The Political Economy of the Allocation of State Government Expenditures for the Industrial Sector

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1 Introduction

Economic development is a critical requirement for improving peoples' standard of living. There is a voluminous body of development economics literature on normative economic growth strategies and industrialization policy (see, for example, Rodrik 2005, 2007). It seems reasonable to suppose that economic development would increase the likelihood of the survival of incumbent political leaders, including their chances of being reelected in democratic countries. However, not all governments implement public policy that promotes economic development. Given that industrialization is supposed to promote economic development (e.g., Robinson 2009), we investigate why some governments do not institute public policy conducive to industrialization by focusing on the balance of political power between the agricultural and industrial sectors. More specifically, we examine whether a higher rural Gini coefficient—a proxy for the degree of political influence of rural elites—tends to reduce the allocation of development expenditures favorable to the industrial sector at the state level in India.

Positive political economy analyses of industrialization policy, which focus on the political processes by which industrialization policy is adopted and implemented, are surprisingly scarce. Robinson (2009) calls the attention of economists and international organizations to this research gap by stating, "To really promote industrialization in a society we need a positive theory of the political equilibrium of that society which leads to particular policy choices." In this study, we attempt to show

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that the political influence of rural elites can limit the allocation of state government expenditures for the industrial sector.

The theory of political survival (e.g., Mesquita et al. 2003), which is an influential theory in the context of public policy choices, states that incumbent political leaders maximize their probability of remaining in office, regardless of the type of political regime. According to this theory, an incumbent government would choose public policies conducive to industrialization when the industrial sector is within the political leader's winning coalition. This proposition can be interpreted as indicating that, when the industrial sector is politically more influential than other conflicting socioeconomic groups, an incumbent government would institute pro-industrial public policy.

However, measuring the extent of political influence is fraught with challenges. Dahl (1991) noted that political leaders' decisions on public policy could be influenced by a variety of political resources, including money, votes, the threat of force, information, friendship, and social standing. In this study, we indirectly examine the negative effects of the rural Gini coefficient and rural population share on the allocation of state government expenditures to the industrial sector. The rural Gini coefficient is considered to be related to money, votes, leadership, and connection with powerful public officials among various political resources.

Focusing on India, we conduct a state-level analysis for the period from 1980 to 2010. We examine the effect of Gini coefficients and population shares, of both rural and urban areas, on the ratio of development (capital) expenditures for industry, energy, transportation, and communications. Although these expenditure items are beneficial to other sectors, including households, they contribute to the industrial sector to a larger extent. Thus, we regard these items as being favorable to the industrial sector. In terms of budget allocations, other socioeconomic groups have demands that are independent from and conflicting with those of the industrial sector. Especially, the agricultural sector encompasses a large share of the population, and agricultural elites, or landlords, have been dominant in the political realm since India gained independence (Bardhan 1984). Furthermore, some previous studies assert that agricultural elites overtly oppose industrialization because they perceive it as reducing their bargaining power vis-à-vis agricultural workers and peasants, because it provides job opportunities for them. Taken together, our estimation results show that the rural Gini coefficient robustly has a significant negative coefficient, and rural population share, though less robustly, has a significant negative coefficient. These results imply that the agricultural sector can limit budget allocations conducive to industrialization, resulting in stagnation of the economy.

The rest of the article is organized as follows. Section 2 briefly surveys the related literature and Sect. 3 provides relevant contextual information on India. Section 4 delineates our empirical strategy and the variables used for our estimation. Next, Sect. 5 presents our estimation results and, finally, Sect. 6 offers conclusions.

2 Literature Review

Development economics has produced a voluminous literature on normative industrialization policy, which has shown which kinds of policy interventions are desirable under what conditions and how to implement them in order to industrialize a country (see, for example, Rodrik 2005, 2007). These industrialization policies can be effective only if they are appropriately chosen and implemented. However, there still remains much to understand about why some governments effectively choose and implement industrialization policies, but others do not.

Political scientists have long examined political processes that affect public policy choices. Among the many strands of political thought, elite theory, for instance, argues that a small in-group consisting of economic, political, and military leaders holds overwhelming control over policy decisions (e.g., Mills 1956). In contrast to this view, pluralism posits that politics is instead guided by competition and coordination among numerous interest groups, leading to policy outcomes (e.g., Dahl 1961). The statist approach, by contrast, asserts that the government more or less autonomously determines public policy, independent of pressure from interest groups (e.g., Evans et al. 1985).

One influential theory that has emerged from this debate is the theory of political survival (e.g., Mesquita et al. 2003), which states that incumbent political leaders maximize the probability of remaining in office, regardless of the type of political regime. On the basis of this theory, we presume in this study that incumbent political leaders choose policies that most effectively increase the probability of their political survival.

In the literature analyzing policy choices by governments, the clout of special interest groups has been highlighted (e.g., Grossman and Helpman 2001). Special interest groups demand benefits from government, via policies, in exchange for political support in the form of votes and political donations. According to the theory of political survival, as long as a special interest group is perceived by politicians to be an important part of their support base, the demands of the interest group may receive special consideration and thus are likely to be reflected in government policy.[1]

A well-known instance of a socioeconomic group's influence on public policy is that of landlords' opposition to land reform policy (see, for example, Kohli 2009a, b). Political economy scholars examining land reform have long argued that the leverage traditionally held by landlords in many countries impedes land reforms. As Banerjee (2001) argues, if land reforms make tenants the owners of land, they would invest more in land and both physical and human capitals, leading to an increase in the

[1] However, some scholars argue that politicians may also pay attention to the general interests of broad socioeconomic groups (Persson and Tabellini 2000). For instance, empirical research on the determinants of non-tariff trade barriers has shown that not only industries that are politically organized, but also industries that are uncompetitive, exposed to the threat of imports, or in decline, as well as those that have a high unemployment rate are also likely to be protected by such trade barriers (e.g., Finger et al. 1982; Trefler 1993; Lee and Swagel 1997). These studies indicate that incumbent political leaders may implement policies that are favorable to general interests if they believe that doing so will enhance the probability of their political survival.

productivity of agriculture and personal incomes.[2] Higher incomes lead tenants to save and invest more, which enables them to raise incomes further. However, land reforms are, in many cases, opposed by landlords, because they are concerned about losing wealth and political power.

A well-known example of the impact of industrialists on policy is the Anti-Corn Law League. Dating back to the nineteenth century, the Anti-Corn Law movement was led by Richard Cobden and John Bright and was supported by the newly emerging class of industrialists in Manchester who advocated free trade and succeeded in repealing the Corn Laws in 1846. This case illustrates how an increase in the political influence of industry and industrialists can change public policy in their favor. Similarly, the literature on the political economy of trade theory has long investigated the determinants of trade policy, especially regarding the choice between open- and close-trade regimes, and has provided evidence that politically organized industries are more likely to be protected by non-tariff barriers (e.g., Goldberg and Maggi 1999; Gawande and Bandyopadhyay 2000). Some scholars in this strand of research have shown that interest groups formed along industry sector lines have exerted significant political influence on trade policy (e.g., Irwin 1996; Irwin and Kroszner 1999; Magee 1980; Busch and Reinhardt 2000).[3]

Robinson (2009) states that "industry policy has been successful when those with political power who have implemented the policy have either themselves directly wished for industrialization to succeed, or been forced to act in this way by the incentives generated by political institutions." He refers to the Glorious Revolution in England in 1688, and argues, on the basis of Pincus (2009), that the success of the Revolution was a result of the Whig coalition, which included many politicians who had their own industrial enterprises and who aimed to stimulate manufacturing. According to Robinson (2009), the Whig coalition "started the Bank of England, facilitated the development of the transportation sector via canals and turnpike roads, reorganized the tax system and changed commercial policy." Thus, as the political power of industrialists, vis-à-vis other socioeconomic groups, especially the agricultural sector, expands, public policy favorable to industry is more likely to be adopted and implemented.

As such, previous studies examining policy choice have highlighted the importance of the political influence of certain socioeconomic groups. Indeed, despite the claim of statist scholars, we could posit that public policy choices are substantively influenced by the interests of particular groups. Nonetheless, there have been relatively few studies with political economy explanations for the adoption and implementation of industrialization policy. According to the theory of political survival, we can predict that an incumbent government would choose public policy desirable for industrialization when the industrial sector is within the political leader's winning

[2]Banerjee et al. (2002) show that, in a successful case of land reforms in West Bengal in India, "the tenancy reform program called Operation Barga explains around 28% of the subsequent growth of agricultural productivity there."

[3]Other scholars, however, have argued that coalitions formed along social class lines are more important (e.g., Rogowski 1989; Mayda and Rodrik 2005).

coalition. This indicates that, when the industrial sector is politically more influential than other conflicting socioeconomic groups, an incumbent government would opt for public policy interventions which are favorable to the industrial sector.

One difficulty in investigating the political influence of a socioeconomic group lies in obtaining an objective measure of its political influence, because this may depend on many ambiguous factors such as the mobilization of people within the group at election time, political donations provided both legally and illegally, and the prospect of future support by the group to incumbent political leaders. It is unimaginable that any precise measure of a socioeconomic group's political influence could integrate all the various types of political resources noted in Sect. 1. Furthermore, Dahl (1991) claims that actual political influence depends on the willingness to use political resources as well as the techniques for utilizing them effectively. Thus, we must rely on a rather indirect measure of political influence of socioeconomic groups in any empirical research.

Ansell and Samuels (2014), in their intriguing study on democratization, took landholding and income Gini coefficients as proxies for the political power of landlords and industrialists, respectively, and showed that democratization is more likely when the political power of industrialists increases. Following their work, we use the rural Gini coefficient as a proxy for the political power of landlords and the urban Gini coefficient as a proxy for that of industrialists. This approach appears justified because as wealth becomes more concentrated in a smaller number of elites, they would find it easier to coordinate their actions for influencing politicians. Previous studies on collective action assert that as the number of actors increases, it becomes more difficult for them to coordinate their actions for collective objectives such as lobbying for achieving desirable public policy (e.g., Olson 1965). Moreover, as the Gini coefficient rises, a smaller number of rich people, who obtain levels of income far beyond what is necessary to meet their needs, could utilize money to mobilize a large number of poor people, or to influence public officials through political donations or bribery.

In this study, we presume that public policies are determined through inter-elite competition, especially that between agricultural and industrial elites. If their interests are not at odds, they do not confront each other. However, their interests often conflict, so it is important to explore allocation of government expenditures from the perspective of the balance of political power between these two groups of economic elites.

We conduct our empirical research using state-level data for India. Differences in electoral systems, the formal distribution of authority inside governments, and political cultures may also affect the political processes that determine the choice and implementation of public policy (see, for example, Persson et al. 2003; Almond and Verba 1963). These factors must be properly controlled for in cross-national analyses, but doing so is difficult. By making comparisons between regional states within a single country, which follow more or less uniform formal rules, we can control for the variations in political institutions and legal frameworks in which public policy is determined. Therefore, we can more precisely estimate the effect of the political influence of agricultural and industrial sectors. Moreover, Indian states

vary significantly in terms of the extent of industrialization, the industrial policies adopted by state governments, and their political and social structures.[4] As Kohli (1987) argued, India is a "laboratory for comparative political analysis."

For our estimation, we apply ordinary least squares (OLS) regression with panel-corrected standard errors (see Beck and Katz 1995), panel data analysis, and maximum likelihood estimation to data for 27 states for the period 1980–2010. The number of states and sample periods vary across the estimation due to differences in the availability of data for each variable included in the estimation.

3 The Indian Context

Following independence, the Government of India adopted a highly restrictive industrialization policy that required businesses to obtain approval for every aspect of corporate activity from the government. The burdensome licensing system was termed the "License Raj."[5] This policy stance was relaxed in the middle of the 1980s under Rajiv Gandhi's administration and liberalized further in the early 1990s. In the period following this economic liberalization by the Central Government, political leaders of Indian regional state governments gained more freedom to adopt industrialization policy at the state level.

However, not all state governments made serious efforts to promote industrialization in response to this opportunity. Bajpai and Sachs (1999) evaluated policy reforms undertaken by Indian state governments in the 1990s in areas such as industrial policy, the power sector, infrastructure development, and the tax system, and then classified 15 major states as either reform-oriented, intermediate, or lagging reformers.[6] They also loosely demonstrated that reform-oriented states performed

[4] Jenkins (2004) stated, "India's federal system has created 29 'mini-democracies' with almost identical institutional infrastructures, at least in terms of the formal systems of representation. India's States, moreover, operate under a set of common conditions, including New Delhi's foreign and economic policy framework and the legal protections enshrined in the Indian Constitution. These control variables represent a major boon to students of comparative politics who seek to understand and explain the divergent patterns and outcomes that the practice of democracy can produce."

[5] The Industries (Development and Regulation) Act of 1951 required both private and public entities to obtain a license to establish a new firm, expand a factory's capacity, start selling a new product, change its location, and so forth. The licensing process often took a long time and imposed a tremendous burden on firms. Due to the discretion of bureaucrats, the approval of a license was uncertain, which also induced corruption. A portion of the licensing system was abolished in the middle of the 1980s and most of the remainder was deregulated in 1991. The time period from 1951 to 1991 is known as the "License Raj Era" in India.

[6] According to Bajpai and Sachs (1999), the reform-oriented states are Andhra Pradesh, Gujarat, Karnataka, Maharashtra, and Tamil Nadu; the intermediate states are Haryana, Orissa, and West Bengal; and the lagging reformers are Assam, Bihar, Kerala, Madhya Pradesh, Punjab, Rajasthan, and Uttar Pradesh.

better in terms of growth rates of per capita gross state domestic product in the 1990s compared with other states.

Many scholars have confirmed that gross state domestic product (GSDP) and per capita GSDP have diverged across Indian states since the 1990s.[7] For instance, Gaur (2010) identified increases in a variety of dispersion indices among Indian states. Comparing the GSDP growth rates of 14 major states, Ahluwalia (2000) showed that the degree of growth rate dispersion was higher in the 1990s than the 1980s. The World Bank (2006) reported that the increasing gap in average growth rates of per capita GSDP between middle-income states and poorer states in the 1990s was mainly due to the accelerated growth in middle-income states, rather than slower growth in poorer states. It appears that Ahluwalia (2000) ascribes a large portion of the divergence in growth rates across states in the 1990s to differences in state government policies, stating that "[s]ince the 'payoff' from superior management has increased because of liberalization it is very likely that variations in the quality of economic management will lead to greater inter-state variation in management performance than was the case earlier."[8,9]

The Government of India classifies government expenditures into development and nondevelopment expenditures. It is considered that "[d]evelopment expenditure has a beneficial impact and leads to economic and social development" (Reserve Bank of India 2010). In this study, we examine the effects of Gini coefficients and population shares, both rural and urban, on development (capital) expenditures for industry, energy, transportation, and communications, which we refer to as expenditures for the industrial sector.[10]

There is a dearth of literature focusing on industrialization policy pursuits by Indian state governments from the perspective of political economy. One of the notable exceptions is Sinha's (2005) comparison between Gujarat, West Bengal, and Tamil Nadu. She draws the conclusion that the Gujarat government was able to adopt

[7]Interestingly, according to Mukherjee and Chakraborty (2010), the dispersion in indicators of human development in such areas as health and education has declined among Indian states.

[8]Ahluwalia (2000) emphasizes the importance of private investment, and says that "[p]rivate corporate investment is potentially highly mobile across states and is therefore likely to flow to states which have a skilled labor force with a good 'work culture', good infrastructure especially power, transport and communications, and good governance generally. The mobility of private corporate investment has increased in the post-liberalization period since decontrol has eliminated the central government's ability to direct investment to particular areas, while competition has greatly increased the incentive for private corporate investment to locate where costs are minimized."

[9]Yet at the same time other scholars (e.g., Nagaraj et al. 2000; Aiyar 2001; Trivedi 2002; World Bank 2006; Nayyar 2008) have found evidence of conditional convergence. However, since the conditions with respect to human capital, infrastructure, public policy, and so forth vary significantly across states, conditional convergence has not reduced disparities among states in the last two decades. In the words of Nayyar (2008), Indian states are "converging to very different steady states."

[10]For instance, Iarossi (2009), on the basis of Investment Climate Survey data, constructed an Investment Climate Index using principal component analysis. He considered three broad business categories, namely, infrastructure, inputs, and institutions, and claimed that infrastructure and institutions are more critical bottlenecks for the business climate of Indian states. Furthermore, power outages and transportation are the most serious business constraints within infrastructure, while those within institutions are corruption and tax regulation.

effective industrialization policy because the electorate was more supportive of (or at least, less opposed to) industrialization policy because of certain unique characteristics such as more industrialized rural areas and weak support from political parties for the labor movement. Kennedy et al. (2013) compared Andhra Pradesh, Haryana, Kerala, and Orissa in terms of state-level responses to economic liberalization policy reforms by the central government. They argue that the policy choices of state governments are "an outcome of a political process based in part on the capability of local groups to promote their interests." Baru (2000) documents that the Telugu Desam Party in Andhra Pradesh opted for pro-industry policies in response to a new class of emerging industrialists such as those represented by Kammas, an influential caste in Andhra Pradesh, whose demands are not met by incumbent political parties that are more aligned with nationwide business groups. Although these studies are illuminating, their approaches are mostly descriptive. Thus, our study adds to the literature by providing statistical evidence to complement their arguments.

4 Empirical Strategy

4.1 Empirical Formulation

Our basic estimation model is as follows:

$$Y_{it} = \alpha + \delta Y_{i,t-1} + \beta Gini_{it} + \gamma Pop_{it} + \rho Control_{it} + \theta_i + \theta_t + \varepsilon_{it},$$

where Y_{it} is the dependent variable, and Y_{it-1} is the dependent variable lagged by one period. Since the lagged dependent variable is included as an independent variable, the estimated coefficients of the other independent variables measure the effect of each variable on the variance of the dependent variable that is unexplained by the lagged dependent variable. In other words, the coefficients capture the effects of variables on contemporaneous changes in the dependent variable relative to the level of the dependent variable in the previous period. We employ four types of ratios as dependent variables, where each ratio is calculated by two components of state government expenditures, as explained shortly. $Gini_{it}$ represents Gini coefficients for either urban or rural areas, and Pop_{it} is the population share of either urban or rural areas. Subscripts denote the state (i) and time (t). Since these variables, especially population ratios of urban and rural areas, are highly correlated, the equation above is estimated separately for urban and rural areas. $Control_{it}$ is a set of control variables that are considered to affect the allocation of state government expenditures. θ_i and θ_t are state and year dummies, respectively, and ε_{it} is the error term.

Moreover, we will also examine the following formulation.

$$Y_{it} = \alpha + \delta Y_{i,t-1} + \varphi Gini_{it} * Pop_{it} + \rho Control_{it} + \theta_i + \theta_t + \varepsilon_{it},$$

where the interaction of a Gini coefficient and population ratio, $Gini_{it} * Pop_{it}$, is included as an independent variable, instead of two separate variables. This is because their combination in this way is expected to capture political power to a greater extent than would be captured by proportionate changes in each variable in isolation.

We use three different estimation methods. First, we conduct an OLS regression with panel-corrected standard errors. Beck and Katz (1995) argue that this estimation method is superior to other methods, such as feasible generalized least squares, when the data are small in cross-sectional terms but cover a long time frame (this is typical in comparative politics). Indeed, previous studies in this field have also adopted this method (e.g., Saez and Sinha 2009; Nooruddin and Chhibber 2008). Second, we conduct a panel data analysis that enables us to control for time-invariant attributes associated with each state. Third, we apply maximum likelihood estimation, which has desirable attributes such as asymptotic unbiasedness, consistency, asymptotic efficiency, and asymptotic normal distribution.[11]

As noted above, according to the classification of Indian government expenditures, we consider four items of development expenditures (industry, energy, transportation, and communications) to be most relevant for the industrial sector. Of course, these items are also desirable for the agricultural sector, as well as other sectors, including households. However, previous studies exploring India's business environment report that insufficient and low-quality infrastructure is among the most serious obstacles to doing business in India (see, for example, the Enterprise Survey conducted by the World Bank in 2006 for India, available at http://www.enterprisesurveys.org/Data). More specifically, we focus on the sum of development expenditures and the sum of development capital expenditures for industry, energy, transportation, and communications. We calculate ratios of these two expenditure items with respect to total state government expenditures and total development expenditures, which include revenue expenditures, as well as capital expenditures. Therefore, our dependent variables are as follows: the ratio of development expenditures for the industrial sector to aggregate state government expenditures; the ratio of development capital expenditures for the industrial sector to aggregate state government expenditures; the ratio of development expenditures for the industrial sector to aggregate development expenditures; and the ratio of development capital expenditures for the industrial sector to aggregate development expenditures.[12]

[11] We also conducted an estimation based on the generalized method of moments (GMM). However, the data utilized herein did not pass the overidentification tests associated with that method and as such we refrain from reporting those results.

[12] Previous studies have shown that the composition of government expenditure may have effects on economic performance; see, for example, Marjit et al. (2013).

4.2 Data Sources and Construction of Variables

Data for state government expenditures are obtained from the EPW Research Foundation database. The principal explanatory variables are rural and urban Gini coefficients, which are available from the Planning Commission website, based on data collected through National Sample Surveys. We also examine the effects of urban and rural population shares using census data because it is reasonable to expect that, in a democratic political system, these shares represent an important factor affecting policy-making.

With respect to public policy choices by governmental entities, we construct a variety of political, social, and economic variables as control variables.

First, to capture the extent of political competition, we include a fractionalization index of political parties' seat shares in the State Legislative Assemblies (see Appendix B for details of the calculation). Data on seats won by political parties in every state legislative assembly (Vidhan Sabha) election in the past can be obtained from the website of the Election Commission of India.

Other political factors have been identified as affecting public policy choices, such as political party identities (Alesina 1987; Alesina and Roubini 1999; Boix 1997), political cycles (Nordhaus 1975; Franzese 2002), and voter turnout (Besley and Burgess 2002; Chhibber and Nooruddin 2004).[13] Herein, we include a voter turnout variable to control for such political factors. An increase in voter turnout reflects increased political activism, by which incumbent political leaders who perform well are more likely to win votes (Besley and Burgess 2002). Moreover, in India, a rise in voter turnout in the 1980s and 1990s was caused by increased participation in elections by poorer segments of society, such as scheduled castes and scheduled tribes. Thus, in this case, the income of the median voter declined, which may have influenced the political strategy of incumbent political parties (see, for example, Chhibber and Nooruddin 2004).

From a sociological viewpoint, social cleavages induced by factors such as ethnic divisions, caste conflicts, and social class confrontation may restrict governments in allocating public goods to different groups (Alesina Baqir, and Easterly 1999; Chandra 2004; Frankel and Rao 1987). For instance, Chandra (2004) argues, based on a detailed analysis of the elites and voters of the Bahujan Samaj Party, that in a patronage-democracy such as India, ethnic demographics play a crucial role in whether an ethnic party succeeds in elections; in particular, the size of a party's target ethnic category should be large enough to allow the party to win. In the book edited by Frankel and Rao (1987), several important chapters show how interactions between castes, religion, and ethnicity have changed Indian society, which is characterized by the dominance of upper castes, in relation to state power.[14] To examine

[13]Note that these studies pay attention to the effects on other dependent variables such as social welfare and infrastructure, not industrialization policy.

[14]Rudolph and Rudolph (1987) also state that "[o]f the many cleavages that animate Indian politics, class usually matters less than other social formations, such as caste, religious and language communities, and regional nationalisms. Other cleavages rival or surpass class on political saliency

the effects of social cleavages, we include variables capturing religious diversity and the heterogeneity of language distribution. Kitchelt and Wilkinson (2007) indicate that social cleavages may serve to sustain clientelistic politics longer. We also control for the population share of scheduled castes and tribes. It would also be desirable to control for the population distribution of each caste, but such data have not been collected since the 1931 census. Moreover, to control for conflicts between social classes, poverty rate is included as a variable. As another sociological variable, literacy rate is also included.[15]

Data on religion are available from censuses. We use data on the relative number of followers of six major religions (Hindu, Muslim, Christian, Sikh, Buddhism, and Jain) and calculate the fractionalization index for each state using the same equation as per the fractionalization index of political parties discussed above and made available in Appendix B.

Similarly, we use census data for the linguistic fractionalization index. In the 1971 Census, 1,652 languages were identified as being spoken in India. However, many of these languages are only spoken by a relatively small number of individuals. In our calculations, we use only the 22 scheduled languages and the 100 nonscheduled languages highlighted in the 2001 Census, which are available from the Census website of the Government of India. The list of languages derived from the 1981 and 1991 Censuses is very similar to the list of languages we are using from the 2001 Census, with differences in terms of only a few languages which are not widely spoken.

Previous studies regarding the effect of scheduled castes and scheduled tribes and religious distribution on policy choice have presented mixed results. For instance, Betancourt and Gleason (2000) find that rural areas with high concentrations of Muslims or scheduled castes have fewer doctors, nurses, and teachers. Banerjee and Somanathan (2007) show that areas with a higher proportion of scheduled castes gained better access to high schools, health centers, and piped water between 1971 and 1991, while those areas where the population was dominated by scheduled tribes and Muslims continued to be at a disadvantage.

Table 1 presents descriptive statistics for the dependent and independent variables; these variables exhibit large variances across states and year. Next, Table 2 presents a bivariate correlation matrix which suggests that no pair of explanatory variables is correlated to the extent that multicollinearity is a serious concern here.

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because the consciousness and commitment focused on them are usually more transparent and accessible than those focused on class."

[15]The data for all of these sociological variables were acquired either from censuses (conducted every ten years in India) or from National Sample Surveys, which are undertaken roughly every 5 years. Linear interpolation was used to generate data for non-census and non-survey years. Therefore, the estimated coefficients associated with these variables should be interpreted with caution and as such we do not emphasize them in our discussion of results.

Table 1 Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Ratio of development expenditure for industrial sector to aggregate government expenditure	786	0.10	0.068	0.00629	0.435
Ratio of development capital expenditure for industrial sector to aggregate government expenditure	786	0.04	0.038	0.00004	0.215
Ratio of development expenditure for industrial sector to aggregate development expenditure	786	0.20	0.092	0.02910	0.560
Ratio of development capital expenditure for industrial sector to aggregate development expenditure	786	0.08	0.056	0.00007	0.324
Fractionalization index of Vidhan Sabha party seats	795	0.59	0.165	0.000	0.955
Voter turnout ratio	795	68.55	11.398	23.820	91.530
Urban Gini coefficient	634	0.32	0.048	0.174	0.498
Rural Gini coefficient	634	0.26	0.042	0.156	0.417
Urban population share	802	24.96	10.609	6.258	60.933
Rural population share	802	75.00	10.669	39.067	93.742
Linguistic fractionalization index	802	0.41	0.231	0.063	0.926
Religious fractionalization index	750	0.34	0.170	0.073	0.733
Scheduled caste ratio	791	11.73	8.049	0.000	28.850
Scheduled tribe ratio	791	21.85	27.322	0.000	94.750
Poverty ratio	802	29.78	12.780	3.420	67.680
Literacy rate	865	59.52	14.766	24.124	93.605

5 Estimation Results

Estimation results are presented in Tables 3 through 6, each corresponding to a different dependent variable. In each table, columns (1)–(3) are estimation results based on OLS with panel-corrected standard errors, columns (4)–(6) are results from panel data analysis, and columns (7)–(9) are results from maximum likelihood estimation. Columns (1), (4), and (7) pertain to models where the rural Gini coefficient and rural population ratio are included as independent variables. Columns (2), (5), and (8) pertain to models where the urban Gini coefficient and urban population ratio are included as independent variables. This separation reflects the fact that these variables are highly correlated. For columns (3), (6), and (9), the interaction terms of the rural Gini coefficient and rural population share and of the urban Gini coefficient and urban population ratio are included as independent variables. These interaction terms are not highly correlated. As a precursor to panel data analysis, we conducted a Hausman test to determine whether a random-effects model was

Table 2 Correlation coefficients

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Ratio of development expenditure for industrial sector to aggregate government expenditure	1.000															
2. Ratio of development capital expenditure for industrial sector to aggregate government expenditure	0.656	1.000														
3. Ratio of development expenditure for industrial sector to aggregate development expenditure	0.419	0.229	1.000													
4. Ratio of development capital expenditure for industrial sector to aggregate development expenditure	0.083	0.538	0.586	1.000												

(continued)

Table 2 (continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
5. Fractionalization index of Vidhan Sabha party seats	−0.220	−0.287	−0.071	−0.150	1.000											
6. Voter turnout ratio	−0.094	−0.015	0.196	0.193	0.114	1.000										
7. Urban Gini coefficient	−0.269	−0.229	−0.129	−0.164	0.158	−0.056	1.000									
8. Rural Gini coefficient	−0.063	−0.086	−0.150	−0.154	−0.088	−0.263	0.546	1.000								
9. Urban population share	−0.047	−0.284	0.238	−0.107	0.084	0.052	0.192	0.183	1.000							
10. Rural population share	0.048	0.284	−0.235	0.108	−0.087	−0.051	−0.194	−0.184	−1.000	1.000						
11. Linguistic fractionalization index	0.038	0.160	0.338	0.421	0.003	0.330	−0.460	−0.513	−0.068	0.069	1.000					
12. Religious fractionalization index	−0.031	−0.040	0.224	0.163	0.317	0.253	−0.163	−0.111	0.182	−0.182	0.305	1.000				
13. Scheduled caste ratio	0.079	−0.010	−0.235	−0.293	−0.134	−0.244	0.342	0.283	−0.210	0.210	−0.593	−0.385	1.000			
14. Scheduled tribe ratio	−0.065	0.084	0.228	0.359	−0.112	0.304	−0.497	−0.428	0.012	−0.011	0.577	0.062	−0.618	1.000		
15. Poverty ratio	−0.129	0.033	−0.538	−0.203	−0.067	−0.322	0.065	0.126	−0.352	0.350	−0.081	−0.310	0.105	−0.084	1.000	
16. Literacy rate	−0.318	−0.303	0.306	0.208	0.221	0.467	0.269	−0.015	0.451	−0.452	0.011	0.296	−0.326	0.189	−0.518	1.000

Table 3 Estimation results for development expenditures for the industrial sector relative to aggregate government expenditures

Dependent variable: ratio of development expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged dependent variable	0.152*	0.146*	0.147*						
	(0.0814)	(0.0805)	(0.0815)						
Fractionalization index of Vidhan Sabha party seats	−0.0227*	−0.0219*	−0.0202	−0.0302**	−0.0282**	−0.0281**	−0.0289**	−0.0272**	−0.0268**
	(0.0122)	(0.0125)	(0.0123)	(0.0119)	(0.0120)	(0.0119)	(0.0116)	(0.0117)	(0.0116)
Voter turnout ratio	0.000147	5.50e-05	0.000153	0.000244	0.000143	0.000206	0.000178	9.07e-05	0.000143
	(0.000348)	(0.000355)	(0.000342)	(0.000210)	(0.000218)	(0.000208)	(0.000205)	(0.000214)	(0.000203)
Linguistic fractionalization index	−0.0300	−0.0204	−0.0329	−0.0320	−0.0291	−0.0365	−0.0420	−0.0365	−0.0465*
	(0.0320)	(0.0317)	(0.0320)	(0.0265)	(0.0270)	(0.0267)	(0.0268)	(0.0271)	(0.0268)
Religious fractionalization index	0.206***	0.199***	0.207***	0.123***	0.137***	0.128***	0.142***	0.150***	0.142***
	(0.0453)	(0.0465)	(0.0455)	(0.0340)	(0.0350)	(0.0347)	(0.0408)	(0.0407)	(0.0403)
Scheduled caste ratio	0.00304**	0.00379***	0.00291**	0.00180*	0.00200*	0.00211**	0.00202*	0.00222*	0.00223*
	(0.00126)	(0.00129)	(0.00127)	(0.00106)	(0.00109)	(0.00107)	(0.00115)	(0.00119)	(0.00114)
Scheduled tribe ratio	0.000716	0.00114	0.000441	8.79e-05	0.000522	0.000222	8.59e-05	0.000512	0.000194
	(0.000703)	(0.000699)	(0.000684)	(0.000335)	(0.000349)	(0.000345)	(0.000373)	(0.000380)	(0.000372)
Poverty ratio	0.000990**	0.000794**	0.000981**	0.000424	0.000248	0.000473	0.000653*	0.000449	0.000656*
	(0.000388)	(0.000391)	(0.000383)	(0.000314)	(0.000326)	(0.000312)	(0.000345)	(0.000350)	(0.000338)
Literacy rate	−0.00161***	−0.00160***	−0.00127**	−0.000869**	−0.000858**	−0.000739*	−0.000858*	−0.000812*	−0.000669
	(0.000552)	(0.000580)	(0.000570)	(0.000424)	(0.000436)	(0.000431)	(0.000447)	(0.000452)	(0.000445)
Rural population share	0.000146			−0.00100**			−0.00102*		
	(0.000594)			(0.000491)			(0.000520)		

(continued)

Table 3 (continued)

Dependent variable: ratio of development expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rural Gini coefficient	−0.168***			−0.209***			−0.216***		
	(0.0496)			(0.0563)			(0.0554)		
Urban population share		−0.000603			0.000537			0.000560	
		(0.000602)			(0.000514)			(0.000536)	
Urban Gini coefficient		0.113			0.139**			0.122*	
		(0.0742)			(0.0653)			(0.0641)	
Rural Gini coefficient*rural population share			−0.00230***			−0.00275***			−0.00290***
			(0.000670)			(0.000737)			(0.000725)
Urban Gini coefficient*urban population share			0.000478			0.00166			0.00163
			(0.00110)			(0.00108)			(0.00109)
R−squared: overall	0.646	0.636	0.645	0.2202	0.1949	0.202			
R−squared: within				0.4264	0.4199	0.4302			
R−squared: between				0.1146	0.078	0.1026			

(continued)

Table 3 (continued)

Dependent variable: ratio of development expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Wald Chi2 (p-value)	1835.68(0)	7918.57(0)	8519.6(0)	465.14(0)	451.76(0)	472.61(0)			
LR Chi2 (p-value)							371.47(0)	359.9(0)	375.04(0)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
State dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	706	706	706	707	707	707	712	712	712
Number of st_id	27	27	27	27	27	27	27	27	27

Standard errors in parentheses
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

preferable to a fixed-effects model. The results favor a random-effects except for column (6) in Table 6, where a Hausman test could not be executed. Because all the other columns show the estimation results of a random-effects model, the results of a random-effects model are also shown in column (6) of Table 6. Results from all models reported in Table 3 through Table 6 have reasonable values of R-squared, Wald chi-squared in columns (1)–(6), and likelihood ratios in columns (7)–(9).

First, we examine the estimation results in Table 3, where the dependent variable is the ratio of development expenditures for the industrial sector to aggregate state government expenditures. Therein, the rural Gini coefficient has significantly negative coefficients across all three estimation methods, and rural population share has a negative coefficient in columns (4) and (7). The negative coefficients of these variables, which reflect the political power of the agricultural sector, indicate that in a state-year where rural political power is strong, the ratio of industrial development expenditures to total expenditures is lower. In contrast, in columns (5) and (8) the urban Gini coefficient has significantly positive coefficients, though the degree of significance is lower than that for the rural Gini coefficients. This result can be interpreted in terms of the political power of the industrial sector, realized through the concentration of wealth, inducing an increase in the ratio of industrial development expenditures to total expenditures. As explained above, the combination of higher concentration of wealth and a larger population share may yield disproportionate political power. We examine the effects of the interaction terms of the Gini coefficient and population share, both rural and urban, in columns (3), (6), and (9). The interaction term has a highly significant negative estimated coefficient for rural areas, but not for urban areas. This suggests that the negative effect of the strengthening rural political power is stronger than the positive effect of the strengthening urban political power, with respect to the ratio of industrial development expenditures to total expenditures. This implies that the agricultural sector could be a political obstacle to industrialization, namely, that it tends to limit the allocation of government expenditures favorable to the industrial sector.

Moving onto Table 4, here the dependent variable is the ratio of development expenditures for the industrial sector to aggregate development expenditures. Thus, nondevelopmental expenditures are excluded from the denominator. In other words, we are examining the effects of the balance of political power in terms of budget allocations within development expenditures. Table 4 shows that rural population share has a significant negative coefficient in column (4) but other variables related to rural political power do not have significant coefficients. Further, the urban Gini coefficient has a significant positive coefficient in columns (2), (5), and (8). Urban population share also has a significant positive coefficient in column (5). In columns (3), (6), and (9), we also observe that the coefficients of the interaction term of the urban Gini coefficient and urban population share are significantly positive. These results indicate that in the allocation of development expenditures to either the industrial sector or other sectors, the political power of urban elites is a determining factor, rather than that of rural elites.

Table 4 Estimation results for development expenditures for the industrial sector relative to total development expenditures

Dependent variable: ratio of development expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged dependent variable	0.209***	0.208***	0.196***						
	(0.0414)	(0.0410)	(0.0415)						
Fractionalization index of Vidhan Sabha party seats	−0.0310**	−0.0296*	−0.0278*	−0.0476***	−0.0458***	−0.0451***	−0.0454***	−0.0437***	−0.0425***
	(0.0156)	(0.0157)	(0.0157)	(0.0161)	(0.0161)	(0.0161)	(0.0156)	(0.0156)	(0.0155)
Voter turnout ratio	−4.07e-05	−0.000168	−0.000116	8.68e-05	−2.99e-05	−1.77e-06	5.75e-05	−7.15e-05	−3.21e-05
	(0.000355)	(0.000360)	(0.000352)	(0.000283)	(0.000293)	(0.000281)	(0.000272)	(0.000283)	(0.000270)
Linguistic fractionalization index	−0.0559	−0.0547	−0.0611	−0.103***	−0.104***	−0.110***	−0.0945**	−0.0940**	−0.102***
	(0.0398)	(0.0396)	(0.0402)	(0.0367)	(0.0367)	(0.0366)	(0.0373)	(0.0372)	(0.0372)
Religious fractionalization index	0.245***	0.239***	0.242***	0.203***	0.210***	0.202***	0.236***	0.239***	0.232***
	(0.0567)	(0.0569)	(0.0568)	(0.0483)	(0.0485)	(0.0484)	(0.0546)	(0.0542)	(0.0542)
Scheduled caste ratio	−0.000221	−3.59e-05	−0.000885	0.00127	0.00130	0.00138	0.000983	0.00109	0.000999
	(0.00180)	(0.00179)	(0.00183)	(0.00151)	(0.00152)	(0.00150)	(0.00166)	(0.00166)	(0.00166)
Scheduled tribe ratio	−0.000720	−0.000555	−0.00126	−3.86e-05	0.000277	0.000143	−8.65e-05	0.000247	4.03e-05
	(0.00112)	(0.00109)	(0.00112)	(0.000486)	(0.000488)	(0.000489)	(0.000577)	(0.000574)	(0.000578)
Poverty ratio	0.00168***	0.00150***	0.00160***	0.00108**	0.000913**	0.00105**	0.00149***	0.00129***	0.00144***
	(0.000459)	(0.000471)	(0.000458)	(0.000434)	(0.000443)	(0.000427)	(0.000465)	(0.000470)	(0.000457)
Literacy rate	0.000234	0.000366	0.000894	0.000754	0.000817	0.00104*	0.000692	0.000782	0.00108*
	(0.000704)	(0.000706)	(0.000738)	(0.000592)	(0.000597)	(0.000596)	(0.000620)	(0.000623)	(0.000633)

(continued)

Table 4 (continued)

Dependent variable: ratio of development expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rural population share	−0.000779			−0.00160**			−0.00149**		
	(0.000916)			(0.000694)			(0.000753)		
Rural Gini coefficient	−0.0715			−0.114			−0.110		
	(0.0687)			(0.0765)			(0.0745)		
Urban population share		0.000621			0.00131*			0.00119	
		(0.000912)			(0.000709)			(0.000763)	
Urban Gini coefficient		0.145*			0.148*			0.154*	
		(0.0852)			(0.0880)			(0.0858)	
Rural Gini coefficient*rural population share			−0.00107			−0.00150			−0.00150
			(0.000943)			(0.000999)			(0.000975)
Urban Gini coefficient*urban population share			0.00425***			0.00424***			0.00437***
			(0.00162)			(0.00149)			(0.00155)
R-squared: overall	0.723	0.723	0.722	0.1814	0.1689	0.1672			
R-squared: within				0.2916	0.2936	0.2988			
R-squared: between				0.3782	0.3624	0.3747			
Wald Chi2 (p-value)	2920.41 (0)	19407.46 (0)	18880.58 (0)	276.32 (0)	277.51 (0)	284.29 (0)			
LR Chi2 (p-value)							247.39 (0)	248.65 (0)	253.86 (0)

(continued)

Table 4 (continued)

Dependent variable: ratio of development expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
State dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	706	706	706	707	707	707	707	707	707
Number of st_id	27	27	27	27	27	27	27	27	27

Standard errors in parentheses
$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$

We now turn to Table 5, where the dependent variable is the ratio of development capital expenditures for the industrial sector to aggregate state government expenditures. The results in Table 5 are very similar to those in Table 3. The rural Gini coefficient has highly significant negative coefficients in all columns, and the rural population ratio also has significant negative coefficients in columns (4) and (7). The urban Gini coefficient has significant positive coefficients in columns (5) and (8). The interaction terms of the rural Gini coefficient and rural population share have highly significant negative coefficients in all columns. Moreover, in Table 5, the interaction terms for urban areas have positive coefficients in column (3). Thus, the implication drawn from Table 3 seems to also hold here: greater rural political power tends to reduce allocation of development expenditures for the industrial sector, while greater urban political power tends to increase it, though the effect of rural political power is stronger, overwhelming the effect of urban political power.

Lastly, we examine the estimation results in Table 6, where the dependent variable is the ratio of development capital expenditures for the industrial sector to aggregate development expenditures. In columns (4) and (7), the rural Gini coefficient has significant negative coefficients, and the interaction term of the rural Gini coefficient and rural population share has a significant negative coefficient. We find that the ratio of industrial development capital expenditures to aggregate development expenditures is affected more strongly by rural political power, compared to urban political power, though the opposite is the case in Table 4. This issue represents a potential topic for future research. Still, it is noteworthy to observe that the negative effect of rural political power on the allocation of state government expenditures for the industrial sector also holds in Table 6.

In sum, throughout Tables 3, 4, 5 and 6, we find that variables considered to be related to the political power of rural elites exert negative effects on the ratio of government expenditures for the industrial sector. Also, we find that, although the effects are relatively weak, the variables considered to be related to the political power of urban elites exert positive effects on the ratio of development expenditures for the industrial sector.

Regarding the estimation results for control variables, first, the fractionalization index of Vidhan Sabha seats has robustly and significantly negative coefficients from Tables 3, 4, 5 and 6. This is consistent with Kitschelt and Wilkinson (2007), who suggest that as political competition intensifies, politicians tend to rely more on individualistic clientelistic exchanges, so the allocation of expenditures for the industrial sector tends to shrink. The religious fractionalization index appears to be working in the other direction, albeit less robustly. This result is contrary to our expectations. However, one explanation here could be that as religious groups become more concentrated, politicians find it cheaper to rely on clientelistic exchanges, so expenditures for the industrial sector would decline. Conversely, as religious groups become more fragmented, it becomes costlier for politicians to sustain clientelistic relationships. As a result, budgetary allocations for clientelistic goods decrease and expenditures directed to the industrial sector increase in relative terms. However, this does not explain the relatively consistent results of negative coefficients for the fractionalization index of linguistic groups. We leave this issue for future research.

Table 5 Estimation results for development capital expenditures for the industrial sector relative to total expenditures

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged dependent variable	0.140*	0.158**	0.128						
	(0.0813)	(0.0804)	(0.0812)						
Fractionalization index of Vidhan Sabha party seats	−0.0269***	−0.0260***	−0.0254***	−0.0352***	−0.0339***	−0.0338***	−0.0351***	−0.0339***	−0.0337***
	(0.00769)	(0.00775)	(0.00771)	(0.00671)	(0.00680)	(0.00669)	(0.00649)	(0.00657)	(0.00647)
Voter turnout ratio	0.000271	0.000214	0.000253	0.000338***	0.000298**	0.000320***	0.000339***	0.000298**	0.000320***
	(0.000184)	(0.000187)	(0.000181)	(0.000118)	(0.000124)	(0.000117)	(0.000114)	(0.000119)	(0.000113)
Linguistic fractionalization index	−0.0328*	−0.0228	−0.0348*	−0.0269*	−0.0237	−0.0302**	−0.0277*	−0.0238	−0.0313**
	(0.0193)	(0.0188)	(0.0193)	(0.0149)	(0.0150)	(0.0149)	(0.0148)	(0.0146)	(0.0148)
Religious fractionalization index	0.0330*	0.0286	0.0335*	0.0290	0.0338*	0.0295	0.0301	0.0344*	0.0308
	(0.0198)	(0.0197)	(0.0199)	(0.0193)	(0.0192)	(0.0193)	(0.0193)	(0.0190)	(0.0195)
Scheduled caste ratio	0.00188**	0.00245***	0.00181**	0.000888	0.000933	0.00107*	0.000955	0.000979	0.00115*
	(0.000735)	(0.000755)	(0.000749)	(0.000600)	(0.000599)	(0.000597)	(0.000621)	(0.000633)	(0.000618)
Scheduled tribe ratio	0.000288	0.000565	0.000209	4.06e-05	0.000288	0.000118	4.93e-05	0.000297	0.000129
	(0.000418)	(0.000406)	(0.000396)	(0.000190)	(0.000189)	(0.000192)	(0.000192)	(0.000191)	(0.000196)
Poverty ratio	0.000381*	0.000253	0.000354	0.000139	2.95e-06	0.000155	0.000159	1.29e-05	0.000175
	(0.000227)	(0.000222)	(0.000224)	(0.000177)	(0.000182)	(0.000174)	(0.000180)	(0.000184)	(0.000175)
Literacy rate	−0.00115***	−0.00115***	−0.000908**	−0.000837***	−0.000816***	−0.000748***	−0.000862***	−0.000828***	−0.000764***
	(0.000344)	(0.000360)	(0.000361)	(0.000240)	(0.000242)	(0.000240)	(0.000244)	(0.000243)	(0.000240)
Rural population share	−0.000511			−0.000594**			−0.000619**		
	(0.000353)			(0.000278)			(0.000282)		

(continued)

Table 5 (continued)

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rural Gini coefficient	−0.132***			−0.149***			−0.150***		
	(0.0354)			(0.0317)			(0.0308)		
Urban population share		0.000204			0.000312			0.000324	
		(0.000350)			(0.000283)			(0.000283)	
Urban Gini coefficient		0.0582			0.0676*			0.0673*	
		(0.0456)			(0.0368)			(0.0357)	
Rural Gini coefficient*rural population share			−0.00184***			−0.00196***			−0.00199***
			(0.000495)			(0.000414)			(0.000405)
Urban Gini coefficient*urban population share			0.00108*			0.000931			0.000989
			(0.000644)			(0.000604)			(0.000605)
R-squared: overall	0.555	0.547	0.552	0.1419	0.1507	0.1225			
R-squared: within				0.3265	0.304	0.3323			
R-squared: between				0.0747	0.0875	0.0449			
Wald Chi2 (p-value)	3344.75 (0)	3379.36 (0)	3194.64 (0)	302.85 (0)	275.35 (0)	309.17 (0)			
LR Chi2 (p-value)							265.43 (0)	245.40 (0)	269.98 (0)

(continued)

Table 5 (continued)

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate government expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
State dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	706	706	706	707	707	707	707	707	707
Number of st_id	27	27	27	27	27	27	27	27	27

Standard errors in parentheses
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 6 Estimation results for development capital expenditures for the industrial sector relative to total development expenditures

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged dependent variable	0.382*** (0.0354)	0.387*** (0.0352)	0.385*** (0.0353)						
Fractionalization index of Vidhan Sabha party seats	−0.0330***	−0.0322***	−0.0312***	−0.0530***	−0.0522***	−0.0522***	−0.0533***	−0.0526***	−0.0522***
	(0.0101)	(0.0101)	(0.0101)	(0.0104)	(0.0104)	(0.0104)	(0.00999)	(0.0100)	(0.0100)
Voter turnout ratio	1.09e-06	−6.54e-05	−1.98e-05	0.000137	0.000112	0.000159	0.000132	0.000108	0.000160
	(0.000154)	(0.000161)	(0.000153)	(0.000182)	(0.000189)	(0.000181)	(0.000176)	(0.000182)	(0.000175)
Linguistic fractionalization index	−0.0332	−0.0300	−0.0344	−0.0609***	−0.0595***	−0.0642***	−0.0609***	−0.0602***	−0.0642***
	(0.0251)	(0.0247)	(0.0249)	(0.0228)	(0.0230)	(0.0225)	(0.0215)	(0.0216)	(0.0218)
Religious fractionalization index	0.0450	0.0409	0.0427	0.0603**	0.0640**	0.0601**	0.0587**	0.0617**	0.0602**
	(0.0323)	(0.0322)	(0.0322)	(0.0291)	(0.0293)	(0.0283)	(0.0271)	(0.0269)	(0.0276)
Scheduled caste ratio	0.000300	0.000522	8.00e-05	0.000690	0.000748	0.000890	0.000650	0.000671	0.000894
	(0.00106)	(0.00103)	(0.00106)	(0.000905)	(0.000913)	(0.000874)	(0.000841)	(0.000838)	(0.000851)
Scheduled tribe ratio	−0.00121	−0.00107	−0.00144*	0.000150	0.000319	0.000176	0.000156	0.000314	0.000176
	(0.000826)	(0.000808)	(0.000812)	(0.000284)	(0.000287)	(0.000277)	(0.000260)	(0.000259)	(0.000268)
Poverty ratio	−4.15e-05	−0.000149	−7.62e-05	−0.000244	−0.000328	−0.000184	−0.000255	−0.000338	−0.000183
	(0.000278)	(0.000280)	(0.000277)	(0.000271)	(0.000278)	(0.000263)	(0.000257)	(0.000261)	(0.000255)
Literacy rate	−0.000391	−0.000338	−0.000117	−0.000217	−0.000211	−0.000235	−0.000193	−0.000183	−0.000236
	(0.000448)	(0.000456)	(0.000481)	(0.000365)	(0.000369)	(0.000358)	(0.000346)	(0.000345)	(0.000347)

(continued)

Table 6 (continued)

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rural population share	−0.000166			0.000268			0.000297		
	(0.000555)			(0.000421)			(0.000396)		
Rural Gini coefficient	−0.0650			−0.103**			−0.100**		
	(0.0515)			(0.0488)			(0.0471)		
Urban population share		1.97e-05			−0.000445			−0.000475	
		(0.000547)			(0.000432)			(0.000399)	
Urban Gini coefficient		0.0736			0.0450			0.0432	
		(0.0558)			(0.0562)			(0.0538)	
Rural Gini coefficient*rural population share			−0.000839			−0.00118*			−0.00118*
			(0.000713)			(0.000636)			(0.000622)
Urban Gini coefficient*urban population share			0.00131			−0.000506			−0.000498
			(0.000969)			(0.000906)			(0.000891)
R-squared: overall	0.661	0.662	0.664	0.3335	0.3474	0.3046			
R-squared: within				0.1665	0.1609	0.1658			

(continued)

Table 6 (continued)

Dependent variable: ratio of development capital expenditure for industrial sector to aggregate development expenditure									
	OLS with panel-corrected standard errors			Panel data analysis			Maximum likelihood estimation		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
R-squared: between				0.6062	0.6227	0.5881			
Wald Chi2 (p-value)	1434.89 (0)	1433.66 (0)	6971.27 (0)	160.14 (0)	155.04 (0)	160.92 (0)			
LR Chi2 (p-value)							148.71 (0)	144.85 (0)	146.77 (0)
Year dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
State dummy	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	706	706	706	707	707	707	707	707	707
Number of st_id	27	27	27	27	27	27	27	27	27

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We also found that the ratio of the scheduled caste population and the poverty ratio have positive coefficients. These results are consistent with inter-elite competition theory. For a significant part of our sample period, scheduled caste people as well as poor people were politically inactive. As the ratio of these politically weak people rises, elites would be able to exert stronger leverage over the allocation of government expenditures. Thus, government expenditures to the industrial sector increase, rather than expenditures directed toward the social sector or clientelistic goods such as public sector jobs.

Lastly, the literacy rate coefficient is negative and highly significant in Tables 3, 4 and 5. This seems to indicate that as more people become educated, especially poor people who previously could not access education, they become aware of their possible influence on public policy and mobilize themselves politically. Then, they could advocate for the enactment of redistributive policies which would concomitantly reduce pro-industry expenditure allocations.

6 Conclusion

In this study, we examined how the political influence of the rural and urban sectors impacts the allocation of Indian state government expenditures for the industrial sector. Our estimation results indicate that as the political influence of rural elites increases, Indian state governments tend to reduce development expenditures, as well as development capital expenditures, to the industrial sector. We also find some evidence, albeit weaker, that as the political influence of urban elites increases, expenditures for the industrial sector tend to increase. Our results imply that there is some sort of battle over the allocation of government expenditures between rural and urban elites, and rural elites may exert an influence that limits the allocation of government expenditures conducive to industrialization. In that sense, the political influence of rural elites can be harmful to economic development in a broad sense.

Appendix: Data Sources and Construction of Variables

(Dependent Variables)

Ratios of development (capital) expenditures for the industrial sector: Data on state government expenditures were obtained from the EPW Research Foundation database.

(Independent Variables)

Gini coefficients: Gini coefficients for both rural and urban areas are available from the Planning Commission website and the original data were collected through National Sample Surveys.

Population shares of rural and urban areas: Data on population shares were obtained from different sources, including the Planning Commission website. All such data were collected in censuses.

Political competition variables: All data on Vidhan Sabha elections were obtained from the website of the Election Commission of India. We calculate the fractionalization index of Vidhan Sabha seats based on the following equation.

$$\text{Fractionalization index} = 1 - \sum_{i=1}^{n} (sh_i)^2,$$

where sh_i is the share of seats in a state assembly that party i won in the last election (see Alesina et al. 1999). The fragmentation index is one minus the Herfindahl index of political parties.

Voter turnout: Data on voter turnout rates are available from the website of the Election Commission of India.

Religious fractionalization: Data on religious distribution are available from censuses. Data on the relative number of followers of the six major religions (Hindu, Muslim, Christianity, Sikh, Buddhism, and Jain) are used to calculate the fractionalization index using the same equation as for the fractionalization index of political parties. We treat "other religions" and "religion not stated" as two separate religious groups so that the shares of all the religions add up to one. The shares of these two groups are negligible in that they do not substantively affect the calculated values of the indices. Linear interpolation was used to generate data in non-census years.

Linguistic fractionalization: We include the 22 scheduled languages and the 100 nonscheduled languages highlighted in the 2001 Census (see the Census website of the Government of India). For the 1981 and 1991 Censuses, the list of languages identified is almost the same as that in the 2001 Census. Linear interpolation was used to generate data in non-census years.

SC share and ST share: The population share of scheduled castes (SC) and scheduled tribes (ST) are available from the Planning Commission website, and the original data were collected through National Sample Surveys conducted by the National Sample Survey Organization approximately every 5 years. Linear interpolation was used to generate data in non-survey years.

Poverty rate: Data on poverty rates are available from the Planning Commission website, and the original data were collected through National Sample Surveys conducted by National Sample Survey Organization approximately every 5 years. Linear interpolation was used to generate data in non-survey years.

Literacy rate: Data on literacy rates were obtained from censuses. Linear interpolation was used to generate data in non-census years.

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