

# Populist Fiscal Policy

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## Abstract

The literature on the impact of political institutions on fiscal policy has shown that proportional electoral rules are likely to lead to coalition governments that tax and spend more than single party regimes because of bargaining among coalition partners. This paper shows that when electoral rules are held constant but voter participation varies, single party governments pursue populist fiscal policy of costly income taxation to spend more to win sufficient swing votes to govern as a single party. When swing votes become too costly, parties form coalition governments that win more cheaply by targeting their combined core supporters and relying less on the swing vote. We provide robust supporting evidence of higher spending under single-party governments across countries, and over time within states in India, a country where participation of swing voters has been shown to be increasing.

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## 1. Introduction

An extensive literature on the political determinants of fiscal policy has suggested that coalition or divided governments pursue more expansionary policies than single-party governments.<sup>2</sup> Persson, Roland and Tabellini (2007) have shown that positive impact of coalition governments on fiscal policy is driven by underlying political institutions; countries with proportional electoral rules (in contrast to majoritarian rules) have greater number of political parties being formed, which increases the likelihood of coalition governments, and thence leads to higher spending because of bargaining among coalition members. This paper explores the role of variation in voter participation while holding electoral rules constant, specifically, participation by swing voters who demand greater public spending.

In a model of government formation and policy choice in the presence of swing voters who are unattached to parties and cannot be reliably targeted through party machines (as in Cox and McCubbins, 1986, and Dixit and Londregan, 1998), we obtain the opposite result on fiscal impact of type of government than the current literature: that when coalitions form they tax and spend *less* than single-party regimes. Single-party governments, in our model, pursue populist fiscal policy, raising costly income taxation for broad-based spending to reach a larger number of swing voters whose support is needed to form a government as a single party. When swing votes become too costly to win, parties come together to form a coalition government which needs fewer swing votes because it wins by combining support from the core vote bases of parties in the coalition.

We present robust evidence of negative correlation between coalition governments and fiscal policy from cross-country data and cross-state data within India, which is driven by changes in

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<sup>2</sup> The suggestion arises from models where expansionary fiscal policy is obtained due to bargaining between multiple interest groups over group-specific targeted benefits, financed by generalized taxation and borrowing. Alesina and Perotti (1995) and Persson and Tabellini (2000, Chapter 13) provide a review. Roubini and Sachs (1989) spawned an empirical literature on “fragmented fiscal policy” through 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 government. Perotti and Kontopoulos (2002) examine the varied results that have been obtained and conclude that these are sensitive to the subjective coding of the fragmentation indicator. They argue for different, more objective, measures—the number of political parties and cabinet ministers in a government—and find that these are associated with larger spending.

government formation while electoral rules are fixed. In the cross-country evidence, the negative correlation is driven by variation in type of government across proportional-rule countries; in the state-level evidence from India, it is driven by over-time changes in type of government within Indian states, all of which share the same majoritarian electoral system.

The cross-country evidence comes from available data from 70 countries over a period of four decades, 1970-2006. We find that switching from a country-decade with a single-party government, where the executive head controls a majority in all law-making houses, to a country-decade with divided government, correlates with a reduction in taxes and spending of 3-4 percentage points of GDP.

Although we do not have a dynamic model for the impact of coalitions on government borrowing, we explore whether in our cross-country specifications coalitions are correlated with budgetary deficits, 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). The sign of the coefficients on measures of coalition size are consistently negative, although the coefficients are not statistically significant in explaining deficits.

Testing our model within India is appropriate because several features of electoral politics in the country are consistent with our modeling of the importance of swing voters. Micro evidence from voting data and voter surveys in India indicates that voters have weakened attachment to political parties over time (Chhibber and Kollman, 2004; Yadav, 1999, 2000), and are more difficult to reach through mobilization efforts of local landlords and caste leaders (Krishna, 2003; Oldenburg, 1999). There is also anecdotal evidence from interviews of political parties of all hues in India of the pressure they feel to create fiscal space to expand broad-based spending, especially in the form of price subsidies and workfare programs (Nooruddin and Chhibber, 2008; Chhibber, 1995; Krishna, 2003).

We examine changes in spending by the 15 major states of India over the period 1972-1995, when they moved from being governed by a single dominant party, the Congress party, to being governed by coalitions of multiple and newly emerging political parties. Using rich panel data on state finances, and state fixed-effects, we find that spending by a state is significantly lower when it is governed by a coalition rather than by a single party.

The next section presents our model. Section 3 presents the evidence from the cross-country sample, and Section 4 from the states of India. Section 5 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>3</sup> The size of each group is denoted by  $\mu^j$ , for  $j = P_1, P_2, P_3, S$ .<sup>4</sup>

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

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<sup>3</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 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>4</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.

$f^s \equiv 0$ , 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>5</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 the right to form the government, as a *formateur*.<sup>6</sup> The party that wins<sup>7</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

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<sup>5</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.

<sup>6</sup> This terminology, the *formateur*, was introduced in the models of government formation in Baron and Dirmeier (2001) and Dirmeier et al. (2003).

<sup>7</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.

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>8</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>9</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

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<sup>8</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>9</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.

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,  $H(g)$ , 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>10</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:

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

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<sup>10</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.

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>11</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) a government formation stage, and (iii) a policy formation stage. At each period  $t$  the timing of events is as follows:<sup>12</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>13</sup>
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*..

### **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:

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<sup>11</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.

<sup>12</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>13</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.

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

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.

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>14</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

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<sup>14</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.

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>15</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  $F(H(g^{*G})) \geq MSV^G$ .

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  $R'(\tau^{*G}) = \mu^G$ .

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<sup>15</sup> Introducing reputation effects and the possibility that the population punishes parties that display such predatory behavior could in principle alleviate this stark result.

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>16</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>16</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>17</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 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-

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<sup>17</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.

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. Evidence from cross-country data

We take the model's prediction to available cross-country data, beginning 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;  $Z_{it}$  is a vector of economic characteristics relevant for fiscal policy;  $P_{it}$  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. We then augment this model received from the literature to include indicators of coalition government. The specification is therefore as follows:

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

Our model predicts  $\gamma < 0$ , and this is the test we perform on cross-country data. 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 empirically that instances of coalition government can be associated with lower spending and taxes. This is because possible reverse causality in specification (7) 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 check the robustness of our results to including the most prominent alternate political variables we could think of from the literature. First, we include voter turnout (Mueller and Stratman, 2003), because greater turnout of core-supporters may be positively correlated both with larger government and single-party government. Second, we include an indicator variable for federalism (Persson and Tabellini, 2003), because federal systems may have smaller central governments and greater political contestation between parties. Third, we include ideology, because whether governments 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 power in coalitions.

Finally, we include ethno-linguistic fragmentation. 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). Ethno-linguistic fragmentation may also be associated with coalition governments if the different groups organize into different political parties.

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 *Database of Political Institutions* (Beck et al, 2001). The fiscal variables measure total spending (excluding interest payments), total tax revenues, and fiscal deficits of central governments.<sup>18</sup> We compile available data for 70 countries over the period 1970 – 2006.<sup>19</sup> We specify the time interval over which the variables are measured,  $t$ , as a decade, calculating decadal averages for each country in our sample using non-missing values.<sup>20</sup> We use decadal averages instead of annual panel data because of large gaps in the fiscal data; even with averaging, fiscal data is available only for 224 country-decades (out of the possible 280), and the sample for estimations is reduced even further when the potential omitted variables discussed above are introduced. Summary statistics, the list of countries for which fiscal data is available, and data source description are contained in Appendix 5.

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 Kontoupoulos, 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

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<sup>18</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>19</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.

<sup>20</sup> In the last decade of the 2000s the average is calculated using non-missing values from 2000-2006.

<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

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”.

The results of estimating specification (7) are reported in Table 1. We find all three measures of coalition government to be significantly associated with lower spending and tax revenues. The size of the coefficient on the indicator variable DIVIDED 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.

These results pertain largely to countries with proportional electoral rules, which make-up over 70 percent of the sample available for these estimations. The results are robust to restricting the estimation to the sample of only proportional-rule countries. We tried several other partitions to the sample—the results are robust in sub-samples of OECD and developing countries, and in sub-samples of countries with regular and irregular elections. The results are particularly strong for the sub-sample of parliamentary countries, where our model of government formation might apply most directly. The results are also 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.

Table 1, column 3, also shows that the coefficients on all three measures of coalition government are negatively signed when correlated with deficits, but not always statistically significant; only the variable Number of Political Parties in Government is significant at the 10 percent level.

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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.

We report the results of including the potentially omitted variables discussed above in Table 2 (includes voter turnout<sup>22</sup>), Table 3 (included indicators for federalism<sup>23</sup> and ideology<sup>24</sup>), and Table 4 (includes ethno-linguistic fragmentation<sup>25</sup>). The estimated impact of coalition governments remains unchanged when turnout is included (Table 2). The estimated impact is smaller in size, but remains negative, and is statistically significant for at least one of spending or taxes for each of the coalition measures, when federalism and ideology indicators are included (Table 3).<sup>26</sup> The results remain significant for one of the coalition measures (GOVFRAC) when ethno-linguistic fragmentation is included, and continue to be negatively signed for the other two measures (Table 4).

One of the more interesting additional results that emerges from this omitted variable analysis is that ethno-linguistic fragmentation is significantly associated with higher deficits (as in Woo, 2003), even as it negatively associated with higher spending and taxes (although this association is not statistically significant). This pattern is consistent with political explanations for deficits rooted in *polarization* between interest groups (Alesina and Tabellini, 1990; Tabellini and Alesina, 1990), as opposed to fiscal profligacy due to fragmentation into multiple groups. Under polarization, 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 to push the financing of current spending onto future governments (because there is a high likelihood of the rival group becoming the incumbent in the future). Ethno-linguistic fragmentation could be an indicator of political polarization and instability, leading to borrowing as the financing choice for current spending. This pattern, that ethnic fragmentation correlates with lower spending but higher borrowing, may be fruitful to examine more carefully in future research.

### **3. Evidence from the states of India**

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<sup>22</sup> Turnout data used by Mueller and Stratmann (2003) and Brender and Drazen (2006) is obtained from the web-site of the Institute for Democracy and Electoral Assistance (IDEA): <http://www.idea.int/vt/index.cfm>

<sup>23</sup> From the database of Persson and Tabellini (2003)

<sup>24</sup> From the DPI

<sup>25</sup> From the database of Persson and Tabellini (2003)

<sup>26</sup> The sample is substantially reduced in size in Table 3, by more than 40 percent, which might account for some of the losses in significance. Results are shown for including both indicators, federalism and ideology, at once, in the interests of brevity; results are identical when each is included separately.

Several features of electoral politics in India are consistent with our model's characterization of populist pressure from swing voters who are difficult to target. Coalition politics in India has been attributed to weakening ideological commitment of voters since mid-1980s to an erstwhile dominant party, the Congress party, and lack of stability of votes accruing to new political parties that emerged to challenge the Congress (Yadav 1999, 2000; Nooruddin and Chhibber, 2008). Several of the new parties have attempted to differentiate themselves and cultivate vote bases by targeting public benefits to the caste groups their leaders represent; yet, these parties are constrained in expanding their base because caste identity of voters is fluid and changing between elections (Chandra, 2004).

The difficulties parties face in expanding their vote base is also reflected in growing independence among the poor voters of India from the influence of traditional village landowners and caste leaders, who parties used to target with benefits in exchange for mobilizing "vote banks" (Krishna, 2003). According to a large national exit poll of voters conducted in 1996, 75 percent of respondents were not guided by anyone in their voting decision, and of the 25 percent who sought advice only 7 percent sought it from caste and community leaders, a reversal of pattern from a survey undertaken in 1971 (Oldenburg, 1999). Through detailed interviews of village residents in a sample of north Indian villages, where caste polarization is in fact more acute than in the south, Krishna (2003) concludes that political parties can no longer rely on big landlords and caste leaders to mobilize the votes.

In addition to growing independence from traditional leaders when they do participate, citizens from disadvantaged groups in India are also increasing their political participation—the poor in India are increasing in turnout more than the middle class or rich, villages more than cities, and lower castes more than upper castes (Yadav, 2000). There is also evidence that these newly mobilized voters are demanding of public services (Krishna, 2003), and that political parties are constrained in finding the fiscal space to service growing voter demands (Nooruddin and Chhibber, 2008; Chhibber, 1995).

Under India's institutions of fiscal federalism, state governments have limited discretion in raising own revenues and have been shown to rely on transfers out of general revenues collected by national agencies for their spending (Khemani, 2007 and 2008; Nooruddin and Chhibber, 2008). We

examine spending of state governments while controlling for political and institutional determinants of their access to revenues. We examine state spending over a period of time in which state politics changed from the dominance of a single party, the Congress party, to the emergence of new regional parties and alternation between governance by a single-party versus a coalition.

We use an existing annual panel database on the country's 15 major states over the period 1972-1996 (Khemani, 2007).<sup>27</sup> This database contains only one variable to measure coalitions—an indicator variable for whether a state government consists of a single party or a coalition of multiple parties. We estimate the effect on spending of this indicator variable, while controlling for state fixed effects; year effects; state domestic product and its growth rate; state population; voter turnout; own-generated revenues; and size of transfers from national government agencies.

Table 5 reports these results for different categories of spending—total non-interest spending (column 1), non-interest spending on the recurrent account which includes subsidies and welfare programs (column 2), and spending on capital construction and investment projects (column 3). We find a significant negative effect on current spending when a state is governed by a coalition instead of a single political party. This is the category of spending which includes most programs under the state government's discretion to provide broadly targeted (to the poor) benefits of price subsidies, jobs, and welfare transfers. We find a positively signed but statistically insignificant effect of coalitions on investment spending by the state government which previous work has argued is more likely to be targeted to organized interest groups (Khemani, 2004). The estimated size of the coalition effect on current account spending is small, being only 4 percent of average real per capita spending in the sample. This is somewhat suggestive that even parties in a coalition government in India attempt to access all types of fiscal resources to service the demands of increasingly swing voters.

## 5. Conclusion

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<sup>27</sup> These 15 states, accounting for 95 % of the country's population, are: Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.

The contribution of this paper is to examine the implications for fiscal policy when electoral rules are fixed but political participation varies, specifically, on the part of swing voters that are demanding of public benefits yet difficult to target through party machines. In our model, political parties come together to form coalition governments when swing voters are too demanding and elections are too costly for a single party to win through broad-based spending. Coalitions win elections more cheaply by targeting benefits to the combined vote bases of parties in the coalition. We find empirical support for this model in a sample of countries where most have proportional electoral rules, but vary in instances and size of coalition governments, and from variation within Indian states that share majoritarian electoral rules.

Our model has implications 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). Our model suggests 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.

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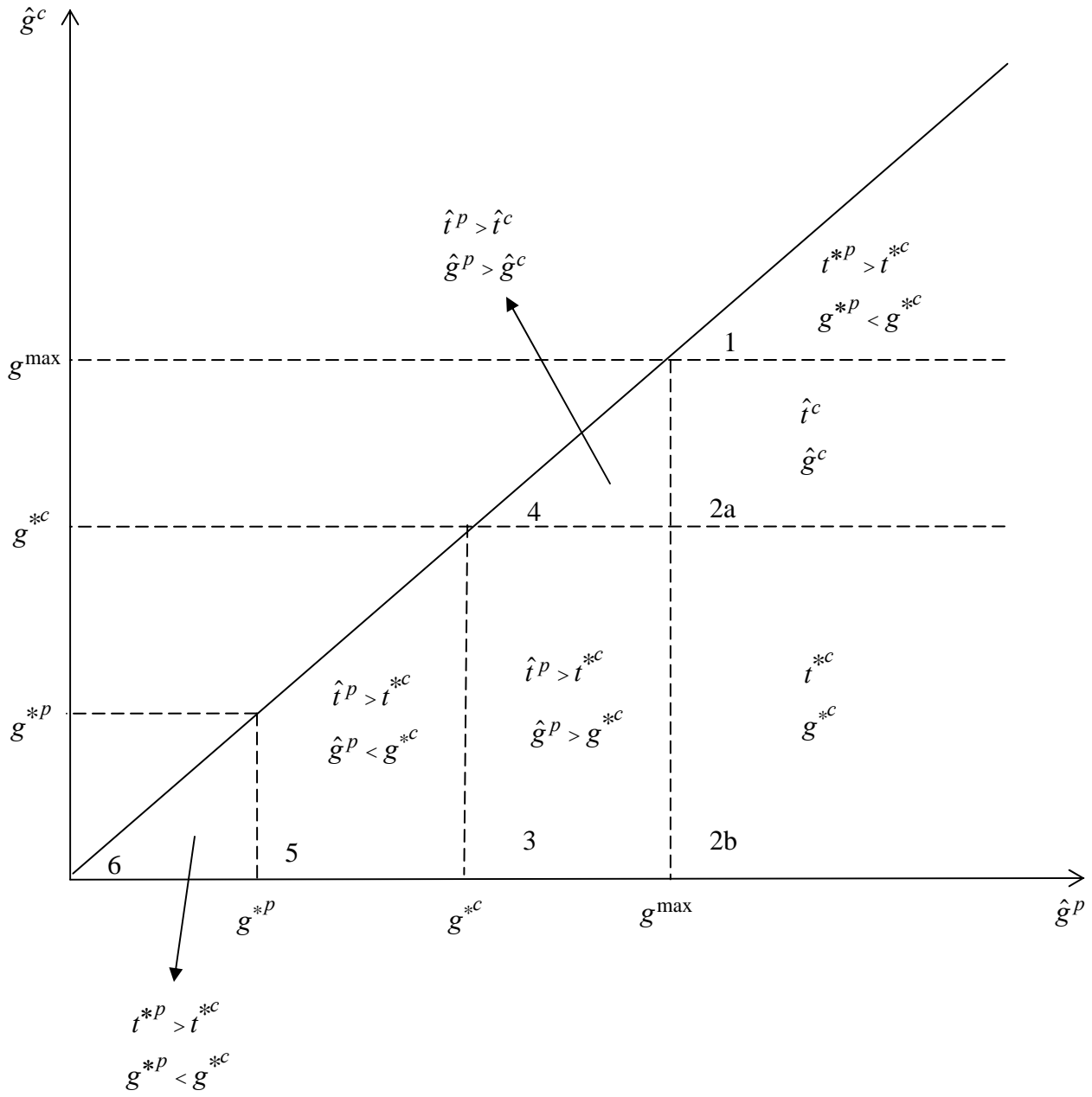
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**Figure 1:** Equilibria under different regimes



**Table 1: Fiscal Policy under Coalition Governments<sup>a</sup>:**

|   | (1)                                     | (2)                     | (3)                  |
|---|---|-------------------------|----------------------|
|   | Total Expenditure (excl. interest)/ GDP | Total Tax Revenues/ GDP | Deficit/ GDP         |
| <b>Model 1: DIVIDED</b>                       |   |                         |                      |
| Indicator variable for Divided Government     | -0.040<br>(0.018)**                     | -0.031<br>(0.012)***    | -0.002<br>(0.008)    |
| Observations                                  | 211                                     | 210                     | 243                  |
| R-squared                                     | 0.32                                    | 0.47                    | 0.20                 |
| <b>Model 2: GOVFRAC<sup>b</sup></b>           |   |                         |                      |
| GOVFRAC                                       | -0.090<br>(0.042)**                     | -0.057<br>(0.029)**     | -0.017<br>(0.014)    |
| Observations                                  | 207                                     | 206                     | 239                  |
| R-squared                                     | 0.36                                    | 0.48                    | 0.21                 |
| <b>Model 3: NUMBER OF PARTIES<sup>c</sup></b> |   |                         |                      |
| Number of Parties                             | -0.0004<br>(0.0002)*                    | -0.0004<br>(0.0001)***  | -0.0002<br>(0.0001)* |
| Observations                                  | 222                                     | 221                     | 257                  |
| R-squared                                     | 0.31                                    | 0.45                    | 0.19                 |

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

**Table 2: Robustness to Including Voter Turnout**

|                                   | (1)                                     | (2)                     | (3)                  |
|-----------------------------------|---|-------------------------|----------------------|
|                                   | Total Expenditure (excl. interest)/ GDP | Total Tax Revenues/ GDP | Deficit/ GDP         |
| <b>Model 1: DIVIDED</b>           |   |                         |                      |
| Divided                           | -0.038<br>(0.018)**                     | -0.029<br>(0.013)**     | -0.003<br>(0.008)    |
| Turnout                           | 0.078<br>(0.039)**                      | 0.068<br>(0.034)*       | 0.015<br>(0.017)     |
| Observations                      | 211                                     | 210                     | 243                  |
| Adjusted R-squared                | 0.29                                    | 0.45                    | 0.14                 |
| <b>Model 2: GOVFRAC</b>           |   |                         |                      |
| GOVFRAC                           | -0.087<br>(0.039)**                     | -0.053<br>(0.028)*      | -0.017<br>(0.014)    |
| Turnout                           | 0.062<br>(0.035)*                       | 0.064<br>(0.035)*       | 0.010<br>(0.016)     |
| Observations                      | 207                                     | 206                     | 239                  |
| Adjusted R-squared                | 0.32                                    | 0.46                    | 0.15                 |
| <b>Model 3: NUMBER OF PARTIES</b> |   |                         |                      |
| Number of parties                 | -0.0003<br>(0.0002)                     | -0.0002<br>(0.0001)*    | -0.0002<br>(0.0001)* |
| Turnout                           | 0.082<br>(0.038)**                      | 0.072<br>(0.035)**      | 0.013<br>(0.018)     |
| 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%. 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 3: Robustness to Including Indicators for Federalism and Ideology**

|                                   | (1)                                     | (2)                     | (3)                |
|-----------------------------------|---|-------------------------|--------------------|
|                                   | Total Expenditure (excl. interest)/ GDP | Total Tax Revenues/ GDP | Deficit/ GDP       |
| <b>Model 1: DIVIDED</b>           |   |                         |                    |
| Divided                           | -0.033<br>(0.019)*                      | -0.018<br>(0.012)       | 0.006<br>(0.007)   |
| Turnout                           | 0.126<br>(0.045)***                     | 0.078<br>(0.032)**      | 0.023<br>(0.019)   |
| Federal                           | -0.038<br>(0.02)*                       | -0.039<br>(0.016)**     | 0.004<br>(0.006)   |
| Right-wing government             | -0.026<br>(0.015)*                      | -0.016<br>(0.01)        | -0.012<br>(0.008)  |
| Observations                      | 129                                     | 129                     | 147                |
| R-squared                         | 0.67                                    | 0.78                    | 0.42               |
| <b>Model 2: GOVFRAC</b>           |   |                         |                    |
| GOVFRAC                           | -0.06<br>(0.035)*                       | -0.021<br>(0.023)       | -0.001<br>(0.012)  |
| Turnout                           | 0.12<br>(0.046)***                      | 0.075<br>(0.032)**      | 0.023<br>(0.02)    |
| Federal                           | -0.04<br>(0.021)*                       | -0.04<br>(0.016)**      | 0.004<br>(0.006)   |
| Right-wing government             | -0.023<br>(0.015)                       | -0.016<br>(0.01)        | -0.012<br>(0.008)  |
| Observations                      | 129                                     | 129                     | 147                |
| R-squared                         | 0.67                                    | 0.77                    | 0.42               |
| <b>Model 3: NUMBER OF PARTIES</b> |   |                         |                    |
| Number of Political Parties       | -0.004<br>(0.002)*                      | -0.003<br>(0.001)**     | 0.001<br>(0.001)   |
| Turnout                           | 0.129<br>(0.045)***                     | 0.083<br>(0.027)***     | 0.02<br>(0.019)    |
| Federal                           | -0.041<br>(0.02)**                      | -0.042<br>(0.016)***    | 0.006<br>(0.007)   |
| Right-wing government             | -0.021<br>(0.016)                       | -0.013<br>(0.011)       | -0.014<br>(0.008)* |
| 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 Tables 1 and 2. Sample is substantially reduced, by more than 40 per cent. 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 4: Robustness to Including Ethno-linguistic Fragmentation**

|                                   | (1)                                     | (2)                     | (3)                 |
|-----------------------------------|---|-------------------------|---------------------|
|                                   | Total Expenditure (excl. interest)/ GDP | Total Tax Revenues/ GDP | Deficit/ GDP        |
| <b>Model 1: DIVIDED</b>           |   |                         |                     |
| Divided                           | -0.025<br>(0.017)                       | -0.02<br>(0.012)*       | 0.013<br>(0.008)*   |
| Ethno-linguistic Fragmentation    | -0.90<br>(0.065)                        | -0.056<br>(0.040)       | 0.041<br>(0.022)*   |
| Turnout                           | 0.047<br>(0.045)                        | 0.037<br>(0.033)        | 0.02<br>(0.017)     |
| Observations                      | 174                                     | 174                     | 191                 |
| R-squared                         | 0.49                                    | 0.64                    | 0.25                |
| <b>Model 2: GOVFRAC</b>           |   |                         |                     |
| GOVFRAC                           | -0.069<br>(0.033)**                     | -0.039<br>(0.02)*       | -0.016<br>(0.012)   |
| Ethno-linguistic Fragmentation    | -0.075<br>(0.062)                       | -0.048<br>(0.037)       | 0.046<br>(0.023)**  |
| Turnout                           | 0.045<br>(0.041)                        | 0.036<br>(0.032)        | 0.019<br>(0.017)    |
| Observations                      | 174                                     | 174                     | 191                 |
| R-squared                         | 0.51                                    | 0.64                    | 0.24                |
| <b>Model 3: NUMBER OF PARTIES</b> |   |                         |                     |
| Number of Political Parties       | -0.0002<br>(0.0003)                     | -0.0002<br>(0.0002)     | -0.0002<br>(0.0001) |
| Ethno-linguistic Fragmentation    | -0.098<br>(0.065)                       | -0.064<br>(0.04)        | 0.042<br>(0.022)*   |
| Turnout                           | 0.045<br>(0.044)                        | 0.036<br>(0.034)        | 0.018<br>(0.017)    |
| 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 Tables 1 and 2. Sample is reduced by between 15-20%. 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 5: Evidence from the Indian States**

|   | (1)                                       | (2)  | (3)  |
|---|---|--|--|
|   | Total Expenditure<br>(excluding interest) | Current Expenditure<br><i>(interpreted as<br/>untargeted programs)</i> | Capital Expenditure<br><i>(interpreted as<br/>targeted programs)</i> |
| <b>COALITION:</b> Indicator variable for coalition government at the state level  | -18.82*<br>(11.49)                        | -27.56**<br>(9.91)   | 10.67<br>(16.56)   |
| Voter turnout   | -0.58<br>(0.44)                           | 0.18<br>(0.45)   | 0.36<br>(0.92)   |
| Observations  | 344                                       | 344  | 345  |
| R-sq  | 0.98                                      | 0.98   | 0.78   |
| <p>Dependent variables and controls for state income and revenues are in per capita 1992 rupees. Controls include: state income, growth in state income, total population, state own-generated revenues, transfers from the main national agencies responsible for distributing intergovernmental grants and loans, state fixed effects and year effects. Robust standard errors in parentheses, clustered by state. * significant at 10%; ** significant at 5%; *** significant at 1%.</p> |   |  |  |

## 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:

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

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:

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

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

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

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:

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

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,

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

Adding together the respective sides of (A1.5) and (A1.6), we have:

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

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

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

Following from (A1.7) and (A1.8), we have the condition (A1.4) 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  $\hat{g}^P = R(\hat{\tau}^P) > R(\hat{\tau}^C) = \hat{g}^C$  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 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**

| Variable                          | # Obs. | Mean  | St. Deviation |
|-----------------------------------|--------|-------|---------------|
| 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         |

<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  $g^{*C} < \hat{g}^C < \hat{g}^P < R(\tau^{*C}) < R(\tau^{*P}) \leq g^{\max}$ .

|                                 |     |       |        |
|---------------------------------|-----|-------|--------|
| 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:

$\bar{r} = \sqrt[10]{(1+r_1)(1+r_2)\dots\dots(1+r_{10})} - 1$  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.