-specific targeted benefits financed by generalized taxation. These models predict that governments consisting of a coalition of political parties spend more than single-party regimes. This paper presents an alternative model—that of populist pressure on political parties to spend more on the general public good, financed by costly income taxation—and obtains the opposite prediction. According to this model, public spending and taxes are lower under coalition

governments that can win elections more cheaply. Indeed, in order to win elections, coalition partners need to satisfy a smaller share of swing voters than does a single-party government that enjoys narrower support from its core constituency. A coalition government therefore spends less on the public good to capture the share of the swing vote necessary for re-election. Using data from more than 70 countries during the period 1970–2006, the paper provides robust supporting evidence for this alternative model.

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This paper—a product of the Growth and the Macroeconomics and Human Development and Public Services Teams, Development Research Group—is part of a larger effort in the department to understand the political economy of public policy choices. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [skhemani@worldbank.org](mailto:skhemani@worldbank.org) and [wwane@worldbank.org](mailto:wwane@worldbank.org).

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## 1. Introduction

Political economy explanations for fiscal profligacy have been dominated by models of bargaining between interest groups over group-specific targeted benefits, financed by generalized taxation and borrowing (Alesina and Perotti, 1995, provide a review). Persson and Tabellini (2000, Chapter 13) draw upon much of the theoretical literature to distil a simple model to illustrate the bargaining problem. They show that when multiple interest groups are represented in the government, and given decision power over the budget, both taxes and borrowing are higher than with a single decision-maker, because group members take unilateral decisions and do not fully internalize the costs of financing group-specific targeted benefits. They posit that one natural indicator of the salience of interest groups in over-fishing the common property of public resources is whether the government (the political executive) consists of a single or multiple political parties. Persson, Roland and Tabellini (2007) develop more rigorously the idea of coalitions spending more than single-party governments through a general theory of political party formation to represent interest groups that organize under alternate electoral rules. Their model predicts that proportional electoral rules (in contrast to majoritarian rules) lead to greater number of political parties being formed, which increases the likelihood of coalition governments, and thence leads to higher spending.

Persson, Roland, and Tabellini (2007) find supporting evidence for their model from a sample of 50 parliamentary democracies. Using electoral rules as the instrument for instances of coalition government, they find that proportional systems lead to greater likelihood of coalition governments, and variation in instances of coalitions (arising out of variation in electoral rules) is associated with larger government spending. Early empirical support for this idea of fragmented fiscal policy came from Roubini and Sachs (1989) in their finding of a positive correlation between deficits and “type of government”, an indicator variable that ranked governments in ascending order of political fragmentation, from single-party majority governments to coalitions and minority governments. This influential paper spawned a substantial empirical literature with varying estimates of the impact of fragmentation on deficits.

Perotti and Kontopoulos (2002) examine the varied results that have been obtained and conclude that these are sensitive to the subjective coding of the “type of government” indicator. They instead test the impact of a more objective measure of government fragmentation—the number of political parties in a coalition government—using panel data for 19 OECD countries from 1970-1995. They find that coalition size is associated with larger spending on only one component, government transfers, and even this correlation is small in size and non-robust to alternate specifications.<sup>2</sup> It would appear, therefore, that the

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<sup>2</sup> Perotti and Kontopoulos (2002) develop new measures of “fragmentation”—one, the number of spending ministers in a cabinet, which is strongly, positively, and robustly associated with all components of spending and with deficits;

received empirical evidence on the impact of coalition governments on spending and deficits is less conclusive than the received theory.<sup>3</sup>

We explore and formalize an alternate intuition of populist pressure on political parties to deliver general public goods or universal transfers to all voters, financed by progressive taxes that have distortionary costs. In the presence of unorganized voters that are demanding of public spending but cannot be easily targeted, parties attempt to form minimum winning coalitions of their core constituents to keep distortionary taxes down while targeting benefits to their members. In our model, instances of coalition government are associated with *lower* taxes and spending than instances of single-party government because coalition partners are able to target their core supporters to win elections more cheaply. Coalition governments occur in our model because parties cooperatively decide to come together to form one in response to expected increases in the demands of unorganized voters. If a coalition cannot be formed, a single-party government has to spend more than a coalition would because it depends upon the votes of unorganized voters and has to win it by spending more on everybody.

Our notion of unorganized voters is an augmented version of “swing” voters in the literature on redistributive politics. “Swing” voters are typically defined as being ideologically neutral, voting only on the basis of economic policies (Lindbeck and Weibull, 1987; Dixit and Londregan, 1995, 1996). However, Cox and McCubbins (1986) and Dixit and Londregan (1998) also assume differences across voters in transaction costs of buying votes, with ideologically neutral voters characterized as being more costly to reach than core supporters of political parties.<sup>4</sup>

In the received literature on fragmented fiscal policy, coalitions arise exogenously from probabilistic voting, or as a result of electoral rules that provide representation to multiple political parties; the objective of each group is to maximize its benefits once in government, at the expense of rival groups, yielding the result of larger government when more groups are represented in government. In our model of populist fiscal policy the conflict of interest is not only between organized groups of economic elites but also with unorganized groups of poorer voters. The economic elite pay the bulk of taxes under a

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and two, the extent of “procedural” dispersal of decision-making authority in budgetary institutions, which is not correlated with either spending or deficits. We do not analyze cabinet size and budgetary institutions, viewing them as tools that the political executives choose once they determine what kinds and what size of public spending programs they want to pursue. We therefore focus on analyzing the more fundamental political incentives for government size.

<sup>3</sup> Stronger empirical evidence exists for the impact of *divided* government in presidential systems on adjustments to fiscal shocks, where the president’s party does not control a majority in all law-making houses (Alt and Lowry, 1994; Poterba, 1994; Alesina et al, 2006). We do not address adjustment to fiscal shocks or stabilization policies in this paper, focusing instead on government size.

<sup>4</sup> The problem of targeting is the subject of much of the literature on welfare economics, re-distributive policies, and poverty alleviation (Van de Walle and Nead, 1995, provide an excellent review). In our model, lack of targeting of swing voters goes hand-in-hand with why they are unattached to political parties; similarly, attachment of core supporters to political parties goes hand-in-hand with the fact that they are able to receive targeted transfers through the party.

progressive regime which yields costly distortions, and attempt to gain political power to capture benefits from public policies and rents from office. The poor voters are the classic swing voters—unorganized or unattached to political parties, demanding of public spending, and able to swing the vote to determine the identity of the organized groups to hold public office. In the presence of these swing voters, coalitions of organized groups arise as a cooperative response to keep taxes low and yet hold on to public office through the combined strength of their core constituents.

We provide robust supporting evidence for our model from a panel of 24 OECD and 53 developing countries over a period of four decades, 1970-2006, that different measures of coalition governments are associated with lower tax revenues and spending. Switching from a single-party government, where the executive head controls a majority in all law-making houses, to a divided government, correlates with a reduction in taxes and spending of 3-4 percentage points of GDP. These findings are particularly strong for the sub-sample of countries with parliamentary systems where our model of government formation is most likely to apply.

Our results may be reconciled with other recent evidence to the contrary—Persson et al (2006)—owing to our different specification, where we estimate the impact of coalition governments after controlling for political systems (presidential versus parliamentary systems) and electoral rules (proportional versus majoritarian). Our specification estimates the impact of moving from a single party government to a coalition *within* majoritarian systems, whereas Persson et al (2006) estimate the impact of change from single party to coalition governments owing to the electoral rule switching from majoritarian to proportional. In the latter case, when switches between single-party and coalition government happen directly as a result of electoral rules that shape voting behavior, then non-cooperative models are perhaps more likely to apply. However, we argue that our model is better applicable to understanding changes *within* a country as it switches between single-party and coalition regimes without a corresponding change in electoral rules, because in such switches coalitions are likely to arise out of a cooperative deal struck between political parties.

Although we do not have a dynamic model for the impact of coalitions on government borrowing, we explore the extent to which our empirical specifications help explain variation in budgetary deficits across countries over time, given that the original impetus of the fragmented fiscal policy literature was to look for evidence in the size of deficits (Roubini and Sachs, 1989). We find that different measures of coalitions have negatively signed coefficients when regressed against deficits, but these coefficients are not statistically significant.

We find another political variable significantly associated with higher deficits, ethno-linguistic fragmentation, as has been found in previous work on the determinants of deficits (Woo, 2003). In previous work fragmentation is assumed to be correlated with deficits because it induces greater fiscal

profligacy through bargaining between different interest groups. However, we find that ethno-linguistic fragmentation is associated with lower spending and lower taxes. This is consistent with our model because forging a minimum winning coalition through targeted spending to coalition members may be more likely in an ethnically fragmented society. Our results suggest that the correlation of fragmentation with higher deficits is driven by the choice of financing of government spending—through borrowing rather than taxes which shifts the costs of spending to future governments.

This pattern is consistent with political explanations for deficits rooted in *polarization* between interest groups, where even with only two groups, one in government and the other in opposition, deficits arise as a strategic choice of the group in power under conditions of rapid political turnover (Alesina and Tabellini, 1990; Tabellini and Alesina, 1990) and not necessarily because of larger government spending. In models of strategic deficits, the financing of current spending is pushed onto future governments by the incumbent group because there is a high likelihood of the rival group becoming the incumbent in the future. Ethno-linguistic fragmentation could be a reasonable indicator of political polarization and instability, leading to borrowing as the financing choice for current spending.

The next section presents our model. Section 3 describes the data and empirical specifications we use to examine our theoretical predictions. Section 4 presents the empirical results. Section 5 discusses policy implications of this analysis. Section 6 concludes.

## 2. Model

We consider a population of unit size with 4 groups indexed by  $j$ . The welfare of group  $j$ 's member is given by:

$$W^j(c, g) = c^j + H(g) \quad (1)$$

$W(\cdot)$  is an increasing and concave function,  $c^j$  is private consumption, and  $g$  is a general public good. Three of these groups are economic elites, controlling different economic resources, paying income taxes, and organized into political interest groups (political parties) to access targeted benefits from public spending which contributes to their private consumption. The fourth group is poor, with income normalized to zero (and hence does not pay taxes), is not organized into a political group and therefore does not receive private transfers. Let the 3 elite groups organized into political parties be designated as  $P_1$ ,  $P_2$ , and  $P_3$ , and the fourth group of unorganized voters be designated as the swing voters  $S$ .<sup>5</sup> The size of each group is denoted by  $\mu^j$ , for  $j = P_1, P_2, P_3, S$ .<sup>6</sup>

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<sup>5</sup> As we will show in greater detail below, in section 2.3 below, our characterization of this group as swing voters is consistent with several different characterizations in the literature of what it means to be “swing”. First, swing voters in our model are indifferent between voting for or against an incumbent government, based upon comparing the

For  $j \notin S$ ,  $c^j = y^j - \tau + f^j$ . That is, the consumption of members of organized interest groups consists of their disposable income, the difference between initial income  $y^j$  and the income tax  $\tau$ , plus a private transfer  $f^j$  targeted towards group members from public resources. For  $j \in S$ ,  $y^S \equiv 0$ , and  $f^S \equiv 0$ , and therefore  $W^S = H(g)$ . That is, members of the unorganized swing group do not have any income, cannot be taxed, cannot be targeted, and receive welfare only from general public goods.<sup>7</sup>

Raising taxes is costly for the government. It may need to allocate resources for enforcing the payment of taxes and prevent tax evasion for instance. We assume that when the government imposes an amount  $\tau$  in taxes it only collects  $\theta(\tau) \cdot \tau$  i.e. the cost associated with this level of taxation is  $(1-\theta(\tau)) \cdot \tau$ . The inefficiency of the tax system is captured by  $\theta(\tau)$  which has the following usual properties for an inverted-U Laffer curve for tax revenues:  $0 \leq \theta(\tau) \leq 1$ ,  $\theta'(\tau) < 0$ , and  $\theta''(\tau) < 0$  for  $0 \leq \tau \leq y^j, \forall j$ . The tax rate at which revenues are maximized is given by  $\tau = \tau^{\max}$ .

The general public good  $g$  and the targeted income transfers  $f^j$  are financed one-to-one with tax revenues, and satisfy non-negativity constraints  $g \geq 0$  and  $f^j \geq 0 \forall j$ . The government budget constraint is therefore given by:

$$\sum_{j \in S} \mu^j \cdot f^j + g \leq R(\tau) \quad (2)$$

where  $R(\tau) = \tau \cdot \theta(\tau) \cdot \sum_{j \in S} \mu^j$  is the government's tax revenue when the tax rate is  $\tau$ .

**The political system and government formation.** The three political parties  $P_1$ ,  $P_2$ , and  $P_3$  compete during elections to win the right to form the government and choose the policy vector  $p = [\tau, g, f^j]$ . There is a single electoral district and the party that wins a plurality of votes wins

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benefits of economic policy against a reservation utility (as in Persson, Roland, and Tabellini; 2006). Second, swing voters in our model are not ideologically attached to political parties, and vote only the basis of evaluating general public policies of incumbent governments (as in Lindbeck and Weibull, 1987; Dixit and Londregan, 1995, 1996; and much of the political science literature). Third, some models define swing voters as those whose ballot ultimately determine the outcome of elections (as in Feddersen and Pesendorfer, 1996), which also happens in the equilibrium in our model.

<sup>6</sup> We will impose some restrictions on the size of political groups, namely that  $\mu^j \geq 1/6$  for all  $j$  (i.e. that each party or group represents at least one sixth of the population), and that no one of the three political parties has more core-supporters than a coalition of core-supporters of the other two parties. These restrictions ensure that results in the model are not driven by relative group size but by political dynamics of voter demands.

<sup>7</sup> We can allow for the swing voters to have positive income and be subject to a tax without altering the predictions obtained for spending by coalitions versus single-parties, as long as the assumption of distortionary taxes is maintained. We set  $y^S \equiv 0$  for the sake of algebraic simplicity in deriving the model's equilibrium.



the right to form the government, as a *formateur*.<sup>8</sup> The party that wins<sup>9</sup> can either choose to govern alone, or extend a coalition proposal to one of the other parties. Parties decide whether to extend a coalition proposal on the basis of expectations of re-election. If a coalition government is formed it remains as a coalition until it loses an election. When a coalition loses an election, that is, when the party in opposition receives more votes than the combined votes received by coalition members, the coalition has to split, and the opposition party becomes the new *formateur*.<sup>10</sup> The government is therefore formed by the party that wins a plurality in the election alone, or along with the party that accepts its coalition proposal.

The political parties in government choose policies to maximize the welfare of their core constituents subject to a re-election constraint to be derived in the next section, in addition to the budget constraint specified in equation (2) above.<sup>11</sup> The objective function of a government is given by:

$$\max_{\{\tau, g, f^j\}} \sum_{j \in G} \mu^j \cdot [y^j - \tau + f^j + H(g)] + B / \sum_{j \in G} \mu^j \quad (3)$$

$B$  represents the exogenous rents or benefits from holding office, which have to be shared equally among the parties in the government. The office-holding rents are large enough for any government to always try to secure the upcoming elections and for a single-party winning the elections to have an incentive to be and remain the sole party in power. Note that swing voters and opposition party supporters do not enter the government's objective function. Any transfers to them would be determined by their role in the re-election constraint to be derived below.

Political parties in this model are therefore both partisan and opportunistic. They cater to the interests of their core constituents once in office, but also choose policies to try to win elections and gain office.

**The voters.** The core-supporters  $\mu^j$  of political party  $j$ , always vote for the party to which they are attached, consistent with the party's objective of maximizing the welfare of its supporters subject to re-election and budget constraints. The unorganized voters cast their ballot for the incumbent government (with equal probability of voting for all parties in government) if their welfare under government policy,

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<sup>8</sup> This terminology, the *formateur*, was introduced in the models of government formation in Baron and Dirmeier (2001) and Dirmeier et al. (2003).

<sup>9</sup> If two parties win the same number of votes which is more than the third party's votes, a coin is tossed for which of the two larger parties gets to form the government.

<sup>10</sup> Since there are only three parties and we want to rule out the trivial case of one-party systems, whenever a coalition wins it cannot propose the third party to join in a consensus government as in Baron and Dirmeier (2001). In this model, the proposition would have been rejected anyway because this is a signal to the opposition party that it will win forthcoming elections.

<sup>11</sup> Cooperative decision-making and equal distribution of transfers and rents from office is a critical feature of our model that is different from the bargaining models like that in Persson, Roland, and Tabellini (2006) which assume that each coalition member is an agenda-setter with unilateral decision-making power over their constituency-specific transfers, with tax rates being residually determined to balance the budget. Our assumption for joint maximization within a coalition is consistent with the assumption of the existence of a political group of "outsiders" that is a common threat to the power of each political party to target benefits to its supporters.

$H(g)$ , is higher than or equal to a reservation utility parameter  $\omega$ ; otherwise they vote for the opposition (again, with equal probability of voting for all parties in the opposition). The unorganized voters' reservation utility parameter  $\omega$  is distributed on the support  $[\underline{\omega}, \bar{\omega}]$ , with density  $f$  and cumulative  $F$  which are common knowledge.<sup>12</sup>

When the incumbent implements the policy  $p = [\tau, g, f^j]$  it can expect to receive  $\mu^S F(H(g))$  of swing voters' ballots. The remaining swing voters  $\mu^S (1 - F(H(g)))$  will punish the incumbent and vote for the opposition. The political parties in the incumbent government  $j \in G$  together receive  $\mu^G + \mu^S F(H(g))$  of the votes, where  $\mu^G = \sum_{j \in G} \mu^j$  is the combined group strength of the parties in government. In parallel, the parties in opposition  $k \notin G$  together receive  $\mu^O + \mu^S (1 - F(H(g)))$ , where  $\mu^O = \sum_{k \notin G} \mu^k$  is the combined group strength of the parties in opposition. If we let  $\Delta^G \mu = \mu^j - \mu^k$  be the incumbent government's electoral advantage over the opposition, the reelection constraint of a single party incumbent government,  $P$ , is given by:

$$F(H(g)) \geq \frac{\mu^S - 2\Delta^P \mu}{3\mu^S} = MSV^P \quad \text{or} \quad H(g) \geq F^{-1}(MSV^P) = mv^P \quad (4)$$

The corresponding constraint for a coalition incumbent government,  $C$ , is given by:

$$F(H(g)) \geq \frac{\mu^S - \Delta^C \mu}{2\mu^S} = MSV^C \quad \text{or} \quad H(g) \geq F^{-1}(MSV^C) = mv^C \quad (5)$$

In the re-election constraints above,  $MSV^G$  for  $G=P, C$ , is the *minimum swing votes* the government needs to secure the upcoming elections. With a reasonable assumption on group size,  $\mu^j \geq \frac{1}{6}, \forall j$ , that each group consists of at least one-sixth of the population, we have  $MSV^C \leq MSV^P$ , that is, a single party government needs more of the swing votes to secure the elections than a coalition (Proof in Appendix 1).<sup>13</sup>

**Timing of events.** There are three stages in this model as in Baron and Diermeier (2001), (i) an election stage that determines the proportion of votes for each contender and identifies the *formateur*, (ii)

<sup>12</sup> We assume that  $\underline{\omega} \geq 0$  i.e. the swing voters expect to be at least as well off as under laissez-faire with no taxation and no public good provision.

<sup>13</sup> Persson et al (2007), in a closely related model, assume greater restrictions on group size, with each of 4 groups representing one-quarter of the population.

a government formation stage, and (iii) a policy formation stage. At each period  $t$  the timing of events is as follows:<sup>14</sup>

1. A coalition or single-party government is the incumbent and the *formateur*
2.  $F$ , the distribution of swing voters' reservation utility, is realized and observed by all parties
3. If incumbent is a single party, it decides whether to extend a coalition proposal or not<sup>15</sup>
  - 3.1. first party accepts and coalition is formed
  - 3.2. first party refuses, second party accepts and coalition is formed
  - 3.3. second party refuses and winning party governs alone
4. Government implements policy to maximize its objective
5. Individuals observe the policy and their state of welfare and vote, which decides who will be the new *formateur*; if the incumbent is a coalition and wins a plurality as a coalition, it continues to set policy as the government; if it loses, it splits into its constituent parties and the opposition party becomes the new *formateur*.

### Political and Fiscal Equilibria

**Fiscal equilibrium under a benevolent social planner.** Before examining the optimal policy of an elected government we first derive the policy a benevolent and utilitarian social planner would implement, under the economic restrictions of the model of distortionary taxes and non-targetability of swing voters. The utilitarian social planner would solve:

$$\max_{\{\tau, g, f^j\}_{j \in G}} H(g) + \sum_{j \in S} \mu^j \cdot [y^j - \tau + f^j]$$

subject to

$$\sum_{j \in S} \mu^j f^j + g \leq R(\tau) = \tau \cdot \theta(\tau) \cdot \sum_{j \in S} \mu^j, \quad g \geq 0, \quad f^j \geq 0 \quad \forall j, \quad \text{and} \quad 0 \leq \tau \leq y.$$

The solution to this optimization problem is given by:  $H'(g^*) = 1$ ,

$H'(g^*) = (\partial[\theta(\tau) \cdot \tau] / \partial \tau)^{-1}$ ,  $R(\tau^*) = g^*$ , and  $f^{j*} = 0$ ,  $\forall j$ . The level of public goods supplied in the utilitarian optimum equates marginal social benefit of the public good to its marginal social cost of production. The government raises just enough taxes to finance the production of the public good.

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<sup>14</sup> We do not develop a dynamic model here, making sufficient assumptions on the nature of expectations to allow the optimal strategy for each agent, voters and political parties, to be to maximize their one-time objective function in every period. More formally, we assume optimistic beliefs (see Scheinkman and Xiong 2003, Yildiz 2004, Brunnermeier and Parker 2005, or Landier and Thesmar 2005) where in every period the party or coalition in power expects to face a more favorable distribution of reservation utilities the next period.

<sup>15</sup> If a coalition government is the incumbent, it directly implements its preferred policies after the realization of  $F_t$  and skips the government formation stage because it is meaningless to have all three parties in a coalition.

When political considerations are taken into account, both a single-party and a coalition government will be tempted to deviate from this optimum and provide targeted transfers to their core constituents. The extent to which they are able to capture public benefits for their core supporters depends upon their prospects for gaining public office which in turn depends upon how demanding swing voters are, or the function  $F(\omega)$  chosen by nature.<sup>16</sup> This distribution also shapes the incentive for a single-party that won a plurality of votes in an election to extend a coalition offer to another party.

**Maximum tax rate,  $\tau^{\max}$ , and public good,  $g^{\max}$ .** We first derive the maximum level of public goods that the most demanding swing voters can receive from any incumbent government who cares about re-election. This is the level of public good that can be produced if the government maximized its tax revenues and then spent it all on the public good. Given the technology for raising taxes described earlier, the tax rate yielding the maximum revenues is given by  $\tau^{\max}$ , the tip of the Laffer curve which satisfies the following condition:  $\theta'(\tau^{\max}) \cdot \tau^{\max} + \theta(\tau^{\max}) = 0$ . The maximum level of public goods is then given by:  $g^{\max} \equiv R(\tau^{\max})$ , with  $f^j = 0, \forall j$ . The highest possible consumption any government can provide to swing voters is thus  $H(g^{\max})$ .

**Incumbent government's preferred tax rate,  $\tau^{*G}$ , and preferred level of public good,  $g^{*G}$ .** We now derive the *preferred* tax rate and level of public good of incumbent governments, single-party and coalitions, denoted by  $\tau^{*G}$  and  $g^{*G}$  respectively, or the policy package incumbents would implement if their re-election constraint were ignored or not binding. There are two polar cases under which an incumbent government can choose a tax rate and level of public good to maximize the welfare of its core constituents. One, when re-election is entirely out of the government's reach, which happens when the minimum swing votes required for victory is greater than the number of swing votes the government can receive at the maximum level of public goods, or  $F(H(g^{\max})) < MSV^G$ . In this case, governments anticipate defeat in an upcoming election, become Leviathans and implement predatory policies.<sup>17</sup> Two, when the preferred level of public good selected by a government in maximizing its core constituents' welfare is sufficient to win the minimum swing votes needed for electoral victory, or  $F(H(g^{*G})) \geq MSV^G$ .

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<sup>16</sup> In our model, if voters could cooperate and choose the distribution of reservation utilities (as in Persson et al. , 2000) they will set it in a way to extract the maximum amount of public good from whatever government is in place. This assumption is, however, unrealistic since it requires a high level of information. It is also inconsistent with our modeling of swing voters as unorganized, and therefore unable to coordinate. We instead consider atomistic voters who cannot communicate or cooperate. Each swing voter will then independently set her reservation utility or will be assigned one by nature.

<sup>17</sup> Introducing reputation effects and the possibility that the population punishes parties that display such predatory behavior could in principle alleviate this stark result.

A government's optimization of the welfare of its core constituents consists of a two-step procedure. First, it chooses the tax rate that maximizes the disposable income of its constituents to whom all tax proceeds are redistributed:

$$\max_{\{\tau\}_{j \in G}} y^j - \tau + \alpha \cdot \theta(\tau)\tau, \text{ where } \alpha^G = \sum_{j \in S} \mu^j / \mu^G .$$

The first order condition for the above maximization, where  $\tau^{*G}$  denotes the preferred tax rate, satisfies  $\alpha^G \cdot [\theta'(\tau^{*G}) \cdot \tau^{*G} + \theta(\tau^{*G})] = 1$  or  $R'(\tau^{*G}) = \mu^G$ .

Second, the government chooses that optimal level of the public good that would be financed by its constituents alone, equating the marginal benefit and costs of the public good accruing only to its constituents, or  $H'(g^{*G}) = 1/\mu^G$ .

Finally, it redistributes the total tax revenue, net of public good spending, amongst its constituents, giving no specific transfers to the group out of government. The government's constituents thus receive  $f^{j*G} \equiv f^{*G} = [R(\tau^{*G}) - g^{*G}]/\mu^G$ , the difference between the tax proceeds and the costs of public good provision as specific transfer, which gives them a consumption level of

$c^{j*G} = y - \tau^{*G} + f^{*G} \forall j \in G$ . The other groups not represented in the government do not receive any transfer i.e.  $f^{*j \notin G} \equiv 0$ , and have a final consumption of  $c^{*j \notin G} = y - \tau^{*G}$ .<sup>18</sup>

The most preferred policies of a government are thus given by the tax rate  $\tau^{*G}$  and the public good level  $g^{*G}$  which satisfy the conditions above. Under this most-preferred policy regime, coalition governments tax less  $\tau^{*C} < \tau^{*S}$ , provide a higher amount of public good  $g^{*C} > g^{*S}$ , and spend less on programs benefiting their constituencies i.e.  $f^{j*C} < f^{j*S}$  than single-party governments.

**Proposition 1:** *When the re-election constraint is ignored or is not binding, single-party governments prefer a higher tax rate than coalition governments, spend more on targeted transfers to their core constituents, and less on broad public goods.*

Proof: In Appendix 2.

**Incumbent government's constrained choice of tax rate  $\hat{\tau}^G$  and public good  $\hat{g}^G$ , under re-election.** Now suppose that the distribution of reservation utilities is such that the government has access

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<sup>18</sup> We assume throughout the paper that  $R(\tau^{*G}) > g^{*G}$  for  $G=C, P$ . This assumption means that the preferred tax rate of the government generates at least enough revenue to pay for its preferred level of public good. This assumption puts an upper bound on the inefficiency of taxation. If we do not impose it, the government's optimal tax rate does not change but the amount of public good provided becomes  $g^{*G} = \text{Max}\{H'^{-1}(1/\mu^G), R(\tau^{*G})\}$  which may entail some rationing.

to a policy package to get re-elected, but only by moving away from its preferred policy described above. As set-up in the previous sections, its constrained optimization program is given by:

$$\max_{\{\tau, g, f^j\}_{j \in G}} \sum_{j \in G} \mu^j \cdot [y - \tau + f^j + H(g)]$$

$$\text{Subject to the budget constraint: } \sum_{j \in G} \mu^j f^j + g \leq R(\tau)$$

$$\text{And the reelection constraint: } H(g) \geq mv^G$$

If the preferred level of public goods of the government derived under the no-election regime,  $g^{*G}$ , satisfies the re-election constraint, that is,  $H(g^{*G}) < mv^G$ , then this is the level of public good which will be provided. However, if the re-election constraint is not satisfied, the government will increase the public good it provides just up to the point where it meets the reelection constraint. The optimal amount of public good for a government seeking re-election is therefore given by

$$\hat{g}^{*G} = \text{Max}\{g^{*G}; \hat{g}^G\} \text{ where } H(\hat{g}^G) = mv^G.$$

The government will attempt to finance the provision of additional public goods, over and above its preferred level, by diverting tax revenues collected through its preferred rate  $\tau^{*G}$  from transfers targeted to its constituents. If  $\tau^{*G}$  generates enough revenue to finance the public good then it is the rate the government will choose. However, if  $\tau^{*G}$  falls short of the revenue needed to finance the public good necessary for reelection, the tax rate will be increased to  $\hat{\tau}^G$  which is just necessary to finance the public good i.e.  $R(\hat{\tau}^G) = \hat{g}^G$ . The optimal tax rate for a government seeking re-election is thus given by:

$$\hat{\tau}^{*G} = \text{Max}\{\tau^{*G}, \hat{\tau}^G\}. \text{ Following the algebra through, the government will transfer}$$

$$\hat{f}^{j*G} \equiv \hat{f}^{*G} = [R(\hat{\tau}^{*G}) - \hat{g}^{*G}] / \mu^G \text{ to its constituents.}$$

Given our restrictions on group size, we have  $mv^P > mv^C$ , or  $H(\hat{g}^P) > H(\hat{g}^C)$ , which implies  $\hat{g}^C < \hat{g}^P$ . The single-party incumbent governments seeking re-election,  $P$ , thus have to spend more on public goods to woo more of the swing voters than do incumbent governments consisting of a coalition,  $C$ .

**Political and fiscal choices of single-party and coalition governments.** The political and fiscal choices of incumbent governments, whether to adopt policy packages to seek re-election or make a coalition government offer, depends upon the distribution of reservation utilities among swing voters,  $F(\omega)$ , obtained from the state of nature. This distribution determines the amount of public good the incumbent government needs to provide to secure its reelection. We examine in turn all possible regimes for the distribution  $F(\omega)$ , in terms of the public goods needed to satisfy swing voters, and derive

implications for the relative size of taxes and spending under single-party versus coalition governments. The different regimes and equilibrium policies of the two types of incumbent governments are depicted graphically in Figure 1.

$$(1) g^{\max} < \hat{g}^C < \hat{g}^P$$

In this regime, the swing voters are so demanding that neither a single party nor a coalition of parties would be able to raise enough tax revenues to provide enough public goods to win the minimum number of swing votes required to beat the opposition. Each type of incumbent government, single-party  $P$  or coalition  $C$ , would implement its preferred policies and not seek re-election. As derived earlier in Proposition 1, the single-party incumbent taxes more  $\tau^{*P} > \tau^{*C}$ , provides less public good  $g^{*P} < g^{*C}$ , and spends more on its constituencies  $f^{*P} > f^{*C}$  than a coalition.

$$(2) \hat{g}^C < g^{*C} \leq g^{\max} < \hat{g}^P \text{ or } g^{*C} < \hat{g}^C \leq g^{\max} < \hat{g}^P$$

Under this regime, a single-party incumbent cannot get reelected under any policy choice available to it. However, a coalition can get re-elected, implementing its preferred policy package when  $\hat{g}^C < g^{*C}$ , and its constrained optimal package otherwise. The *formateur* will choose not to govern alone under this regime, and will extend a coalition offer. That is, a coalition solution will be implemented irrespective of the type of the incumbent government at the beginning of the period; under this regime, there will be no single-party governments observed.<sup>19</sup>

$$(3) \hat{g}^C \leq g^{*C} < \hat{g}^P \leq g^{\max}$$

Under this regime, a coalition incumbent can implement its preferred policy  $(g^{*C}, \tau^{*C}, f^{*C})$  and be reelected. The single-party incumbent can also get re-elected but only if it provides a higher level of public good than its preferred level,  $\hat{g}^P > g^{*P}$ . As derived earlier, the optimal tax rate for the single party government seeking re-election is given by:  $\hat{\tau}^{*P} = \text{Max}\{\tau^{*P}, \hat{\tau}^P\}$ , which is higher than the preferred tax rate implemented by a coalition incumbent  $\tau^{*C}$  (Proposition 1). The tax rate is therefore higher under a single party incumbent than under a coalition incumbent, under this regime. Spending on the specific transfers targeted to group members is ambiguous.

$$(4) g^{*C} < \hat{g}^C < \hat{g}^P \leq g^{\max}$$

This is the case where both types of incumbent governments can be reelected but are constrained to depart from their preferred policy, spending more on the public good than what is optimal for their core

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<sup>19</sup> Given our assumption of some rents from holding office (see equation 3), every incumbent government prefers to attempt re-election, if it is possible, rather than adopting predatory policies. Predatory policies are adopted only when the obtained distribution of reservation utilities is so high that re-election is impossible.

constituents. The single-party would spend more on the public good than a coalition,  $\hat{g}^C < \hat{g}^P$ , and would impose a higher tax rate  $\hat{\tau}^C < \hat{\tau}^P$  (Proof in Appendix 3). Spending on the specific transfers targeted to group members is ambiguous under this regime.

$$(5) \ g^{*P} < \hat{g}^C < \hat{g}^P \leq g^{*C} < g^{\max} \text{ or } \hat{g}^C \leq g^{*P} < \hat{g}^P \leq g^{*C} < g^{\max}$$

The difference between this regime and regime (4) is that the constrained optimal policy of the single-party calls for less public good than the unconstrained policy of the coalition. The coalition will thus provide more public good, but the single-party will continue to levy higher taxes and provide more transfers to its constituencies. That is, while overall government size will remain higher under the single-party, the distribution of public spending between the broad public good and targeted transfers will change (Proof in Appendix 4).

$$(6) \ \hat{g}^C < \hat{g}^S \leq g^{*S} < g^{*C} < g^{\max}$$

This regime is the polar opposite of regime (1)—swing voters are not demanding and sufficient swing votes can be won for single-party and coalition incumbents to win re-election while implementing their preferred policies  $(g^{*P}, \tau^{*P}, f^{*P})$  and  $(g^{*C}, \tau^{*C}, f^{*C})$ , respectively. The reelection constraint imposed by the swing voters is not binding. Following Proposition 1, taxes and total government spending are higher under single-party governments.

Summarizing the arguments above, we have:

**Proposition 2:** *Taxes and total government spending are always higher when incumbent governments consist of a single political party versus a coalition of parties.*

The model therefore makes a strong and robust prediction about the impact of party composition of governments on taxes and total spending, which is contrary to the prediction thus far modeled in the literature. Predictions on *composition* of spending are ambiguous—while broad public goods provision by single-party governments is higher for a middle range of reservation utilities of swing voters, it is lower than provision by coalition governments for some polar values. Furthermore, we have largely ambiguous results with regard to the comparative size of spending on targeted transfers by the two types of government.

### 3. Empirical specification and data

To test the model's prediction about the correlation between type of government and fiscal policy, we begin with a specification drawn from Persson and Tabellini (2003, 2004) and Persson, Roland and Tabellini (2006):  $Y_{it}$  is a fiscal variable (spending, tax, or deficit, as defined further below) for country  $i$ , measured over time  $t$ , expressed as a percentage of GDP; economic characteristics relevant for



fiscal policy are included in the vector  $Z_{it}$ . The vector  $P_{it}$  includes indicators for electoral rules (whether majoritarian or proportional) and system of government (whether presidential or parliamentary), and an indicator for regularity of elections, in place of more subjective measures of quality of democracy used in the Persson-Tabellini specifications. A time effect,  $\delta_t$ , and regional indicator variables,  $R_{it}$ , are included as well. The specification is therefore as follows:

$$Y_{it} = \alpha \cdot Z_{it} + \beta \cdot P_{it} + \delta_t + R_{it} + \varepsilon_{it} \quad (7)$$

We then augment this model received from the literature to include indicators of coalition government:

$$Y_{it} = \gamma \cdot Coalition_{it} + \alpha \cdot Z_{it} + \beta \cdot P_{it} + \delta_t + R_{it} + \varepsilon_{it} \quad (8)$$

Our model predicts  $\gamma < 0$ , contrary to models in the received literature. This is the main test we perform to provide empirical support for our model. That is, we use the same cross-country setting, specification, and data used by recent influential contributions in the literature on political influences on fiscal policy, and then augment the model to test how coalition governments correlate with fiscal policy. We do not have a reasonable instrument for coalition government that is convincingly exogenous to fiscal policy. However, we do not think this is a problem for our purpose of showing both theoretically and empirically that instances of coalition government can be associated with lower spending and taxes. This is because possible reverse causality in specification (8) is also consistent with the argument we make. Fiscal shocks, for example, that reduce an incumbent government's revenue raising capacity are more likely to lead to an incumbent single-party making an offer to form a minimum winning coalition to stay in power.

The more important empirical concern is whether other omitted variables, capturing alternate political explanations, are correlated both with party composition of government and its size, and hence driving the result. We have already included in our basic specification one of the more important alternate political variables determining government size in the literature—electoral rules (Persson et al, 2007). We also consider other prominent variables in the literature such as voter turnout (greater turnout of core-supporters may be positively correlated both with larger government and single-party government); federalism (greater fiscal and political decentralization may lead to smaller size of central budgets, and greater likelihood of coalitions); political ideology (right wing governments may be smaller and in coalitions); and ethno-linguistic fragmentation (greater social fragmentation may lead to smaller government and coalitions). Each of these is discussed in more detail in the next section where we present the empirical results.

Following a large literature with cross-country specifications, we use fiscal data from the IMF's *Government Finance Statistics*, economic data from the World Bank's *World Development Indicators*,

and political data from the World Bank's *Database of Political Institutions* (DPI). The fiscal variables measure total spending (excluding interest payments), total tax revenues, and fiscal deficits of central governments.<sup>20</sup>

We measure coalition governments in three different ways using data from the DPI, given the finding that coefficient estimates are sensitive to the way coalitions are defined (Perotti and Kontopoulos, 2002). The simplest measure is that of an indicator variable which equals 1 if the party of the executive leader in a country does not control a majority in all lawmaking houses, which we label "DIVIDED".<sup>21</sup> The second measure is the probability (which lies between 0 and 1) that two legislators chosen at random from among parties that form the government will belong to two different parties, which is the variable labeled "GOVFRAC" in the DPI. The third measure is the number of political parties forming the government, similar to the measure used by Perotti and Kontopoulos (2002), which we calculate by simply counting the number of parties listed as government parties in the DPI—"NUMBER OF PARTIES".

We compile available data for more than 70 countries over the period 1970 – 2006.<sup>22</sup> We specify the time interval over which the variables are measured,  $t$ , as a decade. We calculate decadal averages for each country in our sample, for the 1970s (1970-1979), 1980s (1980-1989), 1990s (1990-1999), and 2000s (2000-2006), using non-missing values within a decade. We analyze the correlation of political party composition of government with fiscal policy over this country-decade sample. However, there is a lot of missing fiscal data, with observations on central government total spending and taxes available only for 224 country-decades. Details of how the variables are measured are contained in the data appendix, Appendix 5, along with the list of countries for which fiscal data is available in our sample. Appendix 5 also reports the summary statistics of the variables used in the analysis.

There are several arguments for selecting the decade as the time-unit of analysis over other possible choices such as annual panels, or averages within countries between consecutive elections. First,

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<sup>20</sup> Persson and Tabellini (2003) also analyze only central government budgetary spending, as opposed to consolidated government spending across all tiers and including extra-budgetary accounts, because of lack of comparable data across countries. They include an indicator variable for whether a country has lower tiers of government with fiscal authority. We also check the robustness of our results to including this variable.

<sup>21</sup> This is the variable used in a recent paper by Alesina, Ardagna, and Trebbi (2006) to estimate the impact of unified versus divided governments in effecting fiscal stabilization. It is conceptually the same as the measure used by Persson, Roland, and Tabellini (2006) in their work on the impact of electoral rules on public spending in parliamentary democracies. A similar measure is also used by Schwarz (2006) in his finding from over-time analysis of Germany that divided governments have higher deficits, and by Alt and Lowry (1994) and Poterba (1994) in their analysis of fiscal policy in US states.

<sup>22</sup> At the outset of this research when we began compiling the data, we chose to exclude oil-rich countries in the middle-east and countries experiencing nation-wide conflict for the majority of the years of our study, to examine political effects in times of peace. We also exclude countries that had been until the 1990s or are currently under communist regimes to avoid the correlation between single-party governments and government size being driven by the specific economic and political ideologies of these countries.

the source of variation in the explanatory variable of interest for this paper is not annual, so we did not think it appropriate to take our predictions to annual panel data. Typically, even countries with regular elections hold one every 2-5 years following a constitutionally prescribed schedule, so that variation in the main political variable of interest (instances of divided government) is not obtained annually. Countries without regular elections have even fewer years of observations for variation in government fragmentation. Most importantly, changes in government composition in such countries at discrete points in time, such as within one year, are likely to be correlated with larger political changes that might be in the nature of “one-time” events, and if the change is not sustained over a period of time it is not likely to represent the kind of underlying changes in voting behavior whose implications we are interested in testing.<sup>23</sup>

Second, averaging within each country over each of its election cycles would lead to large variation across countries in the time-period over which the fiscal and economic data are calculated, and different time effects on fiscal policy across countries would create problems of comparability across units of observations defined in this way. Furthermore, the number of observations for each country would be endogenous to the number of elections held and therefore yield a sample already biased by political variables.

Third, we could have averaged over the entire time period to get one observation per country as in one of the specifications of Persson and Tabellini (2003) to test the impact of long-term institutions of electoral rules. However, that would not be a suitable application of our model where the political variables change over shorter terms. We check the robustness of our results to restricting the sample to cross-country comparisons within each decade, or within different sub-sets of decades.

#### **4. Empirical results**

The results of our estimations of specification (8) using the three different measures of coalition government are reported in Tables 1-3. We find instances of divided government to be robustly and significantly associated with lower spending and tax revenues, irrespective of the measure of government fragmentation used. The average size of the coefficient estimates across different specifications implies that switching from a single-party government, where the executive head controls a majority in all law-making houses, to a divided government, correlates with a reduction in taxes and spending of 3-4 percentage points of GDP. We also find that the coefficients on all three measures of coalition government are negatively signed when correlated with deficits, but not always statistically significant;

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<sup>23</sup> For similar reasons, Mueller and Stratmann (2003) average over 5 year periods to examine the economic effects of voter turnout. Our argument also finds support in Brender and Drazen’s (2005) evidence that the first four elections in a country after transitioning to democracy have very different implications for fiscal policy than subsequent elections.

only the variable Number of Political Parties in Government is significant at the 10 percent level. Consistently with Persson and Tabellini (2003, 2004), we find that presidential systems are associated with smaller government. These results are robust to several exercises to address problems of outliers and multicollinearity, such as excluding countries one at a time, or randomly selecting small groups of countries to exclude, excluding a decade at a time, and excluding control variables one at a time or in groups.

There are several alternate political variables that have been examined in the literature as having effects on fiscal policy which may be driving the correlation we find between coalitions and government size. We consider each of these in turn.

Mueller and Stratmann (2003) have shown that greater voter turnout in elections is associated with larger government. If greater turnout is more likely to be driven by greater turnout of core-supporters, which in its turn is likely to be correlated with instances of single-party government, then excluding the turnout variable might be providing a spurious negative correlation between coalitions and government size. We use elections turnout data from the Institute for Democracy and Electoral Assistance (IDEA) which has been the source for measuring voter turnout in Mueller and Stratmann (2003) and in other work on re-election prospects of governments (Brender and Drazen, 2006).<sup>24</sup> We include turnout rates in our specification and report the results in Table 4-6.

We find all the indicators of coalitions retain their negative sign, and all but one remains statistically significant at least at the 10 percent level.<sup>25</sup> We find increasing voter turnout to be robustly and significantly associated with larger spending and tax revenues, a result consistent with the results of Mueller and Stratmann (2003).

As mentioned earlier, our fiscal variables only capture budgetary spending and tax revenues of central governments, and do not include local or provincial governments and extra-budgetary government accounts. Not accounting for fiscally decentralized or federal structures may produce a negative correlation between coalitions and central government spending because federal systems have smaller central governments and greater political contestation between parties. We include an indicator variable for whether a country has lower tiers of government with fiscal authority from Persson and Tabellini (2003) to test the robustness of our estimates.

Ideology of governments, whether they are right or left wing, might drive the correlation between coalitions and government size, if right wing governments spend less and are more likely to come to

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<sup>24</sup> The IDEA web-site from which we downloaded the data is: <http://www.idea.int/vt/index.cfm>

<sup>25</sup> Only the Number of Parties indicator is not significant in predicting total spending in column 1 of Table 6, although it *is* significant in predicting lower taxes in column 2 of Table 6.

power in coalitions. We include an indicator variable for whether a government can be attributed a right-wing ideology from the DPI.

Tables 7-9 report the results when including these additional indicators. Each indicator for coalition governments continues to have a statistically significant negative correlation with government spending (at the 10 percent level), but only the Number of Political Parties measure is significant in predicting lower government taxes. However, the coefficient sign on the other measures of coalitions when predicting taxes remains negative. The loss in significance may be because of the much smaller sample available for estimation when the indicators for federalism and ideology are included—sample size falls by about 40 percent—because both these indicators have several missing values.<sup>26</sup> Voter turnout is robustly associated with larger government. Federal systems are associated with smaller size of central governments, as may be expected. Right wing governments also tend to be associated with lower spending, taxes, and deficits, but the coefficient here is less precisely estimated.

A growing empirical literature documents that communities with multiple ethnic groups spend less on broad public goods from which everyone benefits (Easterly and Levine, 1997; Alesina et al, 1999; Miguel, 2001; Banerjee and Somanathan, 2001). Ethno-linguistic fragmentation may also be associated with coalition governments if the different groups organize into different political parties, or if countries with greater fragmentation choose proportional representation systems. We use cross-country data on ethno-linguistic fragmentation compiled by Persson and Tabellini (2003) to include this variable in our analysis, and report the results in Tables 10-12.<sup>27</sup>

All the coefficients on coalition government in predicting government spending and taxes remain negative, but are statistically significant only for the GOVFRAC indicator in Table 11. The loss in statistical significance might be due to a loss in number of observations available when we include ethno-linguistic fragmentation in the regression, with the sample size dropping by almost 20 percent. Alternately, it may be due to high correlation between ethno-linguistic fragmentation and likelihood of coalitions. We find a positive correlation between ethnic fragmentation and deficits as in earlier work (Woo, 2003), but negative point estimates on the fragmentation coefficient for the spending and taxes equations.

In summary, we find that including a variety of potential omitted variables does not change the negative sign on any of the measures of coalitions when correlated with spending and taxes; furthermore,

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<sup>26</sup> Both these indicators are derived from established datasets. The proliferation of missing values seems to be a function of the subjective coding of these variables, which likely makes it more difficult to assign values to some countries under ambiguous circumstances. The reduced sample available for estimation is therefore likely to be biased towards those countries where ideology and federal structure are easier to ascertain.

<sup>27</sup> We drop the indicators for ideology and federal structure from the specification including ethnic fragmentation to more precisely estimate the effect of ethnicity (which may be of independent interest) with more observations.

in every case of inclusion of an omitted variable(s), at least one measure of coalition government remains statistically significant in predicting smaller government size.

The results for the correlation between coalitions and government size are particularly strong for the sub-sample of parliamentary countries, which is the political system under which our model of government formation applies directly. In this sub-sample, we also find the negative coefficient on ethno-linguistic fragmentation to be statistically significant in some specifications when correlated with spending and taxes, while the positive correlation of ethno-linguistic fragmentation with deficits becomes even larger in size. Tables 13-15 report these results when we restrict our estimation of equation (8), augmented with turnout and ethno-linguistic fragmentation, to our sub-sample of 32 countries with parliamentary systems of government.

That ethno-linguistic fragmentation is significantly associated with larger deficits, even though it has a negative coefficient, and statistically significant in some sub-samples, in predicting spending and taxes, suggests that different political economy models may be needed to explain political motivations for fiscal profligacy versus deficit financing. Earlier findings of a robust correlation between ethnic fragmentation and deficits (Woo, 2003), have been interpreted as the result of costly bargaining between multiple groups over the targeting of public resources to group-specific benefits, which increases spending and thence leads to higher deficits. However, we do not find evidence that ethnic fragmentation is associated with larger spending.

These results suggest that fragmentation may matter through political polarization and instability rather than costly bargaining between groups to over-spend or over-tax. This interpretation is consistent with the literature on “strategic debt” in polarized societies where groups with different preferences for public spending alternate in power and are more likely to finance spending through debt rather than taxes (Alesina and Tabellini, 1990; Persson and Svensson, 1989). These models of “strategic debt” do not require spending levels to be higher with fragmentation. Spending levels can be lower with fragmentation along the lines developed in our model, and consistent with the micro-evidence cited above that communities with greater diversity contribute less to public goods.

## **5. Policy implications**

We briefly explore implications of this model for policies designed to curb fiscal profligacy. Consistent with the dominant theoretical idea that bargaining between different interest groups is responsible for fiscal indiscipline, countries seem to have explored solutions in the form of “hierarchical” budgetary rules and procedures that concentrate decision-making power over budget aggregates to a single individual or to a central ministry (typically the Finance or Treasury Minister/Ministry). An increasing number of countries have also adopted various forms of fiscal rules, mainly balanced budget

requirements and debt limits, to constrain political influence. Hallerberg and von Hagen (1999) provide case studies of countries with majoritarian electoral systems (where national legislatures are more likely to be dominated by a single political party) that have chosen to delegate power to the finance minister in the budget process, and of countries with proportional electoral systems (where the national legislature is likely to be fragmented across political parties) that have tried to adopt formal budget targets. The research literature evaluating the efficacy of these rules and institutions has by and large concluded that they can make a difference for fiscal performance (Poterba and von Hagen, 1999; Alesina et al, 1999; Fabrizio and Mody, 2006).

Our theoretical model and empirical results suggest that when fiscal profligacy arises because voters are too demanding, then hierarchical procedures that concentrate budgetary authority within single party governments are unlikely to be a fiscal restraint. This is because the unified government and its agent in the treasury would have incentives to adopt expansionary fiscal policies when there is increasing participation of swing voters as this is politically optimal. Better understanding the underlying political incentives for fiscal profligacy can help in identifying institutions or conditions under which politicians adopt institutions for fiscal restraint.

A quick hypothesis of a kind of institution that might work as a fiscal restraint, and that politicians might be willing to adopt when expansionary policies are driven by increasing participation of swing voters, is delegation of the timing of fiscal adjustment to an independent agency. Alesina and Tabellini (2005) have recently explored the conditions under which politicians choose to delegate to independent bureaucracies. They predict that politicians are not likely to delegate policy instruments that can be used to woo special interests, for campaign contributions or to build winning coalitions. The tasks they are most likely to delegate are those that are risky, so they can distance themselves from bad outcomes, and those from which net rents are negative. If government spending and taxes become large because of bargaining between political parties, each representing a different organized interest group, then the Alesina-Tabellini (2005) analysis suggests that politicians will not delegate the task of setting fiscal limits—they would rather fight-it-out in the political arena, and wait for their turn in power to reward their constituents (or push the costs of adjustment on their rival's constituents).

However, if government spending and taxes increase because of participation by swing voters that are not committed to any political party, and any party that undertakes fiscal stabilization while in power bears the brunt of political costs, then delegation to an independent bureaucracy of monitoring and enforcing deficit and spending limits might allow politicians to take the difficult decisions because they can shift blame away from themselves. The likely key requirement of the agency for such delegation to work is that it be credibly non-partisan, that is, that all political parties trust that the agency will blow the

whistle for fiscal adjustment and set budget constraints without regard to which party controls the executive government and is hence likely to bear the brunt of blame for fiscal retrenchment.

## 6. Conclusion

The contribution of this paper is an alternate model of political motivation for fiscal profligacy which yields a prediction, that single-party governments spend and tax more than coalition governments, that is contrary to the dominant literature. This alternate model is based on the intuition that inequality among voters can lead to populist pressure by the poor on government spending, financed by progressive and distortionary taxes. Coalitions of political parties are better able to resist these populist pressures by garnering the support of their combined groups of core supporters. We find that our theoretical contribution has empirical relevance in the context of an established literature using similar cross-country data and specifications. We provide robust evidence that instances of coalition government are associated with lower taxes and spending than instances of single-party government.

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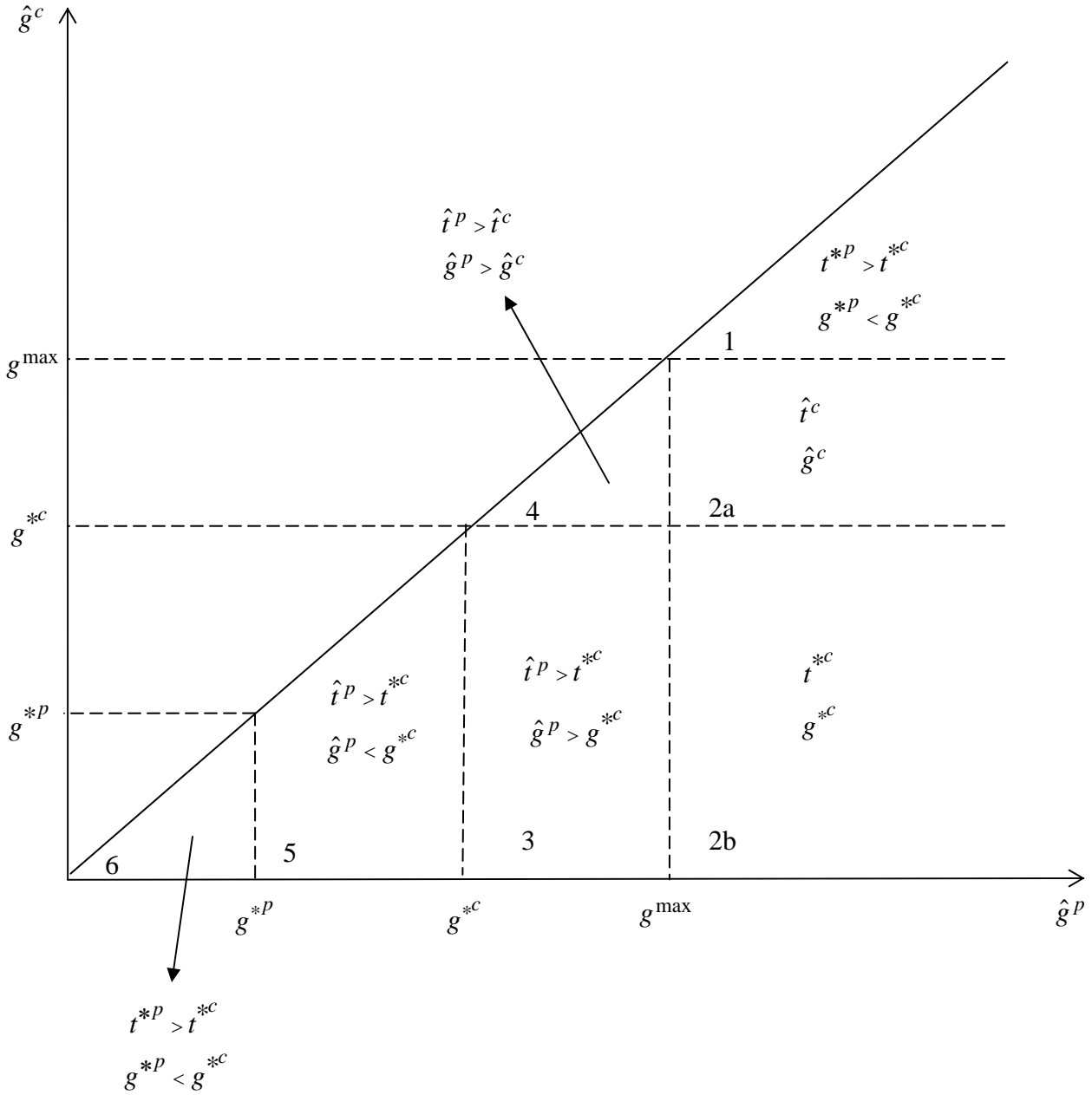


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**Figure 1:** Equilibria under different regimes



**Table 1: Fiscal Policy under Coalition Governments:  
Measured by Indicator Variable for Divided Government**

	(1)	(2)	(3)
	Total Expenditure (excl. interest)/ GDP	Total Tax Revenues/ GDP	Deficit/ GDP
Divided Government (=1, 0 otherwise)	-0.040 (0.018)**	-0.031 (0.012)***	-0.002 (0.008)
Majoritarian System (=1, 0 if Proportional)	0.004 (0.018)	-0.017 (0.012)	-0.001 (0.007)
Presidential System (=1, 0 if Parliamentary)	-0.054 (0.020)***	-0.038 (0.012)***	-0.010 (0.009)
Regular Elections (=1, 0 otherwise)	-0.024 (0.017)	-0.003 (0.010)	-0.014 (0.008)*
Observations	211	210	243
R-squared	0.32	0.47	0.20

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

All the specifications include as controls: share of population between 15 and 64 years, share of population older than 64, share of urban population, average growth of GDP per capita, logarithm of real GDP per capita at the beginning of each decade, trade/GDP, geographic dummies (Africa, OECD, Latin America, Asia) and dummies for each decade.

Countries included in the sample are listed in the data appendix, Appendix 5.

**Table 2: Fiscal Policy under Coalition Governments:****Measured by GOVFRAC<sup>a</sup>**

	(1)	(2)	(3)
	Total Expenditure (excl. interest)/ GDP	Total Tax Revenues/ GDP	Deficit/ GDP
GOVFRAC <sup>a</sup>	-0.090 (0.042)**	-0.057 (0.029)**	-0.017 (0.014)
Majoritarian System (=1, 0 if Proportional)	0.001 (0.018)	-0.018 (0.012)	-0.002 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.051 (0.019)***	-0.037 (0.013)***	-0.010 (0.009)
Regular Elections (=1, 0 otherwise)	-0.026 (0.017)	-0.003 (0.010)	-0.015 (0.009)*
Observations	207	206	239
R-squared	0.36	0.48	0.21

*a.* The variable GOVFRAC measures the probability that two legislators, drawn randomly from among all the parties that belong to the executive government, belong to two different political parties. It therefore lies between 0 and 1.

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1. Countries included in the sample are listed in Appendix 5.

**Table 3: Fiscal Policy under Coalition Governments:  
Measured by Number of Political Parties in Government<sup>a</sup>**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Number of Parties <sup>a</sup>	-0.0004 (0.0002)*	-0.0004 (0.0001)***	-0.0002 (0.0001)*
Majoritarian System (=1, 0 if Proportional)	0.014 (0.019)	-0.009 (0.012)	-0.003 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.051 (0.020)**	-0.034 (0.013)**	-0.010 (0.009)
Regular Elections (=1, 0 otherwise)	-0.028 (0.017)	-0.006 (0.010)	-0.014 (0.008)*
Observations	222	221	257
R-squared	0.31	0.45	0.19

a. Count of the number of political parties listed as belonging to the executive government in the Database of Political Institutions, The World Bank

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1. Countries included in the sample are listed in the Appendix 5.

**Table 4: Including Turnout with DIVIDED**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Divided	-0.038 (0.018)**	-0.029 (0.013)**	-0.003 (0.008)
Turnout	0.078 (0.039)**	0.068 (0.034)*	0.015 (0.017)
Regular elections	-0.025 (0.017)	-0.004 (0.010)	-0.015 (0.008)*
Presidential	-0.046 (0.018)**	-0.028 (0.013)**	-0.009 (0.009)
Majoritarian	0.005 (0.017)	-0.015 (0.011)	-0.002 (0.007)
Observations	211	210	243
Adjusted R-squared	0.29	0.45	0.14

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1. Countries included in the sample are listed in the Appendix 5.



**Table 5: Including Turnout with GOVFRAC**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
govfrac	-0.087 (0.039)**	-0.053 (0.028)*	-0.017 (0.014)
Turnout	0.062 (0.035)*	0.064 (0.035)*	0.010 (0.016)
Regular elections	-0.026 (0.016)	-0.004 (0.010)	-0.015 (0.009)*
Presidential	-0.046 (0.018)**	-0.028 (0.013)**	-0.009 (0.009)
Majoritarian	-0.001 (0.016)	-0.015 (0.012)	-0.005 (0.006)
Observations	207	206	239
Adjusted R-squared	0.32	0.46	0.15

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1. Countries included in the sample are listed in the Appendix 5.

**Table 6: Including Turnout with Number of Political Parties in Government**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Number of parties	-0.0003 (0.0002)	-0.0002 (0.0001)*	-0.0002 (0.0001)*
Turnout	0.082 (0.038)**	0.072 (0.035)**	0.013 (0.018)
Regular Elections	-0.028 (0.017)*	-0.006 (0.010)	-0.014 (0.008)*
Presidential	-0.043 (0.019)**	-0.025 (0.014)*	-0.009 (0.008)
Majoritarian	0.014 (0.018)	-0.007 (0.011)	-0.002 (0.007)
Observations	222	221	257
Adjusted R-squared	0.28	0.44	0.13

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1. Countries included in the sample are listed in the Appendix 5.

**Table 7: Including Indicators for Federalism and Ideology, with DIVIDED**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Divided	-0.033 (0.019)*	-0.018 (0.012)	0.006 (0.007)
Turnout	0.126 (0.045)***	0.078 (0.032)**	0.023 (0.019)
Federal	-0.038 (0.02)*	-0.039 (0.016)**	0.004 (0.006)
Right-wing government	-0.026 (0.015)*	-0.016 (0.01)	-0.012 (0.008)
Majoritarian System (=1, 0 if Proportional)	-0.01 (0.023)	-0.01 (0.015)	0.001 (0.007)
Presidential System (=1, 0 if Parliamentary)	-0.021 (0.017)	-0.031 (0.014)**	0.012 (0.006)**
Regular Elections (=1, 0 otherwise)	0.007 (0.013)	0.02 (0.01)**	-0.006 (0.006)
Observations	129	129	147
R-squared	0.67	0.78	0.42

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in the sample: Argentina, Australia, Austria, Belgium, Belize, Bolivia, Botswana, Brazil, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Ecuador, El Salvador, Finland, France, Germany, Greece, Guatemala, Honduras, Iceland, India, Ireland, Italy, Japan, Mexico, Nepal, Netherlands, New Zealand, Nicaragua, Norway, Paraguay, Peru, Philippines, Portugal, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay, Venezuela

**Table 8: Including Indicators for Federalism and Ideology, with GOVFRAC**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
GOVFRAC	-0.06 (0.035)*	-0.021 (0.023)	-0.001 (0.012)
Turnout	0.12 (0.046)***	0.075 (0.032)**	0.023 (0.02)
Federal	-0.04 (0.021)*	-0.04 (0.016)**	0.004 (0.006)
Right-wing government	-0.023 (0.015)	-0.016 (0.01)	-0.012 (0.008)
Majoritarian System (=1, 0 if Proportional)	-0.01 (0.023)	-0.01 (0.015)	-0.002 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.026 (0.016)	-0.032 (0.013)**	0.012 (0.006)*
Regular Elections (=1, 0 otherwise)	0.005 (0.013)	0.019 (0.008)**	-0.006 (0.007)
Observations	129	129	147
R-squared	0.67	0.77	0.42

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in sample as in Table 7.

**Table 9: Including Indicators for Federalism and Ideology,  
with Number of Political Parties in Government**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Number of Political Parties	-0.004 (0.002)*	-0.003 (0.001)**	0.001 (0.001)
Turnout	0.129 (0.045)***	0.083 (0.027)***	0.02 (0.019)
Federal	-0.041 (0.02)**	-0.042 (0.016)***	0.006 (0.007)
Right-wing government	-0.021 (0.016)	-0.013 (0.011)	-0.014 (0.008)*
Majoritarian System (=1, 0 if Proportional)	0.005 (0.023)	-0.001 (0.014)	-0.002 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.026 (0.018)	-0.035 (0.015)**	0.013 (0.006)**
Regular Elections (=1, 0 otherwise)	-0.001 (0.014)	0.017 (0.01)*	-0.006 (0.007)
Observations	132	132	151
R-squared	0.65	0.77	0.40

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in sample as in Table 7.

**Table 10: Including Ethno-linguistic Fragmentation, with DIVIDED**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Divided	-0.025 (0.017)	-0.02 (0.012)*	0.013 (0.008)*
Ethno-linguistic Fragmentation	-0.90 (0.065)	-0.056 (0.040)	0.041 (0.022)*
Turnout	0.047 (0.045)	0.037 (0.033)	0.02 (0.017)
Majoritarian System (=1, 0 if Proportional)	0.001 (0.017)	-0.012 (0.012)	0.0004 (0.007)
Presidential System (=1, 0 if Parliamentary)	-0.032 (0.019)*	-0.030 (0.014)**	0.0008 (0.007)
Regular Elections (=1, 0 otherwise)	-0.017 (0.014)	-0.004 (0.01)	-0.01 (0.007)
Observations	174	174	191
R-squared	0.49	0.64	0.25

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in the sample: Argentina, Australia, Austria, Bangladesh, Belgium, Belize, Bolivia, Botswana, Brazil, Canada, Chile, Colombia, Costa Rica, Cyprus, Denmark, Ecuador, El Salvador, Finland, France, Germany, Ghana, Greece, Guatemala, Honduras, Hungary, Iceland, India, Ireland, Italy, Japan, Malawi, Malaysia, Mexico, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Paraguay, Peru, Philippines, Portugal, Senegal, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, Uganda, United Kingdom, United States, Uruguay, Venezuela, Zambia, Zimbabwe

**Table 11: Including Ethno-linguistic Fragmentation, with GOVFRAC**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
GOVFRAC	-0.069 (0.033)**	-0.039 (0.02)*	-0.016 (0.012)
Ethno-linguistic Fragmentation	-0.075 (0.062)	-0.048 (0.037)	0.046 (0.023)**
Turnout	0.045 (0.041)	0.036 (0.032)	0.019 (0.017)
Majoritarian System (=1, 0 if Proportional)	-0.003 (0.017)	-0.012 (0.012)	-0.006 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.035 (0.018)*	-0.031 (0.014)**	-0.004 (0.008)
Regular Elections (=1, 0 otherwise)	-0.016 (0.013)	-0.001 (0.01)	-0.011 (0.007)
Observations	174	174	191
R-squared	0.51	0.64	0.24

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in the sample as listed under Table 10.

**Table 12: Including Ethno-linguistic Fragmentation,  
With Number of Political Parties**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Number of Political Parties	-0.0002 (0.0003)	-0.0002 (0.0002)	-0.0002 (0.0001)
Ethno-linguistic Fragmentation	-0.098 (0.065)	-0.064 (0.04)	0.042 (0.022)*
Turnout	0.045 (0.044)	0.036 (0.034)	0.018 (0.017)
Majoritarian System (=1, 0 if Proportional)	0.008 (0.018)	-0.006 (0.012)	-0.005 (0.006)
Presidential System (=1, 0 if Parliamentary)	-0.029 (0.02)	-0.028 (0.015)*	-0.003 (0.008)
Regular Elections (=1, 0 otherwise)	-0.02 (0.014)	-0.005 (0.01)	-0.011 (0.006)*
Observations	180	180	198
R-squared	0.48	0.63	0.24

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in the sample as listed under Table 10.



**Table 13: Restricting Sample to Parliamentary Countries, DIVIDED model**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Divided	-0.064 (0.023)***	-0.041 (0.018)**	-0.0001 (0.012)
Ethno-linguistic Fragmentation	-0.172 (0.081)**	-0.10 (0.067)	0.08 (0.024)***
Turnout	0.23 (0.081)***	0.18 (0.063)***	0.059 (0.031)***
Majoritarian System (=1, 0 if Proportional)	0.006 (0.026)	-0.004 (0.016)	-0.003 (0.01)
Regular Elections (=1, 0 otherwise)	-0.021 (0.027)	-0.004 (0.02)	-0.038 (0.017)**
Observations	79	79	93
R-squared	0.65	0.68	0.44

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries included in sample: Austria, Belgium, Belize, Botswana, Canada, Denmark, Finland, France, Germany, Greece, Guyana, Hungary, Iceland, India, Ireland, Italy, Japan, Malaysia, Nepal, Netherlands, New Zealand, Norway, Pakistan, Portugal, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, United Kingdom, Zimbabwe.

**Table 14: Restricting Sample to Parliamentary Countries, GOVFRAC model**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
GOVFRAC	-0.084 (0.049)*	-0.037 (0.038)	-0.003 (0.017)
Ethno-linguistic Fragmentation	-0.166 (0.083)**	-0.11 (0.069)	0.088 (0.024)***
Turnout	0.21 (0.074)***	0.16 (0.06)***	0.061 (0.025)***
Majoritarian System (=1, 0 if Proportional)	0.027 (0.024)	0.012 (0.016)	-0.009 (0.008)
Regular Elections (=1, 0 otherwise)	-0.017 (0.027)	-0.004 (0.02)	-0.033 (0.017)**
Observations	79	79	93
R-squared	0.65	0.67	0.46

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries as in Table 13.

**Table 15: Restricting Sample to Parliamentary Countries,  
Number of Political Parties model**

	(1)	(2)	(3)
	Total Expenditure	Total Tax Revenues	Deficit
Number of Political Parties	-0.005 (0.002)**	-0.004 (0.002)***	-0.0008 (0.001)
Ethno-linguistic Fragmentation	-0.17 (0.08)**	-0.10 (0.065)	0.084 (0.02)***
Turnout	0.23 (0.09)**	0.18 (0.07)***	0.063 (0.03)**
Majoritarian System (=1, 0 if Proportional)	0.04 (0.03)	0.017 (0.018)	-0.003 (0.007)
Regular Elections (=1, 0 otherwise)	-0.013 (0.028)	0.004 (0.017)	-0.036 (0.019)*
Observations	79	79	93
R-squared	0.65	0.69	0.44

Robust standard errors in parentheses, clustered by country.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. Controls as in Table 1.

Countries as in Table 13.

## Appendix 1

Proof that  $MSV^C \leq MSV^P$  if  $\mu^j > \frac{1}{6}, \forall j$ :

The condition  $MSV^C = \frac{\mu^S - \Delta^C \mu}{2\mu^S} \leq \frac{\mu^S - 2\Delta^P \mu}{3\mu^S} = MSV^P$  can be re-arranged into the following simple inequality:

$$\mu^S + 4\Delta^P \mu - 3\Delta^C \mu \leq 0 \quad (A1.1)$$

Let us assume without loss of generality that party  $P_1$  is the *formateur* and that  $P_2$  is the bigger opposition party i.e.  $\mu^2 \geq \mu^3$ . Then when  $P_1$  chooses to govern as a single party the incumbent's size advantage is given by  $\Delta^P \mu = \mu^1 - \mu^2$ . If  $P_1$  needs to form a coalition to stay in power it has two options:

Case 1:  $P_2$  is chosen as coalition partner.

The incumbent size advantage of a coalition of  $P_1$  and  $P_2$  is given by:  $\Delta^C \mu = \mu^1 + \mu^2 - \mu^3$ .

Substituting this and  $\Delta^P \mu = \mu^1 - \mu^2$  into condition (A1.1) we have:

$$\mu^S + \mu^1 + 3\mu^3 \leq 7\mu^2 \quad (A1.2)$$

Adding  $\mu^2$  on both sides of the equation (A1.2) we obtain:

$$1 + 2\mu^3 \leq 6\mu^2 + 2\mu^2 \quad (A1.3)$$

which is satisfied when  $1 \leq 6\mu^2$  because we already have  $\mu^3 \leq \mu^2$  (by assumption above, and without loss of generality).

Case 2:  $P_3$  is chosen as coalition partner.

The incumbent size advantage of a coalition of  $P_1$  and  $P_2$  is given by:  $\Delta^C \mu = \mu^1 + \mu^3 - \mu^2$ .

Substituting this and  $\Delta^P \mu = \mu^1 - \mu^2$  into condition (A1.1) we have:

$$\mu^S + \mu^1 \leq 3\mu^3 + \mu^2 \quad (A1.4)$$

If  $\mu^j > \frac{1}{6}, \forall j$ , we must have any two groups being together greater than or equal to one-third, that is,

$$\mu^2 + \mu^3 \geq 1/3 \quad (A1.5) \text{ and } \mu^3 + \mu^3 \geq 1/3 \quad (A1.6)$$

Adding together the respective sides of (A.1.5) and (A.1.6), we have:

$$3\mu^3 + \mu^2 \geq 2/3 \quad (A1.7)$$

Since all groups together add up to 1,  $\mu^S + \mu^1 + \mu^2 + \mu^3 = 1$ , we have:

$$\mu^S + \mu^1 \leq 2/3 \quad (A1.8)$$

Following from (A.1.7) and (A.1.8), we have the condition (A.1.4) holding when  $\mu^j > \frac{1}{6}, \forall j$ .

**Q.E.D.**

## **Appendix 2:**

**Proof of Proposition 1:** We have shown that the preferred tax rate for the government satisfies the condition  $R'(\tau^{*G}) = \mu^G$ . For single-party governments,  $G = P$ , we have  $R'(\tau^{*P}) = \mu^P$ , and for coalition governments,  $G = C$ , we have  $R'(\tau^{*C}) = \mu^C$ . Given our assumptions on group size, no one political party is larger than the two other political parties, so that we always have  $\mu^P < \mu^C$ , or  $R'(\tau^{*P}) < R'(\tau^{*C})$ . Given the concavity of the revenue function, we therefore have  $\tau^{*P} > \tau^{*C}$ , that is, the single-party imposes higher taxes than the coalition.

The preferred level of public good provision for the government is given by  $H'(g^{*G}) = 1/\mu^G$ . Comparing the preferred public good levels for  $P$  and  $C$ , we have  $H'(g^{*P}) = 1/\mu^P > 1/\mu^C = H'(g^{*C})$  which implies that  $g^{*P} < g^{*C}$  because of the concavity of marginal utility. That is, the single-party government provides less public good than the coalition.

Finally, because the government distributes the difference between tax proceeds and the cost of public good to its constituents, a single-party by taxing more and providing less public good than a coalition, redistributes more in private transfers to its constituents. The transfer is even higher in per capita terms, given the smaller group size of the core constituents of a single party versus a coalition. **Q.E.D.**

## **Appendix 3**

**Proof of  $\hat{\tau}^C < \hat{\tau}^P$ :**

**Under regime (3)**  $g^{*C} < \hat{g}^C < \hat{g}^P \leq g^{\max}$  where both types of governments face a binding reelection constraint, one needs to distinguish among several sub-regimes depending on the ranking between tax revenue and cost for providing the public good. We know that  $g^{*C} \leq R(\tau^{*C}) < R(\tau^{*P})$  is always satisfied.

(3a) The first sub-regime is  $g^{*C} < R(\tau^{*C}) < R(\tau^{*P}) < \hat{g}^C < \hat{g}^P \leq g^{\max}$  i.e. neither the coalition's nor the single-party's preferred tax rate allows the financing of the level of public good that would ensure reelection. Both types of government will then choose the constrained tax rate  $\hat{\tau}^{*G} = \hat{\tau}^G$ , provide the constrained amount of public good  $\hat{g}^{*G} = \hat{g}^G$  and have no resources left to spend on their constituents  $\hat{f}^{*G} \equiv 0$  for  $G=C,P$ . Given our group size restrictions, we know that  $\hat{g}^P > \hat{g}^C$ , and given the cost of

public good provision under this sub-regime, we have  $\hat{f}^{*P} = \hat{f}^{*C} = 0$ . Therefore, we have

$$\hat{g}^P = R(\hat{\tau}^P) > R(\hat{\tau}^C) = \hat{g}^C \text{ which implies } \hat{\tau}^P > \hat{\tau}^C.$$

(3b) The second sub-regime is  $g^{*C} < \hat{g}^C < R(\tau^{*C}) < R(\tau^{*P}) < \hat{g}^P \leq g^{\max}$  i.e. whereas the coalition can provide the amount of public good necessary for reelection,  $\hat{g}^C$ , with its preferred tax rate, or,  $\hat{\tau}^C = \tau^{*C}$ , the single-party would not be able to provide its higher level of public good for re-election,  $\hat{g}^P$ , at its preferred tax rate. The single-party incumbent would therefore raise its tax rate beyond its preferred rate  $\hat{\tau}^P > \tau^{*P}$ , to a point just enough to cover spending on the public good needed for re-election,  $R(\hat{\tau}^P) = \hat{g}^P$ , and provide no targeted transfers to its constituents,  $\hat{f}^P = 0$ . In this case the optimal solutions are  $\hat{\tau}^{*C} = \tau^{*C}$  and  $\hat{\tau}^{*P} = \hat{\tau}^P$ ,  $\hat{g}^{*G} = \hat{g}^G$  for  $G=C,P$ ,  $\hat{f}^C = (R(\tau^{*C}) - \hat{g}^C)/\mu^C$  and  $\hat{f}^P = 0$ . The single-party still taxes more and provides more public good than the coalition i.e.  $\hat{\tau}^P > \tau^{*C}$ , and  $\hat{g}^P > \hat{g}^C$ . However, the coalition is able to provide targeted transfers to its constituents while the single-party cannot,  $\hat{f}^C > \hat{f}^P = 0$ .

(3c) The third relevant sub-regime to consider is  $g^{*C} < \hat{g}^C < R(\tau^{*C}) < \hat{g}^P < R(\tau^{*P}) \leq g^{\max}$ <sup>28</sup> whereby both governments can finance the necessary level of public good with their preferred tax rate. In this case the optimal solutions are  $\hat{\tau}^{*G} = \tau^{*G}$ ,  $\hat{g}^{*G} = \hat{g}^G$  and  $\hat{f}^C = (R(\tau^{*G}) - \hat{g}^G)/\mu^G$  for  $G=C,P$ . The single-party still taxes more and provides more public good than the coalition i.e.  $\tau^{*P} > \tau^{*C}$ , and  $\hat{g}^P > \hat{g}^C$ . Although, both governments are able to channel targeted transfers to their constituents it is not possible to know which transfer is higher without further assumptions. **Q.E.D.**

#### **Appendix 4:**

##### **Proof that single party incumbents tax and spend more (in total) under regime (5)**

$$g^{*P} < \hat{g}^C < \hat{g}^P \leq g^{*C} \text{ or } \hat{g}^C \leq g^{*P} < \hat{g}^P \leq g^{*C} :$$

Under this regime, the coalition government will implement its preferred policy with  $\hat{\tau}^{*C} = \tau^{*C}$ ,  $\hat{g}^{*C} = g^{*C}$  and  $\hat{f}^C = (R(\tau^{*C}) - g^{*C})/\mu^C$ . Because  $g^{*C} < R(\tau^{*P})$  the single-party will always choose its preferred tax rate  $\hat{\tau}^{*P} = \tau^{*P}$ , provide the constrained amount of public good  $\hat{g}^{*P} = \hat{g}^P$  and transfer the difference to its constituents  $\hat{f}^P = (R(\tau^{*P}) - \hat{g}^P)/\mu^P$ . The single-party imposes a higher

<sup>28</sup> Note that sub-regime (3a) also includes the case  $g^{*C} < R(\tau^{*C}) < \hat{g}^C < R(\tau^{*P}) < \hat{g}^P \leq g^{\max}$  and regime (3c) includes the case  $g^{*C} < \hat{g}^C < \hat{g}^P < R(\tau^{*C}) < R(\tau^{*P}) \leq g^{\max}$ .

tax rate  $\tau^{*P} > \tau^{*C}$ , provides less public good  $\hat{g}^P \leq g^{*C}$  and targets higher transfers to its constituents  $\hat{f}^P > \hat{f}^C$ . The latter inequality holds because  $R(\tau^{*P}) - \hat{g}^P > R(\tau^{*C}) - g^{*C}$  and  $\mu^C > \mu^P$ . Q.E.D.

## **Appendix 5:**

### **Data Description**

**Table A5: Variable Means and Standard Deviations**

<b>Variable</b>	<b># Obs.</b>	<b>Mean</b>	<b>St. Deviation</b>
Expenditure/GDP	226	0.203	0.101
Tax/GDP	225	0.159	0.077
Deficit/GDP	262	0.034	0.042
Average GDP growth	304	0.016	0.022
Trade	301	0.644	0.365
Pop.15-64/ Total population	308	0.583	0.065
Pop.>64 / Total population	308	0.069	0.048
Urban population/total population	308	0.499	0.244
Presidential	305	0.596	0.479
Majoritarian	308	0.219	0.395
Regular elections	308	0.562	0.497
Govfrac	283	0.207	0.241
Divided	286	0.500	0.461
Number of parties	306	4.364	25.341
Turnout	308	0.574	0.269
Federal system Indicator	192	0.25	0.43
Right-wing government Indicator	200	0.48	0.44
Ethno-linguistic fragmentation	236	0.289	0.261

**Tables 1-6 include the following countries in the sample:** Argentina, Austria, Bangladesh, Belgium, Belize, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Cameroon, Canada, Chad, Chile, Colombia, Costa Rica, Cyprus, Denmark, El Salvador, Ethiopia, Finland, France, Germany, Ghana, Greece, Guatemala, Guyana, Honduras, Hungary, Iceland, India, Indonesia, Ireland, Italy, Japan, Kenya,

Madagascar, Malawi, Malaysia, Mali, Mauritania, Mexico, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Portugal, Senegal, Sierra Leone, South Africa, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Thailand, Togo, Uganda, United Kingdom, United States, Uruguay, Venezuela, Zambia, Zimbabwe

### **Variables:**

#### *Gross Domestic Product (GDP):*

Taken from series 99B.ZF--99B.ZF - Na: gross domestic product (local currency) of the IMF's *International Finance Statistics*. For some countries there are missing values in this series and the data is instead taken from the series 99B.CZF--99B.CZF - Gross domestic product (national currency - seasonally adjusted by national compiler)

#### *Logarithm of real GDP per capita at the beginning of the decade (log\_gdppc0):*

Taken from series NY.GDP.PCAP.KD--GDP per capita (constant 2000 US\$) of the World Bank's WDI database. This series starts at 1975, so the GDP per capita at the start of the decade of 1970s corresponds to the data available for 1975.

#### *Growth rate of GDP per capita (avg\_gdpgrowth):*

We calculate the mean of the GDP per capita growth for each decade using the following formula:

$\bar{r} = \sqrt[10]{(1+r_1)(1+r_2)\dots(1+r_{10})} - 1$  where  $r_1, r_2, \dots, r_{10}$  are the GDP per capita growth for each year. The GDP growth rate is taken from the series NY.GDP.PCAP.KD.ZG--GDP per capita growth (annual %) of the World Bank's WDI database.

For the variables following below the decade average is calculated as the arithmetic mean of the non-missing annual values of the variable over a decade.

#### *Fiscal deficit/GDP (deficit\_gdp):*

The fiscal deficit data was taken from the series 80...ZF--80...ZF - Govt finance: deficit (-) or surplus (local currency) of the IMF's *International Finance Statistics* database. We converted the negative numbers for deficits to positive numbers by multiplying the series by -1.

#### *Tax Revenue /GDP (sh\_tax):*

The data on tax revenues of central governments was taken from the series 81YA--TAX REVENUE (A.IV) of the IMF's Government Finance Statistics.

#### *Total Expenditure /GDP (sh\_expenditure):*

The data on total expenditure was taken from the series 82...--TOTAL EXPENDITURE (B.I; OR C.II; OR C.III + C.IV) of the IMF's Government Finance Statistics.

#### *Trade (trade):*

This variable was constructed as the sum of the ratios Imports/GDP and Exports/GDP using the following two series— NE.IMP.GNFS.ZS--Imports of goods and services (% of GDP); NE.EXP.GNFS.ZS--Exports of goods and services (% of GDP)—from the World Bank's WDI database.

#### *Population 15-64 years/ Total Population (sh\_pop1564):*

World Development Indicators, SP.POP.1564.TO.ZS--Population ages 15-64 (% of total)



*Population 65 and older / Total Population (sh\_pop65):*

World Development Indicators, SP.POP.65UP.TO.ZS--Population ages 65 and above (% of total)

*Urban Population/Total Population (sh\_urban):*

World Development Indicators, SP.URB.TOTL.IN.ZS--Urban population (% of total)

*Regional dummies (laam, asiae, africa, oecd):*

There are four regional dummies equal to 1 if the country belongs to Latin America, Asia, Africa or OECD, respectively.

*Decade dummies (dec1, dec2, dec3, dec4):*

There are four dummies to control for time effects. The decades are: 1970-1979, 1980-1989, 1990-1999, 2000-2004.

In the case of the political variables coming from DPI the first decade includes 1975-1979.

*Presidential System (presidential):*

This variable captures the presidential/parliamentary nature of the political system. It was constructed based on the variable "SYSTEM" from DPI. It takes the value 1 if the country has a presidential system (SYSTEM=0 or 1) and the value 0 if the country has a parliamentary system (SYSTEM=2).

*Government fractionalization:*

The paper defines three variables to capture government fractionalization: divided, govfrac and number of parties in the government.

- (1) Divided: This variable is equal to 1 if the party of executive does not control all relevant houses that have lawmaking power and 0, otherwise. It was constructed based on the variable ALLHOUSE from DPI.  
The decade average captures the fraction of years in a decade that the country had a divided government.
- (2) Govfrac: This variable comes from DPI and it is defined as: "The probability that two deputies picked at random from among the government parties will be of different parties". It was coded as missing in three cases: (i) there is no parliament, (ii) there are government parties where seats are unknown and, (iii) there are no parties in the legislature.
- (3) Number of parties in the government (number\_parties): This variable was constructed using values for the variables EXECME, 1GOVME, 2GOVME, 3GOVME and GOVOTH from DPI.

*Indicator for Majoritarian system (maj):*

This variable takes the value 1 if the system is majoritarian and it takes the value 0 if the system is proportional. However, whenever the country does not have a legislature or this is not elected or there is only one party or one candidate, the variable majoritarian is coded as missing.

This variable was constructed using information for the variable proportional system (pr) from DPI.

The decade average of this variable captures the fraction of years in a decade that the country had a majoritarian system.

*Average voter turnout in elections during a decade (avg\_turnout):*

Calculate turnout as votes cast divided by voting age population as reported at the IDEAS website. The decade average was calculated using the number of elections within a decade. However, if there are two or more elections the same year, we averaged the turnout of those elections and then include in the calculation of the decade average as if it were only one value.

In the case of missing values for the turnout variable after 1990, we imputed values using linear interpolation only if voting age population was missing. The reason is that missing values for votes cast are more difficult to interpolate.

*Number of decades of regular elections (number\_decades\_regular):*

This variable was constructed using information from DPI and IDEAS website since 1940 for parliamentary and presidential systems, separately. We define a decade having regular elections if there are at least two legislative and executive elections for parliamentary and presidential systems, respectively. To calculate the number of decades having regular elections, we include the current decade.

*Federal system (federal):*

The existence of a federal system in country is drawn from Persson and Tabellini (2003)

*Ethno-linguistic fragmentation (avelf):*

This variable measures the level of ethno-linguistic fragmentation ranging from zero (homogeneous) to one (strongly fractionalized) from Persson and Tabellini (2003).

*Ideology (left, right and centrist):*

These variables are dummies equal to one if the government is leftist, rightist or centrist, and equal to zero, otherwise. The decade average of these dummies captures the proportion of years in a decade that a country had leftist, rightist or centrist governments. These variables were constructed using information from the variable *execrlc* from DPI. Whenever the variable *execrlc* takes the values 0 or NA, the dummies left, right and centrist were coded as missing.