

The Privatness of Public Expenditure: A model and empirics for the Indian states

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Abstract

What determines the private good/public good composition of public expenditure? We investigate this central issue in public finance through the study of the composition of Indian state budgets. Our framework explains how variation in the incomes of core and swing voters and in the intensity of electoral competition alter the relative prices of political support attached to spending of different types, leading to the following predictions: (1) public expenditure on targetable private goods decreases relative to spending on public goods as incomes increase; and (2) public goods rise in importance in the budget as competition intensifies. Using a new measure of public spending on targetable private goods, and a new index of electoral competitiveness in a pooled mean group error-correction framework, we find that both predictions are confirmed for richer states. However, this virtuous situation in which development and competitiveness lead on to more publicness is muted or reversed in poorer states. An Appendix details the new measure of privatness.

JEL Codes: H42, H72, O53, C23.

Key Words: public spending on private goods, price of political support, targetable private goods, electoral competitiveness, core versus swing voter, rents, pooled mean group estimation, , Indian States.

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1. Introduction and overview

A longstanding question in the study of government in a liberal democracy is what determines the parts of economic activity that are brought within the public sector and what parts are left in private hands. If the many answers that have been given were intended to help restrain growth of the public sector, they failed: contemporary governments now loom so large that the related question of what factors determine the division *within* the public sector between what is 'public' and what is 'private' is of comparable importance for an understanding of modern government. Concern with the public/private divide also resounds throughout the normative literature: it is often alleged that democratic politics generates too much redistribution at the expense of economic growth along with excessive rent seeking by influential groups, leading to the under provision of socially productive public goods and services, and too much expenditure on targetable private goods including transfer payments. In other words, it is often argued that democracy leads to too much government, and to too much privateness in public expenditure.

In this paper we use a positive model of the privateness of public expenditure as a guide to an empirical study of the factors underlying the composition of the budget of the Indian states. In the framework we present and test, competing parties in a majoritarian parliamentary system target private goods towards core, relatively committed and easier to target supporters, while supplying public goods to attract the support of less committed and harder to target swing voters. Rents, if they persist in an equilibrium, are delivered to core supporters to help assure their loyalty and turnout in elections, further increasing the privateness of the public budget. The model leads to two main testable predictions: (1) the ratio of targetable private goods publicly supplied to public goods is a decreasing function of the average real income of voters; and (2) public goods become more important in the public budget as the degree of electoral competition rises. These hypotheses are tested using a panel of 14 major Indian states covering about 85% of the Indian population and economic activity. This panel includes states that differ widely in their socio-economic characteristics, while sharing a common political heritage based on majoritarian, Westminster style parliamentary government.

A sensible stylized fact, commonly observed, concerning India is that for poorer voters, especially in the less developed states, private benefits publicly supplied bulk large relative to what can be achieved by voters with their private incomes. (In this respect, it may be noted that the ratio of real per capita income in the poorest compared to the richest state can be as low as 1/5 in our sample that extends from 1987/88 to 2011/12). As incomes rise however, the expenditure required to generate a unit of political support through provision of targeted private goods to core supporters who expect some return for their loyalty - what we shall think of as the 'price' of a unit of support raised in this manner - rises relative to the price of support using public goods. For this reason, we may expect electoral equilibria in the richer states to be characterized by greater spending on public goods benefitting the community as a whole. Moreover, this pattern with respect to income should also hold within states across time as income levels rise, as they do over our sample period by as much as 3 times, as well as in the cross-section of the panel.

The importance of the level of development to the private/public composition of the public budget has been recognized before, for example by Magaloni et al (2007) who use a related but different

model (of clientism) with a similar idea about the price of support embedded in it.¹ The role of electoral competition, however, has not been studied in the present context. The intensity of electoral competition as we shall think about it depends on the uncertainty about, or 'swinginess' of electoral outcomes at the constituency level.² Competitiveness in this sense rises with the number of swing voters because they are, by definition, not committed to vote for any particular party, as in Besley et al (2010), Golden and Min (2013), Stokes et al (2013) and others.

When competitiveness in this sense rises, public goods grow in importance in our model of the public budget for two reasons. First, greater electoral uncertainty as a result of the rise in the political salience of swing voters leads to a larger weight being placed on their interests in the expected support functions that opposing parties try to optimize, and these interests are skewed towards nonrival goods and services. In the framework we develop and test, swing voters are inherently more concerned with the general economic consequences of public policy than are core supporters, as in Besley et al and Lindbeck and Weibull (1987), the core being both more ideologically driven and more concerned with specific private benefits.³ Swing voters are also more expensive to effectively target with private goods, as in Dixit and Londregan (1996). Either characteristic implies that these voters are inclined towards parties that promise more publicness in its spending program.

Second, when competitiveness rises because swing voters are now more important for electoral success, the price in terms of expenditure on public goods that is required to generate a unit of support from them falls. It does so because of the nonrivalness in consumption of the public goods such voters favor. Parties engaged in the contest for office thus find it politically profitable to increase spending on public goods. A related mechanism is the center piece of the model of publicness of government spending of Bueno de Mesquita et al (2000, 2008).⁴

Testing these implications of our framework requires a measure of public expenditure on targetable private goods and a measure of political competitiveness.⁵ We present a new measure of public spending on targetable private goods and services constructed from detailed line item budgetary data that first became available in *Finance Accounts* in fiscal year 1987/88. The construction of this composite is described in line item detail in the Online Appendix. We also provide a new measure of competitiveness in elections at the state constituency level that captures the ex ante uncertainty or swinginess of multi-party electoral contests. An index of the kind we construct was suggested quite

¹ The role of income is a part of almost any model of special interest politics when each voter's marginal utility of consumption diminishes with income. The importance of income and its growth in determining electoral success in India is emphasized in a more general setting by Gupta and Panagariya (2014).

² Competitiveness has often been associated with, or defined as ex ante uncertainty about election outcomes. See for example, Blais and Lago (2009) and Grofman and Selb (2009).

³ Stokes et al (2013) also point to the particular importance of mobilizing core supporters to turn out to vote, which requires the provision of private targetable goods. Lindbeck and Weibull (1987) and many others emphasize the importance for parties of catering to the general economic interests of swing or less committed voters.

⁴ The argument in Bueno de Mesquita et al (2000) is not phrased in terms of what determines the relative price of a unit of political support gained by supplying public (or private) goods, though it could be analyzed in this way.

⁵ Others who have investigated the privateness of public budgets are also concerned with these measurement issues. See for example, Drazen and Eslava (2010) who study the privateness of public spending across Columbian localities. Drazen and Eslava's analysis focusses on the variation in privateness over the election cycle, while we emphasize the longer run consequences of development and competitiveness for the composition of the budget. And of course, they are studying Columbia, not India.

some time ago by Przeworski and Sprague (1971), and implemented for Canada by Ferris, Winer and Grofman (2016). Such an index, which differs from the often employed first versus second place vote share in ways outlined later has not, to our knowledge, been used to study public policy in the Indian context.⁶ Both of these measures are of independent interest.

Summarizing, we can say that the novel contributions of the paper are, first, the combining of the influences of the level of development and the degree of political competition in a model of the privateness of public budgets; and second, the construction of new measures of public expenditure on private targetable goods and of multi-party electoral competition at the constituency level required to test the implications of this framework in the Indian state context. A third contribution, introduced below, concerns the implementation of our model using a panel data, error-correction method.

We are not the first to study the relationship between the economy, governance and the privateness of public expenditure, as indicated by the literature we have already cited. For India in particular, there is interesting work on public goods and on the privateness of public spending by Banerjee and Somanathan (2007), Nooruddin (2010), Chhibber and Nooruddin (2004), Thachil and Teitelbaum (2015), and Nooruddin and Simmons (2015) among others.⁷ Some of these papers (e.g., Chhibber and Nooruddin, and Nooruddin and Simmons) relate the composition of the budget to the share of the vote required to become the government or to join a governing coalition. As this share declines, it is argued that incumbent coalitions are incentivized to focus more narrowly on specific segments of the electorate, leading to greater privateness in the budget, as in the model of Bueno de Mesquita et al (2000). We allow for this route through which the composition of the budget may be affected in our empirical work.

To get at the determinants of budget composition over the longer run, the domain of the theory we present, the estimating equations we use are formulated in error-correction form and estimated using the pooled mean group approach of Pesaran and Smith (1995) and Pesaran, Shin and Smith (1999).⁸ This procedure allows for variation in coefficients across states in the shorter run, while calculating a common cointegrating vector. We augment this method by allowing for the possibility that convergence is conditional - that key longer run coefficients may vary with average real income because development varies so widely across Indian states.⁹ Our choice of estimator reflects the availability of data required to measure the composition of state budgets. Longer time series might allow separate treatment of each state in the cointegrating relation. But public finance accounts prior to 1987/88 do not permit adequate measurement of privateness of the budget.

⁶ For application to Canada over the history of the modern state since 1867, see Ferris, Winer and Grofman (2016).

⁷ There is also an extensive empirical literature on public expenditure in India which is not oriented towards the question of what determines the privateness of public spending, including, Dutta (1996), Khemani (2004), Lalvani (2005), Chaudhuri and Dasgupta (2006), Uppal (2011), and Dash and Raja (2012) who study broad categories of expenditure. Interstate variation in sector-specific expenditures for development purposes are studied by Rao and Chakraborty (2006), Dash and Raja (2009), Mukherjee and Chakraborty (2011), and Dash and Mukherjee (2015). State health expenditure is considered by Asfaw et al (2004), Bhalotra (2007), Farahani et al (2009), and Rao and Choudhury (2012). Kaur and Misra (2003), De and Endow (2008), and Iyer (2009) study state education expenditure.

⁸ This dynamic panel data estimator is implemented in Stata by Blackburne III and Frank (2007).

⁹ We test whether in fact key long run coefficients do vary across groups of states defined by real income.

The results of our empirical work confirm the hypothesized effect of income and electoral competition on the privateness of budgets in higher income states, especially in the panel but also when higher and lower income states are considered separately. Thus in the richer states, development and electoral competitiveness are shown to virtuously lead on to greater emphasis on public goods including capital infrastructure. In lower income states, however, we find that these effects are more muted, and even reversed in some samples, a situation that is consistent with a greater emphasis by contesting parties in these states on maintaining the loyalty and turnout of poorer, relatively committed supporters. Counterfactuals are provided to illustrate the difference in the quantitative effects of development and competitiveness on privateness across the states.

The paper proceeds as follows. The formal model is presented in section two, with corresponding estimating equations outlined in section three. New measures of public expenditure on targetable private goods and of multi-party competitiveness are presented in section four. Estimation follows in section five. In section six we provide counterfactuals that illustrate the quantitative importance of competitiveness, and discuss further results designed to investigate the robustness of our findings. Section seven concludes. An Online Appendix provides derivations and proofs, explains in detail how our measure of public expenditure on targetable private goods is constructed, and provides summary statistics.

2. A model of the privateness of public expenditure with core and swing voters, an information asymmetry between voters and parties, and rents

We suppose that each political party's electoral success depends on its ability to attract the votes of a common pool of swing, or relatively uncommitted and harder to target voters, of number n_{st} , in addition to retaining the support of its own, more committed and easier to target core supporters numbering n_{cit} . Here subscript i denotes the party, t denotes the electoral period, and state and constituency subscripts are suppressed for convenience. Within groups, voters are assumed to be homogeneous.

Because of their tastes, or the difficulty of targeting them with private goods, or a combination of these characteristics, swing voters are more concerned with the government's role in improving general economic conditions. They therefore vote to an extent that is more important than for core supporters in response to the levels of public goods, g_{it} promised by the competing parties.

Core supporters may be relatively more interested in party-specific ideas that are not narrowly defined in economic terms, and so may exhibit loyalty to the party that is not conditioned on only what may be promised in the current election. But core supporters must be targetable with private goods q_{it} since they are never loyal to their party *regardless* of the opportunity cost of such loyalty (Wintrobe 1986).¹⁰ After all, they can always decide not to vote. Spending on private goods targeted

¹⁰ This point does not appear to be generally recognized in the core versus swing voter literature (But see Stokes et al 2013). The opportunity cost of loyalty depends on the expected benefits that may flow from support offered to some other, opposing, party. Wintrobe (1986) explains why it is not rational for loyalty to be completely blind to its opportunity cost. We also note that Dixit and Londregan explicitly build into their model the targetability of the core and swing voter groups though they do not discuss the loyalty issue.

to the core also serves to establish a reputation or brand name for any party seeking core support, and on the other side of the implicit exchange that occurs, leaders of groups of core supporters can solicit private benefits by attempting to deliver votes to the governing party (Krishna 2007, Stokes et al 2013).¹¹

For completeness, it is also necessary to acknowledge that governments supply relatively hard to target private goods, z_{it} , like pensions and basic administrative services such as the post office and security. This third type of good must be included to complete a definition of the government budget constraint that can be matched to actual data from budgetary sources.

Asymmetric information arises between voters and parties, in the spirit of Lindbeck and Weibull (1987), Lohmann (1998), Weitz-Shapiro (2012), and Aidt and Mooney (2014). The asymmetric nature of information creates the possibility that rents R_{it} may exist, at least in the short run and possibly also in the longer run. We assume that if rents exist, they are delivered to core supporters after an election as private targetable goods, and so will affect the private/public composition of the public budget.

Before turning to our specification of the information structure underlying the existence and possible persistence of rents, we first define actual, ex post government expenditure in terms of private, public and administrative categories, with party subscripts omitted for convenience. Total (non-interest) nominal government expenditure, G_t , consists of public expenditure on private targetable goods Q_t , public goods $p_{gt}g_t$, and (relatively) nontargetable private administrative goods $p_{zt}z_t$, all interpreted to be in per capita form:

$$G_t = Q_t + p_{gt}g_t + p_{zt}z_t, \quad \text{with } Q_t = p_{qt}q_t + R_t. \quad (1)$$

Here expenditure on private targeted goods consists of two categories, payments made to win electoral support from core voters that are part of an announced electoral platform, and rent, R_t , which is regarded as a residual determined after the election. This is the budget restraint that applies *after* an election because it includes rents that are only known ex post. The ex ante restraint underlying the choice of election platforms is specified below.

It is useful to think of prices and quantities in (1) as being defined in terms of political support units. For example, consider *observed* spending on private targetable goods $p_{qt}q_t$. Given p_{qt} , the price (in terms of public expenditure) of a unit of support gained by supplying private targetable benefits, we can determine the support units of private targetable goods supplied by dividing observed spending by the electoral cost of a unit of support. We do not observe p_{qt} or q_t separately, but we can

¹¹ It may be noted here that some of the literature conflates what we are calling targeted private spending on core supporters with clientism. On clientism, see for example Kitschelt and Wilkinson eds, (2007), Hicken (2011) and Robinson and Verdier (2013). In our view, clientism is more restrictive than targeted special interest spending, requiring the existence of a contractual relationship between a political party promising government assistance in return for the legislative support of a specific group. Its measure thus requires evidence of how political promises can be enforced feasibly. In our analysis, targeted spending is directed at special interest groups of relatively committed voters who can be expected to support the governing party with a reasonably high degree of confidence. In this sense, it is a model of special interest politics.

formulate hypotheses about the determinants of the support prices in (1), and test them empirically, in the manner explained below.

In their attempt to maximize electoral support (a support function is specified shortly), each party proposes a fiscal platform consisting of various types of private and public goods along with an overall government size. The fiscal choices made depend on the relative costs of gaining support through expenditure of various kinds, and in this respect we make two key assumptions. First, we assume that the price of a unit of support gained by spending on targetable private goods, p_{qt} , depends on the level of development, as indexed by per capita real income y_t :

$$p_{qt} = f(y_t), \quad f_y \geq 0, \quad f_{yy} \geq 0. \quad (2a)$$

Thus, for reasons discussed earlier, in higher income compared to lower income states, or within a state as development occurs, larger expenditures on the targetable private good will be required to accomplish the same electoral objective. The second partial derivative allows for the possibility that the rise in the price of support with income is smaller in low income states than it is in the more developed ones: in low income states, it may continue to be politically profitable to target private goods towards core supporters to maintain their loyalty. The quantitative importance of the cross-partial derivatives referred to in (2a), and in (2b) below, is an empirical matter that we shall return to later.

A second assumption is that the price of a unit of support from supplying *public* goods, p_{gt} , falls with the relative number of swing voters or with the cost of targeting them. When the effective number (adjusted for the cost of targeting) of swing voters who tend to favor public goods, ϕ , increases, the cost of providing public goods to satisfy such voters falls because of the nonrivalness of public goods. Thus:

$$p_{gt} = h(\phi_t), \quad h_\phi \leq 0, \quad h_{\phi y} \leq 0, \quad (2b)$$

where $\phi_t = \frac{n_{st}}{n_{ct}} \cdot \frac{k_{ct}}{k_{st}}$, with $\frac{k_c}{k_s}$ representing the relative cost of targeting core and swing voters, and where again we allow for the possibility that this effect is not as strong in the poorer states.

It should be kept in mind here that n_c refers to supporters of a representative party. If a party or member of an incumbent coalition is incentivized to focus narrowly on specific segments of the electorate compared to a situation where it is appealing to, say, the electorate as a whole, the price of a unit of support using *public* goods will be higher in the first situation, and this will lead towards more privateness. Thus the effect of changes in ϕ may be conditional on factors determining the extent to which parties can win, or at least enter a governing coalition, by focusing on a narrow versus a broader segment of the electorate, as in Bueno de Mesquita et al (2000) and Chhibber and Nooruddin (2004) and others. This effect is omitted from (2b), but we shall allow for it in our empirical implementation of the model.

2.1 Information asymmetry, competitiveness, and rents

We suppose that the nominal value of government services that can be produced from a given level of revenue, consisting of own tax revenue τ_t and (exogenously determined) grants from the central government ω_t , depends on the ability or competence of the particular political party, a_i , and the realization of a common time specific productivity shock, u_t :

$$G_{it} = a_i u_t (\tau_{st} + \omega_t) \text{ where } u_t \sim N(1, \sigma_u^2) \text{ and } a_i \sim N(\bar{a}, \sigma_a^2), \quad (3)$$

where, from the voter's perspective, the two distributions are assumed to be statistically independent.¹² Each party indexed by i knows its own a_i and, like voters, they know the mean productivity shock. But voters can estimate only the average competence of parties, \bar{a} . It is because voters cannot observe the actual competence of the governing party or its various opponents in the presence of the productivity shock that they will be unable to determine precisely the potential services they could get from their taxes τ_t , and hence identify the truthfulness of any party making election promises. This lack of knowledge allows each successful party, knowing its own competence, to use information compactness to disguise the generation and transfer of rents *after* the election. Thus the information structure in (3) implies that there will be both an ex ante problem facing any party in an electoral contest, and a different situation afterwards.

Swing voters, at least, would like to know which party is most competent. To mitigate the information problem they face, they can guess at the average performance of governing parties using past experience, and demand at least that minimal level of performance from parties contesting the current election. In that case, the value of public output that voters will expect is at least

$$E_i(G_{it}) = E(a_i u_t (\tau_{st} + \omega_t)) = \bar{a} (\tau_{st} + \omega_t), \quad (4)$$

in which case the total (non-interest) public expenditure expected, and delivered, will be

$$\bar{a} (\tau_{st} + \omega_t) = p_{qt} q_t + p_{gt} g_t + p_{zt} z_t. \quad (5)$$

Parties with above average ability could promise more than the minimal level specified in (5), and they will generally do so under pressure from competing parties. To acknowledge this competitive pressure, which leads to the generation of information about party competences, we introduce a parameter θ , $1 < \theta < \theta^*$, the same for all parties, that represents the degree to which competing parties are forced to promise more than the party of average ability. Here the upper bound θ^* is such that $\theta^* \bar{a} = \max\{a_i\}$. In the presence of such competitive pressure, the ex ante constraint that the representative party faces going into an election is

$$E_i(a_i u_t (\tau_{st} + \omega_t) | \theta) = \theta \bar{a} (\tau_t + \omega_t) = p_{qt} q_t + p_{gt} g_t + p_{zt} z_t, \quad (6)$$

¹² We could also describe this as a situation in which parties differ in their ability to collect tax revenue from the same taxable base, which depends on the state of the economy. This interpretation leads to the same propositions as are stated below. For convenience, we adopt the formulation that emphasizes differences across parties in their ability to produce goods and services.

where $\theta\bar{a}(\tau_t + \omega_t)$ is the promised level of government output. This is the ex ante restraint that the representative party takes into account in shaping its policy platform, and the one we shall use in characterizing its ex ante policy choices.

For parties with actual productivity $a_i > \theta\bar{a}$, there will be a positive difference between actual output and what they promised to (and, we assume, do) provide. This residual rent

$$R_t = (a_i u_t - \theta\bar{a})(\tau_{st} + \omega_t), \quad (7)$$

will depend in part on the ex post realization of the productivity shock. Residual rents are used to bolster the loyalty and turnout of supporters through the additional provision to them of targetable private goods.¹³

R_t will appear in recorded public expenditures as in (1). Since a_i is private information, parties with $a_i < \theta\bar{a}$ will be 'exaggerating' ex ante, and they may get away with it in the short run if there is a favourable productivity shock. However, in the longer run, we should expect that elected parties will tend to come from the set of those whose competence levels a_i are in excess of $\theta\bar{a}$. Moreover, as is clear from (7), rents will be a decreasing function of competitiveness as indexed by θ . Rents may or may not persist in the longer run.¹⁴

One may note that the relationship between rents and competitiveness in (7) concerns what happens *in elections*. Rents may also be limited by competition arising in the legislature *between elections*. While the model does not formalize this dimension of competitiveness, we introduce into the empirical model outlined in the next section a proxy for the strength of the government in the legislature between elections - the size of the legislative majority of the governing coalition or government - to allow for the possibility that a governing coalition with more control in the legislature is better able to manipulate the budgetary process to actually realize and deliver rents to favored groups.

2.2 The determination of party platforms, and the private/public composition of the budget

Parties choose platforms to maximize expected support subject to the ex ante budget restraint (6). To begin the formal characterization of the platform for the representative party, we suppose that the probability that a member of group $k = \{c, s\}$ will vote for party i is given by $S_{it}^k = S_{it}^k(V_{it}; V_{j \neq i, t})$, where the policies offered by the parties are V_i , $i = 1 \dots I$, and $V_{j \neq i}$ are platforms offered by competing parties. The expected proportion of the total vote going to party i from both types of voters, $E(S_{it})$, is then

$$E(S_{it}) = n_{ct} S_{it}^c + n_{st} S_{it}^s. \quad (8)$$

¹³ Some part of the rent might be stolen, and in this case the comparative statics introduced below remain essentially the same. If rents persist in the longer run and they are *all* stolen, the ex ante budgetary platforms we describe in what follows will, on average over the business cycle, also be observed ex post.

¹⁴ See West and Winer (1986) on the optimal degree of fraud in a competitive political market.

To go further and derive the effects of income and competitiveness on the composition of the proposed budget, it is necessary to adopt a specific functional form for expected support. We assume that it has the following CES form, where the expectation is with respect to the state of the economy, the given policies of representative party i 's competitors $j \neq i$ and the distributions of the idiosyncratic parts of voter behavior. Omitting the party subscript i for convenience:

$$E[S_t] = \left[\left\{ \alpha^{\frac{1}{\sigma}} q_t^{\frac{\sigma-1}{\sigma}} + (\beta\phi)^{\frac{1}{\sigma}} g_t^{\frac{\sigma-1}{\sigma}} + \gamma^{\frac{1}{\sigma}} z_t^{\frac{\sigma-1}{\sigma}} + \delta^{\frac{1}{\sigma}} \left(c_t \right)^{\frac{\sigma-1}{\sigma}} \right\}^{\frac{\sigma}{\sigma-1}} ; V_{j \neq i} \right] \quad (9)$$

with $\sigma - 1 > 0$. The parameters $\alpha, \beta, \phi, \gamma$, and δ reflect the relative effective weights given to the different components of the budget and to private consumption. Here private consumption is

$$c_t = y_t - \tau_{st} - \tau_{ct}, \quad (10)$$

where y represents the voter's pre-tax income and τ_{st} and τ_{ct} are, respectively, the level of taxes paid by households to the state and central governments. Both current y_t and τ_{ct} are assumed to be exogenous with respect to the party's offered platform. We use the CES form of the support function because it allows price elasticities to vary, while holding the 'income elasticities' due to a change in $\theta \bar{a}(\tau_t + \omega_t)$ constant (and equal to one). This allows us to separate income and substitution effects in order to focus more easily on the role of the factors that affect the prices of support gained by spending on different types of goods. The estimating equations allow for more general effects.

The preceding specification embeds the problem that all parties face in trading off effective support from its core supporters, whose loyalty and turnout in an election depend on the provision of private goods targeted towards them, with support from swing voters who care more about public goods.¹⁵ The resulting first order conditions for the representative party's problem, and the full solution for the ex ante level of taxation and of public expenditure of different types is given in Part 1 of the Appendix. We proceed here by dividing first order condition (Appendix equation A2) for g into first condition (A1) for q , which yields the ratio of expenditures on targetable private versus public goods in the representative party's proposed budget at time t :

$$\frac{p_{qt}q_t}{p_{gt}g_t} = \left(\frac{\alpha}{\beta\phi} \right) \left(\frac{p_{gt}}{p_{qt}} \right)^{\sigma-1}. \quad (11)$$

This leads directly to the following key propositions, which omit party and time subscripts:

Proposition 1: *The ratio of promised public expenditure on private targetable goods relative to public expenditure on public goods, $p_q q / p_g g$, declines with per capita income.*

Proposition 2: *The budget ratio $p_q q / p_g g$ falls as the effective number of swing voters in the electorate indexed by ϕ rises.*

¹⁵ If the support function (9) is concave in the party's own policy instruments, and continuous in the policy instruments, with the instrument set being convex and compact, a theorem due to Nash (1951) assures a non-cooperative equilibrium exists in this multi-party electoral contest (Wittman, 1987).

Proofs:

For proposition 1, by differentiation of (11) with respect to y :

$$\frac{\partial (p_q q / p_g g)}{\partial y} = -\alpha (\sigma - 1) \left(\frac{p_g}{p_q}\right)^{\sigma-2} \cdot p_g \left(\frac{\partial p_q / \partial y}{p_q^2}\right) < 0. \quad (12)$$

For proposition 2, by differentiation of (11) with respect to \emptyset :

$$\frac{\partial (p_q q / p_g g)}{\partial (\emptyset)} = \left\{ \left(\frac{\alpha}{\beta \emptyset}\right) \cdot \sigma - 1 \left(\frac{p_g}{p_q}\right)^{\sigma-2} \cdot \frac{1}{p_q} \frac{\partial p_g}{\partial (\emptyset)} \right\} + \left\{ \left(\frac{p_g}{p_q}\right)^{\sigma-1} \cdot \frac{-\alpha \beta}{\beta \emptyset^2} \right\} < 0. \quad (13)$$

■

The substitution away from private goods or towards public goods as relative prices of support change lie behind these results. If we replace the party subscripts on the parameters of the support function (9) that were dropped for ease of exposition, it is also apparent that while proposed budgets may vary across parties in an equilibrium, the comparative statics identified by the propositions remain the same for all parties, whichever is elected.

If rents are driven out by competition in the longer run, observed spending on private targetable goods relative to spending on public goods will be governed by these propositions. The estimation method we use to consider propositions 1 and 2 empirically permits identification of the longer run effects on budget composition when the role of rents may be suppressed by competition.

2.3 Rents and the composition of the budget in the long run

But what if the information asymmetry between parties and voters created by the conflation of party competence and economic shocks allows rents R to persist? In that case, the following proposition shows that an increase in the intensity of competition, as indexed by θ , will still lead to a change in the actual composition of the budget away from private goods:

Proposition 3: *A rise in the competitiveness of electoral competition as indexed by θ leads to (i) R declining relative to actual public expenditure G , and (ii) to a fall the ratio of observed public expenditure on private targetable goods Q relative to G .*

Proof: See the Appendix, Part 2.

The effects of increases in income, y , or in competitiveness as indexed by \emptyset on Q/R when rents persist are not as clear cut. We deal with these situations below when considering how to formulate budgetary ratios to be used in bringing the model to the data.

3. The empirical model

3.1 Choosing expenditure ratios to represent budgetary composition

Empirical implementation requires budgetary ratios representing spending on private targetable

goods relative to spending on goods which are more non-rival in nature. The main results are based on the use of our new measure of spending on targetable private goods to represent Q in (1). The construction of this measure of private goods publicly supplied is described in the next section. As an alternative we also employ a measure of public sector wages and salaries, the derivation of which from public finance statistics is discussed in the Appendix. Use of this alternative measure of private goods spending provides a useful check on our main results.

As for the denominator in the budget ratios, there are several alternatives available. First, there are some types of public expenditures that almost certainly less rival in consumption than Q , particularly spending on capital infrastructure (net of loans and advances) which we shall refer to as *capital outlay*. This kind of spending is well measured and can be used to represent public expenditure $p_g g$. However, it is just one type of spending on goods and services that are, relative to our measures of Q , more non-rival in nature. Accordingly, we also consider $Q/(p_g NP)$, defined as, public spending on private targetable goods relative to *all other*, non-private goods $NP = G - Q$. NP includes public goods of all types as well as private non-targetable goods z .

To see that propositions 1 and 2 hold for this ratio too, define a composite non-private commodity be $NP = g + (p_z/p_g) \cdot z$ with price p_g . Then we may restate the support function (9) in terms of q and NP goods, with prices p_q and p_g . It follows that (11) then becomes

$$\frac{p_q q}{p_g NP} = \left(\frac{\alpha}{\beta \emptyset}\right) \cdot \left(\frac{p_g}{p_q}\right)^{\sigma-1}. \quad (11a)$$

Since p_g is fixed in the proof of Proposition 1, this proposition carries through when g is replaced by the composite good NP . With respect to Proposition 2, the sign of $\partial p_g / \partial \emptyset$ remains the same as before. There is just one complication: the composite good theorem requires that the ratio p_z / p_g remain fixed, while the second proposition concerns a change in p_g . However, as \emptyset rises, we expect the change in the ratio of expenditures, if it occurs in the data, to be dominated by the effect of the change in p_g relative to p_q , though in the end this is an empirical matter.

A third useful budget ratio is the ratio of spending on private targetable goods relative to total non-interest expenditure, Q/G , as in Proposition 3. Use of Q/G does not rest on the composite good theorem, and this ratio does not by subtraction automatically incorporate into the denominator our new measure of the numerator described below. When $R = 0$, propositions 1 and 2 apply straightforwardly to this ratio since, using (1),

$$\frac{Q}{G} = \frac{1}{1+(p_g g/p_q q)+(p_z z/p_q q)}. \quad (14)$$

When $R > 0$ in the long run, (14) becomes

$$\frac{Q}{G} = \frac{1+(R/p_q q)}{1+(R/p_q q)+(p_g g/p_q q)+(p_z z/p_q q)}. \quad (14a)$$

The new term here compared to (14) is $R/p_q q$ and, as a result, as indicated earlier, it is not

immediately clear that propositions 1 and 2 apply in this case. The reason is that when p_q and p_g change, there are also induced substitutions between public and private sectors: for example, as p_g falls with \emptyset , the size of the public sector will rise as public goods are now cheaper compared to private consumption, and this induced rise in public sector size will lead to more rent. For this secondary effect to invalidate proposition 2, however, R must rise substantially relative to $p_q q$ which also rises as part of the induced rise in public sector size. We expect the primary substitution effects on $p_g g/p_q q$ to dominate the consequences of the secondary rise in public sector size, especially in the longer run when rents may be forced out by competition, though we cannot be sure.

For the convenience of the reader, the following table summarizes all the budgetary ratios which are used in the empirical work along with the corresponding mnemonics appearing in the tables of results. These ratios are generally represented by the dependent variable B in the estimating equations below. It should be noted that $p_g NP$ and G are defined net of interest payments, *capital outlay* is defined net of loans and advances and, because of accounting practices explained in the Part 4 of the Appendix, the estimate of public sector wages and salaries includes maintenance of the capital stock, which is a relatively stable part of the budget.

Budget ratio (B)	Definition (and mnemonics used in tables of results)
$\frac{p_q q}{p_g NP}$	state expenditure on private targetable goods and services/non-private, non-interest state expenditure (<i>Private Targetable/Non-private</i>)
$\frac{p_q q}{G}$	private targetable state expenditure/total non-interest state expenditure (<i>Private Targetable/Total</i>)
$\frac{p_q q}{\text{capital outlay}}$	private targetable state expenditure /state capital outlay, where capital outlay is capital expenditure less loans and advances (<i>Private Targetable/Capital Outlay</i>)
$\frac{\text{wages\&salaries}}{G}$	Wages and Salaries/total non-interest state expenditure (<i>Wages and Salaries /Total</i>).
$\frac{\text{wages\&salaries}}{\text{capital outlay}}$	Wages and Salaries/state capital outlay (<i>Wages and Salaries / Capital Outlay</i>).

Note: For Punjab, capital outlay is negative for years 87/88 and 96/97 due to an accounting anomaly. These years are dropped from the analysis of the budget ratio that includes capital outlay.¹⁶

3.2 Estimating equations

The general form of the cointegrating relation we seek to estimate using our panel data for 14 states is

$$B_{jt} = \alpha_0 + (\alpha_1 \cdot y_{jt} + \alpha_1^L \cdot y_{jt}^L) + (\alpha_2 \cdot c_{jt} + \alpha_2^L \cdot c_{jt}^L) + (\alpha_3' \cdot \mathbf{X}_{jt} + \alpha_3^{L'} \cdot \mathbf{X}_{jt}^L) + \alpha_4' \cdot \mathbf{Z}_{jt} + \varepsilon_{jt} , \quad (15)$$

where B_{jt} is one of the budget composition ratios discussed above. Here the superscript L refers to lower income states, vectors are in bold text, j is a state-specific index and t refers to the fiscal year.

¹⁶ Results are essentially the same if these missing years are replaced with averages over adjacent observations.

The variables superscripted with L are defined to be the same as their un-superscripted counterpart, but only for the lower income states, and are equal to zero otherwise. Thus the coefficient applying to higher income states is the one for the variable without a superscript, while the coefficient applying to lower income states is the sum of the corresponding two coefficients $\alpha_j + \alpha_j^L$, $j = \{1, 2, 3\}$. This formulation allows one to see if there is asymmetry in long run effects across higher and lower income states, allowed for in equations (2 a) and (2b), by looking at the significance of the coefficient on the lower income group. If the coefficient on the superscript L coefficient is significant, then the corresponding difference in coefficients between higher and lower income states is also significant.

The main results are based on the dynamic pooled mean group estimator of Pesaran and Smith (1995) and Pesaran et al (1999), estimated using a maximum likelihood procedure.¹⁷ This estimator is suitable only if the data are integrated of order zero or one: Table A2(b) of the Appendix demonstrates that this condition holds for the data we employ. This method allows for a short run relationship in error correction form that varies across the states in our panel, while assuming that there is one long run relation, conditional in our formulation on the level of per capita income, the degree of competitiveness, and on selected political factors of secondary interest here, as indicated below.

The error correction model from which estimates of the long run relationship (15) are derived, is an error correction reparameterization of the ARDL version of it. The general form of this model is:

$$\Delta B_{jt} = \phi_i (B_{jt-1} - \alpha_{0j} - \alpha'_{1j} W_{jt} - \alpha'_{2j} Z_{jt}) + \gamma'_{1j} \Delta W_{jt} + \gamma'_{2j} \Delta Z_{jt}, \quad (16)$$

where $W = (y_{jt}, y_{jt}^L, c_{jt}, c_{jt}^L, X_{jt})'$ and L indicates a variable defined only for lower income states; = 0 otherwise. The point estimate of the error correction coefficient ϕ_i must lie on the open interval $(-1, 0)$ if the model has a stable long run.

Right side variables, along with mnemonics used in the tables of results discussed in the next section, are:

- y = state real per capita income (*rypc*);
- c = index of multi-party political competitiveness representing the role of both \emptyset and θ , the measurement of which is discussed in detail the next section (*polcomp*, *polcomp_low*);
- X = additional political factors
 - (i) rent generation: seat majority of the winning party/coalition in the state assembly (*seat majority*, *seat majority_low*);
 - (ii) incentive to target private goods towards smaller parts of electorate: number of parties in governing coalition (*parties in govt*, *parties in govt_low*);
 - (iii) proportion of assembly seats reserved for scheduled castes and tribes (*reserved seats*);

and

¹⁷ As noted earlier, the mean group estimator, which is based on separate equations for each element or state in the panel, is not feasible given the length of our time series for each state. Estimation uses *xtpmg* in State 15.

Z = state specific controls

- (i) % state population greater than 60 years (*old*);
- (ii) % labor force in agriculture (*agrilabour*);
- (iii) population of the state relative to national population (*popsize*);
- (iv) FRBM = 1 during state-specific application of Fiscal Restraint and Budget Measures Act; =0 otherwise (*FRBM*);
- (v) grants from the central government relative to total non-interest state expenditure (*grantsize*)
- (vi) indexes of drought and flood.

All variables except FRBM, drought and flood are in log form. Original variables *polcomp*, *old* and *popsize* are linearly interpolated, *polcomp* because we view electoral competition as a continual process, the latter two because only census data are available for selected years. *Seat majority*, *parties in govt* and *reserved seats* are characteristics of specific legislatures for the corresponding legislative period between elections, and are not interpolated. Note that, as for y and c , the estimating equations allow for the possibility that the effects of *seat majority* and of *parties in govt* may differ across high and low income states even in the longer run.

We recall that the index of competitiveness c is an ex ante measure that is predetermined with respect to contemporaneous electoral and other events. y is current income and we should ask if it can also be regarded as predetermined with respect to B . Although increases in the numerator of B - that is, in private goods and services - may increase current incomes, decreases in the denominator, in expenditure on public goods, will tend to reduce it. Thus we see no obvious reason why y will be contemporaneously and systematically correlated in one direction with unobserved events (captured in the error term) that simultaneously alter the *composition* of the budget B . We may regard y as well as c as being predetermined with respect to the current *composition* of the public budget.¹⁸

Seat majority and *seat majority_low*, across all states and for lower income states respectively, are indicators of the strength of the government in the legislature *between* elections, being fixed for the term of a legislature. They are proxies for the ability of the governments to actually channel rents to core supporters despite opposition in the legislature. *parties in govt* and its analogue for lower income states, *parties in govt_low*, allow for the possibility that as the number of parties in a governing coalition rises, its members are incentivized to deliver budgets with more private goods targeted on the (then) smaller segments of the electorate that are required to keep each member of the coalition in power. *Reserved seats* allows for the special role of scheduled castes and tribes in Indian politics. Addressing such groups politically is likely to lead to the provision of private goods targeted towards them.¹⁹

The model of the previous section generates predicted signs for the coefficients on income and competitiveness in the cointegrating relation (15). Propositions 1 and 2 indicate that we should

¹⁸ In a growth model, it might be argued that lower levels of privateness will tend to lead to more growth. But that is another matter.

¹⁹ Reserved seats may also be a proxy for, or correlated with ethnic diversity which may lead to reduced support for public goods benefitting members of 'other' groups. See for example, Alesina et al (1999) and Habyarimana et al (2007).

expect: $\alpha_1 < 0$, while its analogue for lower income states α_1^L may be smaller in absolute value; and $\alpha_2 < 0$, with its low income analogue also possibly smaller in absolute value. Although this is not our main focus, the arguments made earlier suggest that the coefficients of *seat majority*, *parties in govt* and *reserved seats* will be positive.

4. Measuring privateness and electoral competitiveness at the constituency level

We turn next to the details of the measurement of private spending on targetable private goods, and the construction of an index of electoral competitiveness at the constituency level, which is then aggregated up to the state level to measure the ex ante uncertainty associated with electoral outcomes. We use this measure of the uncertainty or competitiveness associated with an election to reflect both the role of swing voters on competitiveness *and* the consequences of the pressure of competition on parties to reveal their competence. The measures of privateness and of competitiveness are of interest in their own right. Estimation results follow in section five.

4.1 Expenditure on private targetable goods and on public goods

Existing public finance accounts in India, or elsewhere for that matter, do not include a separate category for spending on private goods which are targetable towards specific groups of voters over an election cycle. We must construct our own measure using available public accounts data. To do so, we make use of detailed line item budgetary data from the Revenue Expenditure and Capital Expenditure accounting system in the *Finance Accounts* that first became available in fiscal year 1987/88, rather than rely only upon established categories of spending.

Private targetable goods Q are more rival in consumption than are public goods g and are substantially more targetable than the remaining, private good component of public expenditure z . By targetable, we mean that goods or services can be both targeted on groups of voters and also retargeted to a considerable extent from election to election, relative to the more limited targeting possible with the categories of nonprivate goods or public goods. Even public goods can be targeted over some horizon of course; a bridge can be built here and not there. But capital infrastructure takes time to build, and is hard to move afterwards. For purposes of measurement and interpretation of the empirical results, the adjectives private, targetable, and public should be understood in the relative sense in which these components of public budgets can actually be measured.

A detailed description of the line items from the revenue expenditure accounting in the *Finance Accounts* used to compile our measure of targetable private goods is provided in the Appendix, along with a justification as to why each item is relatively private and relatively targetable in nature compared to other components of state budgets. Specific budget codes from the *Finance Accounts* that precisely identify each item we include are also specified. (The Appendix also includes a primer on public finance accounting in India for readers not familiar with Indian public sector accounting practices.)

The summary in Table 1 lists the main categories of expenditures included in our measure of private targetable goods p_q , along with the percentage distribution of the main items for each of two equal sized income groups formed from the 14 major Indian states in our sample on the basis of per capita

real income in fiscal year 2008/09. More than 55 percent of private targetable spending in fiscal year 08/09 is accounted for by three categories: welfare payments to scheduled casts, tribes and other backward classes, general welfare payments, and subsidies for agriculture and for power supply. Another 30 percent is accounted for by expenditures for housing, food, disaster relief and rural development subsidies.

Table 1: Distribution of state spending on targetable private goods, fiscal year 2008/09

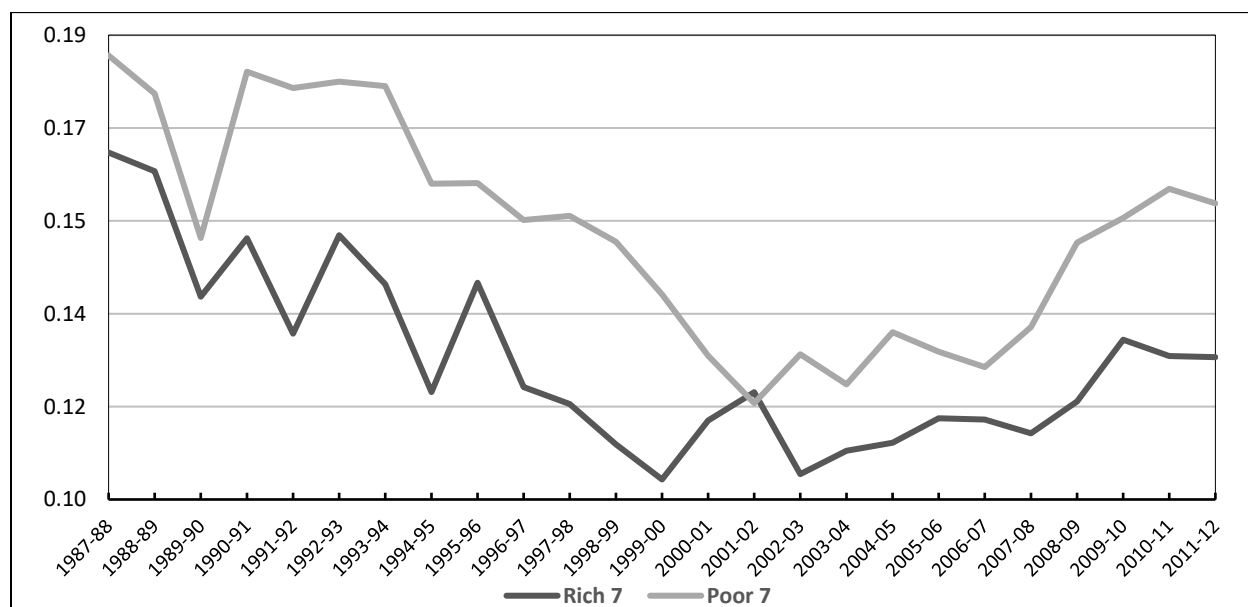
Category of private targetable spending	High Income States (7)	Low Income States (7)
	<i>Percentages of total</i>	
Government loans written off	2.00	1.50
Spending on textbooks, scholarship, and examination for primary, secondary and tertiary education	1.00	0.64
Public health schemes benefit to individuals	1.02	1.00
Rural family welfare services, urban family welfare services, maternity and child health, and family welfare compensation	2.17	2.22
Urban water supply programs, and rural water supply programs	1.22	5.03
Housing	6.66	4.10
Welfare payments to Scheduled Cast(SC), Tribes(SC) and Other Backward Classes(OBC)	13.35	14.99
Social security and welfare (general)	17.17	17.83
Food and nutrition	8.93	10.73
Relief on account of natural calamities	5.86	7.16
Food grain crops, seeds, commercial crops, and fertilizer; animal husbandry; fisheries; and schemes for debt relief to farmers	11.26	6.50
Integrated rural development programs, self-employment programs, employment services, drought prone area programs, and rural employment	8.06	10.30
Power subsidies	16.60	12.39
Civil supplies	4.71	5.60
Total	100.00	100.00

Source: *Finance Accounts*, various years, CAG of India, procured from the NIPFP Data Bank and authors calculations. Notes to table 1 continued: The 14 major states are divided into two equal groups on the basis of per capita real income in 2008/2009. *High income group*: Gujarat, Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu and Karnataka. *Low income group*: Bihar, Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan, West Bengal and Andhra Pradesh.

Figure 1 illustrates the evolution of spending on private goods in the two groups of states over the sample period. Generally spending on private targetable goods (privateness) is larger in the poorer states. The role of spending on targetable private goods declines in all states until about 2001/02 when the two groups of states converge in this respect. But after a few years, privateness is again consistently higher in the poorer states. Privateness in the budget of poorer and richer states shows a similar trend after 2003/04 until about 2009/10, after which it rises somewhat more in the poorer states.

[Figure 1 here]

**Figure 1: Private targetable state spending as a proportion of total noninterest state spending
Averages over 7 higher and 7 lower income Indian states, 1987/88 to 2011/12**



Note: Public spending on lotteries, which is substantial in some states for specific years, is excluded. See Table 1 for classification of states.

The rise in privateness in all states after 2001/02 coincides with an acceleration in the growth of real per capita income across India beginning in the early 2000s, illustrated in figure 2 below. One can also see some divergence in growth across the states as the richer group begins to pull ahead after 2004/05. This divergence of richer and poorer states has been noted before and studied by Rao et al (1999), Sachs et al (2002), Bandyopadhyay (2011), Chakravarty and Dehejia (2017) and others.

Before turning to the measurement of competitiveness, it is useful to look at the relative size of *total* state government spending net of interest payments, shown in figure 3. Total government size relative to state GDP is consistently larger in the poorer group of states, by two to three percentage points. Just as for per capita real income, government size in the two groups begins to diverge in the early 2000s, so that by the end of the sample period, government spending is about 3 percentage points bigger in the poorer states.

[Figures 2 and 3 here]

Figure 2: Real per capita state GDP (rupees)
Averages over 7 higher and 7 lower income Indian states, 1987/88 to 2011/12

Note: See Table 1 for classification of states

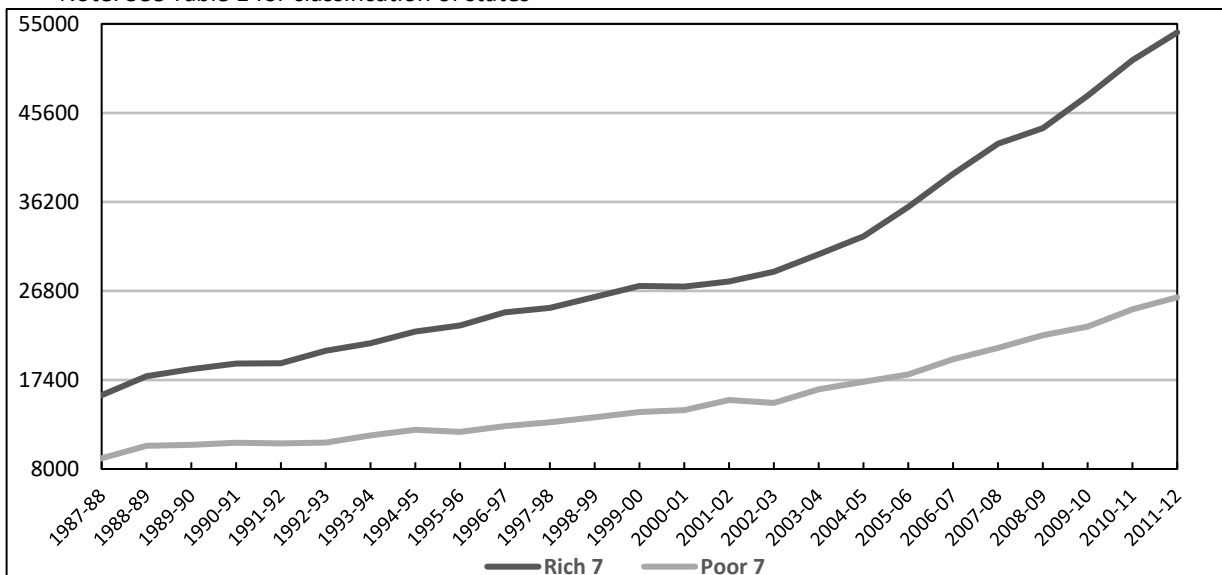
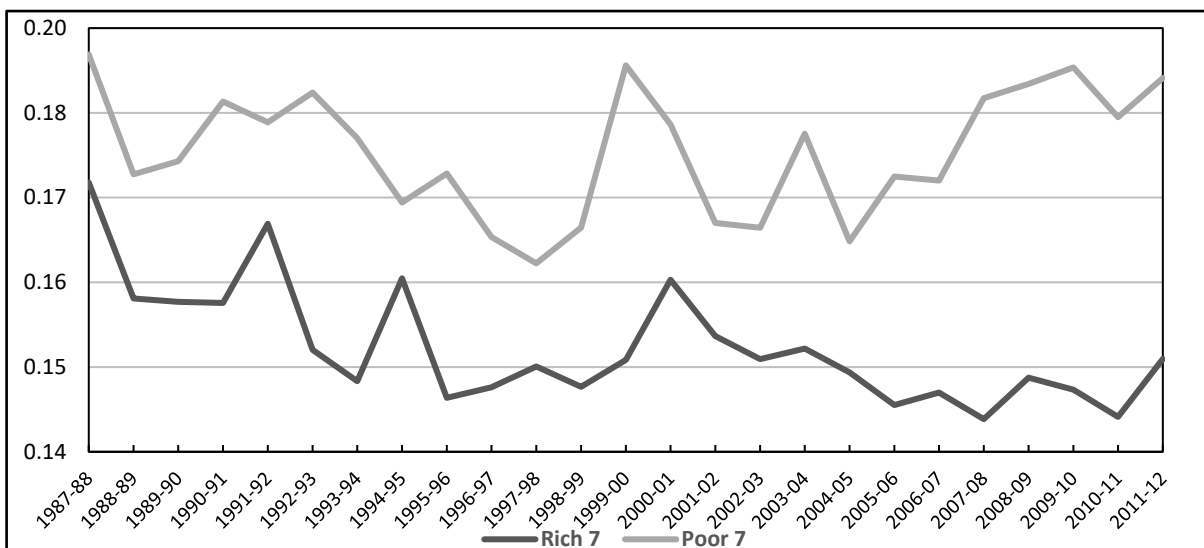


Figure 3: Relative size of state governments:
Noninterest total state expenditure/state gross domestic product.
Averages over 7 higher and 7 lower income Indian states, 1987/88 to 2011/12



Note: Public spending on debt interest is excluded from total spending. See Table 1 for classification of states.

4.2 Measuring competitiveness at the constituency level

Implementation of the model requires a measure of multi-party competitiveness. Often the simple difference in vote shares of first and second place candidates $v_1 - v_2$ is used as a measure of electoral competition, with smaller margins of victory assumed to reflect greater uncertainty about the outcome and hence a greater degree of competitiveness.²⁰ One critical weakness with this measure is that the size of any particular margin can be effectively large or small depending on the volatility of the vote. This point has been recognized for some time (Przeworski and Sprague 1971, Elkins 1974, Pedersen 1979, Bartolini and Mair 1990). A close expected outcome or a relatively small winning margin can be 'effectively large' if that party's vote in that constituency varies little across elections, while even a large margin may be consistent with intense competition in a constituency in which voters often switch political allegiances from election to election. Thus to more accurately reflect the relevant margins facing candidates, constituency vote margins must be adjusted for vote volatility. It turns out empirically that this adjustment is crucial.

A second problem, which applies especially to Indian states, is that it is not just the second place candidate or party that poses a threat to the leader, especially in a context in which coalitions may form a government at the state level, a common situation especially after 1990. The multi-party index of competitiveness that we construct, following an early paper by Przeworski and Sprague (1971), deals in principle with both issues.

Adjusting vote margins for volatility is not easy to do over long periods of time because of redistricting, an issue not addressed by Przeworski and Sprague. In our sample, this applies to electoral boundaries after 2008 following a delimitation commission.²¹ However, the consistency of administrative district boundaries over relatively long periods of time can be used to construct a prior voting history for constituencies that are new (i.e., have no past) due to redistricting after 2008/09.²² To avoid the data loss associated with redistricting, we match all constituencies to districts and, only when necessary, use the average of a given party's votes over constituencies within the relevant district to construct a representative past history for parties and candidates in any newly defined constituency. This past history is a key input into the measurement of vote volatility.

Assuming that redistricting has been dealt with, the measure of volatility of vote shares at time t used to scale the distance to go for each candidate or party in each constituency is

$$volatility_{jt} = \frac{\sum_{p=1}^{12} |v_{pjt} - v_{pjt-1}|}{2}, \quad (17)$$

where v_{pjt} is the vote share of party p in constituency j in election t (or in the synthetic representative

²⁰ For example, in the Indian context see Chhibber and Nooruddin (2000), Arulampalam et al (2009), Crost and Kambhampati (2010), Banerjee and Iyer (2010), Sáez and Sinha (2010), Jha (2014), Dash and Mukherjee (2015), Afridi et al (2017), and Mitra and Mitra (2017) who use the 1 vs. 2 margin $v_1 - v_2$ in their work. Besley and Burgess (2002) use a variant of this margin, the difference in seat shares of the Congress Party and its main competitor(s), for a competitiveness index.

²¹ It also applies to constituencies before 1974, but the data in this paper begin with 1988 because of the need to use line item budget data available from the date onwards.

²² We explain how administrative districts were used to link constituencies across time in the Online Appendix.

of the constituency if it has been redistricted). Note that volatility will incorporate changes in both the size of the franchise and voter turnout. It will be higher when more voters switch their vote between parties, and when an existing party disappears or a new party appears between elections.

The volatility adjusted multi-party competitive margins is based on the idea that every candidate (or party that this candidate represents) views their primary objective as overcoming their deficit vis a vis the previous winner. This deficit is $v_{1jt-1} - v_{pjt-1}$ for all candidates other than the incumbent, whose vote share deficit is zero. The distance to overcome must then be adjusted for volatility to reflect the importance of (swing) voters who have recently switched their vote among candidates:

$$h_{pj}^t = \frac{(v_{1jt-1} - v_{pjt-1})}{Volatility_{jt-1}}, \quad (18)$$

It is important to note that h refers to the previous two elections.

Using the h 's in (18), a candidate or party specific competitiveness index can then be constructed as:

$$c_{pj}^t = \begin{cases} 1 & \text{if } 0 \leq h_{pj}^t \leq 1 \\ \frac{1}{h_j^t} & \text{if } h_{pj}^t > 1 \end{cases} . \quad (19)$$

When $c = 1$ the vote deficit faced by candidate p is smaller than the portion of the electorate that switched parties last time. In that event, we may say that this candidate is fully competitive. Otherwise, the index defined in (19) is less than one, and falls as the margin to be overcome grows relative to volatility. Aggregating across all the candidates within each constituency j , using as weights the vote share that each candidate receives, gives the constituency level competitiveness index:

$$C_j^t = \sum_{p=1}^P c_{pj}^t v_{pjt} . \quad (20)$$

Here $C_j = 0$ indicates no competition among candidates in the constituency (and hence is the value used for constituencies in which an election was uncontested), while $C_j = 1$ is a situation of perfect competition, in which all candidates face vote share 'distances to go' to overtake the frontrunner that are less than the proportion of the electorate that was willing in the recent past to switch their vote. A high value of this index indicates that voters who have switched recently are large relative to the vote deficits facing the challengers to the leading candidate. This is an index of the extent to which a constituency may swing from the previous winner to another party and, we assume, it is also a proxy for the related pressure on parties to reveal knowledge about the party that is, in the first instance, private to party insiders.

Aggregating across all constituencies, using the constituency's share of the aggregate state vote, $adj_{vw_{jt}}$ yields the state level, multi-party competitiveness index that we employ in the estimation,

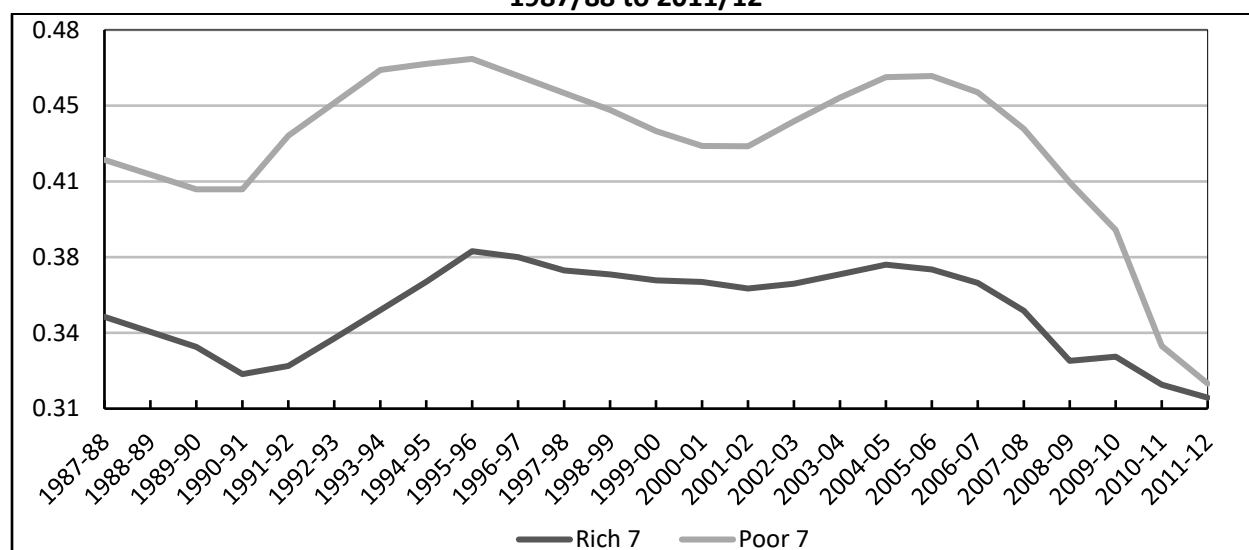
$$C_{SJ}^t = \sum_{j=1}^J (C_j^t \cdot adj_{vw_{jt}}) . \quad (21)$$

The closer that this index is to 1, the greater is the competitiveness of an election.

It is interesting to note that the multiparty, volatility adjusted vote margins index C_{Sj}^t is negatively but only weakly correlated with the first versus second place vote share differential $v_1 - v_2$ over the 1987/88 to 2011/12 period, at -0.21.²³ So the simple vote margin, unadjusted for volatility and absent a role for third and other parties, is a different indicator of competitive pressure at the constituency level than (21). In our view, it is inferior as a measure of electoral competitiveness in the present context. We recall that because the index in (21) uses data from the previous election - the previous election is used to compute the 'distance to go' of each party, while two previous elections are required to measure volatility applying to the previous election - it is an historical measure, predetermined with respect to contemporaneous events.

The linearly interpolated historical competitiveness index is shown in figure 4 for the sample of states divided into two parts on the basis of per capita real state GDP in 2008/09.²⁴ A dramatic increase in competitiveness after the balance of payments shock to the Indian economy in the early 1990s, lasting about 5 or 6 years, is apparent in the figure. It can also be seen that since 1987/88, the poorer states are, on average, consistently more competitive at the constituency level than the richer states, though the difference narrows considerably at the end of the sample period while competitiveness generally declines.

Figure 4: Average multi-party competitiveness for 7 higher and 7 lower income Indian states 1987/88 to 2011/12



Note: Using data for all 14 states, C_{Sj}^t is weakly correlated with the 1 versus 2 vote share differential $v_1 - v_2$ over the 1987/88 to 2011/12 period, at -0.21.

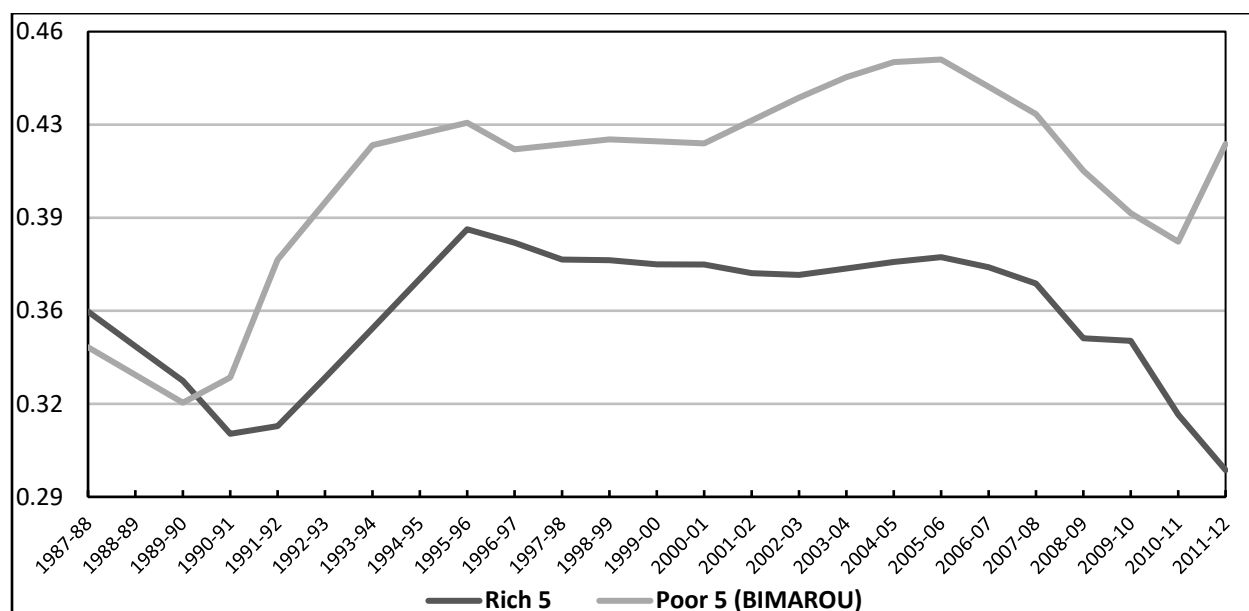
Estimating equation (16) distinguishes between groups of states based on income. Accordingly, we estimate this equation using the 7 richest and 7 poorest division of the states illustrated in figure 4, and also with a sample of the five richest and the 5 poorest states. Figure 5 shows the pattern of

²³ It is somewhat positively correlated with volatility (17), at 0.44 for the same sample. For further investigation of indexes of competition for the Indian states, see Dash, Ferris and Winer (2018).

²⁴ There are approximately the same numbers of state elections across the states up to 2008/09. Thereafter up to the end of our sample in 2011/12, the panel of elections becomes unbalanced in this respect. We utilize the complete data set in our estimation.

multi-party competitiveness at the constituency level for the poorest five or BIMAROU states of Bihar, Madhya Pradesh, Rajasthan, Odisha and Uttar Pradesh, compared to that averaged over the five highest income states, Gujarat, Haryana, Maharashtra, Punjab and Tamil Nadu.²⁵ Again we see that the poorer states are more competitive at the constituency level, but now there is also a period in the late 1980s when competitiveness was similar across these income groups, and instead of convergence at the end of the period, we see some divergence.

Figure 5: Average multi-party competitiveness for the 5 richest and 5 poorest (BIMAROU) states 1987/88 to 2011/12



Note: 5 BIMAROU or lowest income states: Bihar, Madhya Pradesh, Rajasthan, Odisha and Uttar Pradesh. 5 highest income states: Gujarat, Haryana, Maharashtra, Punjab and Tamil Nadu.

Finding an explanation for the patterns in figures 4 and 5 is an interesting challenge for future research. Here we are concerned with the consequences of them.

5. Estimation results

The empirical model allows for distinct long run coefficients on income, political competitiveness, seat majority and the number of parties in the governing coalition for groups of states defined by level of real per capita income. Table 2 presents results for the states grouped into two equally sized groups: first the full 14 states divided into the 7 higher and 7 lower income states on the basis of per capital real income in 2008/09 (the 7+7 sample); then for 10 states comprising the richest 5 and the poorest 5 (the 5+5 sample). Table 3 presents results for each group of 7 states treated as a separate sample for estimation purposes, where the cross-section aspect of the whole panel is less

²⁵ Although the top 4 states are at times singled out as the high income states by Finance Commissions, to insure convergence of the algorithm used for maximum likelihood estimation, we add Tamil Nadu to the higher income group.

important.²⁶

We present only the long run coefficients derived from the error correction model along with their error correction coefficients and log likelihoods. Some variables appearing in the long run cointegrating relation are not used in the short run dynamics, as indicated in notes to the tables, to insure that the maximum likelihood procedure used converges in all cases. Point estimates indicate that equations in the upper part of table 2 are stable, with significant error correction coefficients that are less than -1 and of a size that indicates moderately rapid convergence. Judging by the log likelihoods, the equations for the ratio of spending on private targetable goods Q relative to the budget as a whole G or to expenditure on all other $p_g NP$ goods fit better than equations explaining the ratio of private goods to capital outlay.

When fitted to states separately, the full model does not work well; a stripped down version that omits variables with insignificant coefficients does better. The model with distinct short runs and a common long run is, in our view, a sensible compromise given the data available. Hausman tests using the consistent estimator of the covariance matrix indicate that this model is preferred to dynamic fixed effects versions that also constraint the short run to be the same across states (with political factors allowed to vary across groups of states in both cases).²⁷

Due to smaller sample sizes, the equations in the lower part of Table 2 that use the smaller sample of 10 states have smaller log likelihoods, and while point estimates of the error correction coefficient are all less than one, in two cases the 95% confidence interval for this coefficient extends somewhat below -1. For related reasons, in Table 3 we report only results for the entire sample divided evenly by real per capita income.

[Tables 2 and 3 here]

²⁶ Estimation with just 5 states does not yield reliable results in our view.

²⁷ Using the covariance estimate from the efficient estimator (dfe instead of pmg in Stata's xtpmg procedure) indicates the opposite, while the mixed estimator is undefined. We conclude from this that the conservative assumption is to treat the short runs as distinct. Fixed effects dynamic estimation leads to a similar pattern of signs of coefficients as discussed below, but statistical significance is not as robust.

Table 2: Public Spending on Private Targetable Goods in the Public Budgets of 14 Major Indian States, 1987/88 to 2011/12
Pooled Mean Group Estimation: Cointegrating relation and error correction coefficient

Dependent variable	Private Targetable/Nonprivate	Private Targetable/Total	Private Targetable/Capital Outlay
Sample (High income+Low income)	(7+7)	(7+7)	(7+7)
<i>real income per capita</i>	-0.618 (7.66)***	-0.564 (7.77)***	-0.634 (2.67)***
<i>real income per cap_low</i>	0.362 (3.05)***	0.31 (3.06)***	0.723 (2.19)**
<i>political competition</i>	-0.31 (2.84)***	-0.267 (2.75)***	-0.182 (0.74)
<i>political comp_low</i>	0.547 (3.68)***	0.421 (3.26)***	-0.511 (1.62)?
<i>seat majority</i>	-0.044 (0.60)	-0.028 (0.43)	-0.234 (1.1)
<i>seat majority_low</i>	0.378 (2.18)**	0.328 (2.16)**	1.81 (3.49)***
<i>parties in govt</i>	0.04 (0.7)	0.047 (0.91)	0.136 (1.03)
<i>parties in govt_low</i>	-0.202 (2.34)**	-0.198 (2.64)***	-0.307 (1.78)*
<i>reserved seats</i>	1.51 (7.32)***	1.33 (7.38)***	0.086 (0.18)
<i>old</i>	1.9 (4.47)***	1.72 (4.65)***	-0.173 (0.19)
<i>agrilabour</i>	0.034 (0.17)	0.105 (0.6)	-0.113 (0.28)
<i>popsize</i>	2.08 (2.18)**	1.50 (1.83)*	-3.22 (1.65)*
<i>FRBM</i>	-0.117 (4.66)***	-0.107 (4.86)***	-0.129 (2.04)**
<i>grantsize</i>	0.278 (6.39)***	0.242 (6.39)***	-0.011 (0.14)
<i>ec coefficient</i>	-0.837 (8.51)***	-0.83 (8.51)***	-0.754 (8.43)***
95% C.I. for ec coeff.	-1.03 -0.644	-1.02 -0.639	-0.93 -0.579
Log likelihood	255.31	301.60	21.40
Observations (States)	319	319	316
Sample (High income+Low income)	(5+5)	(5+5)	(5+5)
<i>real income per capita</i>	-0.264 (2.22)**	-0.222 (2.14)**	-0.78 (2.23)**
<i>real income per cap_low</i>	0.196 (1.34)	0.149 (1.21)	0.671 (1.29)
<i>political competition</i>	-0.015 (0.07)	-0.014 (0.07)	-0.447 (1.23)
<i>political comp_low</i>	0.02 (0.08)	0.006 (0.03)	-0.482 (1.01)
<i>seat majority</i>	0.381 (1.27)	0.30 (1.17)	0.623 (1.16)
<i>seat majority_low</i>	-0.205 (0.62)	-0.157 (0.55)	0.578 (0.75)
<i>parties in govt</i>	-0.143 (1.86)*	-0.11 (1.62)?	0.006 (0.04)
<i>parties in govt_low</i>	-0.036 (0.44)	-0.045 (0.62)	-0.192 (0.86)
<i>reserved seats</i>	0.914 (2.31)**	0.768 (2.32)**	1.74 (2.41)**
<i>old</i>	0.308 (0.51)	0.213 (0.42)	1.23 (0.79)
<i>agrilabour</i>	0.098 (0.49)	0.12 (0.7)	-0.963 (1.95)*
<i>popsize</i>	-2.24 (1.81)*	-2.05 (1.97)**	7.55 (2.99)***
<i>FRBM</i>	-0.046 (1.14)	-0.04 (1.18)	-0.211 (2.24)**
<i>grantsize</i>	0.213 (3.85)***	0.191 (3.98)***	0.014 (0.14)
<i>ec coefficient</i>	-0.937 (9.97)***	-0.94 (10.01)***	-0.748 (6.24)***
95% C.I. for ec coeff.	-1.12 -0.753	-1.12 -0.755	-0.983 -0.514
Log likelihood	168.50	201.80	15.02
Observations (States)	226	226	223

Notes: $|z|$ statistic: ***(**)* = significant at 1% (5%) 10%. ?=just misses significance at 10%. See the list of mnemonics for definitions of variables. All variables in logs except *FRBM* and are measured on a fiscal year basis. Only long run coefficients and error correction terms are reported. All variables in the long run are also used in the error correction model in first difference form, except for *old*, *popsize* and *FRBM*, to insure convergence of the maximum likelihood procedure for estimation and to insure point estimates of ec coefficients are greater than -1. We note that since each state has its own short run, variables with the suffix_low need not appear in the short run error correction model. For the Punjab, capital outlay is negative for fiscal years 87/88 and 96/97 due to an accounting anomaly: these two years are dropped when estimating the model that includes capital outlay. **Samples. (1) 7+7 sample:** 14 states, divided into two equal groups on the basis of real per capita real income in 2008/2009. Richer group: Gujarat, Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu and Karnataka. Poorer group: Bihar, Uttar Pradesh, Madhya Pradesh, Odisha, Rajasthan, West Bengal and Andhra Pradesh. **(2) 5+5 sample:** Based on a division of rich (4) and poor states (5) used by the Finance Commission, plus one richer state (TN) to deal with a convergence problem that arise when only 4 states are used in a panel. Middle income states omitted from the higher income group of 7: Kerala and Karnataka. Middle income states omitted from the poorer group of 7: Andhra Pradesh and West Bengal. The poorer 5 states are also referred to as the BIMAROU states (Bihar, UP, MP, Odisha, and Rajasthan).

Table 3: Public Spending on Private Targetable Goods in the Public Budgets of 14 Major Indian States, 1987/88 to 2011/12
Higher and lower income states separately

Pooled Mean Group Estimation: Cointegrating relation and error correction coefficient

Dependent variable	Private Targetable/Nonprivate		Private Targetable/Total		Private Targetable/Capital Outlay	
	(High 7)	(Low 7)	(High 7)	(Low 7)	(High 7)	(Low 7)
<i>real income per capita</i>	-0.458 (6.73)***	-0.192 (1.13)	-0.411 (6.75)***	-0.166 (1.16)	-0.582 (2.24)**	-1.241 (2.77)***
<i>political competition</i>	-0.302 (3.11)***	0.02 (0.18)	-0.261 (3.02)***	0.004 (0.04)	0.113 (0.57)	-0.946 (3.33)***
<i>seat majority</i>	0.127 (1.79)*	-0.002 (0.02)	0.121 (1.91)*	-0.005 (0.06)	-0.556 (2.73)***	0.830 (3.16)***
<i>parties in govt</i>	0.006 (0.1)	-0.146 (4.45)***	-0.001 (0.02)	-0.125 (4.44)***	0.226 (1.56)	-0.201 (1.73)*
<i>reserved seats</i>	1.09 (4.66)***	1.04 (3.31)***	0.993 (4.81)***	0.886 (3.4)***	-0.698 (1.18)	1.73 (1.61)?
<i>old</i>	3.38 (6.16)***	0.065 (0.09)	3.07 (6.46)***	-0.051 (0.09)	0.478 (0.47)	-1.339 (0.44)
<i>agrilabour</i>	0.167 (0.8)	0.193 (0.79)	0.177 (0.95)	0.203 (0.99)	-1.95 (2.98)***	1.765 (2.23)**
<i>popsiz</i>	5.81 (5.06)***	-2.22 (1.62)?	5.12 (5.02)***	-2.12 (1.85)*	3.31 (1.24)	-8.82 (2.46)**
<i>FRBM</i>	-0.136 (4.96)***	-0.047 (1.24)	-0.125 (5.11)***	-0.04 (1.27)	-0.192 (2.65)***	-0.148 (1.10)
<i>grantsize</i>	0.159 (2.87)***	0.316 (5.19)***	0.135 (2.74)***	0.281 (5.44)***	0.093 (0.88)	1.04 (3.70)***
<i>ec coefficient</i>	-0.801 (4.91)***	-0.84 (4.24)***	-0.791 (4.84)***	-0.851 (4.23)***	-0.748 (7.69)***	-0.642(2.77)***
<i>95% C.I. for ec coeff.</i>	-1.12 -0.481	-1.23 -0.452	-1.11 -0.471	-1.24 -0.457	-0.939 -0.557	-1.095 -0.188
<i>Log likelihood</i>	125.04	126.32	147.16	151.29	23.98	-11.56
<i>Observations (States)</i>	163	156	163	156	160	156

Notes: See notes to Table 2. The specification of the estimating equations is the same as in Table 2, except that no allowance for separate coefficients for richer and poorer states is required. High and Low refers to states grouped by level of real income per capita in 2008/09.

When looking at these two tables together, two general features stand out. First, the politics of the budget are evidently different in higher income and lower income states. Second, the politics of capital budgeting are different than for other budget ratios. We take up each of these aspects of the results in turn as they relate to propositions 1 and 2. We also consider the effects of rent seeking by stronger government, represented by *seat majority*, and the effect of the incentive of parties in bigger governing coalitions to target favored parts of the electorate, represented by *parties in govt*. In assessing any of these results, it should be kept in mind that we are dealing with models of the *composition* of the budget.

Concerning income and proposition 1: It is clear that income has a robustly negative effect on the level of privateness in richer states as predicted, for all budget ratios and samples of states. Note that this is also the case, as table 3 shows, when the cross-section heterogeneity of income is substantially reduced by considering each income group of states by itself. For the poorer states, however, in both tables 2 and 3 an increase in per capita income - given by the sum of the coefficients on *real income per capita* and *real income per capita_low* - has a more muted (less negative) effect on the privateness of lower income state budgets and, in the case of capital outlay in the top part of table 2, actually increases it.²⁸ The differences between richer and poorer states are statistically significant in table 2 where this test is both possible and reliable. Notice that the difference in the effects of income across rich and poor states gets larger when rich and poor states are considered separately in table 3.

A reasonable interpretation of these results for the lower income states is that growth in these states leads to budgets that cater more to core supporters than we see occurring in the more developed regions. Greater salience of the core in the budgetary process of less developed states can come from more serious difficulties in getting the core to turn out to vote, from less intense loyalty to one party, a reduced preference for other parts of the budget, or some combination. The smaller negative effect of income for lower income states could also reflect a relatively (to the richer states) reduced preference by swing voters for public services.²⁹

It is evident that assumption (2a) distinguishing the effect of income on the price of support using private goods is not adequate to capture the pattern revealed by these results. There may be a threshold level of income that should be included in the assumption, such that until such a threshold is reached, growth in less developed states has a muted effect, with capital spending being more affected than other public goods and services in this respect. Whatever the reasons, the observed difference in the effects of income between richer and poorer suggests that above some threshold average state income, growth leads to a virtuous result in which privateness in the public budget is reduced as the real incomes of voters rise.

Concerning Propositions 2 and 3, both of which are embedded in our new multi-party competition index: For the higher income states, as competition intensifies privateness of the budget robustly declines, as predicted. However, we again see that the budgetary process in the lower income states is different from that in the richer places, depending on what part of the budget we are considering.

²⁸ When the coefficient with a suffix_low is significant, so is the estimated difference between the two coefficients.

²⁹ In support of this last possibility, we note that the work of Afridi et al (2017) on a related but different topic on Indian states suggests that a majority of voters in lower income states do not value some types of non-private (NP) goods and services as highly as voters in the richer states.

For budget ratios private/nonprivate and private/total spending, the results in tables 2 and 3 show that the effect of competitiveness in poorer states is to increase privateness (table 2), or at best not to alter it significantly (table 3), except in the case of capital outlays.

Again we see that the budget allocation for capital outlay behaves differently. In all cases, the effect of competition on the role of capital spending in the budget is negative for both rich and poor states, and larger in absolute value in the lower income states. So if there is a tendency for competitiveness to raise the degree of privateness in lower income states, this does not occur at the expense of capital infrastructure. More intense competition in the lower income states evidently drives governments to divert resources towards favored groups, leading more targetable goods (in general) to be provided, as we see in the results. But at the same time, as Magaloni et al (2007) suggest, to respond to the electoral pressure, it may pay to diversify the government's appeal by including something for everyone, including some public goods for less partisan voters. This interpretation is reinforced by the finding in Ferris and Dash (2018), who show that the size of the capital budget of Indian states gradually increases as an election approaches.

Concerning the seat majority of the government or governing coalition, which is included here as an indicator of the ability of elected governments to generate rents for favored groups *after* the election: We see in the top half of table 2 that for the ratios defined using budget aggregates, greater government strength in the state assembly between elections leads to greater privateness only in poorer states, with the effect generally being insignificant in the more developed regions. But omitting the middle income states and considering rich and poor states separately does not confirm this. Here the results tend to go the other way, except for capital outlay which in table 3 rises significantly with the strength of the governing coalition in the poorer states. One conclusion, then, is that this variable is not a good indicator of governing party ability to manipulate the budgetary process. (Dropping this variable does not alter the pattern or significance of other results substantially).

We turn other variables, beginning with *parties in govt*. Theory suggests that because each party in a larger coalition can maintain its place in the government by appealing to a smaller segment of the electorate, it is incentivized to lobby for private targetable goods directed to its supporters rather than public goods. In the language of this paper, we would say that the price of a unit of political support for a government coalition member using private targetable goods is lower, the larger is the governing coalition.³⁰ But the results in tables 2 and 3 indicate as a whole that the predicted positive effect on privateness of coalition government does not hold. Either the effect is not significant, or it is negative. When negative, it is so for poorer states. Chhibber and Nooruddin (2004) also find some anomalous results concerning the effect on the budget of the number of parties in a government coalition, and suggest that this may be due to the difficulties coalitions have working out how the bureau is to be managed. Why this might lead to a significantly negative coefficient, and for lower income states, in the present context is not obvious. This is a result that remains to be explained.

³⁰ In assessing the results concerning *parties in govt*, it should be noted that since this variable is in log form, it is similar to a dichotomous dummy variable that indicates the effect of coalition government versus single party government, while still distinguishing between coalitions according to the number of parties of which they are made up.

Reserved seats for scheduled castes and tribes, is generally positive and significant. Parties evidently want to deliver private targetable goods to these communities, a result that will not surprise.

The remaining covariates in the error correction model are included to acknowledge the possible importance of demographics (*old, popsize*), economic structure (*agrilabour*), budget restraint rules (*FRBM*), and grants from the central government (*grantsize*) on the composition of the budget. Note that the budget rule regime represented by FRBM has a consistently negative, significant effect on privateness. Typically budget rules are assessed in terms of their consequences for aggregate spending and the deficit. Here we see a good reason why the composition of the budget may be, or should be, an issue in their design.

A final comment concerns results for models that include *drought* and *flood* - dummy variables recording rainfall that is, respectively, more than two standard deviations below (*drought*), or above (*flood*) mean rainfall - which are not shown in the paper. The introduction of these factors into the long run of the estimating equations in table 2 yields results that do not alter the qualitative nature or pattern of results outlined above.

6. Counterfactuals and further results

The long-run cointegrating relations in table 2 can be used to estimate counterfactuals illustrating the quantitative importance of changes in income and in competitiveness for the privateness of public expenditure. Tables 4a and 4b show what would happen to spending on private targetable goods relative to total non-interest public expenditure, and relative to capital outlay, respectively, if *real income per capita* doubles (i.e., grows at about 5% per year for 14 years), and the electoral competitiveness index rises to equal 1. For this purpose, we use estimates for private targetable spending relative to total noninterest spending in column 2 of table 2, for both the 7+7 and the 5+5 samples. We also compute counterfactual estimates of private targetable spending relative to capital outlay in column 3, since capital spending, which has a higher degree of publicness associated with it than does total expenditure, is observed to involve different responses to changes in the key factors we study.

[Tables 4a and 4b here.]

To estimate the counterfactual numbers in the tables, the difference between the counterfactual number and the actual group average of the variable to be changed in the counterfactual is computed. That difference is then multiplied with the corresponding income group's long-run coefficient and the share of private targetable expenditure to calculate the change in the expenditure share that would result in the counterfactual. The final counterfactual number, in columns 3 and 5, is obtained after adding this number to the actual sample average expenditure share. For example, in table 4a, column 3, the counterfactual number indicates that the ratio of private, targetable expenditure to total non-interest public expenditure of the 7 high income states would be 0.055 if average real per capita income doubled, all else held constant.³¹

³¹ For the high income 7 states (col. 2 of table 2), doubling of per capita income leads to a percentage change of negative 0.564 in the sample expenditure ratio of 0.127, implying a fall in the ratio of 0.072 in the new, hypothetical long run. (Here it should be recalled that all variables in the estimating equations are in log form except for FRBM.)

The substantial effect of growth in reducing privateness in the budget as a whole in the richer states is again apparent in column 3, as is the more muted effect of the same growth on privateness in the budget as a whole in the less developed states. The same sort of pattern - stronger in richer states - with respect to expenditure on capital goods is evident in table 4b. Here we see again the suggestion of a virtuous outcome in the higher income states as growth leads to budgets that involve more public goods, and a more muted or less advantageous effect in the less developed ones.

Counterfactuals based on an assumption of much greater competitiveness (rising to perfection), in columns 5 of tables 4a and 4b, show that with respect to the total budget, increasing competition in elections will reduce privateness in richer states and increase it in poorer states when the 7+7 sample results are used. Using the 5+5 sample however, we see that greater competitiveness leaves the composition of the budget as a whole unchanged in both groups of states. The middle income states obviously play a role in the difference in results for the two samples, but it's not clear if this is by increasing the sample size, or if their behavior is unique.

Pessimism about the effects of competitiveness in the lower income states does not extend to the budgetary role of capital outlay. Capital outlay in all states rises relative to private targetable spending (privateness falls) with more intense electoral competition. Thus we see again that capital budgeting is different than for the budget as a whole.

The implied counterfactual ratio then is $0.055 = -0.072 + 0.127$. Other counterfactuals are computed in similar fashion.

Table 4a
Counterfactual Estimates of State Public Spending on Private Targetable Goods Relative to Total Non-interest Public Expenditure
Higher versus lower income states*

	(1) Private targetable/total noninterest spending. Average over the sample	(2) Sample average real per capita income (rupees)	(3) If per capita income doubles	(4) Sample average level of competitiveness index	(5) If electoral competition becomes more intense (competitiveness index = 1)
High 7	0.127	29677	0.055	0.355	0.105
Low 7	0.152	15343	0.113	0.435	0.165
High 5	0.133	31338	0.104	0.359	0.132
Low 5	0.147	13133	0.136	0.407	0.146

* Using the long run relationship in column 2 of Table 2 for private targetable/total

Table 4b
Counterfactual Estimates of State Public Spending on Private Targetable Goods Relative to Capital Outlay
Higher versus lower income states**

	(1) Private targetable/ capital outlay. Average over the sample	(2) Sample average real per capita income (rupees)	(3) If per capita income doubles	(4) Sample average level of competitiveness index	(5) If electoral competition becomes more intense (competitiveness index = 1)
High 7	1.30	29677	0.474	0.355	1.14
Low 7	1.43	15343	1.55	0.435	0.868
High 5	1.37	31338	0.301	0.359	0.977
Low 5	1.17	13133	1.04	0.407	0.524

** Using the long run relationship in column 3 of Table 2 for private targetable/capital outlay

6.1 Further results: Wages and salaries as a measure of private targetable spending

Table 5 reports results using an estimate of wages and salaries instead of our new measure of targetable private spending as the numerator in the budget ratios used for estimation purposes. Here we consider equations for wages and salaries relative to total non interest spending, and relative to capital outlay. The specification of the equations is otherwise the same as in table 2. As discussed in the Appendix, wages and salaries are best approximated by nonplan spending net of pensions and interest payments, which is, in the Plan/Nonplan expenditure accounts, is equal to wages and salaries plus maintenance. Maintenance can be expected to vary much less than wages over time and across states, so that expenditure ratios using this measure in the numerator will reflect variation in public sector wage bills relative to the other categories of spending we use.

Considering key results concerning income and electoral competitiveness, we see in table 5 that the pattern of results is similar to those in table 2. Higher incomes in the higher income states lead to smaller wage bills in all cases, while the effect for the lower income states is (considering only significant coefficients) either the same or less negative, except in one case, for the 5+5 sample for wages/total spending, where the effect is also negative for the lower income states.

As for the role of competition, it is significantly negative in all cases for the higher income states. In table 5 this includes the 5+5 sample, while in table 2 for that smaller sample, the effect of more competitiveness on the richer states is also negative, but not significant. As in table 2, the effect of competitiveness on the lower income states is either less negative or statistically the same. Thus, using wages and salaries as a proxy for targetable private spending $p_q q$ instead of our new measure of private targetable spending leads to a pattern of results that reinforces our findings based on the new measure.

[Table 5 here]

**Table 5: Public Spending on Wages and Salaries in the Public Budgets of 14 Major Indian States:
1987/88 to 2011/12**

Pooled Mean Group Estimation: Cointegrating relation and error correction coefficient

Notes: $|z|$ statistic: ***(**)* = significant at 1% (5%) 10%. ?=just misses significance at 10%. See notes to table 2. 7+7 refers to 14 states divided into two income groups. 5+5 refers to the 5 richest and 5 poorest (BIMAROU) states.

Dependent variable	Wages and Salaries /Total	Wages and Salaries / Capital Outlay
Sample (High income+Low income)	(7+7)	(7+7)
<i>real income per capita</i>	-0.279 (3.31)***	-1.00 (3.07)***
<i>real income per cap_low</i>	-0.089 (0.95)	1.01 (2.60)***
<i>political competition</i>	-0.335 (3.36)***	-1.40 (2.63)***
<i>political comp_low</i>	0.452 (3.53)***	0.537 (0.89)
<i>seat majority</i>	0.202 (2.12)**	1.06 (2.07)**
<i>seat majority_low</i>	-0.555 (4.22)***	0.173 (0.25)
<i>parties in govt</i>	-0.019 (0.51)	-0.166 (0.85)
<i>parties in govt_low</i>	-0.067 (0.97)	0.081 (0.34)
<i>reserved seats</i>	-0.145 (0.95)	1.68 (1.81)*
<i>old</i>	0.427 (1.07)	1.84 (1.25)
<i>agrilabour</i>	-0.087 (0.66)	-1.55 (2.6)***
<i>popsiz</i>	1.76 (3.11)***	9.00 (3.1)***
<i>FRBM</i>	-0.132 (5.95)***	-0.224 (2.18)**
<i>grantsize</i>	-0.076 (2.85)***	-0.348 (2.79)***
<i>ec coefficient</i>	-0.601 (5.66)***	-0.601 (5.91)***
<i>95% C.I. for ec coeff.</i>	-0.808 -0.393	-0.800 -0.402
<i>Log likelihood</i>	457.34	13.58
<i>Observations (States)</i>	319	316
Sample (High income+Low income)	(5+5)	(5+5)
<i>real income per capita</i>	-0.182 (2.07)**	-0.952 (2.7)***
<i>real income per cap_low</i>	-0.25 (2.09)**	0.97 (1.60)?
<i>political competition</i>	-0.362 (3.66)***	-1.55 (2.82)***
<i>political comp_low</i>	0.419 (3.05)***	0.668 (1.00)
<i>seat majority</i>	0.161 (1.56)	1.22 (2.25)**
<i>seat majority_low</i>	-0.557 (3.83)***	-0.454 (0.56)
<i>parties in govt</i>	-0.032 (0.86)	-0.241 (1.23)
<i>parties in govt_low</i>	-0.029 (0.43)	0.175 (0.69)
<i>reserved seats</i>	-0.332 (1.96)**	1.75 (1.63)?
<i>old</i>	-0.018 (0.04)	2.32 (1.3)
<i>agrilabour</i>	-0.033 (0.24)	-1.29 (1.82)*
<i>popsiz</i>	1.29 (2.21)**	8.13 (2.73)***
<i>FRBM</i>	-0.13 (5.59)***	-0.374 (3.04)***
<i>grantsize</i>	-0.041 (1.49)	-0.227 (1.65)*
<i>ec coefficient</i>	-0.711 (5.82)***	-0.612 (5.78)***
<i>95% C.I. for ec coeff.</i>	-0.95 -0.471	-0.82 -0.404
<i>Log likelihood</i>	321.23	12.23
<i>Observations (States)</i>	226	223

7. Conclusions

Governments are so large in the economic life of most economies that the question of what determines the division *within* the public sector between what is 'public' and what is 'private' is of substantial importance for an understanding of the role of modern government in society. We have studied this public-private divide by modeling the share of public spending on private targetable goods in the budgets of Indian state governments. To do so, we have focused on how the price of political support gained by supplying such goods changes when incomes change, and how the price of support using public goods is affected by changes in the intensity of political competition. Growth increases the price of support gained by supplying targetable private goods, thereby leading to budget plans in which spending on such goods is reduced. An increase in the competitiveness of an election leads to a reduction in the price of support gained from supplying public goods, and thus to planned increases in spending on nonrival goods. The existence of rents, if they are not forced out by competition in the longer run, complicates these propositions since they are at least partly distributed in the form of private goods, though we still may expect both propositions to hold.

Although the prices of a unit of electoral support generated by expenditures of different types are not observed, predictions concerning the effect of changes in these prices can be translated into hypotheses about the expenditure composition of observed budgets. To test the resulting predictions of our model, we have constructed a new measure of public spending on private targetable goods from line item budgetary data, and a new (to India) measure of electoral competitiveness which reflects the swingyness of constituency level elections. The multi-party, volatility adjusted, measure of electoral competitiveness we calculate and employ depends on the vote shares the various candidates in a constituency must gain to overcome the leading candidate, relative to the share of the electorate that has switched candidates and parties in recent past elections. This index is predetermined with respect to the current election.

The new measures of privateness and competitiveness are of interest in their own right. It turns out that on average over the 1987/88 to 2011/12 period we explore, privateness in the state budget has been on average higher in lower income states, and constituency elections in the less developed states have been on average more competitive than those in the richer states, with the extent of both of these differences varying across time and space.

Pooled mean group estimation using these new measures as part of a model of the composition of Indian state budgets confirms the negative role of income growth on the privateness of budgets in the richer states, after controlling for other aspects of political, demographic and economic structure. This holds even when cross-section heterogeneity across the states is substantially removed by separating the 14 states in our panel into higher and lower income groups. In the lower income, less developed states, growth has a more muted effect on privateness, and may even increase it in some cases. It is as if below some income threshold, increases in state tax revenue generated by rising incomes are used to insure the loyalty and turnout of lower income core supporters despite the increase in the relative price of support using private goods.

More intense electoral competitiveness in richer states is also shown to have a negative effect on privateness in richer states, as predicted. The effect of competitiveness in elections in less developed states is not as clearly established in our results. In our preferred estimates (using all 14 states in the

pooled mean group estimation in Table 2) spending on targetable private goods relative to non-private and relative total non-interest spending actually rises with the intensity of competition in the poorer states, as if there is an arms race among the parties to deliver private goods to core supporters.

However, spending *relative to capital outlay* declines in *all* states when competition becomes more intense, with the effect being stronger in the less developed ones. Thus if competitiveness does lead to more privateness in the budgets of lower income states, it does not do so at the expense of capital infrastructure. One can imagine a situation in which increased competition in the less developed states leads governments there to try harder to maintain the loyalty and turnout of their core supporters by supplying more private goods, while at the same time increasing expenditure on capital projects at the expense of other parts of the budget in an attempt to broaden its appeal in the face of more intense electoral pressure.

As a whole, the pattern of results for richer and poorer states we uncover indicates that there is a virtuous effect in the more developed states, where growth and electoral competition lead on to more spending on public goods and services. In the less developed states, this fortuitous sequence appears to be muted, and even reversed in some specifications. The consequences of such a pattern for the relative levels of development across the states in the future may be of interest.

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APPENDIX

1. First order conditions and solution of them for levels of taxation and public expenditure of different types
2. Proof of proposition 3 concerning $Q_{it} = p_q q_{it} + R_{it}$ relative to G_{it}
3. Mnemonics, summary statistics and time series properties of the data.
4. A primer on Indian public finance data for state governments, and the measurement of state spending on private targetable goods.

1. Solution for levels of taxation and public expenditure by type

Party and time subscripts are dropped for convenience.

Using λ as the Lagrangian multiplier, the usual first order conditions for an internal maximum of the problem of optimizing expected political support (9) subject to the ex ante budget restraint (6) are:

$$q: \quad \{X_t\} \alpha^{\frac{1}{\sigma}} q_t^{-\frac{1}{\sigma}} - \lambda p_{qt} = 0 \quad (\text{A1})$$

$$g: \quad \{X_t\} (\beta\phi)^{\frac{1}{\sigma}} g_t^{-\frac{1}{\sigma}} - \lambda p_{gt} = 0 \quad (\text{A2})$$

$$z: \quad \{X_t\} \gamma^{\frac{1}{\sigma}} z_t^{-\frac{1}{\sigma}} - \lambda p_{zt} = 0 \quad (\text{A3})$$

$$\tau_s: \quad \{X_t\} \delta^{\frac{1}{\sigma}} (y_t - \tau_{st} - \tau_{ct})^{-\frac{1}{\sigma}} - \lambda \theta \bar{a} = 0 \quad (\text{A4})$$

$$\lambda: \quad \theta \bar{a} (\tau_{st} + \omega_t) = p_{qt} q_t + p_{gt} g_t + p_{zt} z_t \quad (\text{A5})$$

where

$$X_t = \left[\alpha^{\frac{1}{\sigma}} q_t^{\frac{\sigma-1}{\sigma}} + \beta^{\frac{1}{\sigma}} \cdot \phi \cdot g_t^{\frac{\sigma-1}{\sigma}} + \gamma^{\frac{1}{\sigma}} z_t^{\frac{\sigma-1}{\sigma}} + \delta^{\frac{1}{\sigma}} \left(c_t \right)^{\frac{\sigma-1}{\sigma}} \right]^{\frac{1}{\sigma-1}}.$$

To derive (11), we divide first order condition (A2) for g into condition (A1) for q , which yields this ratio of expenditures on targetable private versus public goods in the representative party's proposed budget at time t .

The ratio of spending on nontargetable private goods to spending on public goods depends on the ratio of relative prices, as for other budget ratios. To see this, divide (A3) by (A1) to determine the proportions of p_{qg} and p_{qz} for party i ,

$$\frac{p_{zZ}}{p_{qQ}} = \left(\frac{\gamma}{\alpha} \right) \left(\frac{p_q}{p_g} \right)^{\sigma-1}. \quad (\text{A6})$$

From (A1) and (A4)

$$\frac{\theta \bar{a} (y_t - \tau_{st} - \tau_{ct})}{p_{qQ}} = - \left(\frac{\delta}{\alpha} \right) \left(\frac{p_q}{\theta \bar{a}} \right)^{\sigma-1}. \quad (\text{A7})$$

Note here that $\theta \bar{a}$ is the implicit price of a unit of consumption. From the government budget constraint (6),

$$\frac{\theta \bar{a} (\tau_s + \omega_t)}{p_{qQ}} = 1 + \frac{p_{gG}}{p_{qQ}} + \frac{p_{zZ}}{p_{qQ}}, \quad (\text{A8})$$

so that

$$\frac{\theta \bar{a}(\tau_s + \omega_t)}{p_q q} = 1 + \left(\frac{\beta \phi}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} + \left(\frac{\gamma}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} = 1 + \left(\frac{\beta \phi + \gamma}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1},$$

$$\text{or, } \frac{\theta \bar{a} \tau_s}{p_q q} = \left(\frac{\beta \phi + \gamma}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} + 1 - \frac{\theta \bar{a} \omega_t}{p_q q}. \quad (\text{A9})$$

Then from (A8) earlier,

$$\frac{\theta \bar{a}(\tau_{st})}{p_q q} = \left(\frac{\delta}{\alpha}\right) \left(\frac{p_q}{\theta \bar{a}}\right)^{\sigma-1} + \frac{\theta \bar{a}(y_t - \tau_{ct})}{p_q q}. \quad (\text{A10})$$

Using (A9) and A(10),

$$\left(\frac{\beta \phi + \gamma - \delta}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} + 1 = \frac{\theta \bar{a}(y_t - \tau_{ct} + \omega_t)}{p_q q},$$

which shows that planned expenditure on private government supplied goods $p_q q$ is

$$p_q q = \frac{\theta \bar{a}(y_t - \tau_{ct} + \omega_t)}{\left\{\left(\frac{\beta \phi + \gamma - \delta}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} + 1\right\}}. \quad (\text{A11})$$

Because y_t , τ_{ct} and ω_t are all predetermined or exogenous, expenditure on publicly provided private goods can be seen to depend inversely on its relative price (compared to publicly provided public goods) and will increase with θ and y_t , and decrease with ϕ .

Rewriting (A10) as

$$\tau_{st} = \left(\frac{\delta}{\alpha \theta \bar{a}}\right) \left(\frac{p_q}{\theta \bar{a}}\right)^{\sigma-1} p_q q + (y_t - \tau_{ct})$$

and substituting in (A11) shows that

$$\tau_{st} = \left(\frac{\delta}{\alpha}\right) \left(\frac{p_q}{\theta \bar{a}}\right)^{\sigma-1} \left\{ \frac{(y_t - \tau_{ct} + \omega)}{\left\{\left(\frac{\beta \phi + \gamma - \delta}{\alpha}\right) \left(\frac{p_q}{p_g}\right)^{\sigma-1} + 1\right\}} \right\} + (y_t - \tau_{ct}). \quad (\text{A12})$$

Finally, we solve for promised expenditure on publicly supplied public goods by substituting (A12) into (A1):

$$p_g g = \frac{\beta \phi \theta \bar{a}(y_t - \tau_{ct} + \omega_t)}{(\beta \phi + \gamma - \delta) + \alpha \left(\frac{p_q}{p_g}\right)^{\sigma-1}}. \quad (\text{A13})$$

2. Proof of proposition 3 concerning $Q_{it} = p_q q_{it} + R_{it}$ relative to G_{it}

For convenience, we repeat here the definitions of G_{it} , $E_i(G_{it})$ and R_{it} :

$$G_{it} = a_i u_t (\tau_t + \omega_t) \quad (3)$$

$$E_i(G_{it}) = \theta \bar{a} (\tau + \omega_t) \quad (4)$$

$$R_{it} = a_i u_t (\tau + \omega_t) - \theta \bar{a} (\tau + \omega_t) = (a_i u_t - \theta \bar{a}) (\tau + \omega_t) \quad (7)$$

We retain party and time subscripts in what follows to maintain clearly the distinctions between ex ante and ex post policy and between party specific competence and a productivity shock.

Proof:

We find first that that planned government spending rises relative to promised government spending as competition increases:

$$\frac{E_i(G_{it})}{G_{it}} = \frac{\theta \bar{a}}{a_i u_t} < 1 \quad (A11)$$

so that

$$\frac{\partial \left(\frac{E_i(G_{it})}{G_{it}} \right)}{\partial \theta} = \frac{\bar{a}}{a_i u_t} > 0. \quad (A12)$$

Note here that while both G_{it} and $E_i(G_{it})$ will be increasing, the ratio of planned to actual spending will rise with θ .

Next, observe that

$$\frac{R_{it}}{G_{it}} = \frac{a_i u_t (\tau_t + \omega_t)}{a_i u_t (\tau_t + \omega_t)} - \frac{\theta \bar{a} (\tau + \omega_t)}{a_i u_t (\tau_t + \omega_t)} = 1 - \frac{\theta \bar{a}}{a_i u_t}. \quad (A13)$$

Hence

$$\frac{\partial \left(\frac{R_{it}}{G_{it}} \right)}{\partial \theta} = - \frac{\bar{a}}{a_i u_t} < 0. \quad (A14)$$

Also, since

$$\frac{R_{it}}{E_i(G_{it})} = \frac{a_i u_t (\tau_t + \omega_t)}{\theta \bar{a} (\tau_t + \omega_t)} - \frac{\theta \bar{a} (\tau + \omega_t)}{\theta \bar{a} (\tau_t + \omega_t)} = \frac{a_i u_t}{\theta \bar{a}} - 1 > 0, \quad (A15)$$

$$\frac{\partial \left(\frac{R_{it}}{E_i(G_{it})} \right)}{\partial \theta} = - \frac{a_i u_t}{\bar{a} \theta^2}. \quad (A16)$$

Thus rents fall relative to both actual and planned government spending as θ increases.

Using the above results,

$$\frac{Q_{it}}{G_{it}} = \frac{Q_{it}}{E_i(G_{it})} \frac{E_i(G_{it})}{G_{it}} = \frac{p_q q_{it} + R_{it}}{E_i(G_{it})} \left(\frac{E_i(G_{it})}{G_{it}} \right) = \left(\frac{p_q q_{it}}{E_i(G_{it})} \right) \left(\frac{E_i(G_{it})}{G_{it}} \right) + \frac{R_{it}}{G_{it}} \quad (\text{A17})$$

where $\left(\frac{p_q q}{E_i(G_{it})} \right)$ is independent of θ because all ex ante budget ratios are.

Hence

$$\frac{\partial \left(\frac{Q_{it}}{G_{it}} \right)}{\partial \theta} = \left(\frac{p_q q}{E_i(G_{it})} \right) \frac{\partial \left(\frac{E_i(G_{it})}{G_{it}} \right)}{\partial \theta} + \frac{\partial \left(\frac{R_{it}}{G_{it}} \right)}{\partial \theta}. \quad (\text{A18})$$

And since $p_q q$ is only one part of $E_i(G_{it})$,

$$\frac{\partial \left(\frac{Q_{it}}{G_{it}} \right)}{\partial \theta} = \left(\frac{p_q q}{E_i(G_{it})} \right) \frac{\bar{a}}{a_i u_t} - \frac{\bar{a}}{a_i u_t} = \frac{\bar{a}}{a_i u_t} \left[\left(\frac{p_q q}{E_i(G_{it})} \right) - 1 \right] < 0. \quad (\text{A19})$$

■

3. Mnemonics, summary statistics, time series properties of the data and correlations

Table A1: Mnemonics, Definitions, and Sources

Mnemonics (variables in tables of results)	Definitions	Sources
<i>private targetable/nonprivate</i>	Ratio of private targetable public spending to nonprivate targetable public spending	Finance Accounts and calculations of authors
<i>private targetable/total</i>	Ratio of private targetable public spending to total noninterest public spending	Finance Accounts and calculations of authors
<i>private targetable/capital outlay</i>	Ratio of private targetable public spending to capital outlay	Finance Accounts and calculations of authors
<i>wages and salaries/ total</i>	Ratio of proxy for wage bill of state government (nonplan spending net of pensions and debt servicing) to total noninterest public spending	Finance Accounts
<i>wages and salaries/capital outlay</i>	Ratio of proxy for wage bill of state government (nonplan spending net of pensions and debt servicing) to capital outlay	Finance Accounts
<i>real income per capita</i> <i>real income per cap_low</i>	Per capita state gross domestic product (SGDP) at 2004/05 constant prices	Central Statistical Organization (CSO), India
<i>political competition</i> <i>political competition_low</i>	Multiparty index of volatility-adjusted differences in vote shares to go (to overcome the leading candidate). State average of constituency level values. The index value varies between 1 (Perfect competition) and 0. See (25). Historical measure = lagged value (for previous election)	Election Commission of India and calculations of authors
<i>seat majority</i>	Ratio of seats occupied by the governing party or coalition to total seats in the state assembly (Vidhan Sabha)	Lalvani (2005) and calculations of authors
<i>parties in govt</i> <i>parties in govt_low</i>	Number of parties in the state governing coalition (= 1 if single party government)	Lalvani (2005) and calculations of authors
<i>reserved seats</i>	Ratio of seats reserved for Scheduled Castes and Schedule Tribes to total seats in the state assembly	Election commission of India
<i>popsize</i>	Ratio of state population to total population of the country	Central Statistical Organization
<i>old</i>	Ratio of persons 60 or more years old to total state population	Census of India
<i>agrilabour</i>	Ratio of agriculture labourers to total workers in a state	Census of India
<i>grantsize</i>	Total grants to the states from the central government relative to state total noninterest public spending	Finance Accounts
<i>flood</i>	dummy variable: =1 when annual average rainfall is two standard deviations above the state specific rainfall mean; = 0 otherwise	Statistical Abstract of India and calculations of authors
<i>drought</i>	dummy variable: = 1 when annual average rainfall is two standard deviations below the state specific rainfall mean; = 0 otherwise	Statistical Abstract of India and calculations of authors
<i>FRBM</i>	A dummy variable differentiating between pre- and post-fiscal rule implementation. (The Fiscal Responsibility and Budget Management Act). = 1 when the Act applies in a state; = 0 otherwise	Reserve Bank of India

Table A2(a): Summary Statistics

Variables	Obs.	Seven rich states			Seven poor states			
		Mean	Min.	Max.	Obs.	Mean	Min.	Max.
private targetable / non-private	175	0.149	0.032	0.35	174	0.182	0.073	0.343
private targetable / total	175	0.127	0.031	0.26	174	0.152	0.068	0.255
private targetable / capital outlay ^(a)	173	1.3	0.32	6.55	174	1.43	0.275	20.25
(nonplan) wages and salaries ^(b) / total	175	0.467	0.295	0.672	174	0.441	0.277	0.649
(nonplan) wages and salaries / capital outlay ^(a)	173	4.82	1.47	19.5	174	4.31	1.15	62.67
real income per capita	175	29677	12395	62440	175	15343	4106	42589
political competition	170	0.355	0.22	0.5	164	0.435	0.15	0.92
seat majority	175	0.622	0.5	0.844	175	0.64	0.51	0.848
parties in govt	175	2.14	1	8	175	2.06	1	6
reserved seats	175	0.179	0.1	0.248	175	0.27	0.16	0.388
popsize	175	0.047	0.019	0.093	175	0.077	0.035	0.164
old	175	0.082	0.061	0.013	175	0.07	0.059	0.095
agrilabour	175	0.227	0.11	0.326	175	0.295	0.075	0.533
FRBM	175	0.337	0	1	175	0.257	0	1
grants	175	0.088	0.034	0.159	174	0.165	0.052	0.276
flood	175	0	0	1	174	0.005	0	1
drought	175	0.066	0	1	174	0.011	0	1

Notes: (a) For the state of Punjab, capital outlay is negative for fiscal years 1987-88 and 1996-97 due to an accounting anomaly. These two years are for this state are dropped from the analysis. The averages are calculated after any necessary interpolation of census data and political factors; (b) (Nonplan) wages and salaries = nonplan expenditures less pensions and debt servicing = wages and salaries plus maintenance.

Table A2(b): Panel Unit Root Tests

Variables	Level		1 st Difference	
	Fisher	Pesaran	Fisher	Pesaran
private targetable / nonprivate	112.7***	-7.87***	642.35***	-15.66***
private targetable / total	111.38***	-7.84***	642.96***	-15.70***
private targetable / capital outlay	66.90***	-4.81***	464.15***	-14.07***
real income per capita	1.82	-3.30***	432.67***	-14.3***
political competition	13.74	3.48	41.47**	-2.53***
seat majority	28.58	-0.37	259.46***	-11.29***
parties in govt	26.63	3.07	194.81***	-5.06***
reserved seats	5.72	8.06	156.47***	-1.23*
old	11.71	3.00	51.67***	-2.74***
popsize	35.68	5.52	136.32***	-1.84**
agrilabour	9.22	-3.23***	47.38**	-1.66**
grantsize	96.39***	-7.31***	570.24***	-16.33***

Note: (*), (**), and (***) indicate significance at 10%, 5%, and 1%. The null hypothesis for both tests assumes that the series are non-stationary. Among first generation unit root tests, the Fisher test is the only one compatible with an unbalanced dataset. A second generation unit root test proposed by Pesaran (2007) allows for cross-sectional dependence among the residuals within the panels. The Stata commands for the two tests are *xtfisher* and *pescaadf*.

Table A2(c): Sample Correlations, 1987/88 - 2011/12

	real y	polcomp	pc_adapt	v ₁ -v ₂	vol	vol_adj_m	enp	seat_maj	parties	reserv_seats	old
real income	1.0000										
political comp	-0.1700	1.0000									
pc_adaptive	-0.2378	0.8698	1.0000								
v ₁ -v ₂	-0.1639	-0.2085	-0.2738	1.0000							
volatility	-0.1065	-0.2839	-0.0215	0.4392	1.0000						
vol_adj(v ₁ -v ₂)	-0.0152	0.0571	-0.2628	0.3239	-0.6189	1.0000					
enp	-0.2231	0.0667	0.4213	-0.2741	0.2770	-0.4683	1.0000				
seat majority	-0.0742	-0.1341	-0.2979	0.4816	-0.0956	0.4734	-0.3744	1.0000			
parties in govt	0.0190	-0.3062	-0.4452	-0.2309	-0.2848	0.1470	-0.2871	0.0516	1.0000		
reserved seats	-0.3433	-0.0306	-0.0374	0.1947	-0.1359	0.2632	0.0132	0.2650	-0.3050	1.0000	
old	0.6899	-0.2109	-0.2951	-0.2324	-0.0654	-0.1884	-0.3785	-0.1061	0.3551	-0.3835	1.0000
agrilabour	-0.2722	0.2723	0.2541	0.0939	0.0494	0.0335	0.1186	-0.0985	-0.1501	0.0122	-0.1514
popsize	-0.3467	0.1917	0.3352	-0.1696	-0.0423	-0.0751	0.4020	-0.2455	-0.0429	-0.0911	-0.3634
drought	0.0914	-0.0594	-0.0652	-0.0052	0.0254	-0.0464	-0.0364	0.0208	-0.0138	-0.1003	0.0417
flood	0.0057	-0.0158	-0.0080	0.0125	-0.0160	0.0110	0.0155	0.0002	-0.0038	0.1154	0.0638
FRBM	0.5723	-0.0464	-0.0501	-0.3852	-0.2651	-0.0671	0.1169	-0.1055	-0.0213	-0.0965	0.4539
grantsize	-0.4743	0.0222	0.0162	0.0268	-0.1308	0.0958	0.0799	0.1321	0.0043	0.5189	-0.2930
govtsize	-0.4663	0.1309	0.2495	-0.0761	0.0779	-0.2019	0.4485	-0.1627	-0.1679	0.2468	-0.2812
	agrilabour	popsize	drought	flood	FRBM	grantsize	govtsize				
agrilabour	1.0000										
popsize	0.2798	1.0000									
drought	-0.0396	-0.0218	1.0000								
flood	0.0704	-0.0432	-0.0111	1.0000							
FRBM	0.0638	-0.0158	-0.0140	0.0923	1.0000						
grantsize	0.2379	0.1942	-0.1288	0.1087	0.0284	1.0000					
govtsize	0.3957	0.0950	-0.0686	0.0308	0.0896	0.3442	1.0000				

Abbreviations and additional definitions used in table of correlations:

- real y = real income per capita
- polcomp = political competition: the historical multiparty index of volatility-adjusted differences in vote shares to go (to overcome the leading candidate).
- pc_adapt = pc_adaptive. The adaptive version of polcomp = the average of the lagged and current values of the multi-party political competition index.
- v₁-v₂ = difference in the first and second place candidates' vote shares, averaged across constituencies for each state
- vol = volatility. See the text for definition
- vol_adj(v₁-v₂) = average across constituencies of the volatility adjusted first versus second place vote share margin, (v₁-v₂) / volatility
- enp = effective number of parties using vote shares. Constituency level values, averaged across constituencies for each state.
- seat_maj = seat majority
- parties = parties in government
- reserv_seats = reserved seats
- govtsize = state total noninterest public spending relative to state G

4. A primer on Indian public finance data for state governments, and the measurement of state spending on private targetable goods

In this part of the Appendix we discuss the measurement of spending on private targetable goods and other categories of state spending introduced and discussed in the main text. The data in the paper covers 14 major Indian States from fiscal years 1987/88 to 2011/12. To form our new measure of state spending on private targetable goods, we take advantage of the fact that the nature of accounting in the public sector underwent a major change in 1987/88 when details about individual line items were added to publicly released data.

Detailed information on Public Spending and Revenues are available in the budget documents. The information given in the budget documents is audited by the Comptroller and Auditor General (CAG) of India and is then presented through the *Finance Accounts* for both the Union and State Governments. Because it is audited by the CAG, *Finance Accounts* data are more reliable than the budget documents. *Finance accounts* data also contains the most detailed public finance, time-series data available in India. It is published in print form by the CAG of India beginning in fiscal year 1987/88. The National Institute of Public Finance and Policy (NIPFP), New Delhi, maintains a Data Bank which digitizes this data every year. *Finance Accounts* of all states are made available online at the CAG of India website (<http://www.cag.gov.in/state-accounts>), but only from fiscal year 2006/07 onwards. We have procured the detailed *Finance Accounts* dataset from the NIPFP Data Bank and have used it to construct measures of private, targetable public spending as well as total non-interest spending, capital outlays net of loans and advances, and wages and salaries.³²

The 14 major states for which public expenditure data are compiled are: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.³³ These states constitute more than 85 % of the total Indian gross domestic product (GDP) and population.

A short primer on public finance data for India.

It is useful to begin with a short primer on public finance data in India. Public expenditures in India are recorded in three different ways: (1) Revenue and Capital expenditure accounts; (2) Development and Non-development expenditure accounts; and (3) Plan and Non-plan expenditure accounts. The latter system of classifying public expenditures has recently been discontinued.

³² The NIPFP regularly updates this database. It is maintained mainly for internal use. Interested researchers can write to the NIPFP Data Bank in-charge and inquire about accessing the database. Terms and conditions for accessing this database by non-NIPFP researchers change from time to time. All of the data used in this paper will be available online after publication.

³³ From the point of view of accounting of the public finances at the state level in India, all Indian states can be divided into 'general' and 'special' category states. The 14 major Indian states included in this study constitute the group of non-special category states. Special category states are historically disadvantaged due to difficult and hilly terrain, have low population density or the presence of large tribal population, have a strategic location along an international border, or for other reasons have non-viable finances. Small and/or Special category states are ignored in this study as they are highly reliant on the central government's assistance. Overdependence on central transfers severely constrains the fiscal autonomy of these states and affects their public finance management abilities.

In what follows we briefly describe each of these accounting systems in order to set the stage for our extensive discussion of the measurement of public expenditure on private targetable goods. Also explained here is how we measure state capital outlays, or capital expenditure net of loans and advances, and state expenditure on wages and salaries.

1) Revenue (Consumption) Expenditure and Capital Expenditure

Using the *Finance Accounts*, all public expenditures of Indian states can be divided into Revenue (current or consumption) Expenditure and Capital Expenditure. Current expenditures are incurred to meet the ongoing operational costs of running the government during a fiscal year. The single largest component of operational costs is wages and salaries for public sector employees. (However, a separate accounting of wages and salaries is not available in the budget, an issue discussed further below). A component such as civil administration is not a measure of wages and salaries. Other major components of current expenditure are subsidies of various kinds, departmental expenditures on goods and services of many kinds, or various purposes (detailed more explicitly below), for pensions and for debt servicing.

Capital expenditures are incurred to create assets whose benefits are realized over a period of time. Capital expenditure further can be divided into capital outlays and loans and advances by the state government. Capital outlays constitute the money that a government spends directly through various ministries to purchase or create physical assets such as roads, bridges, irrigation projects, schools, and hospitals. Loans and advances by the state government are capital payments made by the state government to quasi-government agencies such as housing and electricity boards, public sector undertakings, and other parties including individuals.

Capital outlays, that is, capital expenditure less loans and advances, is used in the paper as a measure of spending on goods that are public or nonrival in consumption relative to the measure of private targetable goods that we have assembled (in the manner detailed below) by combining selected detailed line items from the revenue expenditure accounts.

ii) Development and Non-development Expenditure

The Development/Non-development Expenditure classification is intended to help governments analyze how much public money is spent on social and community services and economic services in contrast to spending on general services. Spending on social and community services and economic services are accounted for as Development Expenditure, and spending on general services as Non-development Expenditure. Public health, education, agriculture and allied activities, rural development, energy, industry and minerals, and transport and communication are the major spending items listed as development expenditures. Major non-development expenditure spending items are debt servicing, pensions, and fiscal and administrative services such as the cost of collecting taxes and duties, district administration, police, and public works.

Often development expenditures are misinterpreted as spending on infrastructure and other capital projects. However, development expenditure has both consumption and capital components. A considerable part of development expenditure includes social and economic services, largely consisting of wages and salaries. Most state subsidies are also reported as development expenditure. Wages and salaries are also included on the non-development side, in general administrative services or civil administration. The major components of administrative services are for the secretariat, district administration, police, and departments of public works. Though a significant part of such administrative services consist of wages and salaries (in a proportion that is not known with precision), it is not the entire

state expenditure on wages and salaries. Wages and salaries from other sectors, including public health, education, public welfare and other sectors, are not accounted for here.

*iii) Plan and Non-plan Expenditure.*³⁴

Plan(ned) expenditure refers to the money spent on programs or projects recommended and approved by the Planning Commission of India, which has been recently disbanded. Non-plan expenditure covers expenditures which are (or were) not part of Indian five-year plans. As long as the planned programs and projects are part of a specific five-year plan, spending on such programs and projects is included as a planned expenditure. Once the five-year plan comes to an end, all expenditures incurred on previous plan's projects are covered under the non-plan expenditure category, from next fiscal year onwards. Non-plan expenditure (net of debt servicing and pensions) is therefore increasing over time because of the wages and salaries that arise due to the growing number of post-plan programs and projects and associated periodical pay revision of public sector employees.

The major items covered under non-plan expenditure are debt servicing, pensions, maintenance of capital assets, and wages and salaries. Debt servicing and pensions are listed separately. Non-plan expenditure net of debt servicing and pensions is thus the sum of spending on maintenance of capital assets plus most public sector wages and salaries. Estimates of maintenance at the state level are not available by state. So cannot be taken out of the state figures.

Maintenance and wages and salaries together constitute about 90 percent of non-plan spending net of pensions and debt servicing. On the reasonable assumption that maintenance is a relatively stable amount over time in relation to this total, we may use non-plan spending net of pensions and debt servicing as a proxy for state wages and salaries. It may be noted that providing government employment, which is not the same thing as wages, is a potent electoral strategy, and it would be useful to study employment in the context of this paper. However, there is no time series panel on state employment.

Using Revenue Expenditure in the Finance Accounts to measure spending on private targetable goods.

None of the three systems of public finance accounting explicitly includes the category of private, targetable goods. Therefore, we have constructed our own measures of public expenditure on private goods that are targetable over electoral periods. Since the Revenue Expenditure/Capital Expenditure classification is economically more meaningful than the other, we have used this classification system to construct our new measure of private targetable goods and services using detailed line spending items reported in the Finance Accounts from 1987/88 onwards.

Expenditure on private, targetable goods and services is the public spending on goods that are substantially more rival in consumption than are public goods, $p_g g$. This spending is also substantially more targetable than the remaining, private good component of public expenditure $p_z z$. By targetable, we mean that goods or services can be retargeted to some extent from election to election, relative to the more limited targeting possible with the categories of nonprivate goods z or public goods g . In what follows, the adjectives private, targetable, public, and non-targetable should be understood in the relative sense in which the categories of public expenditure in the model are defined. Even public goods such as building a bridge or a road can be targeted (built here and not there) over some horizon. This does happen of course. But what matters is that the publicness in consumption of capital outlays substantially exceeds

³⁴ The central government will discontinue the Plan/Non-plan accounting for expenditures from fiscal year 2018/19 onwards.

that of our measure of private, targetable goods. Similarly, the residual category of private non-targetable spending (including such items as pensions) is relatively less targetable than the measure of private, targetable spending that we have constructed in the manner explained below.

To construct a measure of public spending on private, targetable goods – private relative to public goods like capital outlays and targetable relative to public goods and private non-targetable spending – we proceed as follows:

The following line items are selected from *Finance Accounts* and added to form the measure of private targetable public spending. These items include at most a small amount of wages and salaries, though it is not possible to know with certainty what that amount is. Some items may include a small amount of wages. These items are from the revenue expenditure account. These items can be adjusted from election to election and targeted to specific types of individuals or interest groups, relative to capital outlays, and relative to the residual category of private goods. In terms of budget line items, we construct a measure of private, targetable goods by adding the following components from the revenue expenditure account:

State public spending on private targetable goods = (1) *Government loans written off* + (2) *Spending on textbooks, scholarship, and examination for primary, secondary and tertiary education* + (3) *Public health schemes for benefit to individuals* + (4) *Rural family welfare services, urban family welfare services, maternity and child health, and family welfare compensation* + (5) *Urban water supply programs, and rural water supply programs* + (6) *Housing* + (7) *Welfare of SC/ST/OBC groups* + (8) *Social security and welfare* + (9) *Food and nutrition* + (10) *Relief on account of natural calamities* + (11) *Food grain crops, seeds, commercial crops, and fertilizer; animal husbandry; fisheries; and schemes for debt relief to farmers* + (12) *Integrated rural development programs, self-employment programs, employment services, drought prone area programs, and rural employment* + (13) *Power subsidies* + (14) *Civil supplies*

Below, we explain how these 14 spending items can be targeted to specific groups of voters via changes in effective administration at the state and local levels and timed electorally. Where it is useful, examples of recently introduced state-specific government sponsored schemes are used to make the discussion specific. Also provided are specific budget codes that can be used to identify the items included in the *Finance Accounts* from 1987/88 onwards:

Each of the 14 expenditure categories is constructed from both major and minor line items in the *Finance Accounts*. Budget codes of line items are presented below under each of the categories of expenditures. All expenditure items are reported under three budget heads of revenue expenditure account: General services, Social services, and Economic services. Each of these three budget heads are further divided into 4-digit Major heads, e.g., 2202 for *General education*, 2210 for *Medical and public health*, and so on. The Major heads further are divided into 2-digit Major sub-heads and the Major sub-heads are further divided into 3-digit Minor heads. For some of the 4-digit Major heads, there are no 2-digit Major sub-heads. For these, the expenditure classification goes from 4-digit Major heads to 3-digit Minor heads. Some of the Major heads appear under two categories of expenditures. For example, spending on Minor head *Irrecoverable loan written off* appears under Major head (2235 – Social security & welfare) of expenditure category *Government loans written off* and the entire spending on Major head (2235 – Social security & welfare) is again accounted under expenditure *Social security and welfare*. In such cases, the spending is accounted under the expenditure where the Minor head is mentioned and the same amount is deduced from the Major head accounted under the other expenditure category. This is done to avoid the double counting of expenditure items. Under some of the 4-digit Major heads, grants transferred to local

governments by the state government are reported as 3-digit Minor heads. Since these transfers are spent by the local governments, they are not part of any of our 14 expenditure categories.

- (1) Government loans written off:** State governments provide loans to individuals for various purposes. However the recovery of such loans is uncertain and often subject to political manipulation. A significant share of individual loans is given to the farmers and such loans are written off from time to time. Writing off farm loans is often used as a part of electoral strategy by most of the parties and such loans are usually written off around the election years. For instance, the pre-electoral announcement of Writing off farm loans by the Bharatiya Janta Party (BJP) if it comes back power was one of the major reasons behind BJP's unprecedented electoral victory in the state of Uttar Pradesh, the largest state of India, in 2017. As it had promised, farm loans worth 360000 million rupees was written off within few months of coming back to power. Subsequently, it had a snowball effect on other states. Punjab and Maharashtra, two other predominate agricultural states, have announced large-scale farm loan waivers following Uttar Pradesh's example. More states are expected to follow the suit as they go to elections.

Budget Codes of *Government loans written off*: [Budget head (A – General services) → Major head (2029 – Land revenue) → Minor head (792 – Irrecoverable loan written off); Budget head (A – General services) → Major head (2075 – Miscellaneous general services) → Minor head (795 – Irrecoverable loan written off); Budget head (B – Social services) → Major head (2202 – General education) → Major sub-head (80 – General) → Minor head (792 – Irrecoverable loan written off); Budget head (B – Social services) → Major head (2217 – Urban development) → Major sub-head (80 – General) → Minor head (795 – Irrecoverable loan written off); Budget head (B – Social services) → Major head (2230 – Labour and employment) → Major sub-head (01 – Labour) → Minor head (792 – Irrecoverable loan written off); Budget head (B – Social services) → Major head (2235 – Social security & welfare) → Major sub-head (01 – Rehabilitation) → Minor head (792 – Irrecoverable loan written off); Budget head (C – Economic services) → Major head (2401 – Crop husbandry) → Minor heads (792 – Irrecoverable loan written off, 795 – Irrecoverable loan written off); Budget head (C – Economic services) → Major head (2404 – Dairy development) → Minor head (792 – Irrecoverable loan written off)]

- (2) Spending on textbooks, scholarship, and examination for primary, secondary and tertiary education:** Though education spending is by and large non-targetable, beneficiaries of spending on textbooks, scholarship, and examinations can be identified. Distribution of text books and offering scholarships to students may be considered private targetable spending because the effective rules vary with elections. Distributing text books on a large scale and increasing the numbers and amounts of fellowships in the years leading to elections are the commonly seen practices in most of the states. Other than distributing text books and awarding scholarships, in recent years, states have introduced various one-time beneficiary schemes targeting students. In 2006, the Bihar state government provided rupees 2000 (later raised to rupees 2500) to every secondary school female student to purchase a bicycle. The objective behind introducing this scheme was to encourage female students to attend secondary schooling. Before 2015 state election, boys attending secondary school were also made eligible to get money for purchasing a bicycle and, in addition to a bicycle, all eligible students were given 1000 rupees to buy school uniforms. Subsequently, many other states also have introduced the bicycle scheme in their respective states. Similarly, the Uttar Pradesh state government distributed free laptops and computer tablets to the students who passed the high

school and intermediate examinations to encourage them for higher studies. A total of 1.5 million laptops were distributed by the state government between 2012 and 2015.

Budget Codes of *Spending on textbooks, scholarship, and examination for primary, secondary and tertiary education*: [Budget head (B – Social services) → Major head (2202 – General education) → Major sub-head (01 – Elementary education) → Minor heads (108 – Text books, 109 – Scholarship, 110 – Examination); Budget head (B – Social services) → Major head (2202 – General education) → Major sub-head (02 – Secondary education) → Minor heads (106 – Text books, 107 – Scholarship, 108 – Examination); Budget head (B – Social services) → Major head (2202 – General education) → Major sub-head (03 – University and higher education) → Minor heads (106 – Text books, 107 – Scholarship); Budget head (B – Social services) → Major head (2202 – General education) → Major sub-head (80 – General) → Minor heads (107 – Scholarship, 108 – Examination)]

- (3) *Public health schemes benefit to individuals*: Various healthcare schemes are in operation at the state level. Since these schemes are state-specific in nature, the number of such schemes and their beneficiaries vary from state to state. Most of these schemes are usually introduced around election years. Beneficiaries of such schemes are often identified and monitored at the local level. Among the recently implemented schemes, Andhra Pradesh state government introduced Aarogya Raksha (Health for All) on the 1st January of 2017. Under this scheme, the lower income groups become eligible to get free healthcare service from the state government. Recently the Karnataka state cabinet approved a scheme called Aarogya Bhagya (free healthcare) for low income population. At present, the Karnataka state runs seven different health schemes and all are expected to be merged under Aarogya Bhagya. This scheme was approved a few months before a scheduled assembly election.

Budget Codes of *Public health schemes benefit to individuals*: [Budget head (B – Social services) → Major head (2210 – Medical and public health) → Major sub-head (01 – Urban health services-allopathy) → Minor heads (103 – Central Government Health Scheme, 109 – School health schemes); Budget head (B – Social services) → Major head (2210 – Medical and public health) → Major sub-head (02 – Urban health-Other system of medicine) → Minor head (200 – Other health schemes); Budget head (B – Social services) → Major head (2210 – Medical and public health) → Major sub-head (06 – Public health) → Minor head (010 – Minimum need programme)]

- (4) *Rural family welfare services, urban family welfare services, maternity and child health, and family welfare compensation*: Like the public health schemes, Indian states implement various schemes related to family welfare. Like most other schemes, these schemes are also populist in nature. Beneficiaries under these are identifiable and can be monitored at the local level. In recent times, Tamil Nadu has been the leading state in introducing some of the popular family welfare schemes in India. A scheme named Thalikku thangam thittam ‘Gold for marriage’ was introduced in 2011 when the AIADMK party came to power. The scheme gives four grams of gold and cash upto rupees 50000 to economically-backward women who have completed their degree or diploma. Under another scheme named ‘Amma baby care kits’, every mother who gave birth to her child at a government hospital gets 16 types of baby-products worth rupees 1000 for free.

Budget Codes of *Rural family welfare services, urban family welfare services, maternity and child health, and family welfare compensation*: [Budget head (B – Social services) → Major head (2211 – Family welfare) → Minor heads (101 – Rural Family Welfare Services, 102 – Urban Family Welfare Services, 103 – Maternity and Child Health, 105 – Compensation, 109 – Child health programmes)]

- (5) *Urban water supply programs, and rural water supply programs*: State governments play a major role in supplying adequate water for drinking and other house hold purposes in both rural and urban areas in India. These services are provided through local administrations. Some localities have uninterrupted water supply and others suffer from water scarcity is a commonly seen situation in India. Political discretion is a reason for this. Hours of water supply can be adjusted from election to election. This is serving as a quasi-public good because it is provided here and not there. Specific states use various schemes to supply drinking water in urban areas. For instance, under Amma Kudineer Thittam scheme, the Tamil Nadu government supplies free drinking water through vending machines in the city of Chennai.

Budget Codes of *Urban water supply programs, and rural water supply programs*: [Budget head (B – Social services) → Major head (2215 – Water supply and sanitation) → Minor heads (101 – Urban water supply programs, 102 – Rural water supply programs)]

- (6) *Housing*: Many of the popular housing schemes in India are implemented by the central government. Over the years, state governments too have played a major role in providing housing to families, usually to the poorer ones. Financing housing at the state level is usually accompanied by subsidies to households. Housing subsidies are carefully monitored and the beneficiaries are easily identifiable.

Budget Codes of *Housing*: [Budget head (B – Social services) → Major head (2216 – Housing)]

- (7) *Welfare of SC/ST/OBC*: The Schedules Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBC) are underprivileged groups in India. All states spend a considerable amount of money for the welfare of SC/ST/OBC under various affirmative action programs. Different states implement different programs and the primary objectives of these programs are to provide better education, health, housing and employment to SC/ST/OBC. Tribal areas are usually underdeveloped and isolated. In the states where a sizeable population live in tribal areas, governments spend money specifically for tribal area development. Expenditures incurred under this head are mostly area specific and individual specific, and subject to political discretion.

Budget Codes of *Welfare of SC/ST/OBC*: [Budget head (B – Social services) → Major head (2215 – Water supply and sanitation) → Minor head (789 – Special component plan for scheduled caste, 796 – Tribal areas sub plan); Budget head (B – Social services) → Major head (2216 – Housing) → Major sub-heads (02 – Urban housing, 03 – Rural housing, 80 – General) → Minor heads (789 – Special component plan for scheduled caste, 796 – Tribal areas sub plan); Budget head (B – Social services) → Major head (2217 – Urban development) → Major sub-head (01 – State Capital Development, 03 – Integrated Development of Small and Medium Towns, 04 – Slum area Improvement, 05 – Other Urban Development Schemes, 80 – General) → Minor head (789 – Special component plan for scheduled caste, 796 – Tribal areas sub plan); Budget head (B – Social services) → Major head (2225 – Welfare of SC/ST/OBC); Budget head (C – Economic services) → Major heads (2401 – Crop husbandry, 2402 – Soil & water conservation, 2403 – Animal husbandry, 2404 –

Dairy development) —> Minor heads (789 – Special component plan for scheduled caste, 796 – Tribal areas sub plan); Budget head (C – Economic services) —> Major head (2406 – Forestry and wild life) —> Major sub-heads (01 – Forestry, 02 – Environmental Forestry and Wild Life) —> Minor heads (789 – Special component plan for scheduled caste, 796 – Tribal areas sub plan)]

- (8) *Social security and welfare*: This item includes some of the most popular publicly funded schemes which provide security and welfare to the vulnerable and unprotected sections of the society. Some of the major welfare schemes such as child welfare, woman's welfare, old age pension, and insurance provided by the government for agriculture and labourers working in informal sectors of the economy are covered under it. Beneficiaries of these schemes receive mostly cash payment on regular basis and they are targetable. The criteria are altered from time to time, new schemes are announced, and old ones are eliminated. Governments can use these schemes as instruments to consolidate their support base.

Budget Codes of *Social security and welfare*: [Budget head (B – Social services) —> Major head (2230 – Labour and employment) —> Major sub-head (01 – Labour) —> Minor head (112 – Rehabilitation of Bonded Labour); Budget head (B – Social services) —> Major head (2230 – Labour and employment) —> Major sub-head (02 – Employment Service) —> Minor heads (101 – Employment Services, 102 – Assistance to the Urban Poor); Budget head (B – Social services) —> Major head (2235 – Social security & welfare)]

- (9) *Food and nutrition*: This item includes government programs for nutritional benefits to the targeted groups such as children, pregnant women, and lactating mothers. All state governments finance special nutrition programs to provide required amount of nutrition to pregnant women, and lactating mothers. The other popular scheme accounted under this item is mid-day meals scheme. The scheme provides free lunches to primary and upper primary school going children on all working days. This scheme intends to provide required nutrition to school going children and reduce school dropout rates. Recently the Tamil Nadu government implemented *Amma Unavagam*, a populist scheme where the city corporation-run canteens offer subsidised food at very low prices. It had an immediate snowball effect on other states. The beneficiaries of these popular schemes are individuals.

Budget Codes of *Food and nutrition*: [Budget head (B – Social services) —> Major head (2202 – General education) —> Major sub-head (01 – Elementary education) —> Minor heads (112 – National Programme of Nutritional to Primary Education); Budget head (B – Social services) —> Major head (2236 – Nutrition); Budget head (C – Economic services) —> Major head (2408 – Food, storage and warehousing) —> Major sub-head (01 – Food)]

- (10) *Relief on account of natural calamities*: From time to time, all Indian states are affected by various natural calamities such as drought, flood, cyclone, famine etc. All states governments have different calamity relief funds and the funds are used to compensate for the losses incurred to people on account of the calamities. The beneficiaries of relief are easily identifiable. The decisions about the amount and timing of compensation and the number of beneficiaries are political issues.

Budget Codes of *Relief on account of natural calamities*: [Budget head (B – Social services) —> Major head (2245 – Relief on account of natural calamities)]

- (11) *Food grain crops, seeds, commercial crops, and fertilizer; animal husbandry; fisheries; and schemes for debt relief to farmers*: These activities are part of primary sector. People employed in these activities are members of strong interest groups, and budget cuts in these items could prove politically very costly. Since most of these expenditures are paid to individuals either in form of subsidies or direct payments from government, it is necessary for the governments to mark the beneficiaries. Majority of the beneficiaries live in rural areas and their support is often essential to win elections. During election years, incumbent parties introduce various populist schemes to reach out to these groups and thereby hope to enjoy their support. Among the recent practices, the Tamil Nadu government introduced *Amma Seeds* scheme before 2016 assembly election. Under this scheme, the Tamil Nadu State Seeds Development Agency distributes seeds to the farmers for free. The agency also provides subsidised kits in the urban areas to cultivate vegetable farming in smaller land and roof-tops.

Budget Codes of *Food grain crops, seeds, commercial crops, and fertilizer; animal husbandry; fisheries; and schemes for debt relief to farmers*: [Budget head (C – Economic services) → Major head (2401 – Crop husbandry) → Minor heads (102 – Food Grain Crops, 103 – seeds, 105 – Manures and Fertilizers, 106 – High yielding variety programme), 107 – Plant Protection, 108 – Commercial Crops, 110 – Crop Insurance, 114 – Development of Oil Seeds, 119 – Horticulture and Vegetable Crops); Budget head (C – Economic services) → Major heads (2403 – Animal husbandry, 2404 – Dairy development, 2405 – Fisheries); Budget head (C – Economic services) → Major head (2435 – Other agricultural programs) → Minor head (101 – Schemes for debt relief to farmers)]

- (12) *Integrated rural development programs, self-employment programs, employment services, drought prone area programs, and rural employment*: These are some of the major publicly funded programs run by the states in the rural areas and these expenditures constitute a significant chunk of total spending under the major head of *rural development*. A majority of rural Indians are directly dependent on these programmes for their livelihood. Beneficiaries of these programs are targetable, with administration varying across states and elections to effectively alter who receives benefits. Parties implementing these schemes claim credit for running them. Recent studies have shown how political affiliation helps households in getting benefits from some of these programs when their favored party is in power. Panda (2015) has found evidence for this in Poverty Alleviation Program, and Das (2015) in Rural Employment Guarantee Program.

Budget Codes of *Integrated rural development programs, self-employment programs, employment services, drought prone area programs, and rural employment*: [Budget head (C – Economic services) → Major heads (2501 – Special programs for rural development, 2505 – Rural employment, 2506 – Land reforms); Budget head (C – Economic services) → Major heads (2515 – Other rural development programs) → Minor head (102 – Community development)]

- (13) *Power subsidies*: In recent years, elections in India are contested by promises to provide *bijli-sadak-paani* (power-road-water), the basic needs for a decent quality of rural life. In India, power supplied for agricultural and household consumption is highly subsidised and power theft is rampant in most parts of India. Providing free electricity to farmers is one of the most commonly observed pre-electoral practices followed by political parties in India. This causes huge losses to the state governments. Since power supply is a politically sensitive issue in most of the states, governments have found it difficult to undertake reforms in this sector. A sizeable amount of public expenditure is

devoted to paying these subsidies to agricultural and households. Hours of power supply can be adjusted from election to election. Manipulating power supply around election years in India is documented by Min and Golden (2014) and Baskaran et al. (2015).

Budget Codes of *Power subsidy*: [Budget head (C – Economic services) —> Major heads (2801 – Power)]

- (14) *Civil supplies*: This spending item consists mostly the cost of supplying basic goods and services to lower income sections of a state. A major part of this item consists of food subsidies. Most of the states supply food items such as rice and wheat at heavily subsidized prices through public distribution system (PDS). The majority of the population in India depends on these subsidized food items and all governments handle this particular item extremely carefully. Mismanaging it could prove politically fatal. Governments often increase the supply of subsidised food items, and sometimes even subsidise the price further as the election approaches.

Budget Codes of *Civil supplies*: [Budget head (C – Economic services) —> Major heads (3456 – Civil supplies)]

Table A3 (repeated from the main text for convenience) presents a snapshot of the distribution of each of the 14 spending items within total public expenditures on targetable private goods for seven rich and seven poor states based on the income in 2008. The numbers are expressed in percentage and the figures are provided for fiscal year 2008-09. Fiscal year 2008-09 is the latest year for which our measures of political competitiveness are available for all 14 major Indian states. The panel becomes unbalanced after this date. The last date for which the budgetary data is available for some state is fiscal year 2011-12

[Table A3 here]

Table A3 (repeated in text): Distribution of state spending on items within the category of public expenditure on targetable private goods. Fiscal year 2008-2009, for 14 major states in two income groups

Category of private targetable spending items	High Income States (7)	Low Income States (7)
	<i>Percentages of total</i>	
Government loans written off	2.00	1.50
Spending on textbooks, scholarship, and examination for primary, secondary and tertiary education	1.00	0.64
Public health schemes benefit to individuals	1.02	1.00
Rural family welfare services, urban family welfare services, maternity and child health, and family welfare compensation	2.17	2.22
Urban water supply programs, and rural water supply programs	1.22	5.03
Housing	6.66	4.10
Welfare payments to Scheduled Cast(SC), Tribes(SC) and Other Backward Classes(OBC)	13.35	14.99
Social security and welfare (general)	17.17	17.83
Food and nutrition	8.93	10.73
Relief on account of natural calamities	5.86	7.16
Food grain crops, seeds, commercial crops, and fertilizer; animal husbandry; fisheries; and schemes for debt relief to farmers	11.26	6.50
Integrated rural development programs, self-employment programs, employment services, drought prone area programs, and rural employment	8.06	10.30
Power subsidies	16.60	12.39
Civil supplies	4.71	5.60
Total	100.00	100.00

Source: *Finance Accounts*, various years, CAG of India, procured from the NIPFP Data Bank.

Notes: 14 states, divided into two equal groups on the basis of per capita real income in 2008/2009.

High income group: Gujarat, Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu and Karnataka.

Low income group: Bihar, Uttar Pradesh, Madhya Pradesh, Orissa, Rajasthan, West Bengal and Andhra Pradesh