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# Political fragmentation, fiscal policy and economic growth in Indian States

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## Abstract

We study how a fragmented political landscape affects fiscal policy and economic growth with a sample of 15 Indian States over the period 1980-2000. We measure state-level political fragmentation with an inverse Herfindahl index for party vote shares in the state legislature. Our results show that political fragmentation distorts fiscal policy: it entails higher spending, lower revenues, and higher public debt. At the disaggregated level, political fragmentation leads to higher current and lower capital expenditures. These fiscal distortions, in turn, lower growth rates. We also find that informational issues play an important role in determining the effect of political fragmentation.

JEL classification: D72, H11, H30, O23

Keywords: Competitive politics, Political fragmentation, Fiscal policy, Economic growth

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## 1. Introduction

Many countries, notably in Eastern Europe, Latin America, and Africa, have replaced in the last few decades their autocratic governments with democratically elected ones. While this wave of democratization is obviously a desirable political development, it comes with significant challenges. In particular, a more competitive political arena may lead to increased political fragmentation. As can be seen by many historical examples – the most notorious being perhaps Weimar Germany – political fragmentation may reduce confidence in parliamentary politics and give rise to the emergence of strongmen and autocrats. By allowing too much fragmentation, democratic governments may hence sow the seeds of their own demise (Sartori, 1976).

To ensure the stability of nascent democracies, it is therefore important to know how electoral and political institutions should be set up to avoid excessive fragmentation (Baskaran and Lopes da Fonseca, 2016). Are political structures that lead to two-party systems or executives that are detached from party politics – e. g. majoritarian electoral rules and presidentialism (Duverger, 1972) – better than those that allow for a more fragmented political landscape? Should parties represent broad or narrow interests? What, in short, is a reasonable level of party fragmentation?

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A number of contributions have attempted to answer such questions theoretically. Meyerson (1993) suggests that political fragmentation causes higher government expenditures because incentives to target policies to special interest groups or specific electoral districts increase in the number of parties that compete in the political marketplace. A similar point is made by Lizzeri and Persico (2005) who conclude that it might be efficient to limit political competition as measured by the number of parties.

Polo (1998), on the other hand, shows that an increasing number of political candidates has two countervailing effects. A direct effect that diminishes the rents that a candidate can promise and an indirect effect by increasing the reservation rent that candidates demand as compensation for the smaller probability of winning. The net effect is ambiguous. A related theoretical literature studies the role of electoral competition for government accountability. Coate and Morris (1995) show that in the presence of informational asymmetries between electorates, electoral competition may result in inefficient forms of government transfers. Aytimur (2013) suggests that political rents increase in the importance of extreme parties.

Despite this theoretical interest, empirical analyses of the fiscal and economic effects of political fragmentation are rare. We therefore explore in this paper how political fragmentation, measured by the fragmentation of the party system, affects fiscal and economic outcomes in 15 Indian States (covering more than 90 percent of the population of India) over the period 1980-2000.<sup>1</sup>

India is a compelling laboratory to study the effect of political fragmentation at the state level. First, a large number of states hold elections at different points of time providing us with useful state-time variation in political fragmentation. Second, a law, called the anti-defection (AD) law, passed in 1985 as the 52<sup>nd</sup> amendment to the Indian constitution to restrict frequent defections of opportunistic legislators between parties unexpectedly led to an increased fragmentation of the party system in India. The AD law took effect over time across different states during the period between 1985-1989 and provides us a natural experiment to examine the effect of political fragmentation on fiscal variables, such as expenditures and taxes, composition of expenditures, and debt, and economic growth. Thus, Indian state politics offers the opportunity for a

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<sup>1</sup> The current number of states in India is 28. Our sample of 15 states covers about 90% of Indian population. Many new states came into existence in 2000 after reorganization of some existing states.

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methodological innovation to overcome the main difficulty of endogenously determined political fragmentation as some unobservable omitted factor such as voters' preferences may determine both political fragmentation and fiscal policy.

In addition to the specific literature on political fragmentation, this paper is related to a large body of work on common pool problems in policy making (Weingast et al., 1981). The main idea in this literature is that government spending can be targeted toward individual groups while tax burdens cannot. Since each group underestimates the cost of expenditures that are targeted toward itself, government expenditures increase in the number of groups that are decisive for political decisions. Empirical studies on common pool problems explore the effect of coalition governments and cabinet size (Le Maux et al., 2011; Schaltegger and Feld, 2009), the fragmentation of municipal councils (Borge, 2005), and federalism (Baskaran, 2012).<sup>2</sup> For India, Dutta (1996) finds that unstable coalition governments have a higher revenue (current) expenditures to GDP ratio and lower non-tax revenues to GDP ratio. Chaudhuri and Dasgupta (2006) also finds that coalition governments raise less own non-tax revenues.

Further, there are greater incentives to target policy by skewing the expenditure composition rather than the aggregate spending given that voters have heterogeneous preferences over the types of spending (Leblanc et al., 2000; Brender, 2003; Brender and Drazen, 2013; Drazen and Eslava, 2010; Uppal, 2011). In the Indian context, Chaudhuri and Dasgupta (2006) provide evidence that revenue (current) expenditures are lower when a coalition government is in power. Uppal (2011) finds increased turnover in state legislatures in India encourages greater targeting of fiscal policy in form of increased current spending. Uppal and Glazer (2015) also finds evidence that increased turnover affects composition of spending in the US states. So we should expect stronger results for the composition of spending than for the aggregate spending.

Our contribution to the common pool literature is to extend its empirical applications to a new setting by specifically studying the role of political fragmentation.<sup>3</sup>

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<sup>2</sup> Other notable contributions in this literature are Roubini and Sachs (1989b,a), Edin and Ohlsson (1991), De Haan and Sturm (1997), De Haan et al. (1999), Perotti and Kontopoulos (2002), Woo (2003), Ashworth and Heyndels (2005), Bawn and Rosenbluth (2006).

<sup>3</sup> Our approach is related to those studies that explore the effect of a fragmented municipal council (Borge, 2005). But in contrast to municipal councils, opposition parties in state legislatures have little direct political clout. We therefore treat legislature fragmentation as an indicator for party fragmentation rather than as a variable that has a direct effect on expenditures.

Most notably, while Dutta (1996) and Chaudhuri and Dasgupta (2006) are related to our paper, one crucial difference is that both studies only examine fragmentation within the government and therefore treat the opposition parties as passive players in the political arena. But as noted by Dutta (1996), government fragmentation is related to the overall fragmentation of the party system. That is, political jurisdictions where many parties are represented in the legislature tend to have coalition governments. Our paper is also related to Chhibber and Nooruddin (2004), who examine the effect of number of parties on government expenditure. Our results are largely consistent with their result that more fragmented party systems induce a greater degree of policy targeting.

Our results suggest that political fragmentation has undesirable fiscal and economic consequences. While the results for aggregate fiscal variables are less robust to correcting for serially correlated errors, we find that expenditures and debt are higher and revenues are lower in more politically fragmented states. Consistent with the literature, we find stronger and statistically consistent effect of fragmentation on the composition of expenditures: politicians favor current over capital spending. Current spending is a measure of public consumption and refers to expenditures on daily maintenance of state organs. It comprises, most notably, the salaries of government employees and military staff, perks for ministers, office furniture, grants to local bodies, subsidies, interest on loans, and pensions. This kind of expenditure can be easily targeted to specific sections in the short run. Our results suggest that more fragmented legislatures skew spending towards unproductive consumption expenditures and away from capital projects.

In a first set of robustness tests, we find that these results are robust to controlling for the structure of the government – single-party or coalition – and for government ideology. We also find that the media can play a role in mitigating the negative consequences of political fragmentation. Finally, we explore in an extension how the fiscal effects of political fragmentation affect economic growth. We find that because of the fiscal distortions, growth seems to be hindered: growth rates are lower in more fragmented states. These results are consistent with predictions from the common pool literature.

The remainder of the paper is organized as follows. The next section provides the institutional background behind the anti-defection law. We discuss the empirical model

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and data in Section 3. Section 4 discusses our main results and we check for sensitivity of our results in Section 5. Section 6 examines the relationship between political fragmentation and income. We conclude the paper in Section 7.

## **2. Institutional details**

### **2.1. Fiscal federalism**

All states in India follow a Westminster-style parliamentary system of government, similar to the system at the federal level. All states are governed by a state government elected by the state population and headed by a chief minister. The government relies on majority support in the legislature, if possible by a single party or otherwise by a coalition of parties.

Even though the states are linguistically and culturally relatively homogeneous, almost all have significant minority populations. Hindus are the largest religious group in all the states in our sample except in Punjab where they are the second largest group. Muslims are the second largest group in many states, except in Harayana where Sikhs are the second largest and in Orissa and Tamil Nadu where Christians are the second largest group.

The states have considerable constitutional autonomy in various policy areas, and notably with respect to fiscal matters. The expenditures undertaken by the state tier (including the local tier) constitute more than half of general government expenditures (McCarten, 2003). While this aggregate figure is high, both the level and composition of expenditures and deficits varies considerably between states. According to our data, the expenditures to GDP ratio in, for example, Assam was 0.19 while it was only 0.09 in Maharashtra. The ratio of current expenditures to GDP was 0.13 in Orissa while 0.07 in Maharashtra. Orissa had a deficit to GDP ratio of 0.27 while 0.05 had a ratio of Maharashtra.

Expenditures are financed through tax revenues, federal transfers, and debt. The Indian Constitution gives states discretion over several important taxes, notably sales taxes, taxes on lands and buildings, and taxes on mineral rights. While state governments raise considerable own-source revenues through such taxes, they are not allowed to impose a tax on bases that are constitutionally allocated to the federal government. This constitutional arrangement limits the ability of state governments to

raise additional revenues by broadening their bases. Hence, central transfers, including revenues from shared taxes, are an important source of financing in all states. The vertical fiscal imbalance is fairly large with the average state being able to finance only around half of its expenditures through own-source revenues (McCarten, 2003).

This, however, is only the average figure. There are significant differences between states' ability to finance their expenditures through own-source revenues. According to McCarten (2003), Gujarat is able to fund more than 75 percent of its current expenditures by own-source revenues. On the other hand, the corresponding number for Bihar is 35 percent. Effective tax rates vary as well between states, with Tamil Nadu having an effective tax rate of about 12 percent and Uttar Pradesh about 6 percent. We posit that part of the differences in fiscal variables can be explained by political fragmentation.

## **2.2. Politics**

From Independence in 1947 to the fourth federal election in 1967, the Congress party completely dominated Indian politics, both at the state and the federal level (Chhibber and Nooruddin, 1999). But from 1967 onward, Congress' electoral success varied. In 2013, around 32 percent of the seats are held by Congress in the national Parliament, but there have been also elections in the recent past where Congress fared worse. In 1998, for example, the Congress' seat share was only around 25 percent. While Congress remains an important player in many states, it is currently only in power in a minority of them. In some states, Congress is not even the third largest party any more, such as in Uttar Pradesh, Tamil Nadu and Bihar.

The period of declining fortunes of the Congress party coincided with frequent defections. Defections or floor crossings, defined as a change in the party allegiance by elected representatives, are a case in point. Kamath (1985) notes that individual defections, especially in the 1970s and the first half 1980s, were a common phenomenon in Indian politics. A Government of India (2002) report notes the following:

Between the fourth and the fifth general elections in 1967 and 1972, from among the 4000 odd members of the Lok Sabha and the Legislative Assemblies in the States and the Union Territories, there were nearly 2000 cases of defection and counter-defection. By the end of March, 1971 approximately 50% of the legislators had changed their party affiliations and

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several of them did it more than once – some of them as many as five times. One MLA was found to have defected five times to be a minister for only five days.

Kamath (1985) questions these defections on many grounds. First, defection of members elected from a certain party amounts to contempt for the electorate, particularly when they alter clear electoral mandates. The Congress government in the center led by Indira Gandhi, whose dominance began to erode in state elections, engineered defections from the majority governments of opposition parties in many states, such as Harayana, Himachal Pradesh, Jammu and Kashmir, and Andhra Pradesh, to form a Congress government. This was termed as assumption of power through the back door rather than through a direct mandate from the electorate. Second, defections encourage corrupt practices by defectors and political parties alike. Kamath argues that various means, such as monetary incentives, ministerial posts in the government, and coercion, were used to secure defections of elected members. He notes that in the 1960s, the price quoted for a would-be defector varied between Rs. 200,000 and 400,000. In the 1980s, the price tag increased, allegedly, to Rs. 1-1.5 million. Third, frequent defections created excessive instability in the political system as incumbent governments, which also included the ones with a large majority of seats, may find themselves in a minority as the factions within their party were lured by the opposition party with various perks.

This led to a consensus that political defections should be banned. If a candidate decides to defect to another party, he or she should cease to be the member of the elected body. The logic of this argument is that if a candidate is dissatisfied or has any disagreements with her party, she should resign from her seat, which she won as a nominee of the party, and seek a fresh mandate from the voters as a member of different party. As a result, defections by the members of elected bodies were banned under the 52<sup>nd</sup> amendment to the Indian constitution, which became a law on March 1, 1985. According to the law,

A member of a House belonging to any political party shall be disqualified for being a member of the House:

1. if he or she has voluntarily given up his membership of such political party; or
2. if he or she votes or abstains from voting in such House contrary to any direction issued by the political party to which he or she belongs or by any person or authority authorized by it in this behalf, without obtaining, in either case, the prior

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permission of such political party, person or authority and such voting or abstention has not been condoned by such political party, person or authority within fifteen days from the date of such voting or abstention.

The law, although it did make individual defections illegal, encouraged en bloc defections due to a few major loopholes. For instance, if at least one-thirds of the members of a party decide to defect and form a new party, called a split, the defected members are not disqualified. Whereas in the pre-1985 period individual defections were the rule, the AD law of 1985, by banning them, left a split of parent parties as the only option and thus increased political fragmentation.

### 3. The Empirical Model and Data

We estimate the following empirical model, which regresses a fiscal policy variable in state  $i$  in year  $t$  ( $Y_{it}$ ) on a variable,  $POLFRAG_{it}$ , measuring political fragmentation in state  $i$  in year  $t$ :

$$Y_{it} = \alpha_i + \gamma_t + \beta \times POLFRAG_{it} + \delta \times X_{it} + \mu_{it}. \quad (1)$$

We also include state fixed effects,  $\alpha_i$ , which control for the time-invariant state specific characteristics of state  $i$ , and time fixed effects,  $\gamma_t$ , to control for time-variant factors affecting fiscal policy that are common across states.  $X_{it}$  are a set of covariates representing economic, demographic, natural, and political factors which may affect fiscal policy and  $\mu_{it}$  is the error term. Given the model in equation (1), the effect on policy is identified by within state variation in political fragmentation. We consider the following measures of aggregate fiscal policy: total expenditures, total tax revenues and public debt, which are expressed both in per capita terms and as a proportion of state income.

We measure political fragmentation using an inverse Herfindahl index based on aggregate party vote shares. This index, first used by Laakso and Taagepera (1979) as a measure for the effective number of parties, is computed as follows:

$$POLFRAG_{it} = 1 / \sum v_{ijt}^2 \quad (2)$$



where  $V_{i,j,t}$  is the vote share of party  $j$  in state  $i$  in election  $t$ . The higher is this index, the higher is political fragmentation. Another interpretation of this index is that it provides the effective number of parties. This is especially useful in Indian context where the actual number of parties contesting elections is large. Many of these parties barely win any votes. This index puts a lower weight on these parties to calculate the number of effective parties. Following Meyerson (1993) and Lizzeri and Persico (2005), we hypothesize that an increase in political fragmentation gives incentives to target fiscal policy as each party competes for a smaller plurality.

The vector  $X_{it}$  includes lagged values of the natural log of state income per capita, the natural log of state population, proportion of urban population, proportion of Scheduled Castes (SCs) and Tribes (STs), and an indicator variable for a calamity. The most frequent calamities in India are floods and drought due to excessive or deficient rainfall. Following Besley and Burgess (2002), the indicator variable for a calamity is 1 if the rainfall is two standard deviations above (flood) or below (drought) the average rainfall and 0 otherwise. We also control for other political factors, such as the rate of voter turnout, and *ELECTIONYEAR* $_{it}$ , which takes a value of 1 for an election year and 0 otherwise. The latter controls for any electoral fiscal policy cycles as the governments may attempt to appear more competent around election times.

The source of election data, such as percentage vote received by each party and voter turnout, is the Election Commission of India (ECI). The data on state government finances is taken from the Reserve Bank of India (RBI), the Indian central bank. This data is the most comprehensive data on state finances in India. The RBI also provides information on state net domestic products that are divided by the total state population to arrive at the per capita income figures for each state, and a GDP deflator series which is used to arrive at the real values of expenditures and revenue items of states.

The data on population, urban population, and population of Scheduled Castes and Scheduled Tribes are available from the decennial census of India in 1981, 1991 and 2001. The values were extrapolated for the non-census years. The population data were further divided by the area of each state to compute population density. The state-wise

rainfall data is available from the Indian Institute of Tropical Meteorology (IITM) website.<sup>4</sup> Table 1 lists descriptive statistics for all the variables in the dataset.

Estimating equation (1) using the ordinary least squares (OLS) method may be problematic. As argued above, it is likely that some unobservable omitted factor such as voters' preferences determine both political fragmentation and fiscal policy. As a result, our measure of political fragmentation is likely to be correlated with error term rendering the ordinary least squares (OLS) estimates inconsistent. The inclusion of state fixed effects and other control variables may alleviate the problem, but only somewhat.

We use a generalized method of moment instrument variable technique (IV-GMM) (Baum et al., 2007). Our first instrument is the anti-defection law passed in March, 1985. As discussed above, the AD law was passed by the federal government in 1985 as the 52<sup>nd</sup> amendment to the Indian constitution. The law however took effect in different years in different states as state elections are not synchronized. We can exploit this state time variation in a federally mandated law to examine the effect of political fragmentation on fiscal policy and growth. As shown in Figure 1, while the effective number of parties was declining before 1985, it began to increase after the anti-defection law began to take effect as different states held elections. We use an indicator variable which is 1 for first election onwards after 1985 in a state and zero before that.

We also use the proportional share of the second largest religious group in a state as an additional instrument for political fragmentation. The data on the proportional share of second largest religious group in a state is taken from Urdal (2008). Easterly and Levine (1997) use ethnicity based variables as determinants of electoral politics. Annet (2001) argues that socio-ethnic fractionalization increases political instability, which in turn affects government consumption. In our sample, proportion of second-largest religion, which is Islam in most of the states, varies negatively with political fragmentation. Hindus make up the dominant religion. Their vote is highly fragmented along caste lines. Many Muslims are not as politically organized and as Yadav (2009) notes they tend to vote for more established parties. This consolidates the party system in states where their proportion is larger giving rise to a negative relationship between share of largely Muslim minority and political fragmentation.

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<sup>4</sup> Indian Institute of Tropical Meteorology, <http://www.tropmet.res.in/> accessed in December, 2007.

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For our instruments to be valid they need to fulfill two important conditions. First, they should be highly correlated with the effective number of parties. Second, the instruments must be uncorrelated with the policy variables directly. This ensures that the instruments can be validly excluded from our second stage equation. We provide diagnostic evidence below to validate these two conditions. We show below that both our instruments jointly perform well in exogenously identifying variation in political fragmentation.

## 4. Empirical Results

### 4.1. Public expenditures and taxes

Table 2 reports the effect of political fragmentation on aggregate measures – total spending and tax revenues – of fiscal policy using the IV-GMM method. All the regression equations include state and time fixed effects to control for any state-invariant and time-varying factors. Standard errors are robust and given in parentheses. In column (1), we regress the natural log of total expenditure per capita on political fragmentation and various economic, demographic, natural and political control variables. Increased political fragmentation increases per capita total expenditure. In column (2), the effect of political fragmentation on total spending as a share of income is positive and significant at the 5% level. In column (3), we regress the natural log of per capita tax revenues on political fragmentation. Increased fragmentation reduces tax revenues significantly. We get similar results in column (4) where the dependent variable is the share of tax revenues in state income. Columns (5) and (6) report the effect of political fragmentation on public debt. Increased political fragmentation has a significantly positive effect on state public debt, both in per capita terms and as a share of income.

The effects are both statistically and economically significant. An increase in fragmentation by one effective party increases total spending per capita by 2.1% and the share of spending in state income by about 0.5 percentage points. Tax revenues decrease by about 3.5% in per capita terms and by about 0.1 percentage points as a share of spending for one unit increase in fragmentation. Per capita level of public debt increases 9.7% and public debt as a share of state income increases 2.1 percentage points for 1-unit increase in political fragmentation.

The effect of various covariates are as expected. While income per capita increases per capita spending and tax revenues, it decreases the shares of spending and taxes in income.

More populated states spend less in per capita terms and as a share of income. They also tax less both in per capita terms and as a share of income. Population density and share of SC and ST populations have a negative effect on both spending and taxes. Public debt, when measured as a share of income, is negatively related with per capita income, as does proportion of urban population. Public indebtedness is also negatively related to turnout, population, and proportion of SC and ST population. Table A.1 corrects for heteroscedasticity and serial correlation. The results, albeit slightly weaker statistically, are similar to the above findings.

Various diagnostic tests suggest our instrument variable technique to be valid. Staiger and Stock (1997) suggest a formal test for weak instruments based on the proportion of variation in the endogenous variable explained by the instruments in the first stage. They caution against using the conventional F critical values and suggest a stricter cutoff value of 10 of the first stage F-statistic for the instruments to be sufficiently strong. We use the rk F-statistic suggested by Kleibergen and Paap (2006). The value of the rk F-statistic in the specification used in Table 2 is 20.73. We also test for the validity of over-identifying restrictions using Hansen J test. The null hypothesis states that instruments are properly excluded from the model. Thus, a high value of test statistic would lead to a rejection of over-identifying restrictions and imply that the instruments are directly related to the error term in our model. Table 2 lists the p-value of the test statistics from this regression. As can be seen, we do not reject the null hypothesis as the p-values are higher than the conventionally used levels of significance, implying the over-identifying restrictions are valid.

Table 3 examines how political fragmentation affects the composition of spending. In column (1), increased political fragmentation increases revenue expenditure per capita. The coefficient of political fragmentation is significant at the 1% level. Substantively, a unit increase in political fragmentation increases current spending by about 6%. Political fragmentation also significantly increases the share of revenue spending in column (2). In columns (3) and (4), political fragmentation has an opposite effect on capital spending. Increase in political fragmentation by one effective party

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decreases capital spending per capita by about 6% and the share of capital spending in income by about 0.2 percentage points. Also, more populated states spend less on revenue account and more on capital account. Surprisingly, states with larger share of urban population spend less on capital account. Whereas states with larger proportion of SC and ST population have lower current spending, they have higher capital spending. Table A.2 corrects for heteroscedasticity and serial correlation and finds results that are consistent with the above findings.

## 5. Robustness Checks and Extensions

### 5.1. Ideology and coalition governments

A large literature discusses the role of ideology in determining policy choices (Alt and Lowry, 1994; De Haan et al., 1999; Rogers and Rogers, 2000; Besley and Case, 2003). For example, Democratic control of the government, both at the federal and state level in the U.S., is associated with higher government spending (Alt and Lowry, 1994; Rogers and Rogers, 2000). Democratic control of a state legislature is associated with significantly higher taxes and a redistribution of spending in favor of family assistance (Besley and Case, 2003). Chhibber and Nooruddin (2004) also find that government ideology affects government policy in the Indian case. They find that center-right competition generates bigger governments when compared to a single-party-dominant system than competition between two centrist parties or a center and a leftist party. We use their measure of ideology and define a dummy variable that is 1 if the state government leans right, 0 if it is centrist and -1 if it leans left. As discussed above, whether a government is a coalition or a single-party majority affects government choices. Table 4 reports the results from regressions with ideology and an indicator variable for coalition governments as additional covariates.<sup>5</sup> Inclusion of these covariates does not change our findings above. While ideology has no significant effect on total expenditures and tax revenues, a right-leaning state government has significantly lower and a left-leaning state government has significantly higher public debt as a share of income than a centrist government. Similarly, coalition-led governments accumulate

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<sup>5</sup> Due to space constraints we report results of the dependent variables that are measured as a percentage share of state income. We get similar results when we measure them in per capita levels. These results are available upon request.

significantly less public debt as a share of income than single-party-majority governments.

Table 5 reports regression results of composition of spending. The coefficients on political fragmentation remains largely unchanged. There are, however, interesting effects of both ideology and coalition governments on the two components of spending. A right-leaning government spends significantly less on current account and significantly more on capital account than a centrist government. The opposite is true for a left-leaning government. Similarly, coalition governments also prefer to spend less on current account and more on capital account than a single-party-majority government.

## **5.2. Alternative measure of political fragmentation**

Our measure of political fragmentation is based on party vote shares. It is plausible that parties care only about victory and not its margin. In that case, party vote shares may not represent appropriate weights to compute effective number parties. Also, legislative decision process may depend on the parties that are represented in the legislature and how many seats they won. For these reasons, we could also measure political fragmentation by computing effective number of parties in the legislature, which uses seats shares rather than the vote shares as weights.

The results using this alternative measure of fragmentation are reported in Table 6 and are consistent with what we find above. Increased political fragmentation significantly increases spending and decreases taxes, and hence, increases public debt. Contrasting effects on composition of spending are also found here. Political fragmentation has a significantly positive effect on current spending and a negative, albeit insignificant, on capital spending.

## **5.3. The role of media**

Much research stresses the role of informational constraints in political markets. The more informed voters are, the more accountable the policy is likely to be. However, what we ask is if greater access to information alters how political fragmentation affects policy. It is plausible that political parties are less likely to target policy to its favored groups, the more informed voters are. We hypothesize that in presence of more

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informed voters, political fragmentation shrinks the size of government as informed voters are more likely to punish profligacy by the government, and it reduces public consumption and increases public investment. As in Besley and Burgess (2002), we consider per capita newspaper circulation in a state as a measure of how freely information is available. The data on per capita newspaper circulation, which is only available for the period between 1980-1997, is taken from Besley and Burgess (2002).

We also interact this variable with our political fragmentation measure to gauge how the effect of political fragmentation varies by newspaper circulation. We create an additional instrument for the interaction variable between political fragmentation and newspaper circulation, by interacting newspaper circulation with the proportion of second-largest religion in a state.

The results in Table 7 suggest that the effect of political fragmentation varies by newspaper circulation for several of the outcomes. According to column (1), states with larger circulation of newspapers in per capita terms have larger spending. Political fragmentation increases spending as we find above. More fragmented states, however, spend less as newspaper circulation increases. The average political fragmentation in our sample is 4.44 and the average newspaper circulation is 2.38 (Table 1). Accordingly, the effect of political fragmentation at the average level of newspaper circulation is  $0.010 + (-0.001 \times 2.38) = 0.008$ . The effect of newspaper circulation at the average level of political fragmentation is  $0.013 + (-0.001 \times 4.44) = 0.009$ .

In columns (3) and (4), states with higher levels of per capita circulation have higher debt and higher current spending. The effect of political fragmentation decreases with newspaper circulation, implying more fragmented states accumulate less debt and spend less on revenue account as newspaper circulation increases. Taken together, the results in this section are consistent with Besley and Burgess (2002) and suggest that informational issues play an important role in determining policy choices. More specifically, political fragmentation can produce meaningful policy choices when access to information is easy and voters are not disadvantaged vis-a-vis politicians.

## 6. Political fragmentation and economic growth

The above findings are consistent with the hypothesis that a fragmented political arena incentivizes targeting of policy and, as argued by Meyerson (1993) introduces

distortions in policy choices. Faced with a fragmented political arena, politicians increase revenue expenditure that is more visible and direct in the short run whereas they decrease capital expenditure, benefits of which are far in the future after the election is over. In the Indian case, this behavior also has the added effect of increased total expenditure and public indebtedness.

A large literature suggests that distortions in fiscal policy have adverse effects on economic growth (Aschauer, 1989; Grier and Tullock, 1989; Barro, 1990, 1991; Alesina et al., 2002). We examine how political fragmentation affects per capita income and economic growth in table 8. In column (1), political fragmentation negatively affects per capita income and the coefficient on political fragmentation is significant at the 10% level. The level of per capita income is about 1.5 percent lower for each unit increase in political fragmentation. Among other covariates, both proportion of urban population and proportion of SC and ST population affect growth positively. In column (2), we include indicator variables for ideology and coalition governments in the regression specification. Neither of these additional variables have a significant effect on per capita income. The coefficient of political fragmentation remains negative and is significant at the 5% level. In column (3), the effect of political fragmentation on per capita income increases with newspaper circulation implying that political fragmentation in states with greater circulation of newspapers increases per capita income. We get similar results in columns (4)-(6) which examine annual rate of growth of income.

These results suggest that political fragmentation, via its distorting effect on fiscal policy, has an adverse effect on income levels and its growth rate. In case of India, Bardhan (2008) discusses the collective action problems facing the country. He argues that political system caters to short-term particularistic interests and waste of public resources on inefficient farm subsidies on fertilizers, electricity and water; salaries; pensions and so on, at the expense of long-run public investment, particularly in improving India's creaking infrastructure (power, ports, railways, roads, irrigation, etc.), which acts as a severe bottleneck for private investment and growth.

## **7. Conclusion**

Political fragmentation has been associated with various inefficient outcomes, ranging from heightened political instability and disenchantment with democracy



(Sartori, 1976) to more pronounced electoral distortions in public spending (Myerson, 1993). In this paper, we examine the implications of political fragmentation in India. In first-past-post systems as in India, increased political fragmentation implies that each party needs a smaller plurality to win the election. We find in the Indian case that this behavior leads to larger expenditures, lower tax revenues, larger public debt, and lower economic growth. Increased political fragmentation also results in lower capital and higher revenue (or current) spending. While controlling for coalition governments or ideology do not change the estimated effect of political fragmentation, we find that targetability of policy decreases with greater newspaper circulation.

The above findings have a number of policy implications for those developing countries that are currently reshaping their political systems. Our paper highlights that a highly fragmented political system could offset the benefits that could come from a competitive political system. As a consequence, they should consider introducing institutional rules that would work towards lowering political fragmentation, for example higher electoral thresholds. At the same time, parties should also strive to offer platforms that would appeal to a broad set of voters.

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## Appendix: tables

Table 1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Total expenditure per capita	315	337	119	141	804
Current expenditure per capita	315	264	107	88	690
Capital expenditure per capita	315	72.66	28.26	18.57	208.21
Tax revenues per capita	315	118	62	25	285
Total expenditure. as a proportion of income	315	0.14	0.03	0.07	0.22
Current expenditure as a proportion of income	315	0.11	0.02	0.06	0.19
Capital expenditure as a proportion of income	315	0.03	0.01	0.01	0.11
Total Debt per capita	315	424	211	150	1585
Total debt as a proportion of income	315	0.18	0.07	0.04	0.44
Political Fragmentation	307	4.44	1.81	2.64	13.75
Per capita Income	315	2227	942	917	5249
Growth rate	300	0.05	0.06	-0.15	0.36
Population	315	52911	31495	12539	169967
Population density	315	352	192	97	887
Proportion urban	315	0.25	0.08	0.10	0.43
Turnout rate	313	62.54	10.48	27.02	81.72
Newspaper circulation per capita	270	2.38	1.12	0.33	7.51
Proportion of second-largest religion	315	0.14	0.10	0.02	0.37
Proportion SC & ST	304	0.24	0.07	0.11	0.39
Calamity	315	0.03	0.17	0.00	1.00

Table 2: Political fragmentation and aggregate fiscal variables

	Total Expenditure		Tax Revenue		Public Debt	
	(1) Log Per Capita	(2) Proportion of Income	(3) Log Per Capita	(4) Proportion of Income	(5) Log Per Capita	(6) Proportion of Income
Political Fragmentation	0.021* [0.012]	0.005† [0.002]	-0.035‡ [0.012]	-0.001‡ [0.000]	0.097‡ [0.022]	0.021‡ [0.005]
Lagged per capita income	0.267‡ [0.075]	-0.044‡ [0.012]	0.136† [0.059]	-0.016‡ [0.003]	0.064 [0.094]	-0.116‡ [0.021]
Population	-1.387‡ [0.291]	-0.157‡ [0.053]	-0.457* [0.263]	-0.011 [0.013]	-3.943‡ [0.558]	-0.700‡ [0.130]
Proportion of urban population	-0.326 [0.735]	-0.153 [0.116]	0.266 [0.606]	0.008 [0.027]	0.873 [1.093]	-0.141 [0.251]
Population Density	-0.000 [0.000]	-0.000* [0.000]	-0.002‡ [0.000]	-0.000‡ [0.000]	0.000 [0.000]	-0.000 [0.000]
Proportion of SCs and STs	-3.732‡ [1.448]	-0.848‡ [0.214]	-0.689 [1.072]	-0.178‡ [0.049]	-8.092‡ [1.890]	-1.702‡ [0.434]
Calamity	0.027 [0.028]	0.004 [0.004]	0.013 [0.023]	0.000 [0.001]	0.029 [0.036]	0.007 [0.008]
Election year	-0.007 [0.011]	-0.001 [0.002]	-0.002 [0.011]	-0.000 [0.001]	0.010 [0.018]	0.002 [0.004]
Turnout	-0.000 [0.001]	0.000 [0.000]	-0.001 [0.001]	-0.000* [0.000]	-0.004‡ [0.001]	-0.000 [0.000]
R2	0.95	0.76	0.99	0.92	0.93	0.86
N	286	286	286	286	286	286
Method	IV- GMM	IV-GMM	IV- GMM	IV-GMM	IV- GMM	IV-GMM
Hansen J stat. p-value	0.26	0.48	0.33	0.17	0.64	0.66
Kleibergen- Paap rk Wald F-stat.	20.73	20.73	20.73	20.73	20.73	20.73

All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 3: Political fragmentation and composition of spending

	Current Expenditure		Capital Expenditure	
	(1) Log Per Capita	(2) Proportion of Income	(3) Log Per Capita	(4) Proportion of Income
Political Fragmentation	0.059‡ [0.015]	0.007‡ [0.002]	-0.057* [0.030]	-0.002‡ [0.001]
Lagged per capita income	0.119 [0.082]	-0.053‡ [0.010]	0.773‡ [0.173]	0.009* [0.005]
Population	-1.907‡ [0.339]	-0.187‡ [0.045]	0.250 [0.882]	0.028 [0.027]
Proportion of urban population	0.663 [0.983]	-0.053 [0.118]	-3.176* [1.644]	-0.098‡ [0.046]
Population Density	-0.000 [0.000]	-0.000† [0.000]	-0.000 [0.001]	0.000 [0.000]
Proportion of SCs and STs	-8.473‡ [1.572]	-1.194‡ [0.183]	9.715† [3.859]	0.342‡ [0.106]
Calamity	0.008 [0.034]	0.002 [0.004]	0.093* [0.052]	0.003 [0.002]
Election year	-0.001 [0.015]	-0.000 [0.002]	-0.023 [0.031]	-0.001 [0.001]
Turnout	-0.002† [0.001]	-0.000 [0.000]	0.005* [0.003]	0.000† [0.000]
R <sup>2</sup>	0.94	0.76	0.73	0.71
N	286	286	286	286
Method	IV-GMM	IV-GMM	IV-GMM	IV-GMM
Hansen J stat. p- value	0.36	0.65	0.30	0.48
Kleibergen-Paap rk Wald F-stat.	20.73	20.73	20.73	20.73

*All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.*

Table 4: Political fragmentation and aggregate fiscal variables: other political controls

	Total Expenditure			(Proportion of Income) Tax Revenues			Public Debt		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political Fragmentation	0.005‡ [0.002]	0.005† [0.002]	0.005‡ [0.002]	-0.001† [0.000]	-0.001‡ [0.000]	-0.001† [0.000]	0.021‡ [0.005]	0.020‡ [0.005]	0.020‡ [0.005]
Lagged per capita income	-0.039‡ [0.013]	-0.047‡ [0.011]	-0.043‡ [0.012]	-0.017‡ [0.003]	-0.016‡ [0.003]	-0.016‡ [0.003]	-0.092‡ [0.021]	-0.130‡ [0.019]	-0.105‡ [0.020]
Population	-0.137‡ [0.049]	-0.151‡ [0.053]	-0.139‡ [0.050]	-0.013 [0.011]	-0.011 [0.012]	-0.013 [0.011]	-0.522‡ [0.109]	-0.660‡ [0.123]	-0.518‡ [0.108]
Proportion of urban population	-0.114 [0.123]	-0.122 [0.124]	-0.098 [0.127]	0.012 [0.027]	0.004 [0.028]	0.011 [0.028]	0.104 [0.251]	-0.039 [0.248]	0.134 [0.248]
Population Density	-0.000* [0.000]	-0.000 [0.000]	-0.000* [0.000]	-0.000‡ [0.000]	-0.000‡ [0.000]	-0.000‡ [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Proportion of SCs and STs	-0.891‡ [0.230]	-0.833‡ [0.211]	-0.865‡ [0.226]	-0.177‡ [0.051]	-0.179‡ [0.048]	-0.180‡ [0.050]	-1.883‡ [0.423]	-1.607‡ [0.421]	-1.790‡ [0.414]
Calamity	0.005 [0.005]	0.004 [0.005]	0.005 [0.005]	0.000 [0.001]	0.000 [0.001]	0.000 [0.001]	0.007 [0.008]	0.006 [0.008]	0.006 [0.008]
Election year	-0.001 [0.002]	-0.001 [0.002]	-0.001 [0.002]	-0.000 [0.001]	-0.000 [0.001]	-0.000 [0.001]	0.003 [0.004]	0.004 [0.004]	0.004 [0.004]
Turnout	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000† [0.000]	-0.000† [0.000]	-0.000† [0.000]	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Ideology	-0.005 [0.004]		-0.004 [0.004]	-0.000 [0.001]		-0.000 [0.001]	-0.028‡ [0.007]		-0.023‡ [0.007]
Coalition Governments		-0.004 [0.003]	-0.004 [0.003]		0.001 [0.001]	0.000 [0.001]		-0.015‡ [0.005]	-0.011† [0.004]
R2	0.76	0.76	0.76	0.93	0.92	0.93	0.88	0.87	0.88
N	282	286	282	282	286	282	282	286	282
Method	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM
Hansen J stat. p-value	0.73	0.63	0.89	0.12	0.21	0.14	0.29	0.96	0.46
Kleibergen-Paap rk Wald F-stat.	21.41	20.52	21.64	21.41	20.52	21.64	21.41	20.52	21.64

All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.



Table 5: Political fragmentation and composition of spending: other political controls

	(Proportion of Income)					
	Current Expenditure			Capital Expenditure		
	(1)	(2)	(3)	(4)	(5)	(6)
Political Fragmentation	0.007‡ [0.002]	0.007‡ [0.002]	0.007‡ [0.002]	-0.001* [0.001]	-0.002‡ [0.001]	-0.001* [0.001]
Lagged per capita income	-0.043‡ [0.011]	-0.058‡ [0.010]	-0.048‡ [0.010]	0.004 [0.005]	0.011† [0.005]	0.005 [0.005]
Population	-0.119‡ [0.041]	-0.176‡ [0.045]	-0.120‡ [0.041]	-0.019 [0.022]	0.023 [0.026]	-0.019 [0.022]
Proportion of urban population	0.024 [0.122]	-0.009 [0.130]	0.044 [0.128]	-0.138‡ [0.047]	-0.112† [0.050]	-0.141‡ [0.048]
Population Density	-0.000‡ [0.000]	-0.000* [0.000]	-0.000† [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
Proportion of SCs and STs	-1.256‡ [0.187]	-1.160‡ [0.177]	-1.221‡ [0.183]	0.363‡ [0.105]	0.327‡ [0.102]	0.356‡ [0.103]
Calamity	0.003 [0.004]	0.002 [0.004]	0.003 [0.004]	0.002 [0.002]	0.003 [0.002]	0.003 [0.002]
Election year	-0.000 [0.002]	0.000 [0.002]	0.000 [0.002]	-0.001 [0.001]	-0.001 [0.001]	-0.001 [0.001]
Turnout	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000† [0.000]	0.000 [0.000]
Ideology	-0.010‡ [0.004]		-0.009‡ [0.003]	0.005‡ [0.001]		0.005‡ [0.001]
Coalition Governments		-0.006† [0.003]	-0.004* [0.002]		0.002* [0.001]	0.001 [0.001]
R2	0.77	0.77	0.77	0.73	0.71	0.73
N	282	286	282	282	286	282
Method	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM
Hansen J stat. p-value	0.68	0.99	0.92	1.00	0.34	0.91
Kleibergen-Paap rk Wald F-stat.	21.41	20.52	21.64	21.41	20.52	21.64

All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 6: Political fragmentation and fiscal policy: Alternative measure of fragmentation

	Percent of Income				
	(1) Total Expenditure	(2) Tax Revenues	(3) Public Debt	(4) Current Expenditure	(5) Capital Expenditure
Political Fragmentation	0.026* [0.015]	-0.007† [0.004]	0.093† [0.047]	0.034* [0.018]	-0.009 [0.007]
Lagged income per capita	-0.027 [0.019]	-0.020‡ [0.005]	-0.060 [0.056]	-0.031 [0.021]	0.004 [0.008]
Population	-0.338† [0.165]	0.041 [0.040]	-1.267† [0.544]	-0.412† [0.200]	0.077 [0.078]
Proportion of urban population	-0.212 [0.160]	0.028 [0.038]	-0.329 [0.492]	-0.126 [0.194]	-0.073 [0.063]
Population Density	-0.000 [0.000]	-0.000‡ [0.000]	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]
Proportion of SCs and STs	-1.205‡ [0.428]	-0.080 [0.114]	-2.778† [1.313]	-1.621‡ [0.502]	0.429† [0.202]
Calamity	0.003 [0.005]	0.001 [0.001]	0.001 [0.015]	0.000 [0.005]	0.003 [0.002]
Election year	-0.004 [0.003]	0.000 [0.001]	-0.006 [0.011]	-0.003 [0.004]	-0.000 [0.001]
Turnout	-0.001* [0.000]	0.000 [0.000]	-0.003† [0.001]	-0.001† [0.000]	0.000† [0.000]
R2	0.54	0.85	0.41	0.28	0.52
N	288	288	288	288	288
Method	IV-GMM	IV-GMM	IV- GMM	IV-GMM	IV-GMM
Hansen J stat. p- value	0.92	0.63	0.55	0.59	0.28
Kleibergen-Paap rk Wald F-stat.	2.53	2.53	2.53	2.53	2.53

*Political Fragmentation is the inverse Herfindahl index of seat shares. All regressions include the state and year fixed effects.*

*Standard errors are robust arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.*

Table 7: Political fragmentation and fiscal policy: role of information

	(Percent of Income)				
	(1) Total Expenditure	(2) Tax Revenues	(3) Public Debt	(4) Current Expenditure	(5) Capital Expenditure
Political Fragmentation	0.010† [0.005]	-0.002 [0.001]	0.044‡ [0.009]	0.016‡ [0.005]	-0.005† [0.002]
Political fragmentation × Newspaper circulation	-0.001* [0.001]	0.000 [0.000]	-0.006‡ [0.002]	-0.002† [0.001]	0.000 [0.000]
Newspaper circulation	0.013† [0.006]	-0.001 [0.001]	0.049‡ [0.009]	0.014† [0.005]	0.000 [0.003]
Lagged per capita income	-0.026* [0.014]	-0.011‡ [0.004]	-0.060‡ [0.021]	-0.041‡ [0.014]	0.015† [0.006]
Population	-0.150† [0.076]	-0.034* [0.019]	-0.835‡ [0.127]	-0.205‡ [0.067]	0.049 [0.037]
Proportion of urban population	-0.038 [0.190]	-0.039 [0.047]	-0.287 [0.349]	0.139 [0.185]	-0.175* [0.090]
Population density	-0.000 [0.000]	-0.000‡ [0.000]	0.000 [0.000]	-0.000 [0.000]	-0.000 [0.000]
Proportion of SCs and STs	-0.836‡ [0.209]	-0.178‡ [0.056]	-1.035‡ [0.355]	-1.263‡ [0.203]	0.425‡ [0.117]
Calamity	0.005 [0.004]	-0.000 [0.001]	0.004 [0.008]	0.003 [0.004]	0.002 [0.002]
Election year	-0.002 [0.002]	-0.001 [0.001]	-0.003 [0.004]	-0.001 [0.002]	-0.001 [0.001]
Turnout	-0.000 [0.000]	-0.000 [0.000]	-0.001‡ [0.000]	-0.000† [0.000]	0.000* [0.000]
R <sup>2</sup>	0.75	0.93	0.90	0.73	0.70
N	241	241	241	241	241
Method	IV-GMM	IV-GMM	IV-GMM	IV-GMM	IV-GMM
Hansen J stat. p-value	0.76	0.29	0.75	0.85	0.38
Kleibergen-Paap rk Wald F-stat.	11.69	11.69	11.69	11.69	11.69

All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values \* and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8: Political fragmentation and economic growth

	Log of Per Capita Income			Rate of Growth of Income		
	(1)	(2)	(3)	(4)	(5)	(6)
Political fragmentation	-0.015* [0.008]	-0.015† [0.008]	-0.035* [0.020]	-0.013* [0.007]	-0.013* [0.007]	-0.033* [0.019]
Lagged per capita income	0.668‡ [0.055]	0.671‡ [0.054]	0.529‡ [0.071]	-0.324‡ [0.053]	-0.323‡ [0.052]	-0.459‡ [0.069]
Population	0.004 [0.224]	-0.014 [0.205]	0.413 [0.352]	0.023 [0.212]	0.005 [0.194]	0.384 [0.335]
Proportion of urban population	0.908‡ [0.350]	0.895† [0.364]	1.881‡ [0.667]	0.931‡ [0.332]	0.926‡ [0.344]	1.790‡ [0.644]
Population density	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	-0.000 [0.000]
Proportion of SCs and STs	3.614‡ [0.894]	3.549‡ [0.861]	3.145‡ [0.860]	3.401‡ [0.838]	3.342‡ [0.808]	3.125‡ [0.817]
Calamity	-0.004 [0.018]	0.004 [0.019]	-0.002 [0.018]	-0.003 [0.017]	0.005 [0.018]	-0.002 [0.017]
Election year	0.003 [0.008]	0.004 [0.008]	0.006 [0.011]	0.003 [0.008]	0.004 [0.008]	0.006 [0.010]
Turnout	-0.000 [0.000]	-0.000 [0.001]	0.000 [0.001]	-0.000 [0.000]	-0.000 [0.000]	0.000 [0.000]
Ideology		-0.019 [0.024]			-0.019 [0.023]	
Coalition Governments		-0.002 [0.013]			-0.003 [0.012]	
Political fragmentation × Newspaper circulation			0.005* [0.003]			0.005* [0.003]
Newspaper circulation			-0.052† [0.023]			-0.049† [0.022]
R <sup>2</sup>	0.98	0.98	0.98	0.33	0.34	0.41
N	286	282	241	286	282	241
Method	IV- GMM	IV- GMM	IV- GMM	IV- GMM	IV- GMM	IV- GMM
Hansen J stat. p-value	0.75	0.92	0.62	0.81	1.00	0.67
Kleibergen-Paap rk Wald F-stat.	20.73	23.94	11.69	20.73	23.94	11.69

All regressions include the state and year fixed effects. Standard errors are robust for arbitrary heteroscedasticity and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Figure 1: Average effective number of parties, by year

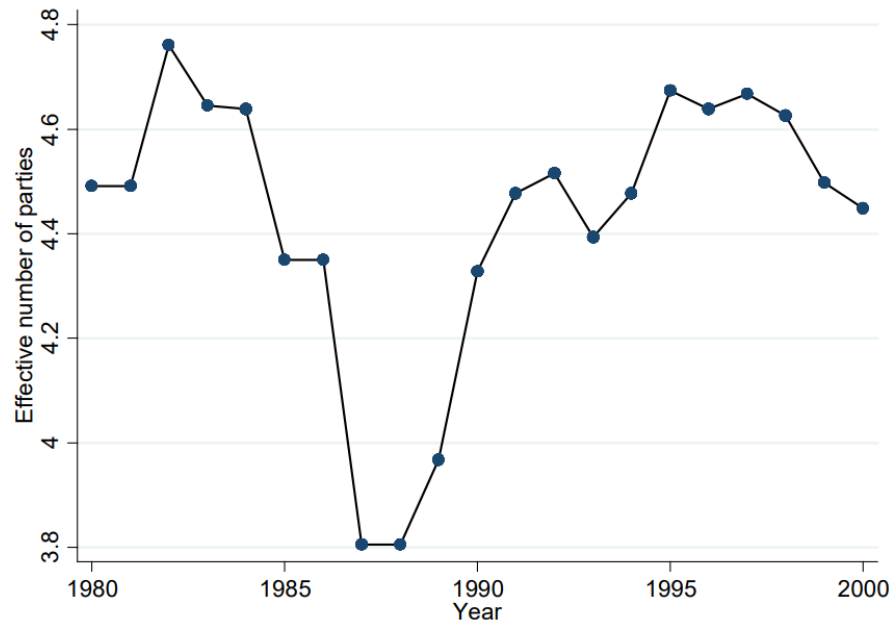


Table A.1: Political fragmentation and aggregate fiscal variables: After Serial Correlation Correction

	Total Expenditure		Tax Revenue		Public Debt	
	(1) Log Per Capita	(2) Percent of Income	(3) Log Per Capita	(4) Percent of Income	(5) Log Per Capita	(6) Percent of Income
Political Fragmentation	0.017 [0.014]	0.004* [0.003]	-0.032* [0.019]	-0.001* [0.001]	0.097† [0.044]	0.021† [0.010]
Lagged per capita income	0.251† [0.119]	-0.046‡ [0.016]	0.152† [0.077]	-0.015‡ [0.004]	0.052 [0.171]	-0.121‡ [0.031]
Population	-1.300‡ [0.453]	-0.156* [0.085]	-0.487 [0.395]	-0.011 [0.017]	-3.947‡ [1.110]	-0.716‡ [0.238]
Proportion of urban population	-0.647 [1.070]	-0.165 [0.180]	0.045 [1.084]	-0.000 [0.040]	0.984 [2.193]	-0.098 [0.483]
Population Density	-0.000 [0.000]	-0.000 [0.000]	-0.002‡ [0.000]	-0.000‡ [0.000]	0.000 [0.001]	-0.000 [0.000]
Proportion of SCs and STs	-3.453* [1.902]	-0.842‡ [0.280]	-0.887 [1.443]	-0.190‡ [0.055]	-8.085† [3.297]	-1.728† [0.748]
Calamity	0.037 [0.031]	0.005 [0.005]	0.009 [0.026]	0.000 [0.001]	0.035 [0.042]	0.008 [0.008]
Election year	-0.006 [0.008]	-0.001 [0.001]	-0.001 [0.009]	-0.000 [0.000]	0.012 [0.013]	0.003 [0.003]
Turnout	-0.000 [0.001]	0.000 [0.000]	-0.001 [0.001]	-0.000 [0.000]	-0.004† [0.001]	-0.000 [0.000]
R <sup>2</sup>	0.95	0.76	0.99	0.92	0.93	0.86
N	286	286	286	286	286	286
Method	IV- GMM	IV- GMM	IV- GMM	IV- GMM	IV- GMM	IV- GMM
Hansen J stat. p- value	0.30	0.53	0.47	0.29	0.76	0.72
Kleibergen-Paap rk Wald F-stat.	7.49	7.49	7.49	7.49	7.49	7.49

All regressions include the state and year fixed effects. Standard errors are robust to both arbitrary heteroscedasticity and serial correlation and given in parentheses. The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.2: Political fragmentation and composition of spending: After Serial Correlation Correction

	Current Expenditure		Capital Expenditure	
	(1) Log Per Capita	(2) Percent of Income	(3) Log Per Capita	(4) Percent of Income
Political Fragmentation	0.052‡ [0.020]	0.007‡ [0.003]	-0.061* [0.032]	-0.002* [0.001]
Lagged per capita income	0.108 [0.133]	-0.054‡ [0.014]	0.786‡ [0.257]	0.010* [0.006]
Population	-1.782‡ [0.576]	-0.186† [0.073]	0.167 [1.098]	0.028 [0.034]
Proportion of urban population	0.791 [1.585]	-0.039 [0.188]	-3.720 [2.316]	-0.102 [0.069]
Population Density	-0.000 [0.000]	-0.000 [0.000]	-0.000 [0.001]	0.000 [0.000]
Proportion of SCs and STs	-8.573‡ [1.839]	-1.207‡ [0.199]	9.108 [5.715]	0.340† [0.145]
Calamity	0.028 [0.037]	0.003 [0.004]	0.085 [0.054]	0.002 [0.002]
Election year	0.002 [0.010]	-0.000 [0.001]	-0.019 [0.022]	-0.001 [0.001]
Turnout	-0.002* [0.001]	-0.000 [0.000]	0.005† [0.002]	0.000† [0.000]
R <sup>2</sup>	0.95	0.76	0.73	0.70
N	286	286	286	286
Method	IV-GMM	IV-GMM	IV-GMM	IV-GMM
Hansen J stat. p-value	0.43	0.69	0.34	0.53
Kleibergen-Paap rk Wald F-stat.	7.49	7.49	7.49	7.49

*All regressions include the state and year fixed effects. Standard errors are robust to arbitrary heteroscedasticity and serial correlation and given in parentheses.*

*The values with \*, †, and ‡ indicate significance at the 10%, 5%, and 1% levels, respectively.*