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An Analysis of Public Spending on  
Mass Education in the Indian States**

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## ABSTRACT

### **The Elite and the Marginalised: An Analysis of Public Spending on Mass Education in the Indian States<sup>\*</sup>**

In the context of strikingly low literacy rates among Indian women and low caste population, the paper explores whether and how far the interests of the marginalized poor are undermined by the dominant elite consisting mainly of the landed and the capitalists. We distinguish the dominant elite from the minority elite (i.e., elected women and low caste representatives in the ruling government) and also the marginalised as measured by the state poverty rate. Results based on the Indian state-level data suggest that a higher share of land held by the top 5% of the population lowers public spending on education while presence of capitalist elite, as reflected in greater degree of industrialisation enhances it, even in poorer states; the landed elite thus appears to be unresponsive to the underlying poverty rate. The effect of minority representation in the government appears to have a limited impact, indicating a possibility of their non-accountability to serve their cohorts and/or a possible alliance with the dominant elite.

JEL Classification: I28, J15, O15, P48

Keywords: literacy among women and low caste, dominant landed and capitalist elite, minority elite, poor and the marginalised, education spending, development and non-development spending, India

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## *The Elite and the Marginalised: An Analysis of Public Spending on Mass Education in the Indian States*

### **1. INTRODUCTION**

The Paper is based on a political economy theme, where we explore, for the Indian states whether and how far the interests of the marginalised poor are undermined - particularly with respect to the provision of mass education – by the dominant elite consisting mainly of the landed and the capitalists.

It is unfortunate that despite more than four decades of planning efforts with an emphasis on balanced regional development, inter- and intra-state disparities in literacy rates in India are striking. While adult literacy rate in Kerala was about 91%, it was about half of that level (47%) in Bihar in 2001. Gender inequity continues to remain a serious problem in all the states, though it is far worse in the worse-performing ones; the gender gap is only about 7% in Kerala while it is more than four times (30%) in Rajasthan and Bihar. The situation is even worse among the backward castes; their literacy rate was only 37.41% in 1991 compared to 52.21% for India as a whole; it was even lower among women belonging to the backward castes (23.76% as compared to 39.29% for all Indian women).

While females constitute about 48% of the Indian population of more than a billion in 2001, about 24% belongs to scheduled castes and scheduled tribes category. The question however remains as to why the marginalised groups of women and low-caste people in the Indian states may not obtain the full attention of the politicians in a democracy even when they have the numerical strength. When a country like Cameroon could more than double its rate of adult literacy in three decades after 1970 (from 30% to 71%), the question remains as to why a flourishing democracy like India that started in the 1970s with 33% adult literates would still struggle with a rate of 57% in 2000.

Differences in the nature of politicians elected are a possible mechanism through which social/demographic structure could influence the allocation of public spending on education and thereby literacy among different sections of the population in the Indian states. This is because it is harder for a democratically elected government to be unresponsive to the needs of their electorate, especially when the latter is well informed and politically aware. In this respect, the paper explores the possible role of elite dominance and in doing so integrates the new institutional economics literature on persistence of under-development and also that on the political economy of the public goods provision in India.

The recent institutional economics literature suggests that poorer countries lack the institutions needed or have the wrong institutions for economic growth (e.g., see Acemoglu, Johnson and Robinson (2001); Rajan and Zingales, 2005, among others). More specifically, dominance by an elite that does not support human capital investment in the masses is a theme in several papers (e.g., Bourguignon and Verdier, 2000). The oligarchy will oppose widespread education because educated people are more likely to demand political power, thus undermining the dominance of the elite. The result could be lower public spending on mass education and hence persistence of illiteracy. Spread of mass education in contrast would increase the ability of the illiterate to take advantage of the social opportunity (and gain from pro-market reforms), which in turn may facilitate them making informed choices in the political process as well as to oust the elite from power (with their numerical strength). In this respect a distinction between the landed and capitalist elite could be quite important. As Galor and Moav (2006) argued, the productive co-operation between capitalists and workers was instrumental in the provision of public education for the masses. Since firms have limited incentive to invest in the general human capital of their workers, in the presence of credit market imperfections, the level of education would be suboptimal unless it is financed publicly. Thus the capitalist (unlike the landed) elite could favour the public provision (tax funded) of human capital. While Banerjee and Somanathan (2007) have alluded to the concept of elite dominance in the provision of public goods in the Indian districts, the issue remains virtually unexplored. The present paper thus examines the effect of the presence of the dominant elite, both landed and capitalist on changes in public spending (rather than

public goods) with a view to explore difference, if any.

Identification of the elite is an important part of this exercise. While the institutional literature (e.g., Galor and Moav, 2006) distinguishes between the landed and capitalist elite in the process of industrial revolution, one also needs to disentangle its link to the prevailing gender/caste composition of the population, which is specific to the Indian society. Along this line, the recent political economy literature has highlighted the importance of political representation of women and low caste population on the provision of public goods/services in India at different levels of administrative units. For example, Betancourt and Gleason (2000) suggested the selectivity in the allocation against Muslims and Scheduled castes in the allotment of nurses, doctors and teachers to rural areas of the Indian districts. Pande (2003) highlighted the benefits of political reservation of the Scheduled Caste (SC) and scheduled Tribes (ST) on public policy in the Indian states: while political reservation of SCs has been associated with an increased spending on job quotas, that of STs is associated with lower spending on education (but greater ST welfare spending) in the Indian states. Banerjee and Somanathan (2007) too highlight the success of political reservation and 'Garibi Hatao' (i.e., poverty alleviation), among other national policies, on increased universal provision of public goods in the Indian districts over 1971-91 period, especially in favour of the scheduled castes (and not so much the scheduled tribes), who have successfully organised themselves to gain some political power. Chattopadhyay and Dufflo (2004) have provided evidence for the distinctive role of female preferences in local policy making: village councils with reserved seats for women tend to invest more in drinking water, fuel and employment generating activities such as road construction (compared to those unreserved village councils) in a district in the eastern Indian state of West Bengal. None of this previous literature has however looked at the effect of minority representation in relation to the presence of the dominant elite; the present paper aims to fill in this gap of the literature.

We distinguish between the dominant (landed and/or capitalist) and the minority (women and SC/ST representatives in the state legislature) elite and examine whether/how the minority elite could affect the pattern of public spending in favour of their cohorts. The underlying argument here is that the women and low caste people have lower incomes and are over-represented in Indian poverty estimates (see further

discussion in section 3.1) and thus are likely to be more risk-averse than the general population; accordingly, they are likely to benefit more from the redistributive public spending and thus may want to lobby for higher redistributive public spending. However, their effectiveness to influence public policy would depend on whether they have a voice (e.g., they may be under-represented in the government), preference (e.g., they may be more aligned with the ruling landed/capitalist elite) and/or any mandate (e.g., they may not be accountable to the minority population, especially if they are not elected by their cohorts) to serve their cohorts. The latter resonates the very limited literature on intra-elite conflict/cooperation.<sup>1</sup>

The central question here is to explore whether the elite promotes the interests of the marginalised poor. Poverty is an endemic problem in India and poverty alleviation has remained an important objective of successive Indian governments as is highlighted in the ‘Garibi Hatao’ programme launched in the mid 1970s. While elite dominance largely influences the supply of public spending on education (a la Bourguignon and Verdier, 1999; Galor and Moav 2006), it is also important to assess to what extent the dominant elite are responsive to the poverty rates in the Indian states, if at all, and also if landed and capitalist elite respond differently to poverty. Thus one needs to take account of both demand and supply considerations. On the one hand, the elected representatives may have lower accountability towards the marginalised attributable to their lower turnout (especially among women and low caste voters and more so in the poorer states; see Table 3 and further discussion in section 2). On the other hand, the poor may have a lower demand for certain public goods, especially education, as has been highlighted in household-level evidence from low-income countries (e.g., see Glewwe and Jacoby). The result could be lower realised redistributive spending or lower provision of public goods/services in the poorer states.

Acemoglu et al. (2007) have argued that political influence of the dominant elite (i.e. the rich) may give rise to emergence and persistence of inefficient political regimes that may utilise its patronage to bureaucrats to reduce the amount of redistribution and

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<sup>1</sup> While Acemoglu et al. (2007) suggested a co-operation between the dominant elite and the bureaucrats, anecdotal evidence suggests an alliance between the dominant (landed/capitalist elite) and the minority elite (i.e., minority representation in the government) in Indian politics (see further discussion in section 2). Thus the elected women and low caste representatives may not have the interest to serve their cohorts.

public goods provision even in a democracy. This kind of political regime is likely to be associated with higher spending on non-developmental account. This seems to be in line with the recent study of Sachs et al. (2000), who highlighted the recent growth in non-developmental spending in the Indian states. Accordingly, we examine whether elite dominance could be associated with an increase in the non-developmental spending in the Indian states and whether there is a difference between the landed and the capitalist elite in this respect.

Our analysis of state-level data for the period 1960-92<sup>2</sup> from the selected states highlights the differential effect of landed and capitalist elite on education spending: while greater influence of capitalist elite may boost education spending in the presence of higher poverty, that of the landed elite lowers it. After controlling for the presence of dominant landed/capitalist elite, minority representation tends to have a limited role. We find that a higher representation of SC/ST in the ruling party is associated with higher education spending though the effect is significant only at 10% level; women's representation in the ruling party however fails to have a significant impact on education spending. In contrast, both capitalist and landed elite tend to enhance allocation of total development spending in the poorer states; the latter is likely to be related to the fact that there is no conflict of interest between the dominant elite and the masses in this respect.<sup>3</sup> Dominance of the capitalist elite is, however, associated with higher non-developmental spending even in the presence of higher poverty, thus highlighting the cost of capitalist elite dominance. The paper is developed as follows. Section 2 describes the data, hypotheses and the methodology while section 3 analyses the empirical results. The final section concludes.

## 2. DATA AND METHODOLOGY

The data-set used in the paper consists of state-level economic and political variables available from the World Bank (Ozler, Dutt and Ravallion, 1996; Besley and Burgess, 2000), Election Commission of India and also Butler, Lahiri and Roy (1996). Our

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<sup>2</sup> See discussion in section 2 for the choice of sample period.

<sup>3</sup> The fact remains that the dominant elite is wary of making the poor literate as the latter may dilute their authority.



analysis focuses on the 1960-92 period, before the introduction of the 73<sup>rd</sup> amendment of the constitution. With these constitutional amendments, institutions at all levels witnessed some changes in their functions. As responsibility for education became decentralised, district-level personnel, school head masters and village education committees acquired many new responsibilities. These changes justify our focus on the period, 1960-92.

While the union government is involved in general with the development of the core sectors, states have the primary responsibility for most social sectors including education, health, community and social services. A state-level analysis is thus appropriate, as Indian states have considerable decision making powers, especially in social and community development. Each state has an elected assembly headed by the chief minister and we label the ruling state government as a 'political regime'. Political regimes may differ in terms of representation from and inclusion of different sections of population in their electoral base and thus could result in differences in the policy choices under different regimes.

The data points are the election years. The idea is that elected politicians will want to attain their targets by the time of the next election when the electorate decides whether to re-elect them. In most cases elections take place every five years, though there can be an election before the next scheduled one if the government in power collapses. There can however be problems in the estimates if, for example, policies implemented in year four take a further two years to complete, so that the model will assign the effect to the next election cycle. While we need to be cautious in interpreting these results, one election cycle lag appears to be the best available option.

## **2.1. Elite dominance in India**

India is an interesting case in point where social, economic and political dominance of the elite (landed/capitalist/both) is closely interlinked with the age-old institution of caste and gender. Although many other nations are characterized by social inequality, perhaps nowhere else in the world has inequality been so elaborately constructed as in the Indian institution of caste.

Castes are ranked, named, endogamous (in-marrying) groups, membership in which is achieved by birth. Many castes are traditionally associated with an occupation,

such as high-ranking Brahmins (priests); middle-ranking farmer and artisan groups, such as potters, barbers, and carpenters; and very low-ranking leatherworkers, butchers, launderers, and latrine cleaners. Since the 1990s, many politically aware members of the lowest castes prefer to call themselves 'Dalit', a Hindi word meaning oppressed or downtrodden. Since 1935 "Dalits" were known as Scheduled Castes, referring to their listing on government rosters, or schedules. Numerous groups usually called tribes (often referred to as Scheduled Tribes) are also integrated into the caste system to varying degrees. Some tribes live separately from others, particularly in the far northeast and in the forested center of the country, where tribes are more like ethnic groups than castes. After independence, Ambedkar (a Dalit leader) almost single-handedly wrote India's constitution, including key provisions barring caste-based discrimination. Nonetheless, discriminatory treatment of Dalits, especially Dalit women, remains a fact of daily life, even in the twenty-first century.

There are close correlations between caste hierarchy and ownership of both land and non-land assets and economic prosperity in India. Members of higher-ranking castes tend, on the whole, to own more land and non-land assets and thus are more prosperous than members of lower-ranking castes. Many lower-caste people lack any assets and live in conditions of abject poverty and social disadvantage. Deshpande (2001) has constructed a composite caste deprivation index (CDI) for India that includes landholding, assets, livestock, education, and occupation. There is evidence that caste development is consistently worse for the backward castes (SC and ST) compared to others in all the states though the extent of the difference between these caste groups may vary across the states.

There is conflicting evidence about the role of women in India. The constitution of modern India guarantees equal rights to men and women. India has been one of the first countries in the world to confer voting rights to its women. There is however a parallel body of evidence that seems to challenge the former view. Unlike most other societies, men outnumber women in India suggesting higher rates of female child mortality rates. According to 1998-99 National Family Health Survey data, women's average age at marriage has been less than 20 years while about 58% of 13-19 years old were mothers; these young mothers have little control over their own fertility and

reproductive health; they face nutritional discrimination within the family, eating last and least. More than a quarter of 6-17 year old girls do not attend schools. There are far fewer women in the paid workforce than men; women's wages are lower than men, even for the same work. Women are under-represented in governance and decision making position; there were less than 8% women in parliamentary seats, 6% in cabinet positions and less than 4% women judges in High court and Supreme Court of the country even in the 1990s (Menon-Sen and Shivkumar, 2001).

Social dominance of men and upper caste elite has naturally been translated into the political arena even within India's democratic set-up. While the Indian Constitution of 1950 ensures reservation of jurisdictions in favour of the Scheduled Castes and Scheduled Tribes in the state legislature as well as union Parliament, there has been no reservation for women at these levels. It was only the 73<sup>rd</sup> amendment of the Indian Constitution in 1993 that allowed reservation of seats for women in the village council. Following the 73<sup>rd</sup> amendment of the Constitution, discussion is now under way about the reservation of seats for women at the state and national levels as well. A number of factors however continue to constrain minority participation at all levels of administration including their lack of political experience and public skills, threat of violence, motion of no-confidence often brought by male/upper caste members. Thus the gender/caste gap persists in political representation.

## **2.2. Measures of elite dominance**

In order to capture different dimensions of elite dominance in the Indian states, we distinguish the *dominant* and the *minority elite* from the masses of the marginalised people.

### **The dominant elite**

The dominant elite are the rich with more land or capital or both who are on the top end of the income distribution. Land is both the main productive asset and the basis of survival of the majority of the population in India still today, especially in rural areas. Thus land tenure is the foundation of social structure and political power. Very often

there is also a close correspondence between caste and ownership of land in the Indian society; thus upper caste people often enjoy a much greater share of land while the low caste people turn out to be landless or marginal farmers. One could form some idea of economic dominance of the elite, especially in the rural areas, from the distribution of land in these states. Table 1 shows the average percentage of total land area held by top 5% and bottom 40% of the population and also the Gini coefficient in the distribution of land (LANDGINI) over 1960-92. Since there is very little variation in the Gini index of land distribution, we use the land held by the top 5% of the population (TOP5); in particular, a greater share of land held by the top 5% of the population is used here as an index of economic dominance of the landed elite.<sup>4</sup> Table 1 clearly demonstrates the extent of the discrepancy in the distribution of land between top 5% (TOP5) and bottom 40% of the population in all the states; moderate degree of discrepancy persists in most other states.

One also needs to distinguish the capitalist elite from the landed elite, especially in the context of industrial development that gathered pace in India since the late 1970s. Firm ownership in developing countries is not only more concentrated than in the west, but often concentrated within family holdings. India has been no exception where leading families typically own controlling shares, either directly or through cross-holdings of firms belonging to the same business group. Leading business groups in India includes Tata and Birla (starting in 1900s), Goenka, Khaitan (starting in 1950s), Ambanis (starting in 1960s) and Wipro, Infosys, Ranbaxy (in the 1990s).<sup>5</sup> Given that most emerging countries have only nascent markets for corporate control, families remain well entrenched in the firms they control. It is also remarkable that the family business groups continued to dominate the Indian corporate landscape over past seven decades, despite changes in the economic/political regimes (Khanna and Palepu, 2004). In the early 1990s, Indian corporate sector had the following profile. There were a little more than 100 state-

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<sup>4</sup> We also try the percentage of land held by the bottom 40% of the population in our empirical analysis though it was never significant. That is why these results are not shown.

<sup>5</sup> The Tata Group of India, for example, has member firms that operate in the steel, automobile, telecom, software, beverage and leisure industries, among others. In some cases, business groups were created to help create internal capital markets in environments where capital markets as such were imperfect. In other cases, they were responses to regulatory barriers (e.g., the Monopolies and Restrictive Trade Practices Act in India) that did not allow expansion of operations in one industry, forcing a firm to seek growth in another, sometimes unrelated industry.

owned enterprises and about 2500 relatively smaller publicly traded private companies, about 50% of whom were affiliated to business groups. Private sector companies associated with business groups had significantly higher concentrated family ownership and substantial assets. Khanna and Palepu (2004) noted that with the evolution of government industrial policies since independence, there have been changes in the relationship between the influential business groups and government in power; however political connection has not been the sole factor behind the success of these groups. It is however not possible to obtain the state-level information on ownership concentration of the private sector companies as there is no restriction on regional operations of any private firm in India. Consequently, the measure used to identify the presence of the capitalist elite relates to an index of industrialization, which is the share of manufacturing output in net state domestic product. The idea is that more industrialised states have greater capital investment often made by the controlling owners, thus indicating a greater presence of capitalist elite; this is also highlighted in the fact that the correlation coefficient between factory fixed capital and net state domestic product from manufacturing turns out to be 0.98 in our sample and it is also significant at less than 1% level. Table 1 highlights the extent of inter-state variation in the extent of industrialization in the sample states.

### **The minority elite**

The minority elite refer to the elected women and low caste representatives in the state government. It is important to distinguish them from the dominant elite as the nature of their influence in the ruling government may be quite different from the dominant elite. In particular, following Lott and Kenny (1999), one could argue that the political representation of women and low caste people (i.e., the minority elite) in the ruling party could favour redistributive public spending as they are poorer and more risk-averse. Pande (2003) and Banerjee and Somanathan (2007) highlight the benefits of political reservation of SC/ST in favour of the community they represent. The argument could however be weakened in a number of cases: (a) the minority elite could be under-represented in the government and therefore lack the voice to influence public policies in

their favour. While political reservation of SC/ST in the government represents their population shares, in the absence of any political reservation, women's representation continues to be very marginal in the sample states (see Table 1 and further discussion below). (b) In a democratic set-up minority representation could influence policy decision in favour of their communities if they have a mandate to serve the particular community. However, lower voter turnout among women and low caste people, especially in the poorer states, could make the elected women and low caste representatives less accountable to their cohorts, especially if they are not elected by their cohorts.<sup>6</sup> (c) One cannot also rule out the possibility of an alliance between the dominant and the minority elite (women and low caste elected members) in the government, which may induce the latter *not* to act in the interests of their cohorts (e.g., see Acemoglu et al. 2007; Ghosal and Proto, 2007).

The pre-1993 period was marked by the predominance of the Indian National Congress (INC) regime in most states, especially until 1977, important exceptions being Tamil Nadu and Kerala, where alternative regimes came to power as early as 1967 (rise of other regional parties have had a more recent origin in the Indian states). The social base for the Congress had traditionally been the landed elite and the rural habitations they controlled, resulting in a dominance of the upper castes in Congress politics, especially in the first 30 years after independence. While the Dalits were a crucial Congress vote bank in a majority of individual States, they did not cling to Congress in regions where another party or movement rose to prominence. Within Congress the importance of the Dalit vote however did not translate itself into great influence for individual Dalits in either the organisation or the ministry. Low social standing has also made individual Dalit spokesmen relatively easy targets for political demolition. Dalits have therefore tended to construct their political careers as dependants within factions led by high-caste politicians.

Under-representation of women in Indian politics is a well-known fact; what is more disappointing is how little has changed in this respect since Independence. Women's presence (as share of total seats) in Lok Sabha (lower house of the Parliament)

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<sup>6</sup> In section 3 we have examined if there is a direct correlation between election of women and low caste representatives and turnout among women and low caste voters in the sample states.

fluctuates between 3%-8% over 1952-98 and the average turns out to be 6%. Very often these women come from an elite upper caste background (note that representation of women from the low caste background in the state government remains a rare phenomenon even in the 21<sup>st</sup> century)<sup>7</sup> with some political tradition in the family or being close to a prominent male leader. Also more ambitious women members of the legislative assembly will choose to speak about issues not relating to women's affairs, but those relating to industry, trade, economy and international relations, where power and influence converge. Thus women politicians, like the Dalit politicians very often co-opted for the dominant elite (landed/capitalist) and thus have not been spokespersons for their own cohorts.

Our measure of the *minority elite* in the Indian states pertains to the proportions of women and scheduled caste/tribe legislators in the ruling party as a share of total seats won by the ruling party in the state assembly. We believe that this is the pertinent measure as these are the people who could in principle influence policy decisions of the government. The average values of these measures of political elite dominance in our sample are summarized in Table 1. These figures clearly highlight the low representation of the members of the marginalized groups, especially women, in the ruling government in all the sample states over this period.<sup>8</sup>

### **The marginalised**

Setting aside the dominant and the minority elite, there remains the masses of marginalised groups of poor where women and low caste people are over-represented. These marginalised people are not only worse off compared to the general population when residing in any state of India, they are more so when residing in the poorly performing states like Bihar, MP, Orissa, Rajasthan or UP. The latter is closely related to the fact that often female-headed (especially widows) and low-caste households have

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<sup>7</sup> Following the 73<sup>rd</sup> amendment of the Constitution in 1993, there has however been reservation for women in the village councils in India; the latter may have paved the way for greater women's representation at the higher levels of administrative units. It will therefore be interesting to update this study beyond the sample period.

<sup>8</sup> As possible alternatives, we also considered proportions of (i) women and scheduled caste/tribe legislators in the ruling party *as a share of all women and scheduled caste/tribe legislators in the state assembly*; (ii) proportions of women and scheduled caste/tribe legislators in the ruling party *as a share of total reserved and unreserved seats* respectively. However results were rather similar.

limited assets (beyond their own unskilled labour) and thus they are forced to participate in various casual (rather than regular) farm/non-farm jobs. The latter may explain why these minority groups are over-represented in poverty (Drèze and Srinivsan, 1997; Parker and Kozel, 2007).

Indian poverty is linked to economic, social and cultural factors that interact to maintain long-term structural disparities in the distribution of resources and social opportunities. Thus the poor are found to be a highly heterogeneous group: they have limited physical assets (e.g., land), low education and often suffer from health problems. They are also deprived of formal/informal system of support and social capital (Parker and Kozel, 2007).

Despite their numerical strength, the voices of the poor are not heard through the ballot box. Column (4) of Table 2 shows the average voter turnout among women and low caste voters relative to all voters. Clearly voter turn out rates are significantly lower among these marginalized people and more so in the worse performing states like Bihar, Orissa, MP and UP (despite their high share in the population). In addition to an apathy towards the political process that fails to include them in the process of Indian development, the latter could be a result of the criminalisation of politics that resulted in many criminals being elected (e.g., see Drèze and Sen, 1995), especially in the Hindi heartland of North India (including some of the worst performing states like UP and Bihar), threatening/bribing the electorate during election times to vote or not to vote in a certain way, especially those less educated and marginalised and therefore vulnerable in a caste-based society.

### **3. EMPIRICAL ANALYSIS**

Our analysis is developed in three steps. First we examine the role of elite dominance on the changing share of state-level spending on education (as a proportion of state domestic product), distinguishing between the landed and capitalist elite (see section 3.2). Second, education is only one component of total development spending. It is also interesting to assess if elite dominance may have similar effect on total development spending as well (section 3.3). Finally, given the recent steady increase in non-developmental spending in



the Indian states, we examine if the elite have any preference for non-development (as opposed to development) account of public spending (section 3.4).

### 3.1. Determination of Changes in Public Spending

In this section, we examine the factors determining the changing share of state spending on education, development and non-development account of total state spending (as a share of state output). Taking the share of some account of public spending in relation to state domestic product allows us to control for a state's wealth.

#### Dependent variable

We choose the change in the value of the particular spending variable from the last election to be the dependent variable. This differenced variable allows us to examine how the political regime would change the behaviour of the government in power while the level variable would simply reflect the correlation between political variables and the spending on education. Using the first difference of the state spending on education also allows us to reduce the possible problem of simultaneity arising from the inclusion of some of the explanatory variables (see further discussion below).

This allows us to determine changes in any account of spending  $\Delta Y_{it}$  as function of one period lagged values of the explanatory variables,  $X_{it}$ , as follows:

$$\Delta Y_{it} = \beta' X_{it-1} + \alpha_i + \epsilon_{it} \quad (1)$$

where  $\alpha_i$  is the state-specific fixed effects. We also examine the robustness of our estimates by including an additional time fixed effect,  $\gamma_t$ :

$$\Delta Y_{it} = \beta' X_{it-1} + \alpha_i + \gamma_t + \epsilon_{it} \quad (2)$$

Use of one-period (i.e., 4-6 years) lagged explanatory variables, including measures of elite dominance in the determination of changes in education spending would minimize the possibility of endogeneity bias in our analysis (related econometric issues are discussed below). Accordingly, we use fixed effects (both state and time fixed-effects) panel data model to determine the first differences in the public spending on education, development and non-development accounts during 1960-92.

### **Explanatory variables**

We use the same set of explanatory variables in determining the three dependent variables of our choice, namely, changing share of education spending, development spending and non-development spending.

First we include the initial value of public spending (on education, development or non-development account, depending on the particular dependent variable of our choice) and expect a negative sign on its coefficient; the latter would indicate convergence, if any, in the level of this spending among the states over time, conditional on values of other covariates.

As discussed earlier, we include different measures of the dominant elite relating to the ownership of land or capital. Among various possible alternative measures of dominance exercised by the landed elite<sup>9</sup>, we use the proportion of land held by top 5% of the population (TOP5). In order to explore the differential role of the dominance of capitalist elite (vis-à-vis the dominance of landed elite), if any, we include an index of state industrialization (share of manufacturing output to total state net domestic product) in specification (2).<sup>10</sup> In addition to two measures of dominant elite, we include the measure of minority elite, i.e., the proportion of elected women and low caste members in the ruling government. This enables us to examine if the minority representation in the state assembly yields any favourable and significant impact on changes in public spending, even in the presence of dominant elite.

In the context of the Indian poverty alleviation programme, e.g., ‘Garibi Hatao’, it is also useful to assess the role of poverty. Following our discussion in section 2.2, it could be argued that the inclusion of the poverty rate could represent the marginalised and thus capture the accountability of the state to cater to their demand (or lack of it) for education.<sup>11</sup> In an attempt to account for the interaction, if any, between measures of elite

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<sup>9</sup> As possible alternative measures of elite dominance, we also tried including Gini index in the distribution of landholding, the share of land held by the top 10% and bottom 40% of the population; but these variables never turned out to be significant.

<sup>10</sup> Given the close and significant correlations between measures of land distribution (Top5) and share of manufacturing (see Table 4), we also include these measures one at a time rather than both together; however results were similar, These results will be available on request.

<sup>11</sup> Following the large household-level evidence in the low-income countries (e.g., see Glewwe and Jacoby, 2004), some may also argue that the poor have lower demand for education. Thus poverty is likely to be associated with lower spending on education.

dominance and poverty, we include two interaction terms, namely, TOP5\*HCR and MFG\*HCR in addition to HCR. These interaction terms would reflect the responses of the dominant elite to the presence of the marginalized.<sup>12</sup>

In addition to the measures of dominant and minority elite as well as the marginalised, we control for the variation in ethnic heterogeneity of the states, which has been identified as a key control variable in some previous studies.

There is some recent literature that stresses the link between *ethnic fractionalisation* and the poor delivery of public services (e.g., see Alesina, Baqir and Easterly, 2000). Banerjee and Somanathan (2001) have extended the idea of ethnic diversity for the provision of public goods in the Indian districts and suggest that more heterogeneous communities tend to be politically weaker and therefore are less likely to get the goods they want and are more likely to get some of the inferior substitutes.

Indian society has traditionally been multireligious (including 82% of the Hindus along with minority groups of Muslims, Christians, Sikhs, Buddhists and Jains in these states). This social structure is further complicated by the prevailing caste system among the Hindus that distinguishes between the upper caste (16%), other backward castes (43.7), scheduled caste (15%) and scheduled tribe (7.5%)<sup>13</sup>, giving rise to a pluralistic society. We construct a direct composite measure of ethnic fractionalisation from the population proportions belonging to various ethno-religious groups including upper caste Hindus, scheduled caste, scheduled tribes, Muslims, Jains, Buddhists, Christians, Sikhs and others, as  $1 - \sum p_i^2$ , where  $p_i$  is the share of the particular population group. It is expected that the coefficient of this variable would be negative in the determination of change in education spending. This is because a greater degree of heterogeneity would mean that the ruling party caters to a smaller segment of the total population with a lower provision of public goods/services. Inter-state variation in the average values of social heterogeneity measure is summarised in Table 2 for the study period 1960-92.<sup>14</sup> Means

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<sup>12</sup> We also attempted to include the interaction terms between the dominant and the minority elite – however these interaction terms were never significant in any specification.

<sup>13</sup> Source: Government of India, Report of the Backward Classes Commission (Mandal Commission Report), First Part, Vol. 1 (1980), p. 56. These figures are best estimates. The last caste census was taken in 1931.

<sup>14</sup> We also tried including an indicator variable measuring if the state government is aligned to the government at the centre. INC has remained in power at the centre during most of this period, except 1977-80 (Janata Party rule), 1989-90 (National Front coalition government). Thus the binary variable takes a

and standard deviations of all explanatory variables are shown in Table 3; Table 4 in addition shows the correlations between various measures of elite dominance.

### **Some econometric considerations**

We start our analysis with some non-parametric Kernel fit. The advantage of the non-parametric approach is that it does not specify the functional form; rather it allows the data to determine the appropriate nature of the functional form. We consider the bivariate relationship between (a) land held by top 5% of the population and changes in education spending, and also that between (b) share of manufacturing and changes in education spending for each state, and in each case use kernel regression to fit a relationship between each pair of variables. These fitted lines are shown in Appendix Figure 1 for selected states over the sample period. In general, the relationship tends to be negative for (a) and positive for (b); there are some exceptions too: e.g., relationship (a) is much flatter in Haryana and Maharashtra than AP and Orissa while some non-linearity is observed with respect to (b) in most states illustrated. We shall examine the nature of these relationships, after controlling for all other possible covariates that we describe below.

An important identification issue in our analysis pertains to the fact that the factors that may cause measures of elite dominance to change over time may also have a direct impact on education spending and therefore its changes. In the absence of a randomized experiment, we try to generate a ‘natural experiment’. One possible way of doing so is to examine the nature of education spending in states with close election; in the light of the available information, we determine changes in state-level education spending by considering the years when a coalition government has been in power in the sample states. The latter allows us to test whether the dominant elite may still dominate the policy decisions. Note however that this means that our sample size is now reduced to only 31 observations across the states and over time. Given the limited number of observations we fail to apply fixed effects estimates; OLS estimates of changes in

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value 1 if the party in power at the state assembly is also the party in power at the centre and 0 otherwise. Alliance with the union could be important in determining both earning and spending patterns of the state (e.g., see Khemani, 2003). But the variable was never significant in explaining change in state level spending and that is why we exclude it from the final specification.

education spending yield much weaker results (as reflected in signs and significance of estimated coefficients); in particular, the effect of landed, capitalist or minority elite as such loses significance. One possible interpretation of this weaker result could be that the dominant elite loses its policy influence in case of close election; yet the possibility remains that this weaker result is attributable to the small sample size in this special case.<sup>15</sup>

A related problem pertains to the treatment of the unobserved variables not included in our analysis. Note however that the use of (state-specific) fixed effects model by its very nature allows us to control for any state-specific unobserved factors that may affect the relationship. So long as these other (omitted/unobserved) variables are state-specific, our estimates would be unbiased. One may however raise the question that these state-specific (unobserved) fixed effects do not control for the possibility of endogeneity being introduced by *unobserved time-varying factors* that we have not controlled for, especially for measures of the dominant/minority elite. We could however defend that the Gini index in the distribution of landholding (e.g., see McKay and Pal, 2004) and/or women's representation in the state assembly remain relatively stable during the sample period. In an alternative specification, we also include both state- and time- specific fixed effects.

Finally, one also needs to tackle the issue of reverse causality; for example, certain types of people (dominant and/or minority elite) may get elected depending on what they promise regarding government spending on education. In an attempt to test the exogeneity of measures of elite dominance we follow a regression based approach suggested by Hausman (1978, 1983); in fact a regression based test is asymptotically equivalent to the original form of the Hausman test. This is explained below.

Given that the set of explanatory variables  $X$  in equation (1) and (2) includes some potentially endogenous variables like share of land held by the top 5% of the population (TOP5), share of manufacturing (MFG), proportion of SC/ST (PSCST) and women (PWOM) members in the ruling government, we need to correct for the potential endogeneity. We proceed as follows: (a) we regress each of these potentially endogenous

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<sup>15</sup> These results are available upon request.

variables on a set of explanatory variables  $Z$  which includes some additional variables (e.g., coalition government, president's rule) over and above what is included in  $X$ . Note that  $Z$  replaces the particular potentially endogenous variable by its relevant instrument. In particular, we instrument TOP5 by population density in the state, MFG by the share of factory fixed capital in factory value added at the state level, PSCST by the proportion of SC/ST population in each state and PWOM by the proportion of women in the state. Note that population density, proportion of SC/ST and women in the state are all demographic variables and thus choice of these instruments has been dictated by their likely exogeneity in relation to the dependent variable. In each case, we obtain the estimated residuals for each of these potentially endogenous variables, namely, resTOP5, resMFG, resSCST, resWOM; we also derive the residuals for the two interaction variables TOP5\*HCR and MFG\*HCR. (b) In the final stage we include these estimated residuals as additional explanatory variables in (1). Statistical insignificance (i.e., the relevant t-statistics) of these estimated residuals would constitute a test of exogeneity. We have also tested the sensitivity of these results by choosing alternative instruments for share of manufacturing, e.g., literacy rate or adult literacy rate. Results were unchanged, perhaps reflecting the fact that all explanatory variables are 4-6 years lagged values. Uncorrected and corrected estimates are shown in Tables 5-7; insignificance of the estimated residuals establishes the exogeneity of all potentially endogenous variables and their interaction terms.

### **3.2. Estimates of changes in education spending**

Following our discussion in section 3.1, we obtain estimates of changes in education spending with (a) only state and (b) both state and time specific fixed effects. These estimates are shown in columns (1) and (2) of Table 5. In an attempt to test for the potential endogeneity of some of the key measures of elite dominance, we estimate the augmented model using estimated residuals of these potentially endogenous variables and their possible interaction terms. These corrected estimates are shown in column (3) and (4) respectively for fixed effects models with only state fixed effects and both state and time fixed effects. Note however that none of the residual terms (resTOP5, resMFG, resSCST and resWOM) are significant in specification (3) and (4), thus establishing the

exogeneity of these measures in our sample.

A positive (negative) coefficient estimate would indicate an increase (decrease) in the share of education spending associated with an increase in the value of the particular explanatory variable in the last election year. F-statistics for the joint test of significance of the explanatory variables are significant at less than 1% level in each case. Our analysis in the rest of this paper focuses on the corrected estimates.

The initial level of education spending is positive though only significant in specification (1) at 10% level; thus there is no evidence of convergence in public spending on education across the sample states and could perhaps be rationalised in terms of the divergent agenda of the ruling political regimes in the sample states over the sample period. Secondly, the coefficient estimate of ethnic heterogeneity is highly significant and negative, as expected. This is in conformity with the findings of Banerjee and Somanathan (2007) that regions with higher ethnic heterogeneity tend to have lower spending on education.

There is also evidence that poverty rates have a significant effect on education, even after accounting for the presence of elite dominance. In particular, higher poverty is associated with lower education spending, as predicted. This could be a reflection of the under-representation of the poor in the government, lower accountability of the elected members towards the poor (who often have lower voter-turnout), and/or lower demand for education among the poor.

Finally we consider the estimates of measures of elite dominance, *ceteris paribus*. Here we focus on the estimates using the land held by the top 5% of the population as a measure of landed elite. While a greater share of land held by the top 5% of the population continues to be insignificant as such, the interaction term TOP5\*HCR is always negative and significant in Table 5; in other words the landed elite seems to be unresponsive to the presence of the poor. In contrast, the interaction term between MFG and HCR is always positive and significant here; the latter suggests a contrasting trend in that the presence of capitalist elite is associated with higher education spending if poverty rates are high, thus supporting Galor and Moav (2006).

After controlling for the presence of dominant landed/capitalist elite, neither SC/ST nor women representation has any significant impact on changes in education

spending. The latter perhaps validates the general wisdom that a greater degree of minority representation in the ruling government as such cannot by itself induce higher investment in public education (see discussion in section 2.2), especially if these members do not have any preference/voice/mandate to serve these marginalised people.

Clearly women are under-represented in government (Table 2) while representation of the low (SC/ST) caste is proportional to their population share in the state. Moreover, in many cases the elected representatives of the minority group may be aligned with the dominant elite, thus suggesting their lack of voice/preferences to serve their cohorts. While we cannot directly test the latter, we can indirectly test if the minority elite have any mandate to serve their people. In doing so, we examine if the winning seat in the state assembly won by a woman/low caste member is closely correlated with the turnout among female/low caste voters. This is because if there is no such correlation it would not be necessary for these members to cater to these communities. Our results (available on request) do suggest that there is no significant association between turnout among low caste voters and the election of low-caste members in the assembly, after controlling for illiteracy rate, ethnic heterogeneity of the state over the study period.

### **3.2.1. Comparison with the existing literature**

The question that naturally arises here is how our results are related to the existing literature. Clearly our reference points are Pande (2003) and Banerjee and Somanathan (2007) (BS henceforth). BS relate to the effect of SC/ST population share on *changing provision* of various public goods over 1971-91 in the Indian districts, while Pande (2003) analysed the effect of SC/ST reservations in state assemblies on *levels* of public spending on different accounts (as a share of total spending) over a period of 1960-92 in the Indian states using annual data. With respect to the provision of schools, BS found that ST dominated areas received more primary schools (effects for middle and high schools were insignificant though), while SC dominated areas received less high schools (effects for primary and middle schools were insignificant) during 1971-1991 period. Pande found that SC reservations have significantly positive effect on job quotas (not its changes) while ST reservations had pronounced positive effects on ST welfare spending,



but negative effects on education spending. So the results remain mixed.

We examine the *changes* in education as shares of state domestic product (which allows us to control for the variation in state-level prosperity) using a more comprehensive framework. We not only control for the minority representation in the ruling government, but also control for the presence of the dominant elite (landed and capitalist), poverty rate and ethnic heterogeneity. We also account for the possible interaction between poverty HCR and presence of the dominant (landed and capitalist) elite. *Ceteris paribus*, we found that representation of SC/ST members fails to have any significant effect on changes in education spending. While Pande did not control for the distribution of land or capital across the states, BS controlled for Gini coefficient in the distribution of land though did not find it significant. While we also find that Gini is insignificant in our analysis, share of land held by the top 5% of the population is significant; similarly, the effect of share of manufacturing turns out to be significant.

Appendix Table A1 summarises the results of various alternative specifications starting from the simplest possible scenario; this suggests how inclusion of additional controls for the presence of dominant elite may change our estimates. Specifications (1) and (2) constitute the baseline model without any control for elite dominance. (1) includes only low caste representation variable while (2) includes both low caste and women's representation variables. In these specifications low caste representation has significant and positive impact on education spending. With the inclusion of controls for landed and capitalist elite as in specifications (3) and (5), low caste representation loses its significance on education spending. However, presence of landed elite lowers education spending while that of capitalist elite enhances it. Specifications (4) and (6) in addition include the poverty rate and its interaction with the measures of dominant elite, which in turn suggest that the landed elite do not respond to the poverty rate while the capitalist elite do. Finally, estimates of our complete specifications, as shown in Table 5, highlight that after including controls for dominant and minority elite, the minority elite, i.e., representation of the low caste and women in the government as such fail to have a significant effect; additional analysis suggests that there is no significant relationship between the election of a low caste representative and the turnout of low caste voters in the sample states.

### **3.3. Changes in Developmental Spending**

Education is only one component of total development spending incurred by the Indian states. In addition to education, total development spending also includes spending on health, family welfare, community building, etc. The natural question to ask here is whether the dominant elite behave similarly with respect to total development spending (as opposed to education spending) in the Indian states. We include the same set of explanatory variables as in Table 5 to explain changes in total development spending; these fixed effects estimates are shown in Table 6. One particular result needs to be highlighted here: unlike education spending, both landed and capitalist elite tend to respond to the underlying poverty rate, and they do so by increasing spending on development account in the poorer states. However none of the measures of the presence of the minority elite turn out to be significant in determining development spending. In other words, there is some confirmation that the differential effect of landed and capitalist elite as we have seen for education spending does not seem to hold for overall development spending.

### **3.4. Non-developmental Spending**

Recently Sachs et al. (2000) argued that the resource constraints in state finances in India have been accentuated by a near stagnant tax-GDP ratio, a rising share of non-developmental outlay in the total expenditure, large volumes of hidden or implicit subsidies and increasing financial losses of state enterprises while a growing pressure on state finances has stemmed from the rising demand for public services. The critical problem in state finances is not only one of high levels of expenditure (relative to revenue mobilization), but also one of increasing distortions in the pattern of expenditure as reflected in an increase in non-developmental spending relative to developmental spending. One possible explanation of this trend could be related to the presence of a dominant elite that may use its influence over the minority elite (e.g., bureaucrats as in Acemoglu et al. 2007; elected representatives of the minority groups as in our case) to reduce the amount of redistributive public spending, resulting in higher non-development spending. Accordingly, we explore if the presence of the dominant elite has been one of

the explanations for the trend increase in non-developmental spending (as a share of state output) in the Indian states in recent years. As before, we use fixed effects estimates and these results are shown in Table 7.

First, there is evidence of significant divergence among the Indian states as states with higher initial non-developmental spending tend to have higher spending and there is no sign of catching up here. Second, these estimates seem to suggest some preference of the dominant elite (both landed and capitalist) for non-development spending. Indeed there is some confirmation that a dominance of both landed and capitalist elite is associated with significantly higher non-developmental spending, even when poverty rates are higher; the effect although positive remains insignificant for the landed elite in specifications (4). As before representation of women or low caste fails to have any perceptible effect on non-development spending in any specification. Taken together, these results could be indicative of a possible alliance between the dominant and the minority elite, among other possibilities.

#### **4. CONCLUDING COMMENTS**

This paper examines the role of elite dominance as a possible explanation of the low levels of literacy in India, especially among women and low castes, who are significantly worse off than the general population, and more so when residing in the worse performing states. India is an important case in point where the identification of the elite is not only related to the distribution of land and non-land resources, but also to the age-old institution of gender/caste (and its close link with the distribution of land and non-land resources and therefore poverty). Despite its importance, the issue is little understood in the Indian context, if at all.

We argue that the systematic under-investment in public education could reflect the preferences of the dominant elite, especially the landed elite; the elite will oppose mass education because the educated people are more likely to demand political power, thus diluting the authority of the elite. Given the productive co-operation between the workers and the capitalist, the latter may however be willing to favour public spending on education, especially in the presence of credit market imperfections. While minority

representation of women and low caste people in the government could boost redistributive spending on certain accounts, its effectiveness could be limited by (a) the minority under-representation in the government so that these minority elite may not have the voice in the government, (b) a possible alliance of the dominant elite with the minority elite, which may alter the preference of the minority elite away from serving their cohorts; (c) non-accountability of the minority elected officials towards the marginalised people. Point (c) could be particularly important in the poorer states with lower voter turn-out, especially among women and low caste people and also a possible lack of demand for education among the poor.

There is evidence from the state-level panel-data analysis in the paper that the landed elite tend to be unresponsive to the underlying poverty rate. In contrast, presence of the capitalist elite is associated with higher education spending, if underlying poverty rate is high. After controlling for the presence of the dominant elite, women and low caste representation in the ruling party however fails to have any statistically significant impact on education spending. In contrast, both capitalist and landed elite respond significantly to the presence of poverty in the allocation of total development spending; presence of the dominant elite is, however, associated with higher non-developmental spending even in the presence of higher poverty.

Unlike the previous literature, our analysis highlights the importance of accounting for the conflict/cooperation between the dominant and the minority elite. Ensuring political representation of the marginalized people (women and low caste) is not sufficient to erode their initial disadvantages; clearly land reform and industrialization could boost public spending on education. This is, however, not an isolated process and needs to be implemented in conjunction with the financial sector reforms, thus enabling the marginalized people to take advantage of the pro-market reforms, credit opportunities as well as to consciously participate in the political process (and make an informed choice). Impartial judiciary has also a very important role to play to uphold this crucial fundamental right, especially in its fight against criminalisation of the political process. 'Class based politics perpetuates inequality; spread of human capital could help to overcome the traditional disparities of class, caste and gender, allowing individuals to take advantage of available resources and social opportunity, just as the removal of these

inequalities helps the spread of human capital.’ It would thus be interesting to examine whether/how pro-market reforms could change the balance of power between the dominant and the minority elite, if at all – we hope future research will address this.

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**Table 1. Characterisation of economic elite dominance, 1960-92**

State	Literacy rates (%)		Share. of mfg. output	% of land held by		Gini in land distribn	Land reform index	Minority elite [1]	
	1991	2001		Top 5%	Bottom 40%			Women in ruling govt.	SC/ST in ruling govt.
AP	44.10	61.1	0.14	41.4	0.79	0.74	1.58	4.00	22.2
Assam	52.90	64.3	0.09	25.6	2.53	0.60	2.18	3.1	24.6
Bihar	38.50	47.5	0.12	34.6	1.76	0.68	4.61	4.7	22.7
Gujarat	61.30	70.0	0.21	31.7	0.73	0.69	3.33	6.8	36.2
Haryana	55.80	68.6	0.14	-	-	-	-	7.5	22.9
J&K	-	54.5	0.06	21.5	10.43	0.49	1.45	1.7	3.9
Karnataka	56.00	67.0	0.15	32.8	1.29	0.67	2.55	5.2	21.2
Kerala	89.80	90.9	0.13	42.3	7.95	0.69	5.64	1.7	7.2
MP	44.20	64.1	0.10	29.7	2.61	0.63	3	6.7	46.8
Maharashtra	64.90	77.3	0.26	33.2	0.58	0.70	1.97	5.8	18.0
Orissa	49.10	63.6	0.09	31.3	2.26	0.64	5.33	5.0	53.9
Punjab	58.50	69.9	0.11	37.1	-	0.74	0.64	5.0	23.6
Rajasthan	38.60	61.0	0.10	33.3	4.65	0.63	1	6.5	35.6
Tamil Nadu	62.70	73.5	0.23	39.6	0.60	0.74	4.36	5.1	24.7
UP	41.60	57.4	0.10	29.8	3.05	0.62	2.48	6.0	24.4
West Bengal	57.70	69.2	0.18	31.6	1.32	0.67	5.18	4.0	27.9

Note: Share of manufacturing in state domestic product is used as a measure of capitalist elite while % of land held by top 5% of the population is a measure of capitalist elite. States with higher Gini in land distribution is also a measure of dominance of landed elite while the composite index of land reform legislation is a complement of dominance of landed elite. In particular, states with more land reform legislations are likely to have more harmonious class relationships. [1] Women and SC/ST members in the ruling party as shares of total ruling party seats.

**Table 2. Presence of coalition government, degree of ethnic heterogeneity and voter turnout in the selected states, 1960-92**

State	(1)	(2)	(3)	(4) Voter turnout (%)		
	Poverty rate	Coalition government	Ethnic Heterogeneity	SC/ST	Women	All
AP	46.1	0.00	0.47	59.2	64.0	68.3
Assam	38.85	0.00	0.64	57.5	56.0	61.3
Bihar	58.9	0.25	0.70	41.7	42.5	53.5
Gujarat	50.9	0.29	0.48	49.0	50.5	55.6
Haryana	31.95	0.25	0.46	31.2	64.2	67.4
J&K	31.7	0.00	0.26	31.7	51.2	69.0
Karnataka	49.5	0.00	0.51	62.9	62.6	67.2
Kerala	56.01	0.78	0.67	70.3	65.8	75.6
MP	54.5	0.14	0.53	43.3	40.9	51.2
Maharashtra	53.9	0.29	0.46	51.9	57.0	61.2
Orissa	57.3	0.25	0.56	38.4	35.0	46.7
Punjab	27.8	0.25	0.55	31.4	65.3	67.9
Rajasthan	48.4	0.14	0.54	48.6	41.0	55.4
Tamil Nadu	51.3	0.25	0.44	63.3	66.1	69.7
UP	49.03	0.11	0.63	35.9	43.6	50.5
West Bengal	43.1	0.88	0.66	64.2	57.8	67.3

**Note:** All values are averages for the period 1960-92. While poverty rate is the state-level poverty head count ratios, ethnic heterogeneity is the composite index  $1 - \sum p_i^2$  where  $p_i$  is the share of the particular population group belonging to upper caste Hindus, SC, ST, Muslim, Christians, Buddhists, Jains and Sikhs. Average values of coalition government are generated from the binary variable that takes a value 1 if the election resulted in a ruling government which is the coalition of more than one political parties.

**Table 3. Means and Standard Deviations of Regression Variables**

<b>Variable</b>	<b>Mean</b>	<b>Std.Dev.</b>
Educational expenditure as share of sdp (EDUEXPY)	0.0136	0.02
Development expenditure as share of sdp (DEVEXPY)	0.0446	0.0845
Non-development spending as share of sdp (NDEVEXPY)	0.0234	0.0422
Changes in educational spending CHEDU	-0.00368	0.008
Changes in development spending CHDEV	-0.0111	0.0473
Changes in non-development spending CHNDEV	-0.0072	0.0226
Proportion of land held by the top 5% of the population (TOP5)	33.56851	5.524738
Share of manufacturing in net state domestic product (MFG)	0.138163	0.0583
Poverty HCR (HCR)	47.19207	12.55005
Index of ethnic heterogeneity (ETHHETY)	0.543687	0.168208
Proportion of all SC/ST members in the ruling party out of all seats won by the ruling government (PSCST)	0.25367	0.14652
Proportion of all women in the ruling party out of seats won by the ruling government (PWOM)	0.04856	0.04509
If coalition government in power	0.256198	0.438348
If president's rule	0.115702	0.321198
Population density	268.9264	169.0429
Proportion of seats reserved for SC/ST	0.212284	7.97E-02
Proportion of women elected out of all women candidates	0.271248	0.211016

**Table 4. Correlation matrix**

	<b>Landgini</b>	<b>Top5</b>	<b>MFG</b>	<b>HCR</b>
<b>Landgini</b>	<b>1</b>		0.427**	0.233**
<b>Top5</b>		<b>1</b>	0.16*	
<b>MFG</b>	0.427**	0.16*	<b>1</b>	
<b>HCR</b>	0.233**			<b>1</b>

Note: TOP5: land held by the top 5% of the population; MFG: Share of manufacturing in the state domestic product; HCR: poverty head count ratio. Any blank cell represents that the particular coefficient is insignificant and therefore is not shown. ‘\*’ denotes that the coefficient is significant at least at 10% while ‘\*\*’ denotes that at 1% level.

**Table 5. Fixed effects estimates of changes in public spending on education**

Variables	Uncorrected estimates				Corrected estimates			
	state fixed effects		state & time FEeffects		state fixed effects		state & time fixed effects	
	1		2		3		4	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Initial edn. spending	0.137076	1.65*	0.071	0.761	0.0541	0.485	0.000695	0.006
Land held by top 5% (TOP5)	0.000385	0.28	0.000768	0.724	0.00164	1.097	0.00132	1.001
Manufacturing share (MFG)	-0.20211	-1.89*	-0.11174	-1.509	-0.000751	-1.26	-0.00044	-0.752
Poverty HCR	-0.000819	-1.943*	-0.000465	-1.854*	-0.36338	-2.518*	-0.1904498	-1.779*
TOP5*HCR	-0.000003	-1.671*	-0.0000034	-1.227	-0.000015	-1.814*	-0.00000248	-1.142
MFG*HCR	0.00466	2.464**	0.00199	1.692*	0.00556	2.592**	0.00296	1.785*
SCST in govt.	0.00759	1.896*	0.000890	-0.267	0.0288	1.646*	0.0238	1.05
Women in govt.	-0.0006	-0.275	0.00239	1.191	-0.0115	-1.11	-0.00471	-0.699
Ethnic heterogeneity	-0.0274	-4.891**	-0.0251	-5.008**	-0.0249	-4.448**	-0.0257	-4.784**
<i>resTOP5</i>					0.000933	0.606	0.00044	0.37
<i>resMFG</i>					0.124189	1.416	-0.0107	-0.147
<i>resSCST</i>					0.0173	-0.965	-0.0242	-1.08
<i>resWOM</i>					0.011	1.282	0.00226	0.515
Residual for Top5*HCR[1]					Yes		Yes	
Residual for MFG*HCR[1]					Yes		Yes	
Intercept			0.00136	0.038			0.0137	-0.309
R <sup>2</sup>	0.69		0.84		0.74		0.84	
F-stat	5.97**		6.7**		5.92**		5.77**	
Nobs	113		113		113		113	

Note: The dependent variable in each case is the changes in the public spending on education (as a share of state domestic product) from the last election. Definitions of the variables are given in Table 4A. '\*' denotes significance at 10% or lower level while '\*\*' denotes that at 1% or lower level. [1] Both these residuals are insignificant too.

**Table 6. Fixed effects estimates of changes in public development spending**

Variables	Uncorrected estimates				Corrected estimates			
	state fixed effects		state & time fixed effects		state fixed effects		state & time fixed effects	
	1		2		3		4	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Initial dev. Spending	0.6809	8.042**	0.8608	7.763**	0.7616	7.051**	0.8837324	6.843**
Land held by the top 5% (TOP5)	0.00434	-0.581	0.0028	-0.338	0.00054	0.061	0.0033	0.333
Manufacturing share (MFG)	-1.0348	-2.186*	-1.0574	-1.951*	-1.14195	-1.606	-1.21787	-1.532
Poverty HCR	-0.0085	-2.595*	-0.007	-1.674*	-0.0083	-2.382*	-0.00528	-1.812*
TOP5*HCR	0.00009	1.901*	0.00012	1.67*	0.00006	1.662*	0.00006	1.642*
MFG*HCR	0.0228	2.565*	0.0167	1.687*	0.0283	2.552*	0.0240	1.919*
SCST in govt	0.0256	1.281	0.0127	0.497	-0.0384	-0.308	-0.0176	-0.109
Women in govt.	-0.0047	-0.393	-0.00063	-0.041	-0.00136	-0.035	0.00981	0.2
Ethnic hety	-0.1726	-5.705**	-0.2123	-5.946**	-0.163	-5.226**	-0.2098	-5.468**
RESTOP5					-0.0127	-1.615	-0.0156	-1.271
RESMFG					-0.43917	-1.026	-0.7935	-1.533
RESSCST					0.0838	0.688	0.0237	0.149
RESWOM					0.0295	1.091	0.0031	0.092
Residual for Top5*HCR[1]					Yes		Yes	
Residual for MFG*HCR[1]					Yes		Yes	
Intercept			0.3361	1.216			0.1318	0.395
R <sup>2</sup>	0.6		0.72		0.64		0.61	
F-stat	5.17**		3.53**		4.7**		3.42**	

Note: The dependent variable in each case is the changes in the public spending on development from the last election. ‘\*’ denotes significance at 10% or lower level while ‘\*\*’ denotes that at 1% or lower level. [1] Both these residuals are insignificant too.

**Table 7. Fixed effects estimates of changes in public non-development spending**

Variables	Uncorrected estimates				Corrected estimates			
	state fixed effects		state & time fixed effects		state fixed effects		state & time fixed effects	
	1		2		3		4	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Initial non-dev Spending	0.4384	4.76**	0.5985	4.546**	0.457	3.808**	0.6087	3.998**
Land held by the top 5% (TOP5)	0.0003	0.083	0.00041	0.092	0.00296	0.627	0.0017	0.309
Manufacturing share (MFG)	-0.407	-1.613	-0.30323	-1.027	-0.6964	-1.82*	-0.4965	-1.117
Poverty HCR	-0.0035	-1.981*	-0.00277	-1.211	-0.0034	-1.805*	-0.00268	-1.078
TOP5*HCR	0.000024	1.654*	0.000044	0.689	0.0000028	1.646*	0.000003	0.421
MFG*HCR	0.0106	2.223*	0.0054	1.994*	0.0156	2.597**	0.0095	1.661*
SC/ST in govt	0.0159	1.485	0.00809	0.577	0.0361	0.541	0.00145	0.016
Women in govt.	-0.00238	-0.371	0.0036	0.438	-0.0142	-0.684	0.00494	0.181
Ethnic hety	-0.0655	-4.109**	0.0844	-4.285**	-0.0628	-3.754	-0.0869	-4.04**
RESTOP5					-0.00043	-0.103	-0.00148	-0.293
RESMFG					-0.1322	-0.57	-0.3289	-1.137
RESSCST					-0.009	-0.138	0.0058	0.066
RESWOM					0.0194	1.327	0.0057	0.308
Residual for Top5*HCR[1]					Yes		Yes	
Residual for MFG*HCR[1]					Yes		Yes	
Intercept			0.0740	0.487			0.0513	0.276
R <sup>2</sup>	0.51		0.64		0.54		0.67	
F-stat	3.5**		3.27**		3.11**		3.22**	

Note: The dependent variable in each case is the changes in the public spending on non-development from the last election. ‘\*’ denotes significance at 10% or lower level while ‘\*\*’ denotes that at 1% or lower level. [1] Both these residuals are insignificant too.

## Appendix

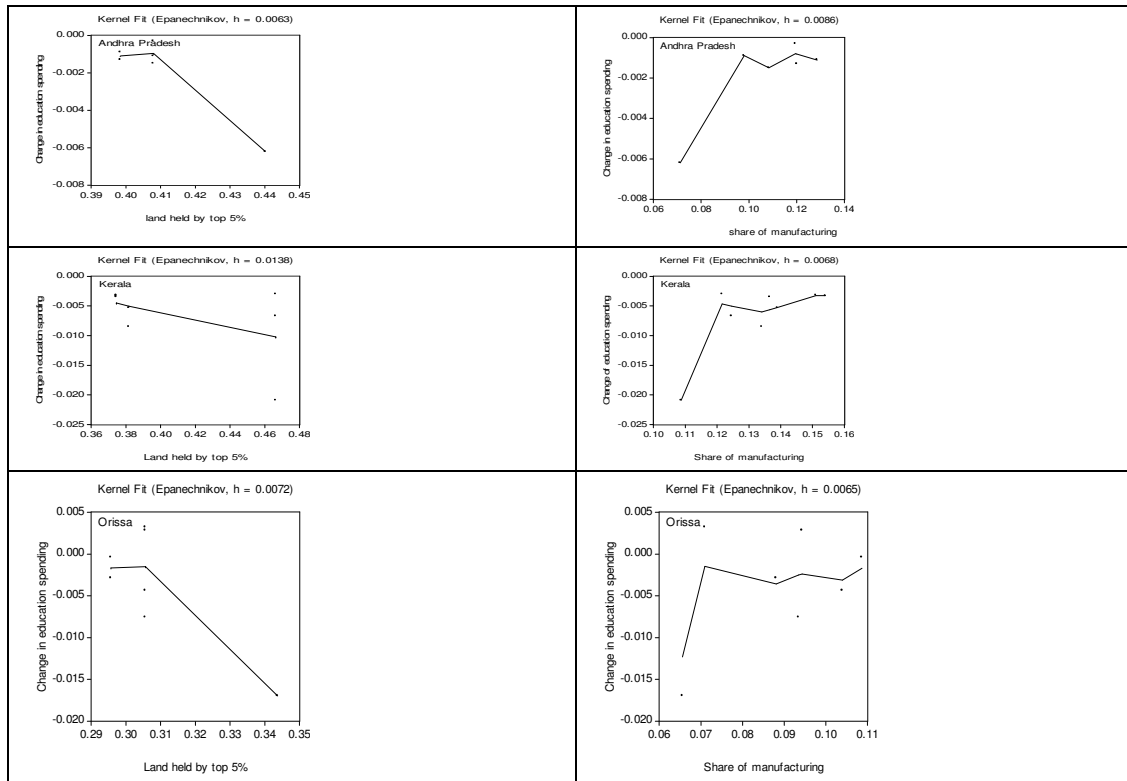
Table A1. FE Estimates of Changes in Education Spending: Alternative Specifications

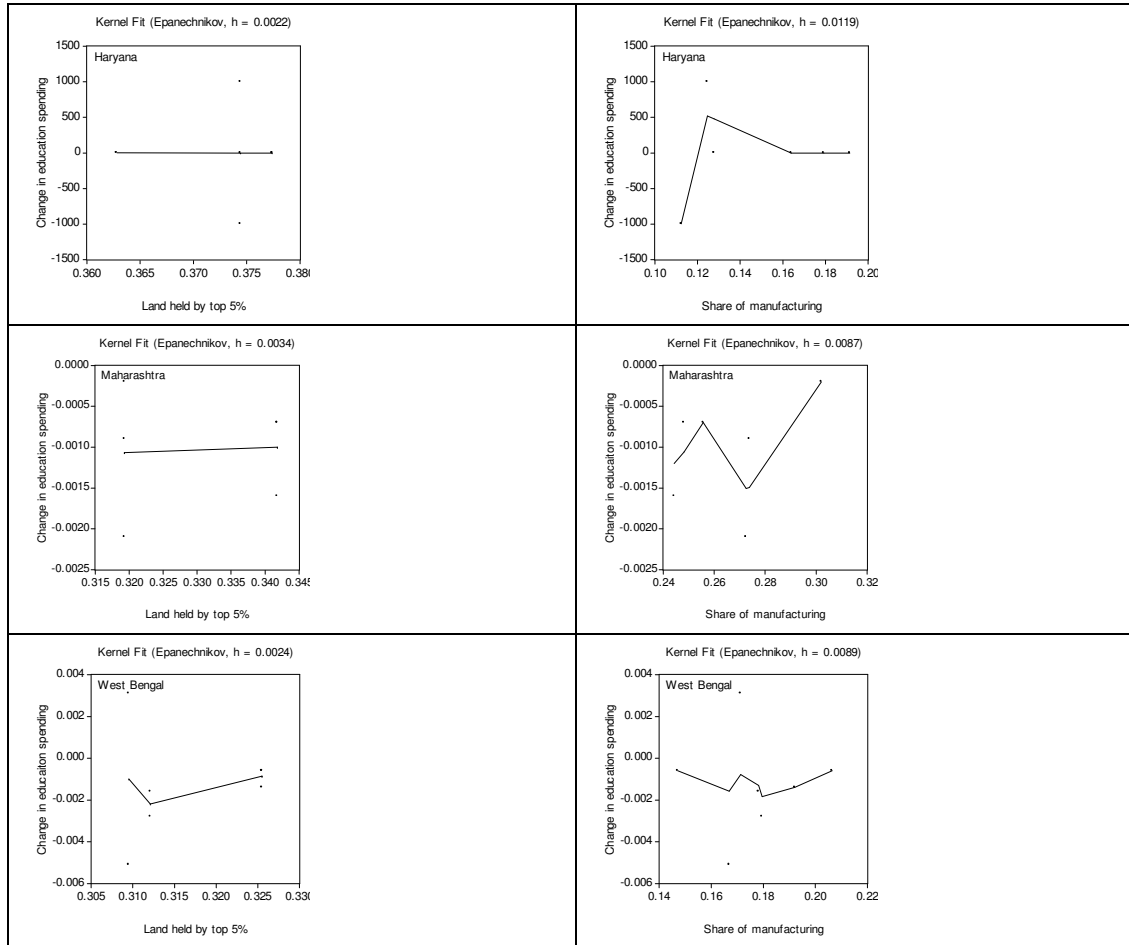
	1		2		3		4		5		6	
Variable	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
Initial education spending	0.008	0.138	0.0006	0.009	0.04	0.540	0.101	1.383	0.02	0.365	0.14	1.872*
Land held by the top 5% (TOP5)					<b>-0.001</b>	<b>-2.03*</b>	<b>-0.002</b>	<b>-1.939*</b>				
Manufacturing share (MFG)											<b>-0.124</b>	<b>-1.831*</b>
Poverty HCR							<b>-0.001</b>	<b>-2.132*</b>	<b>0.0007</b>	<b>2.456**</b>	<b>-0.0007</b>	<b>-3.66**</b>
TOP5*HCR							0.00003	1.607				
MFG*HCR											<b>0.003</b>	<b>2.579**</b>
SCST in govt.	<b>0.0119</b>	<b>1.868*</b>	<b>0.011</b>	<b>1.708*</b>	0.009	1.080	0.005	0.592	0.005	0.418	0.005	0.830
Women in govt.			0.0008	0.405	-0.0007	-0.321	-0.0001	-0.057	0.002	1.166	-0.0002	-0.092
Ethnic heterogeneity	-0.021	-4.23**	-0.02	-4.21**	-0.03	-4.76**	-0.029	-5.36**	-0.02	4.760**	-0.03	5.915**
R <sup>2</sup>	0.54		0.54		0.59		0.65		0.61		0.68	
F-stat	5.63**		5.29**		4.90**		5.62**		5.97**		7.11**	

Note: '\*' denotes significance at 10% or lower level while '\*\*' denotes that at 1% or lower level. Also see note to Table 5.



**Figure 1. Non-parametric Kernel Fit for Selected States**





### Data Preparation

Variable	Source
(1) Education spending as share of state domestic product	Ozler, Dutt and Ravallion, 1996
(2) Net state domestic product from manufacturing (as share of total net state domestic product)	Besley and Burgess
(3) Poverty head count ratio	Ozler, Dutta and Ravallion, 1996
(4) Share of Hindu, SC, ST, Muslim, Christians, Jains, Buddhists, Sikhs in total population; we use this population proportion ( $s_i$ ) to calculate ethnic heterogeneity as $1 - \sum(s_i)^2$	Besley and Burgess, 2000
(6) Land held by top 5%, top 10%, bottom 40% of the population	Besley and Burgess, 2000
(7) Party of the chief Minister	Besley and Burgess, 2000
(8) Winning SC/ST and woman candidate(s) in each state	Butler, Lahiri and Roy, 1996; Election Commission of India website
(9) Combining (7) and (8), we obtain number of SC/ST and women representatives in ruling government	