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

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Abstract

We study the public/private divide within the public sector by investigating the privateness of public expenditure by Indian states. To consider the role of targetable private goods in the composition of public budgets, we focus on how variation in income and in electoral competitiveness across space and time affects the price of the political support that can be generated using private or public goods. There are two main predictions: (1) the ratio of expenditure on targetable private goods publicly supplied to public goods expenditure is a decreasing function of average income; and (2) budgetary expenditure on public goods becomes more important in the budget as electoral competitiveness (and the salience of swing voters) rises. To consider these hypotheses, we construct a new measure of public spending on targetable private goods from detailed line item state budget data that became available in 1988, and a new (to India) measure of electoral competitiveness that reflects the extent to which multi-party constituencies may swing among contesting candidates. The cointegrating relation that emerges from a pooled mean group error-correction model confirms these predictions for richer states, suggesting a virtuous circle in which development and political competitiveness enlarge the role of public goods in state budgets. In lower income states, however, these effects are more muted or even reversed, consistent with a greater emphasis by governing coalitions in these states on maintaining the loyalty of core supporters. Counterfactuals illustrate the difference in the quantitative effects of growth and competitiveness on the privateness of public expenditure across higher and lower income regions.

JEL Codes: H42, H72, O53, C23.
Key Words: public spending on private goods, Indian States, price of political support, targetable goods public goods, electoral competitiveness, swing versus core voter, partisan rents, ARDL panel models.

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1. Introduction and overview

One of the big questions in the study of government is what determines the nature of the public/private divide; that is, what parts of social and economic activity 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 in the economic life of most nation states 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 the role of government. Concern with both of these dimensions of the public/private divide also resound 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 underprovision of socially productive public 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 simple positive model of the private/public composition of the public budget as a guide to an empirical study of the factors underlying the privateness of public expenditure of the Indian states. In the framework we present and test, multiple competing parties in a parliamentary system target private goods towards core, or relatively committed and easy to target supporters, while supplying public goods to attract the support of less committed, less targetable swing voters who are more concerned with general economic conditions. 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 state voters; and (2) public goods become more important in the public budget as the political salience of swing voters, and hence the degree of electoral competition, rises.

Our main and auxiliary predictions are tested on a panel of 14 major Indian states covering about 85% of the Indian population and economic activity. While these major states differ widely in their physical, cultural and economic characteristics, their modern governance shares a common political heritage based on British parliamentary government and administration. This combination of distinctive and common features means that the Indian states provide an excellent arena for testing hypotheses that are based on the general idea that the nature of the public sectors we observe are responsive to differences in their specific political and economic environments. Highlighting our interest in modeling the privateness of public expenditure in India is the reasonable conjecture that the composition of public budgets is likely to be an influential determinant of future development of the country.

The empirical work requires a measure of public expenditure on targetable private goods and a measure of political competitiveness, as others who have investigated similar issues also conclude.\(^1\)

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\(^1\) 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 long run consequences of development and competitiveness for the composition of the public budget. And of course, they are studying Columbia, not India.
Accordingly, 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 1987/88. We also provide a new measure of electoral competitiveness at the state constituency level that reflects the electoral salience of swing or less committed voters. This type of index was suggested some time ago by Przeworski and Sprague (1971) but, to our knowledge, has not yet been implemented in the Indian context. Both of these measures are of independent interest.

In all states political parties must provide for their core supporters who expect some compensation for their loyalty. A sensible stylized fact, often observed, concerning India is that in the poorer states relatively small valued, private benefits will bulk large relative to what can be achieved by these voters with their existing personal incomes. (In this respect, it may be noted that the ratio of average real per capita income in the poorest compared to the richest state can be as low as 1/5 in our sample). As income levels rise, however, the price of a unit political support in terms of the expenditure required to generate it - a concept that we incorporate into our specification of the government budget constraint - gained through provision of targeted private goods rises relative the price of public goods, if only because the marginal utility of consumption declines with income. For this reason, we expect political equilibria in the richer states to be characterized by relatively greater spending on public goods aimed at the community as a whole. Moreover, this pattern with respect to income should also hold within each state across time as income levels rise (by as much as 3 times over our sample period), as well as in the panel.

The argument that the price of support depends importantly on income level is essentially analogous to that of Bueno de Mesquita et al (2000, 2008), who argue that as the size of a coalition required to win an election increases, it becomes cheaper for a party to assemble a winning coalition by supplying public as opposed to private goods. Here we study the analogous implication of variation in income for the price of support from supplying private goods, because income is well measured and because it varies substantially both across Indian states and over time within them. 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 different model (of clientism) with a similar idea about the price of support embedded in it. The role of income is in fact an implication of any model of special interest politics of almost any type where the individual voter’s marginal utility of consumption diminishes with income, such as the models of Dixit and Londregan (1996) and Stokes et al (2013) among many others.

The second factor that we feature for its potential role in determining the privateness of the public budget is electoral competitiveness, an issue which has been less well studied in work on India. Our view about why this matters is stimulated by studies of electoral equilibria in which the distinction between core and swing voters matters, including Cox and McCubbins (1986), Dixit and Londregan (1996), Besley, Persson and Sturm (2010), Goldin and Min (2013), and Stokes et al (2013) and many others. Less committed or swing voters are regarded as being inherently more concerned with the general economic consequences of public policy than are core supporters, who are more ideologically

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2 For an application to Canada over the history of the modern state since 1867, see Ferris, Winer and Grofman (2016).
3 The importance of income and its growth in determining electoral success in India is emphasized in a more general context by Gupta and Panagariya (2011, 2012).
These types of voters may also be distinguished by the cost for government to target them—swing voters being more difficult to identify. In the present context, either characterization serves to distinguish them. In the present context, either characterization implies that swing voters are relatively inclined towards parties that promise more publicness in its spending program, such as additional spending on capital infrastructure that may lead on to future economic growth. It follows that as the proportion of swing voters rises, or as the electoral salience of a given number of such voters increases, incumbents will be induced to increase the publicness of the budget as the (relative) price of support from supplying public goods now falls.

It should be noted here that, as Goldin and Min (2013) have pointed out, it is difficult to distinguish empirically between swing voters and swing constituencies. In the majoritarian electoral system of India, what matters is the overall degree of competitiveness, or swingyness of the constituency, which our index of competitiveness is designed to measure. The multi-party measure of competitiveness at the constituency level that we construct in order to test proposition (2), following Przeworski and Sprague (1971) and Ferris, Winer and Grofman (2016), depends on the number of swing voters in a constituency, and also on the relevance of these voters for the tightness of the electoral contest among the candidates of the various parties in each constituency.

Since electoral competition in India generally involves more than 2 parties, our measure of competitiveness must be a multi-party index. This index, built up from the constituency level, varies from zero to one, with a larger number indicating more a more intense contest. In terms of this index, a perfectly competitive constituency is one in which for all candidates other than the front runner, the 'distance to go' - that is, the vote margin that candidate or party must overcome to become the winner - is less than the number of voters who might reasonably be persuaded to switch their vote.

The novel contributions of this paper are, then, to combine the influence of the level of income and of political competitiveness on the privateness of public spending via their effect on the price of electoral support; to implement this model using new measures of private targetable goods and multi-party electoral competition at the constituency level; and to estimate the model in a dynamic empirical framework. 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.

4 Stokes et al (2013) point to the importance of mobilizing core supporters to turn out to vote. Lindbeck and Weibull (1987) and many others emphasize the importance for parties of catering to the general economic interests of swing voters.

5 An additional factor leading in the same direction is that as swing voters become more numerous or salient, the electorate that matters is now more heterogeneous than when a win can be fashioned with a high degree of certainty using core supporters alone. For this reason as well, risk averse politicians will see the relative price of a unit of support using public goods - which reach a broader section of the electorate for the same budgetary expenditure - declining as competitiveness increases (Magaloni et al 2007).

Goldin and Min (2013) argue that it is difficult to distinguish empirically between swing voters and swing constituencies. In the majoritarian electoral system of India, what matters is the overall degree of competitiveness of the constituency, which our index of competitiveness is designed to measure, in a manner explained more fully below.

6 For general discussion of underlying theory, see for example Hettich and Winer (1999), Drazen (2000), Persson and Tabellini (2000), Besley and Persson (2011) and Stokes et al (2013). See also La Porta et al (1999), Rajkumar and
in particular, there is 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. Some of these papers also make use of the reasoning in Bueno de Mesquita et al (2000), arguing (in the case of Chhibber and Nooruddin and Nooruddin and Simmons) that as the share of the vote required to win declines, incumbent parties are incentivized to focus more narrowly on specific segments of the electorate, leading to greater privateness. While it is not part of our more formal framework, we explicitly allow for this particular channel through which privateness may be affected in our estimating equations, in a manner described below.

The empirical model is formulated in error-correction form and estimated using the pooled mean group estimator of Pesaran and Smith (1995) and Pesaran et al (1999). This procedure allows for variation in coefficients across states in the shorter run, with a common cointegrating or long run outcome. Our choice of estimator reflects the availability of data required to measure privateness. Longer time series may allow separate treatment of each state in the long run cointegrating relation too. But our judgement is that public finance accounts prior to 1987/88 do not permit an adequate treatment. We can and do generalize the long run to allow for selected differences that may persist between higher and lower income states, including the effects of income and competitiveness, as described later on.

The results of the empirical work confirm the hypothesized effect of income and electoral competition on the public/private composition of budgets in higher income states, suggesting that there is a virtuous circle in these richer states in which development and more electoral competition leads to a greater emphasis on public goods, services and capital infrastructure which, it is reasonable to expect, will lead on to further development. In lower income states, we find that the effects of rising income and greater competitiveness are more muted, and even reversed in some samples, a situation that is consistent with there being a greater emphasis by contesting parties on the maintenance of 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 of public budgets in higher versus lower income states.

The paper proceeds as follows. A model in which the general ideas introduced above are embedded is presented in section two, and the estimating equations used to implement the model are specified

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7 There is an extensive largely empirical literature on public expenditure in India, though not much of it is oriented towards the question of what determines the degree of privateness of public spending. See, for example, Dutta (1996), Khemani (2004), Lalvani (2005), Chaudhuri and Dasgupta (2006), Uppal (2011), and Dash and Raja (2012) who study the variation in broad categories of expenditure such as total, current, and capital expenditures. Interstate variation in sector-specific expenditures for development purposes have been documented and studied by Rao and Chakraborty (2006), Dash and Raja (2009), Mukherjee and Chakraborty (2011), and Dash and Mukherjee (2015). Public health expenditure across the states 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 variations in state education expenditure.

8 This dynamic panel data estimator is implemented in Stata by Blackburne III and Frank (2007).
in section three. Our new measures of public expenditure on private targetable goods and of multi-party political competitiveness are discussed in section four. Estimation results are presented in section five, followed in section six by some counterfactuals designed to illustrate the quantitative importance of the point estimates and some further estimation results that investigate the robustness of our findings. Section seven concludes. Finally, an Appendix provides a primer on Indian public finance statistics, explaining why it is necessary to construct a distinct measure of privateness in public expenditure and how we have done so, along with mnemonics, summary statistics concerning the data and auxiliary results that are referred to in the main text.

2. A model of the composition of the public budget with targetable private spending, core and swing voters, and information asymmetry between voters and parties

We suppose that a political party’s probability of electoral success depends on its ability to attract the votes of swing voters in addition to retaining the effective support of its own core supporters at the polls.\(^9\) In contrast to the core, swing voters are not as easily targeted with private goods publicly supplied, \(q_t\), and are assumed to be more concerned with the government’s role in improving general economic conditions. They therefore vote in part, and to an extent that is more important than for core supporters, in response to the levels of public goods, \(g_t\), promised by competing parties. Swing voters are also responsive to private benefits.\(^10\)

Core supporters must be compensated to maintain their loyalty and participation - they can always decide not to turn out to vote - and this requires the provision of targetable private goods and services.\(^11\) Targeted spending on private goods 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 credibly delivering group votes to the governing party (Krishna 2007, Stokes et al 2013).

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\(^9\) Core supporters, as any voter, may not vote for another party. But their effective support depends on them turning out to vote instead of staying at home.

\(^10\) It may be noted that although core supporters are relatively more interested in party-specific ideas that are not narrowly defined in economic terms, and exhibit loyalty to the party that is not conditioned on only what may be promised in the current electoral contest, core supporters must be targetable with private goods since they are never loyal to their party regardless of the opportunity cost of such loyalty. 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. Either the relative difficulty of targeting a group of voters, or their interest in general economic issues versus private benefits, or both, could be used as a basis for a definition of core versus swing voters in the present context. We need not choose between these characteristics here.

\(^11\) Some of the literature conflates what we are calling targeted private spending 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 an (implicit) 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 focused more generally on private goods that can be directed at special interest groups who can be expected to support the governing party.
For completeness, it is also necessary to acknowledge that governments are required to supply non-targeted or relatively hard to target private goods, $z_t$, in large measure for quasi-contractual government services like established public pensions and basic administrative services such as the post office and security. This third type of good is included here to complete a definition of government expenditure that matches data available from budgetary sources.

Asymmetric information arises between both types of voters and political parties, in the spirit of Lindbeck and Weibull (1987), Lohmann (1998), Besley et al (2010), Weitz-Shapiro (2012), Aidt and Mooney (2014) and others. The asymmetric nature of information creates the possibility that rents $R_t$ may exist in an electoral equilibrium, at least in the short run and possibly also in the longer run. The role of rents is important in the present context for two reasons. If they exist, rents are delivered to core supporters after an election as additional private targetable goods, and so will affect the private/public composition of the public budget. Consideration of how rents can persist also points the way towards a condition concerning public expenditure that must be satisfied in a short run electoral equilibrium. Optimization of a political support function subject to this condition is used here to derive equilibrium political strategies, from which the hypotheses about the role of private targetable goods in the public budget introduced earlier are then derived.

Before turning to our specification of the information structure underlying the creation and persistence of rents, it is useful to first specify the government expenditure in terms of private, public and administrative categories. This allows us to introduce into the model the price of political support on which the hypotheses about privateness depends. We note that in formulating the model that follows, the prices and quantities of each type of good and the components of the budget are in principle specific to political parties, constituencies and states as well as time varying. For convenience of exposition, only time subscripts and party subscripts (when appropriate) appear.

Total nominal government expenditure $G_t$, consists of 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. That is,

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

Note that nominal expenditure on private targeted goods consists of two categories, payments made to win electoral support from core voters and rent, $R_t$, which is a strictly a residual. The expenditure equation in (1) uses prices and quantities in a non-traditional way. The prices $p_{kt}$ ($k = q, g, z$) refer to the price or cost of using goods, transfers or services of type $k$ to acquire a unit of political support and all quantities appear in units of support arising from physical supply. To understand the definition of prices and quantities in (1), consider observed spending on private targetable goods $p_{qt} q_t$. Given $p_{qt}$, the price of a unit of support gained by supplying private targetable benefits, we can determine the support units of private targetable goods supplied by dividing actual spending by the electoral cost of a unit of support. We do not observe $p_{kt}$ or $k_t$ separately, but we can formulate hypotheses about the determinants of this price, and test them empirically, in the manner explained below. Note that (1) is not a substitute for a political support function, nor an objective pursued by political parties
nor a budget constraint (since we will assume that there is a party specific productivity parameter metering each party’s ability to transform aggregate government revenues into $G_t$.

Maximizing electoral support, as we assume parties want to do, requires an optimal choice of the various types of private and public goods that can be supplied along with the overall level of state taxation. We make three model specific assumptions to incorporate hypotheses about how the cost by which electoral support can be acquired varies and the way that electoral competition can affect compositional choices, the intuition for which was introduced earlier. The first relates to how the cost of using targetable private goods to generate electoral support changes with the level of development, as indexed by per capita real income $y_t$. More formally, we assume that

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

That is, comparing higher income states to lower, less developed ones or within each state higher levels of $y_t$ to lower as development occurs through time, larger expenditures on the targetable private good will be required to accomplish the same electoral objective. The second partial derivative means that the rise in the price of support using private goods is smaller as income increases in low income states than it is in higher income states. This may reflect the costs of reforming institutional structures as state parties move from targeting core as opposed to swing voters. Because income remains low even after some growth in lower income states, it may continue to be politically profitable to target private goods at core supporters to maintain their loyalty. (See, for example, Stokes 2005, Stokes et al 2013). In this respect, we recall that the ratio of income in the richest state relative to that in the poorest can be as much as 5 to 1 in our sample.

The second assumption is that the price of a unit of support from supplying public goods falls with the electoral relevance of swing voters, who care more about the general consequences of state spending on public goods and services that do core supporters. There are two channels contributing to this overall effect. When the number of swing voters increases, a given expenditure on (non-rival) public goods will affect positively more voters, reducing the relative (to private goods) price of support from the use of public goods. This first channel mimics the argument about the relative price of public goods of Bueno de Mesquita et al. This we will reflect by using the ratio of the proportion of core voters, $n_c$, relative to swing voters, $n_s$, in the political support function, i.e. $n_c/n_s$. The second channel reflects the salience of a given number of swing voters. Here we assume that increases in swing voter salience because, for example, the vote margins between each party and the leading candidate narrow leads to an increase the levels of service promised by competing parties. This will be reflected in the model by a parameter, $\theta$, that scales upward the minimum required level of service expected by voters to reflect an increase in party competitiveness coming from the class of swing voters becoming more decisive in determining the outcome of the election. Together with changes in demographics that determine the size of potential electorates and exogenous events that alter turnout, these predetermined factors lead to variation in the proportions of swing (and core) voters across space and time. They may also affect the additional vote share required to overcome the incumbent’s lead in any particular contest. As a result, the degrees of electoral competition reflected in changes in $n_c/n_s$ and $\theta$ will vary within and across states and over time.
The model built to incorporate these assumptions in the presence of imperfect voter information in the section below results in the potential for a winning party of above average competence to realize rents that can then be transferred to core supporters. Hence the third hypothesis that is not formally present but is tested for in the empirical work is that the ability to realize more of these rents will depend upon the degree of competition the party faces from more informed competitors in the legislature. That is, the larger the majority of the winning party the larger will be the private targetable proportion of state expenditures.

The formal model also incorporates parameters to reflect differences in the cost of identifying and delivering benefits to core supporters $\kappa_c$ and swing voters, $\kappa_s$. Both may vary across space and over time. We do not as yet have empirical proxies metering changes in these costs, but their presence allows for the generation predictions of the effect of changes in these targeting costs on the private-public composition of state budgets.

2.1 Information asymmetry, optimal party platforms and testable propositions concerning the privateness of the public budget

We turn to the specification of the information asymmetry between voters and political parties. Let the nominal value of government services that can be produced from a given level of nominal tax revenue depend on the ability or competence of the particular political party, $a_i$, and the realization of a common time specific productivity shock, $u_t$:

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

and where, from the voter’s perspective, the two distributions are assumed to be statistically independent. Each party knows its own $a_i$ and, like voters, they know the mean productivity shock ($= 1$). But voters know 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 $\tau_t$, and hence identify the truthfulness of any party making election promises about its productivity. 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. In other words, the information structure in (4) implies that there will be both an ex ante problem facing any party engaged in an electoral contest, and a different situation ex post, after the election.

Swing voters, at least, would like to know which party is most competent. To mitigate their information problem, they can try to infer the competence of the governing party from its historical level of performance, and vote retrospectively. They can at least establish a minimal level of performance

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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.
as the basis for voting for any party in the upcoming election. The value of public output that could be expected from a randomly drawn alternative to the governing party is

\[ E(G_t) = E(a_t u_t (\tau_t + h_t)) = \bar{a}(\tau_t + h_t), \] (4)

where \( h_t \) represents the grants received by the state government from the central government.

Swing voters can protect themselves against false election promises by demanding at least this level of aggregate performance on various types of goods as a prerequisite for their support, where:

\[ \bar{a}(\tau_t + h_t) = p_{qt} q_t + p_{gt} g_t + p_{zt} z_t. \] (5)

This in turn implies that the rents generated by this information asymmetry when the effective output constraint is \( \bar{a} \tau \) will be

\[ R_t = (a_t u_t - \bar{a})(\tau_t + h_t). \] (6)

Parties with above average ability could promise to provide more than the minimal levels of goods specified in (6). They will do so only if they feel that competition from competing parties will require them to produce more than this minimum. We then assume that there is a parameter \( 0 < \theta < \theta^* \) that represents the degree to which competition forces competing parties to promise more than the minimum. The upper bound \( \theta^* \) is chosen such that \( \theta \bar{a} = a_i \). For parties with \( a_i > \theta \bar{a} \), potential rents are still available such parties can actually deliver more to both core and swing voters than a party that has average productivity. Parties with lower than average \( a \)’s could ’exaggerate’ ex ante, since \( a_i \) is private information and hope to get away with it in the short run by realizing a favourable productivity shock. However in the long run elected parties will come from the set of parties whose competence levels are in excess of \( \theta \bar{a} \). When information is costly over the longer run so that \( E(a_i) > 0 \) for all \( a_i > \theta \bar{a} \), rents will be: a) positive in the long run, and b) a decreasing function of \( \theta \).\(^\text{13}\)

2.2 The determination of party platforms and state output proportions

We begin by assuming that within our two voter types, \( k = c, s \), voters are identical and value differently the policies offered by the different parties, \( V_j, j = 1 \ldots J \). A representative from group \( k \) will then vote for party \( i \) with probability \( P^k_i = P^k_i(V_i; V_{\neq i}) \) where \( V_{\neq i} \) is the value of the policies offered by the parties competing with party \( i \). The expected proportion of the vote going to party, \( n_i \) is then

\[ E(n_i) = n_c P^c_i + n_s P^s_i. \] (7)

To characterize more precisely the ex ante platform chosen by a representative party and derive the effects of income and competitiveness on the composition of the budget via their effects on the prices of a unit of support, it is necessary to adopt a specific functional form for the representative party’s political objective. Here we assume representative party \( i \) in a multi-party system optimizes the

\(^{13}\) See West and Winer (1986) on the optimal degree of fraud in competitive political markets.
following CES expected vote function, where the expectation is with respect to the state of the economy and the given policies of its competitors,

\[
E_t[\text{Votes}_{st}] = \left\{ \left( \frac{\alpha k_n c_{st}}{K_{st} n_{st}} \right)^{\frac{\sigma - 1}{\sigma}} q_t^{\frac{\sigma - 1}{\sigma}} + \beta g_t^{\frac{\sigma - 1}{\sigma}} + \gamma z_t^{\frac{\sigma - 1}{\sigma}} + \delta^{\frac{\sigma - 1}{\sigma}} \left( c_t \right)^{\frac{\sigma - 1}{\sigma}} \right\}^{\frac{\sigma}{\sigma - 1}}; V_{j \neq i} \right\}
\]

with \( \sigma - 1 > 0 \) and the parameters \( \alpha, \beta, \gamma, \) and \( \delta \) reflect the relative weights given to the different government outputs and private consumption.\(^{14}\) The expected vote function is maximized subject to the expected budget constraint (which is conditional on expected level of competitiveness)

\[
E_t(a_i u_t \tau_t | \theta) = \theta \tilde{a}(\tau_t + h_t) = p_{qt} q_t + p_{gt} g_t + p_{zt} z_t ,
\]

where state government revenues include grants from the central government, \( h_t \), and households pay taxes to state governments as well as the central government. Hence

\[
c_t = y - \tau_{st} - \tau_{ct} ,
\]

where \( y \) represents state pre-tax income and \( \tau_{st} \) and \( \tau_{ct} \) are, respectively, the level of taxes paid by households to the state and central governments. Both \( \tau_{st} \) and \( \tau_{ct} \) are assumed to be exogenous with respect to the representative party’s offered platform as is \( h_t \).\(^{15}\) 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 \( \theta \tilde{a}(\tau_t + h_t) \) 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 relative price \( p_{qt}/p_{gt} \). The estimating equations allow for more general effects.

This constrained optimization problem is then a simplified representation of the problem that any party faces in trading off effective political support from its core supporters whose loyalty in an election depends on the provision of private goods targeted towards them with the welfare and support from swing voters who care about public and other goods. It also allows examination of the role that different aspects of political competition play in determining the allocation between these two groups.

Using \( \lambda \) as the Lagrangian multiplier (and omitting time subscripts), the first order conditions for an internal maximum are:

\[
q: \{ X \} \left( \frac{\alpha k_n c_{st}}{K_{st} n_{st}} \right)^{\frac{1}{\sigma}} q^{-\frac{1}{\sigma}} - \lambda p_q = 0
\]

\(^{14}\) This is a simplification of the sum of expected votes over types of voters in a multi-party electoral system like India. This support function is assumed to be concave in the party’s own policy instruments, and continuous in the policy instruments of all instruments, with the instrument set being convex and compact. Under these conditions, a theorem due to Nash (1951) assures a non-cooperative equilibrium exists (Wittman, 1987).

\(^{15}\) This problem provides a general characterization of the composition of the budget that will be proposed in an electoral equilibrium because it describes the essential nature of the optimization problem solved by every party, up to the level of competence \( q_i \). We are assuming here that all parties share the same information about voting behavior and face the same government budget constraint apart from \( q_i \).
\[ g: \quad \{X\} \beta \sigma g^{-\sigma} - \lambda p_g = 0 \quad (11b) \]

\[ z: \quad \{X\} \gamma \sigma z^{-\sigma} - \lambda p_z = 0 \quad (11c) \]

\[ \tau_s: \quad \{X\} \delta \sigma (y - \tau_s - \tau_c)^{-\sigma} - \lambda \theta a = 0 \quad (11d) \]

\[ \lambda: \quad \theta a(\tau_{st} + h_t) = p_{qt}q_t + p_{gt}g_t + p_{zt}z_t \quad (11e) \]

where \( X = \left\{ \left( \frac{\alpha_k n_c}{\kappa s n_s} \right)^{\frac{1}{\sigma}} q_t^{\sigma-1} + \beta \sigma g_t^{\sigma-1} + \gamma \sigma z_t^{\sigma-1} + \delta \sigma \left( c_t \right)^{\sigma-1} \right\}^{-\frac{1}{\sigma}} \).

We assume that the winning party carries out the minimum program promised to win the election. Dividing (11b) into (11a) we can then solve for the optimal ratio of expenditures on private versus public services in party \( i \)'s proposed budget:

\[ \frac{p_{qg}}{p_{gg}} = \left( \frac{\alpha_k n_c}{\beta k n_s} \right) \left( \frac{p_{gg}}{p_{qg}} \right)^{\sigma-1}. \quad (12) \]

This leads directly to the following propositions:

**Proposition 1:** The ratio of observed public expenditure on private targetable goods relative to public expenditure on public goods declines with per capita income.

**Proposition 2a:** The ratio of public expenditure on private targetable goods relative to public expenditure on public goods falls with a rise in the electoral relevance of swing voters in the electorate as indexed by a rise in \( n_s/n_c \).

**Proof of Propositions 1 and 2a:**

For proposition 1, by differentiation of (12) with respect to \( y \):

\[ \frac{\partial (p_{qg}/p_{gg})}{\partial y} = -\left( \frac{\alpha_k n_c}{\beta k n_s} \right) \left( \frac{p_{gg}}{p_{qg}} \right)^{\sigma-2} \cdot p_{gg} \left( \frac{\partial p_{qg}/\partial y}{p_{qg}^2} \right) < 0. \quad (13) \]

For proposition 2a, by differentiation of (12) with respect to \( n_c/n_s \):

\[ \frac{\partial (p_{qg}/p_{gg})}{\partial (n_s/n_c)} = -\left( \frac{\alpha_k n_c}{\beta k n_s} \right) \left( \frac{n_s}{n_c} \right)^2 \left( \frac{p_{gg}}{p_{qg}} \right)^{\sigma-1} < 0. \quad (14) \]

These propositions will hold regardless of the level of competence \( a_i \) of the representative party. We expect that for more general support functions, such as those where income elasticities are not unitary, the consequences of changes in income and electoral competition via their effects on the relative political cost of using private targetable and public goods to generate support will continue to
hold. The estimating equations we shall use to test the propositions do not impose the condition that income elasticities be unitary.

While the targetable private good /public good composition of the budget does not depend on party competence given the CES form of the support function, the same is not the case for the level of each budgetary item. Each component of the budget will increase with $a_i$. To see this, divide (11b) by (11c) to determine the proportions of $p_g g$ and $p_z z$ for party $i$,

$$\frac{p_z z}{p_g g} = \frac{y}{\beta} \cdot \left(\frac{p_g}{p_z}\right)^{\sigma-1},$$

and divide (11b) by (11d) to derive the optimal proportion of $p_g g$ and private consumption, $c$:

$$\frac{y - \tau_s - \tau_c}{p_g g} = \frac{\delta}{\beta (\theta \bar{a})^\sigma} \cdot \left(\frac{p_g}{p^*}\right)^{\sigma-1}.$$  

The ex ante optimal outputs and tax collections can be solved for by substituting the ratios of the first order conditions back into the government budget constraint. Using the ratios of (12), (15) and (16) in (11e), party $i$’s promised $\tau_s$ can be found as

$$\tau_s^* = \frac{K}{1+K} (y - \tau_c), \text{ where } K = (\theta \bar{a})^\sigma \left[ \frac{\alpha}{\delta} p_q^{-1} + \frac{\beta}{\delta} p_g^{-1} + \frac{\gamma}{\delta} p_z^{-1} \right] > 0. \tag{17}$$

where * denotes the tax portion of the optimal party platform. Because $\frac{d\tau^*}{dK} = \frac{1}{(1+K)^2} > 0$, then $\frac{d\tau^*}{da_i} > 0$ as long as $\sigma > 1$, and so $E(G)^* = \theta \bar{a} (\tau^* + h)$ must also rise with $\theta$.

Finally, rewriting (15) as $y - \tau = \frac{\tau^*}{K}$, we use (14) to solve for $p_g g$ as

$$(p_g g)^* = \frac{\tau^*}{K} \frac{\beta (\theta \bar{a})^\sigma}{\delta} \cdot \left(\frac{p_g}{p^*}\right)^{1-\sigma}, \tag{18}$$

and similarly use (9a) and (9d) and (15) to solve for $p_q q$ as

$$(p_q q)^* = \frac{\tau^*}{K} \frac{\alpha (\theta \bar{a})^\sigma}{\delta} \cdot \left(\frac{p_q}{p^*}\right)^{1-\sigma}. \tag{19}$$

It follows that with an increase in either $\theta$ or $\bar{a}$, all individual components of a promised government budget must increase accordingly.

2.2 **Rents and the composition of the budget in the long run**

The information asymmetry between parties and voters that is created by the conflation of party competence and economic shocks allows ex post expenditures to differ from the ex ante promised ones. Ex post, actual rents $R_{it}$ can be generated and delivered as private goods to core supporters
(and to political agents, though their utility is not explicitly part of the model). At their maximum, rents are equal to the difference between the maximum $\mathcal{G}$ that can be delivered at a point in time by the successful party and the amount that can be expected from a party of average competence:

$$R_{it} = a_i u_t \tau^* - \theta \bar{a} \tau^* = (a_i u_t - \theta \bar{a}) \tau^*$$  \hspace{1cm} (20)

where a '*' denotes an equilibrium value. Equation (20) indicates that a party with a competence level above that set by political competition and/or above average productivity luck can generate potential rent from the promised minimum level of taxation $\tau^*$. Hence together (17) and (20) lead directly to the second channel for the effect of competition on the composition of government output and proposition 2b.

**Proposition 2b:** The ratio of public expenditure on private targetable goods relative to public expenditure on public goods falls with a rise in the competitiveness of the electoral competition as indexed by a rise in $\theta$.

**Proof of Proposition 2a:**

First note that from (12) and (15) it can be seen that the expenditure shares of private targetable, $q_t$, publicly provided, $g_t$, and government administrative services, $z_t$, are all independent of $\theta$. This implies that changes in the share of private targeted government services can rise relative to the other components of government spending only if rents fall as $\theta$ increases. Then given that the winning party keeps its commitment to maintain tax collections at its promised level, we see from (20) and (17) that

$$\frac{\partial R_{it}}{\partial \theta} = -\theta \bar{a} < 0.$$  \hspace{1cm} (21)

In the empirical application of the model, we allow for the possibility that potential rents are not fully realized because of competition arising in the legislature from opposition parties, and hence add into the estimating equations a proxy for the strength of the government in the legislature between elections, as discussed below. The assumption here is that a governing coalition with more control in the legislature (i.e., a larger winning majority) is better able to manipulate the budgetary process in order to generate output that is higher than expected and to deliver rents to favored groups.

3. **The empirical model: budget ratios and estimating equations**

A central challenge in studying the private targetable/public composition of public expenditure is how to measure this composition. A detailed discussion of our new measure of private targetable spending by state governments in India, $p_q q$, is provided in the next section and in the Appendix, along with the measurement of electoral competitiveness at the state constituency level. Here we consider a more general specification of the budgetary ratios that will be used in empirical application of the model, and the specification of the estimating equations.

The problem of distinguishing spending on public goods $p_g g$ from spending on private, nontargeted goods $z$ that are more or less equally distributed remains. There are some types of expenditures that
almost certainly are less rival in consumption than private targetable goods, such as spending on capital infrastructure net of loans and advances, which we shall refer to as capital outlay. This kind of spending can be accurately measured and we will use this category of spending as a representative of $p_g g$. However, it is just one type of spending on goods that are (relatively) public in nature. Accordingly, we also consider spending on our new measure of private targetable goods relative to all other, non-private goods, $NP$, which includes public and private non-targetable goods $z$, as well as spending on private targetable goods relative to total non-interest expenditure $G$. The propositions above carry over to the ratios $p_q q / p_g NP$ and $p_q q / G$.

To see that this is so for the ratio of expenditures on targetable goods to non-private goods, define a composite non-private commodity $NP = g + (p_z / p_g) \cdot z$ with price $p_g$. Then we may restate the support function (8) in terms of $q$ and $NP$ goods, with prices $p_q$ and $p_g$. It follows that (10) then becomes:

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

(10a)

Since $p_g$ is fixed in the proof of proposition 1, it is evident that this proposition carries through when $g$ is replaced by the composite good $NP$. With respect to proposition 2, the sign of $\frac{\partial p_g}{\partial \theta}$ 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 $p_g$. As $\theta$ rises, we may 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 $p_q$, but we cannot be sure. We shall consider what happens when the dependent variable in our estimating equation is the ratio of private targetable spending relative to non-private goods. In addition, considering $p_q q$ relative to expected total (non-interest) expenditure $G$ avoids the issue pointed to.

To consider $p_q q$ relative to expected total expenditure $G = p_q q + p_g g + p_z z$, we first write the ratio of $p_q q$ to $G$ as:

$$\frac{p_q q}{G} = \frac{1}{1 + p_g g / p_q q + p_z z / p_q q} = \frac{1}{1 + \frac{g}{\alpha} \left( \frac{p_g}{p_q} \right)^{\sigma - 1} + \frac{z}{\alpha} \left( \frac{p_z}{p_q} \right)^{\sigma - 1}}.$$

(10b)

Since $p_q$ rises with $y$, the ratio of targetable spending to total spending on the left of (10b) falls with $y$, analogous to the effect in Proposition 1. Similarly, since $p_g$ falls with $\theta$, proposition 2 is also preserved when considering the ratio of targetable spending to total spending.

It is important to point out that all three of the spending ratios introduced above are useful, and also different. Studying (10a) and (10b) will inform us about private targetable goods relative to the rest of the budget, or the budget as a whole. Spending on targetable goods relative to capital outlay tells us something about private goods relative to one measurable component of spending on a class of goods that has a higher degree of publicness. We would also like to study employment, but there is no time series of it for the states. Moreover, there is no separate line item for wages and salaries, a matter that is discussed further in the
Appendix. However, we can form a estimate or proxy for wages and salaries using the non-plan expenditure accounts, in the manner discussed further in the Appendix. This allows the estimation of equations with wages and salaries relative to total non-interest spending and relative to capital outlay, which are presented in the Appendix.

For convenience, we summarize the budgetary ratios we can measure and which are used in the empirical work in the following table along with the mnemonics used in the tables of results. These ratios are represented by the dependent variable $B$ in the estimating equations. In the table, $p_q NP$ and $G$ are defined net of interest payments, capoutlay is defined net of loans and advances, and of necessity, wages and salaries includes maintenance of the capital stock.\(^\text{16}\)

<table>
<thead>
<tr>
<th>Budget ratio</th>
<th>Definition and mnemonics used in tables of results</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\frac{p_qq}{p_q NP}$</td>
<td>state expenditure on private targetable goods and services/non-private, non-interest state expenditure (Private Targetable/Non-private)</td>
</tr>
<tr>
<td>$\frac{p_qq}{G}$</td>
<td>private targetable state expenditure/total non-interest state expenditure (Private Targetable/Total)</td>
</tr>
<tr>
<td>$\frac{p_qq}{\text{capoutlay}}$</td>
<td>private targetable state expenditure /state capital outlay, where capital outlay is capital expenditure less loans and advances (Private Targetable/Capital Outlay)</td>
</tr>
<tr>
<td>$\frac{\text{wages}}{G}$</td>
<td>wages and salaries/total non-interest state expenditure (Wages/Total). See Appendix</td>
</tr>
<tr>
<td>$\frac{\text{wages}}{\text{capoutlay}}$</td>
<td>wages and salaries/state capital outlay (Wages/ Capital Outlay ). See Appendix</td>
</tr>
</tbody>
</table>

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

The main estimation 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.\(^\text{17}\) 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, cointegrating relation. The mean group estimator, which is based on separate equations for each state in the panel, is not feasible given the length of time series available. In our application of this empirical framework, we allow for the possibility that key elements of the long run also vary across states, namely the effects of income growth, changes in political competitiveness, in the strength of the government in the legislature, and in the number of parties in the governing coalition. Allowance for differences across groups of states defined by their level of development proves to be justified by the results. We also estimate separate equations for two samples consisting of just higher income, and just lower income states alone.

\(^{16}\) The closest one can come is to derive a composite of wages and salaries and maintenance (depreciation), with the variation in this composite assumed (reasonably) to depend primarily on variation in wages and salaries.

\(^{17}\) 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 \texttt{xtpmg} in State 15.
In the Appendix we also present results using an alternative measure of electoral competitiveness, and dynamic fixed effects estimation which imposes the additional restriction that the short run as well as the long run is common across the states.\footnote{Hausman tests that might distinguish between the pooled mean group and dynamic fixed effects estimators prove to be inconclusive, and we rely mainly on the more general pmg estimation while presenting selected fixed effects estimation in the Appendix.}

The pooled mean group estimator is suitable only if the data are integrated of order zero or one. Table A2 of the Appendix demonstrates that this condition holds for the data we employ.

Equation (22) presents the general form of the long run, cointegrating relationship we seek to estimate, where the $i$ subscript refers to the state, where $B_{it}$ is one of four private versus public budget composition ratios that we have introduced above:

\[
B_{it} = \alpha_0 + (\alpha_1 \cdot y_{it} + \alpha_1^L \cdot y_{it}^L) + (\alpha_2 \cdot pc_{it} + \alpha_2^L \cdot pc_{it}^L) + (\alpha_3' \cdot X_{it} + \alpha_3^L' \cdot X_{it}^L) + \alpha_4' \cdot Z_{it} + \varepsilon_{it}. \tag{22}
\]

Here the superscripts $H$ and $L$ refer to high and lower income states, vectors are in bold text, $i$ is a state-specific index and $t$ refers to the fiscal year. 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 $\alpha_k + \alpha_k^L$, $k = \{1, 2, 3\}$. All variables are used in log form except for one 0/1 dummies described below.

The error correction model actually estimated by maximum likelihood, from which estimates of the long run relationship (22) are derived, is an error correction reparameterization of the ARDL(1,1) version of it. This model has the general form:

\[
\Delta B_{it} = \phi_i (B_{it-1} - \alpha_0 - \alpha_1^i W_{it} - \alpha_2^i Z_{it}) + \gamma_1^i \Delta W_{it} + \gamma_2^i \Delta Z_{it} \tag{23}
\]

where $W = (y_{it}, y_{it}^L, pc_{it}, pc_{it}^L, X_{it})'$ and $L$ indicates a variable defined only for lower income states; $=0$ otherwise. The estimate of the error correction coefficient $\phi_i$ 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 ($\text{rypc}$);
$pc =$ multi-party political competitiveness, following Przeworski and Sprague (1971), also discussed in the next section ($\text{polcomp, polcomp_low}$);
$X = \text{additional political factors:}$

(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

$Z = \text{state specific controls;}$

(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
(vi) indexes of famine and flood.

All variables except FRBM, famine and flood are in log form. Original variables $pc$, $old$ and $popsize$ are linearly interpolated. $pc$ because we view political competition as a continual process, the latter two because only census data are available for selected years. \textit{Seat majority, parties in govt and reserved seats} are characteristics of specific legislatures for specific periods of time and are not interpolated.

\textit{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 \textit{between} elections. As noted, we use them as proxies for the ability of the government to channel rents to core supporters and to escape the performance constraint despite opposition in the legislature.

\textit{Parties in govt} and its analogue for lower income states, \textit{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. Chhibber and Nooruddin (2004) and Noorruddin and Simmons (2015) have also investigated the effect of this factor on other measures of privateness, following Bueno de Mesquita et al, as also noted earlier. Similar reasoning leads to the inclusion of \textit{reserved seats} for scheduled castes and tribes.\(^{19}\)

The model of the previous section generates predicted signs for the coefficients in the cointegrating relation (22). Propositions 1 and 2 indicate that we should expect: $\alpha_1 < 0$, while its analogue for lower income states $\alpha_1^L$ may be smaller in absolute value; and $\alpha_2 < 0$ , with its low income analogue

\(^{19}\) Reserved seats may also be a proxy for, or correlated with, ethnic diversity which may reduce support for public goods benefitting members of 'other' groups. See for example, Alessina et al (1999) and Habyarimana et al (2007).
also possibly smaller in absolute value. As argued immediately above, we also expect the corresponding coefficients of seat majority, parties in govt and reserved seats to be positive.

4. Measuring privateness and electoral competitiveness

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 that reflects the electoral relevance of swing voters. The nature of these new measures are matters of interest in their own right. Estimation results follow in section five.

4.1 Expenditure on private targetable goods \( p_{q,q} \) and on public goods \( p_{g,g} \)

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 of public expenditure on private targetable goods 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 upon broad categories of spending.

Private targetable goods are more rival in consumption than are public goods \( p_{g,g} \) and are 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 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 very 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 exactly identify each item we include are also specified.\(^{20}\)

The summary in Table 1 lists the main categories of expenditures included in our measure of private targetable goods \( p_{q,q} \) in the order in which they appear in the Accounts, 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,

\(^{20}\) The Appendix also includes a primer on public finance accounting in India.
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, for 14 major states in two income groups**

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

Source: Finance Accounts, various years, CAG of India, procured from the NIPFP Data Bank and authors calculations. 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 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 faster though not consistently so.

**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*

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 (2017a, b) and others. It turns out that our estimation results may have a bearing on one of the sources of this divergence.

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 2 to 3 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.
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 the competitiveness of constituency level elections and the electoral relevance of swing voters

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.\(^1\) One important 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 in that constituency. This point has been recognized for some time (Przeworski and Sprague 1971, Elkins 1974, Bartolini and Mair 1990). A close expected outcome or a relatively small winning margin can be quite 'safe' if that party's vote in that constituency varies little across elections, while even a large margin may be unsafe in a constituency that turns over its representative from election to election. Thus to reflect more accurately the relevant margin facing candidates, constituency vote margins and their averages 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 Przeworski and Sprague (1971), deals with both issues.

Adjusting vote margins for volatility is not easy to do over long periods of time because of redistricting. In our sample, this applies to electoral boundaries after 2008 following a delimitation commission. 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.\(^2\) To avoid the data loss associated with redistricting, we match all constituencies to districts and, 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.

The measure of volatility of vote shares at time $t$ used to scale the distance to go for each candidate or party in any constituency, following Przeworski and Sprague (1971) and Pedersen (1979) is

$$\text{volatility}_{jt} = \frac{\sum_{p=1}^{12}|v_{pjt} - v_{pjt-1}|}{2},$$

(24)

where $v_{pjt}$ is the average vote share of party $p$ in constituency $j$ (or its synthetic representative) in election $t$. Note that volatility will incorporate changes in both the size of the franchise and voter

\(^1\) 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) 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.

\(^2\) We explain how administrative districts were used to link constituencies across time in the Online Appendix.
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 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:

\[
h^t_{pj} = \frac{(v_{1jt-1} - v_{pjt-1})}{\text{Volatility}_{jt-1}},
\]

(25)

Using the \( h \)'s in (22), a candidate or party specific competitiveness index can then be constructed as:

\[
c^t_{pj} = \begin{cases} 
1 & \text{if } 0 \leq h^t_{pj} \leq 1 \\
\frac{1}{h^t_j} & \text{if } h^t_{pj} > 1
\end{cases}
\]

(26)

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 could say that this candidate is fully competitive. Otherwise, the index defined in (26) 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:

\[
C^t_j = \sum_{p=1}^P c^t_{pj} v_{pjt}.
\]

(27)

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.

Aggregating across all constituencies, using the constituency’s share of the aggregate state vote, \( \text{adj}_v w_{jt} \) yields the state level, multi-party competitiveness index that we employ in the estimation,

\[
C^t_s = \sum_{j=1}^J (C^t_j \cdot \text{adj}_v w_{jt}).
\]

(28)

The closer that this index is to 1, the greater is the political salience of voters who have in the recent past switched between parties. It is important to note that because this index includes a proxy for the number of swing voters in its denominator (i.e., volatility) and is also a measure of competitiveness of elections at the constituency level, it can and will be used to test both propositions 2 and 2a.
It is interesting to note that the multiparty, volatility adjusted vote margins index $C_{SJ}^t$ is weakly and negatively correlated with the 1 versus 2 vote share differential $v_1 - v_2$, over the 1987/88 to 2011/12 period, at -0.21. So the simple vote margin, unadjusted for volatility and absent a role for third and other parties, is certainly a different indicator of competitive pressure at the constituency level than (28). In our view, it is inferior as a measure of competitiveness at the constituency level.

It should be noted that because uses data from the prior election and the one before that (in the measure of volatility in its denominator), it is an historical measure, predetermined with respect to current events. An adaptive measure may also be constructed, using an equally weighted average of the historical index defined in (28) and its current dated analogue. Some results using this adaptive version of the competitiveness index $C_{SJ}^t$ are also provided in the Appendix.

The linearly interpolated historical competitiveness index is shown in figure 4 for the sample of states again divided into two parts on the basis of per capita real state GDP in 2008/09. 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 at the end of the sample period.

**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 and negatively correlated with the 1 versus 2 vote share differential $v_1 - v_2$, over the 1987/88 to 2011/12 period, at -0.21.

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23 It is somewhat positively correlated with volatility (24), 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. For a more general treatment of the measurement of electoral competitiveness, including extension of (28) to earlier years as well as additional indexes, see Dash et al (2018).
Estimating equation (22) distinguishes between groups of states based on income. Accordingly, we estimate them 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 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. 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 observed in figures 4 and 5 is an interesting challenge for future research. Here we are concerned with the consequences of the observed patterns of competitiveness.

25 Although only the top 4 states are at times singled out as the high income states by Finance Commissions, we add Tamil Nadu to the higher income group to overcome a convergence problem with the algorithm used for maximum likelihood estimation.
5. Estimation

Since the 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, it matters what samples are employed. Table 2 presents results for the states divided 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.26

Because we are concerned primarily with longer run relationships and their stability, 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 relative to the budget as a whole $G$ or to expenditure on all other $p_gNP$ goods fit better than equations explaining the ratio of private goods to capital outlay.

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 -

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.

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

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Private Targetable/Nonprivate</th>
<th>Private Targetable/Total</th>
<th>Private Targetable/Capital Outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (High+Low)</td>
<td>(7+7)</td>
<td>(7+7)</td>
<td>(7+7)</td>
</tr>
<tr>
<td>real income per capita</td>
<td>-0.618 (7.66)***</td>
<td>-0.564 (7.77)***</td>
<td>-0.634 (2.67)***</td>
</tr>
<tr>
<td>real income per cap_low</td>
<td>0.362 (3.05)***</td>
<td>0.31 (3.06)***</td>
<td>0.723 (2.19)***</td>
</tr>
<tr>
<td>political competition</td>
<td>-0.31 (2.84)***</td>
<td>-0.267 (2.75)***</td>
<td>-0.183 (0.74)</td>
</tr>
<tr>
<td>political comp_low</td>
<td>0.547 (3.68)***</td>
<td>0.421 (3.26)***</td>
<td>0.511 (1.62)</td>
</tr>
<tr>
<td>seat majority</td>
<td>-0.004 (0.6)</td>
<td>-0.028 (0.43)</td>
<td>-0.234 (1.1)</td>
</tr>
<tr>
<td>seat majority_low</td>
<td>0.378 (2.18)***</td>
<td>0.328 (2.16)**</td>
<td>1.81 (3.49)***</td>
</tr>
<tr>
<td>parties in govt</td>
<td>0.04 (0.7)</td>
<td>0.047 (0.91)</td>
<td>0.136 (1.03)</td>
</tr>
<tr>
<td>parties in govt_low</td>
<td>-0.202 (2.34)**</td>
<td>-0.198 (2.64)**</td>
<td>-0.307 (1.78)*</td>
</tr>
<tr>
<td>reserved seats</td>
<td>1.51 (7.32)***</td>
<td>1.33 (7.38)***</td>
<td>0.086 (0.18)</td>
</tr>
<tr>
<td>old</td>
<td>1.9 (4.47)***</td>
<td>1.72 (4.65)***</td>
<td>-0.173 (0.19)</td>
</tr>
<tr>
<td>agrilabour</td>
<td>0.034 (0.17)</td>
<td>0.105 (0.6)</td>
<td>-0.113 (0.28)</td>
</tr>
<tr>
<td>popsize</td>
<td>2.08 (2.18)**</td>
<td>1.5 (1.83)*</td>
<td>-3.22 (1.65)*</td>
</tr>
<tr>
<td>FRBM</td>
<td>-0.117 (4.66)***</td>
<td>-0.107 (4.86)***</td>
<td>-0.129 (2.04)**</td>
</tr>
<tr>
<td>grantsize</td>
<td>0.278 (6.39)***</td>
<td>0.242 (6.39)***</td>
<td>-0.011 (0.14)</td>
</tr>
<tr>
<td>ec coefficient</td>
<td>-0.837 (8.51)***</td>
<td>-0.83 (8.51)***</td>
<td>-0.754 (8.43)***</td>
</tr>
<tr>
<td>95% C.I. for ec coeff.</td>
<td>-1.03 -0.644</td>
<td>-1.02 -0.639</td>
<td>-0.93 -0.579</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>255.31</td>
<td>301.6</td>
<td>21.4</td>
</tr>
<tr>
<td>Observations (States)</td>
<td>319</td>
<td>319</td>
<td>316</td>
</tr>
</tbody>
</table>

| Sample (High+Low)  | (5+5)                         | (5+5)                    | (5+5)                             |
| real income per capita | -0.264 (2.22)**              | -0.222 (2.14)**          | -0.78 (2.23)**                    |
| real income per cap_low | 0.196 (1.34)                 | 0.149 (1.21)             | 0.671 (1.29)                      |
| political competition | -0.015 (0.07)                | -0.014 (0.07)            | -0.447 (1.23)                     |
| political comp_low | 0.02 (0.08)                  | 0.006 (0.03)             | -0.482 (1.01)                     |
| seat majority      | 0.381 (1.27)                 | 0.3 (1.17)               | 0.623 (1.16)                      |
| seat majority_low  | -0.205 (0.62)                | -0.157 (0.55)            | 0.578 (0.75)                      |
| parties in govt    | -0.143 (1.86)*               | -0.11 (1.62)*            | 0.006 (0.04)                      |
| parties in govt_low| -0.036 (0.44)                | -0.045 (0.62)            | -0.192 (0.86)                     |
| reserved seats     | 0.914 (2.31)**               | 0.768 (2.32)**           | 1.74 (2.41)**                     |
| old                | 0.308 (0.51)                 | 0.213 (0.42)             | 1.23 (0.79)                       |
| agrilabour         | 0.098 (0.49)                 | 0.12 (0.7)               | -0.963 (1.95)*                    |
| popsize            | -2.24 (1.81)*                | -2.05 (1.97)**           | 7.55 (2.99)***                    |
| FRBM               | -0.046 (1.14)                | -0.04 (1.18)             | -0.211 (2.24)**                   |
| grantsize          | 0.213 (3.85)***              | 0.191 (3.98)***          | 0.014 (0.14)                      |
| ec coefficient     | -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     | 145.97                       | 201.8                    | 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 the 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. The 5+5 results also exclude reserve_fraction for the same reasons. 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 respectively

*Pooled Mean Group Estimation*

Notes: See notes to table 2. Here the short run specification is the same as in table 2.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Private Targetable/Nonprivate</th>
<th>Private Targetable/Total</th>
<th>Private Targetable/Capital Outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (High vs. Low)</td>
<td>(High 7)</td>
<td>(Low 7)</td>
<td>(High 7)</td>
</tr>
<tr>
<td>\textit{real income per capita}</td>
<td>-0.458 (6.73)***</td>
<td>-0.192 (1.13)</td>
<td>-0.411 (6.75)***</td>
</tr>
<tr>
<td>\textit{political competition}</td>
<td>-0.302 (3.11)***</td>
<td>0.02 (0.18)</td>
<td>-0.261 (3.02)***</td>
</tr>
<tr>
<td>seat majority</td>
<td>0.127 (1.79)*</td>
<td>-0.002 (0.02)</td>
<td>0.121 (1.91)*</td>
</tr>
<tr>
<td>parties in govt</td>
<td>0.006 (0.1)</td>
<td>-0.146 (4.45)***</td>
<td>-0.001 (0.02)</td>
</tr>
<tr>
<td>\textit{reserved seats}</td>
<td>1.09 (4.66)***</td>
<td>1.04 (3.31)***</td>
<td>0.993 (4.81)***</td>
</tr>
<tr>
<td>old</td>
<td>3.38 (6.16)***</td>
<td>0.065 (0.09)</td>
<td>3.07 (6.46)***</td>
</tr>
<tr>
<td>agrilabour</td>
<td>0.167 (0.8)</td>
<td>0.193 (0.79)</td>
<td>0.177 (0.95)</td>
</tr>
<tr>
<td>\textit{popsise}</td>
<td>5.81 (5.06)***</td>
<td>-2.22 (1.62)?</td>
<td>5.12 (5.02)***</td>
</tr>
<tr>
<td>FRBM</td>
<td>-0.136 (4.96)***</td>
<td>-0.047 (1.24)</td>
<td>-0.125 (5.11)***</td>
</tr>
<tr>
<td>grantsize</td>
<td>0.159 (2.87)***</td>
<td>0.316 (5.19)***</td>
<td>0.135 (2.74)***</td>
</tr>
<tr>
<td>\textit{ec coefficient}</td>
<td>-0.801 (4.91)***</td>
<td>-0.84 (4.24)***</td>
<td>-0.791 (4.84)***</td>
</tr>
<tr>
<td>95% C.I. for ec coeff.</td>
<td>-1.12 -0.481</td>
<td>-1.23 -0.452</td>
<td>-1.11 -0.471</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>125.04</td>
<td>126.32</td>
<td>147.16</td>
</tr>
<tr>
<td>Observations (States)</td>
<td>163</td>
<td>156</td>
<td>163</td>
</tr>
</tbody>
</table>
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. 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.

It is evident that assumption (2) 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 circle in which privateness in the public budget is reduced as the real incomes of voters rise, thereby fostering more spending on public goods that enhance future growth prospects. The results also indicate that this potentially virtuous circle is more muted in lower income states. Recalling the stylized fact that inequality of average incomes across the states is increasing in our sample period leads to the question of whether, and to what extent, this virtuous circle has played a role in the interstate divergence of incomes that has been occurring in recent decades.

Concerning political competitiveness and propositions 2 and 2a, 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 in proposition 2. However, we again see that the budgetary process in the lower income states is different from that in the richer places as competitiveness intensifies, depending on what part of the budget we are considering. For budget ratios private/nonprivate and private/total spending, the results in

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27 When the coefficient with a suffix _low is significant, so is the estimated difference between the two coefficients.

28 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.
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. One possible explanation for the difference between capital outlay and other parts of the budget begins with the observation that capital goods are likely to have a higher degree of publicness than is embedded in the nonprivate or total aggregates. More intense competition in the lower income states evidently drives governments to divert resources towards favored groups - this requires more targetable goods be provided. 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.

Concerning the seat majority of the government or governing coalition which is, we think, 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.

We turn to results for other variables, beginning with parties in govt. Recall that an increase in the number of parties in a governing coalition is predicted to lead to more privateness. 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.29

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. They suggest that this may be

29 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.
due to the difficulties coalitions have working out how the bureau is to be managed. Why this might lead to a significantly negative coefficient for lower income states in the present context is not obvious. This is a result that remains to be explained.

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

The remaining covariates in the error correction model are included to acknowledge the possible importance demographics (*old, psize*), economic structure (*agrilabour*), and budget restraint rules (*FRBM*) on the composition of the budget. Note that the budget rule regime represented by the dummy variable FRBM always has a negative effect on privateness. Typically budget rules are assessed in terms of their effect on spending aggregates and the deficit. Here we see a reason why the composition of the budget may be, or perhaps should be, an issue in their design.

A final comment concerns results for models that include *famine* and *flood* - dummy variables recording rainfall that is, respectively, more than two standard deviations below (famine), 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), the electoral competitiveness index rises to equal 1, and competition in the state assembly becomes very intense - that is, when the *seat majority* of the governing coalition equals 0.5. 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.30

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 circle in the higher income states as growth leads to budgets that are likely to encourage further growth, and the 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 poorer states. The middle income states obviously play a role in the difference in results for the two samples, but it is not clear if this is just by increasing the sample size, or if their behavior is unique. In general we can say that more intense electoral competition reduces privateness of the budget as a whole in at least some states, with the effect being strongest in richer states.

Pessimism about the effects of competitiveness in the lower income states does not extend to the budgetary role of capital outlay. Capital expenditure 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.

30 Doubling of per capita income leads to a percentage change of -0.473 X 100 in the sample expenditure ratio of 0.127, implying a fall in the ratio of -0.06 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 implied counterfactual ratio then is 0.067 = -0.06 + 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*

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

* Using the long run relationship implied by pooled mean group estimation in column 2 of Table 2 for private targetable/total non-interest spending.

Table 4b
Counterfactual estimates of state public spending on private, targetable goods relative to capital outlay
Higher versus lower income states*

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

* Using the long run relationship implied by pooled mean group estimation in column 3 of Table 2 for private targetable/capital outlay.
6.1 Further results (to be completed)

The Appendix presents some additional results designed to explore the robustness of the estimation to alternative specifications in addition to those that have already been considered. These results are discussed briefly here, focusing on the pattern of the effects of income and electoral competition on the privateness of public expenditure in higher and lower income states. This includes the consideration of wages and salaries relative to the total budget and relative to capital outlay; the use of an alternative, adaptive measure of competitiveness; and the use of a dynamic fixed effects estimator instead of the pooled mean group estimator used for tables 2 and 3.

Table A5 presents results using our estimate of wages and salaries. Discussion to be completed. See the Appendix for the table.

In table A6 the adaptive version of the electoral competition index is used instead of its historical counterpart. This adaptive measure of competition is the equally weighted average of the historical measure defined in (28) and its analogous current value. This is not our preferred index since it is not strictly predetermined with respect to the contemporaneous budget, and consistency relies on the superconsistency property of the error correction estimators. To be completed.

The models in table A7 are estimated using a dynamic fixed effects method that assumes both longer run and shorter run dynamics are the same across all states, apart from a fixed effect. Competition is measured using the historical index (28) as in tables 2 and 3. To be completed.

Finally, results including famine and flood: Discussion to be completed.

7. Conclusions

We have studied the public-private divide within government by empirically modeling the share of 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 targetable private goods changes when average incomes change, and how it is affected by changes in electoral competitiveness. Growth increases the price of a unit of support gained by supplying targetable private goods to government supporters, thereby leading to budgets in which spending on such goods is a smaller proportion of the total. An increase in the ex ante political salience of swing voters, who are more concerned than core supporters with general economic conditions, leads to a reduction in the price of support gained by supplying public goods and hence to less privateness in state budgets.

Although the prices of a unit of electoral support generated by expenditures of different types are not observed, propositions concerning the effect of changes in these prices can be translated into hypotheses about the expenditure composition of actual public budgets. To test the resulting predictions, we have constructed a new measure of public spending on private targetable goods. We have also constructed a new (to India) measure of electoral competitiveness which reflects the swingyness of constituency level elections. This multi-party, volatility adjusted ex ante measure of electoral

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31 In table A5, all variables in the cointegrating relation are also used in the short run (except for FRBM) for the 7+7 sample, while for the 5+5 sample, old is also excluded from the short run to insure convergence of the maximum likelihood procedure. The pattern of coefficient signs remains the same in table A5 if the models are estimated with the same specification of the short run as in table 2.
competitiveness depends on the 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.

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 over time and space.

Pooled mean group estimation using these new measures as part of as 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 politics, demography, and economic structure. This result holds even when cross-section heterogeneity across the states is substantially removed by separating the 14 states in our panel into separate 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.

This pattern of results for the richer and poorer states suggests that there is a vigorous virtuous circle in the more developed states, where growth leads to more spending on capital infrastructure and other public goods, developments which likely help to set the stage for even more growth in the future. In the less developed states, however, this fortuitous sequence appears to be muted, and even reversed in some specifications. The size of the induced effects on growth remains a subject for further research.

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, although in our preferred estimates (using all 14 states in the pooled mean group estimation) spending on targetable private goods relative to capital outlay declines in all states when competition becomes more intense, with the effect being stronger in the less developed states. In these results, if competitiveness does lead to more privateness in the budget, 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.
References


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Chhibber, P., and I. Nooruddin (2000). Party competition and fragmentation in Indian national elections:


Winer, Ferris and Dash (forthcoming). Data Set for Indian State Elections.

### ONLINE APPENDIX

#### A1. Mnemonics, summary statistics and time series properties of the data.

**Table A1: Mnemonics, Definitions, and Sources**

<table>
<thead>
<tr>
<th>Mnemonics</th>
<th>Definitions</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Private Targetable/Nonprivate</strong></td>
<td>Ratio of private targetable public spending to non-private targetable public spending</td>
<td>Finance Accounts and calculation of authors</td>
</tr>
<tr>
<td><strong>Private Targetable/Total</strong></td>
<td>Ratio of private targetable public spending to total non-interest public spending</td>
<td>Finance Accounts and calculation of authors</td>
</tr>
<tr>
<td><strong>Private Targetable/Capital Outlay</strong></td>
<td>Ratio of private targetable public spending to capital outlay</td>
<td>Finance Accounts and calculation of authors</td>
</tr>
<tr>
<td><strong>Wages and salaries/ Total</strong></td>
<td>Ratio of proxy for wage bill of state government (non-plan spending net of pensions and debt servicing) to total non-interest public spending</td>
<td>Finance Accounts</td>
</tr>
<tr>
<td><strong>Wages and salaries/Capital Outlay</strong></td>
<td>Ratio of proxy for wage bill of state government (non-plan spending net of pensions and debt servicing) to capital outlay</td>
<td>Finance Accounts</td>
</tr>
<tr>
<td><strong>real income per capita</strong></td>
<td>Per capita state gross domestic product (SGDP) at 2004-05 constant prices</td>
<td>Central Statistical Organization (CSO), India</td>
</tr>
<tr>
<td><strong>real income per cap_low</strong></td>
<td>Per capita state gross domestic product (SGDP) at 2004-05 constant prices</td>
<td>Central Statistical Organization (CSO), India</td>
</tr>
<tr>
<td><strong>political competition</strong></td>
<td>Multi-party index of volatility-adjusted vote margins. The index value varies between 1 (perfect competition) and 0. See (25)</td>
<td>Election Commission of India and calculation of authors</td>
</tr>
<tr>
<td><strong>political competition_low</strong></td>
<td>Multi-party index of volatility-adjusted vote margins. The index value varies between 1 (perfect competition) and 0. See (25)</td>
<td>Election Commission of India and calculation of authors</td>
</tr>
<tr>
<td><strong>seat majority</strong></td>
<td>Ratio of seats occupied by the governing party or coalition to total seats in the state assembly (Vidhan Saba)</td>
<td>Lalvani (2005) and calculation of authors</td>
</tr>
<tr>
<td><strong>parties in govt</strong></td>
<td>Number of parties in the governing coalition (= 1 if single party government)</td>
<td>Lalvani (2005) and calculation of authors</td>
</tr>
<tr>
<td><strong>enp</strong></td>
<td>Effective number of parties, using vote shares. Constituency level values, averaged across constituencies for each state.</td>
<td>Election Commission of India and calculation of authors</td>
</tr>
<tr>
<td><strong>reserved seats</strong></td>
<td>Ratio of seats reserved for Scheduled Castes and Schedule Tribes to total seats in the state assembly</td>
<td>Election Commission of India</td>
</tr>
<tr>
<td><strong>popsize</strong></td>
<td>Ratio of state population to total population of the country</td>
<td>Central Statistical Organization (CSO), India</td>
</tr>
<tr>
<td><strong>old</strong></td>
<td>Ratio of persons 60 or more years old to total population</td>
<td>Census of India</td>
</tr>
<tr>
<td><strong>agrilabour</strong></td>
<td>Ratio of agriculture labourers to total workers</td>
<td>Census of India</td>
</tr>
<tr>
<td><strong>grantsize</strong></td>
<td>Total grants to the states from the central government relative to state total non-interest public spending</td>
<td>Finance Accounts</td>
</tr>
<tr>
<td><strong>flood</strong></td>
<td>dummy variable: =1 when annual average rainfall is two standard deviations above the state specific rainfall mean; = 0 otherwise</td>
<td>Statistical Abstract of India and calculation of authors</td>
</tr>
<tr>
<td><strong>drought</strong></td>
<td>dummy variable: = 1 when annual average rainfall is two standard deviations below the state specific rainfall mean; = 0 otherwise</td>
<td>Statistical Abstract of India and calculation of authors</td>
</tr>
<tr>
<td><strong>FRBM</strong></td>
<td>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</td>
<td>Reserve Bank of India</td>
</tr>
</tbody>
</table>
Table A2: Summary statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Seven rich states</th>
<th>Seven poor states</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Observations</td>
<td>Mean</td>
</tr>
<tr>
<td>Private Targetable / Non-private</td>
<td>175</td>
<td>0.149</td>
</tr>
<tr>
<td>Private Targetable / Total</td>
<td>175</td>
<td>0.127</td>
</tr>
<tr>
<td>Private Targetable / Capital Outlay(a)</td>
<td>173</td>
<td>1.3</td>
</tr>
<tr>
<td>Non-plan (wages and salaries) / Total</td>
<td>175</td>
<td>0.467</td>
</tr>
<tr>
<td>Non-plan (wages and salaries) / Capital Outlay(a)</td>
<td>173</td>
<td>4.82</td>
</tr>
<tr>
<td>Real Income Per Capita</td>
<td>175</td>
<td>29677</td>
</tr>
<tr>
<td>Political Competition</td>
<td>170</td>
<td>0.355</td>
</tr>
<tr>
<td>Seat Majority</td>
<td>175</td>
<td>0.622</td>
</tr>
<tr>
<td>Parties in Govt</td>
<td>175</td>
<td>2.14</td>
</tr>
<tr>
<td>Reserved Seats</td>
<td>175</td>
<td>0.179</td>
</tr>
<tr>
<td>Popsiz</td>
<td>175</td>
<td>0.047</td>
</tr>
<tr>
<td>Old</td>
<td>175</td>
<td>0.082</td>
</tr>
<tr>
<td>Agrilabour</td>
<td>175</td>
<td>0.227</td>
</tr>
<tr>
<td>FRBM</td>
<td>175</td>
<td>0.337</td>
</tr>
<tr>
<td>Grants</td>
<td>175</td>
<td>0.088</td>
</tr>
<tr>
<td>flood</td>
<td>175</td>
<td>0</td>
</tr>
<tr>
<td>drought</td>
<td>175</td>
<td>0.066</td>
</tr>
</tbody>
</table>

Note: (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.

Table A3: Panel Unit root tests

| Variables                                      | Level          | 1st Difference     |
|                                               | Fisher         | Pesaran          | Fisher        | Pesaran        |
| Private Targetable / Non-private               |               | -7.87***         | 642.35***     | -15.66***      |
| Private Targetable / Total                    |               | -7.84***         | 642.96***     | -15.7***       |
| Private Targetable / Capital Outlay(a)        | 66.9***       | -4.81***         | 464.15***     | -14.07***      |
| Real Income Per Capita                        | 1.82          | -3.3***          | 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                | 51.67***      | -2.74***       |
| Popsiz                                        | 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 pescadf.
A2. Public finance data of state governments and the measurement of 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.

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

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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.
explained here is how we measure state capital outlays, or capital expenditure net of loans and advances, and state expenditure on wages and salaries.

I) 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 in 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. Plan(ed) 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 and 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 use non-plan spending net of pensions and debt servicing as a proxy for state wages and salaries. 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, \( p_g \). This spending is also substantially more targetable than the remaining, private good component of public expenditure \( p_z \). 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 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.

---

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

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

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 deducted 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 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 in 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 a 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 largely non-targetable, beneficiaries of spending on textbooks, scholarships, and examinations can be identified. Distribution of textbooks and offering scholarships to students may be considered private targetable spending because the effective rules vary with elections. Distributing textbooks 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 textbooks 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 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.

(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)]
Urban water supply programs, and rural water supply programs: State governments play a major role in supplying adequate water for drinking and other household 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, which 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)]

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)]

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 verity 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)]
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 A4 (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 A4 here]
Table A4 (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

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

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.
A3: Grants to the states

Figure A1: Total grants as a proportion of total noninterest state spending
Averages over 7 higher and 7 lower income Indian states, 1987/88 to 2011/12

Figure A2: Total grants as a proportion of total noninterest state spending
Averages over 5 richest and 5 poorest (BIMAROU) states, 1987/88 to 2011/12
A4: Consideration of the role of wages and salaries

Table A5: Public Spending on Wages And Salaries in the Public Budgets of 14 Major Indian States: 1987/88 to 2011/12
Pooled Mean Group Estimation

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Nonplan (wages and salaries*)/Total</th>
<th>Nonplan (wages and salaries*)/ Capital Outlay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample (High+Low)</td>
<td>(7+7)</td>
<td>(7+7)</td>
</tr>
<tr>
<td>real income per capita</td>
<td>-0.279 (3.31)***</td>
<td>-1.00 (3.07)***</td>
</tr>
<tr>
<td></td>
<td>real income per cap_low</td>
<td>0.089 (0.95)</td>
</tr>
<tr>
<td>political competition</td>
<td>-0.335 (3.36)***</td>
<td>-1.4 (2.63)***</td>
</tr>
<tr>
<td></td>
<td>political comp_low</td>
<td>0.452 (3.53)***</td>
</tr>
<tr>
<td>seat majority</td>
<td>0.202 (2.12)***</td>
<td>1.06 (2.07)***</td>
</tr>
<tr>
<td>seat majority_low</td>
<td>-0.555 (4.22)***</td>
<td>0.173 (0.25)***</td>
</tr>
<tr>
<td>parties in govt</td>
<td>-0.019 (0.51)</td>
<td>-0.166 (0.85)***</td>
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<tr>
<td>parties in govt_low</td>
<td>-0.067 (0.97)</td>
<td>0.081 (0.34)</td>
</tr>
<tr>
<td>reserved seats</td>
<td>-0.145 (0.95)</td>
<td>1.68 (1.81)***</td>
</tr>
<tr>
<td>old</td>
<td>0.427 (1.07)</td>
<td>1.84 (1.25)***</td>
</tr>
<tr>
<td>agrilabour</td>
<td>-0.087 (0.66)</td>
<td>-1.55 (2.6)***</td>
</tr>
<tr>
<td>popsize</td>
<td>1.76 (3.11)***</td>
<td>9 (3.1)***</td>
</tr>
<tr>
<td>FRBM</td>
<td>-0.132 (5.95)***</td>
<td>-0.224 (2.18)**</td>
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<tr>
<td>grantsize</td>
<td>-0.076 (2.85)***</td>
<td>-0.348 (2.79)***</td>
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<tr>
<td>ec coefficient</td>
<td>-0.601 (5.66)***</td>
<td>-0.601 (5.91)***</td>
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<tr>
<td>95% C.I. for ec coeff.</td>
<td>-0.808 -0.393</td>
<td>-0.8 -0.402</td>
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<tr>
<td>Log likelihood</td>
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<td>13.58</td>
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<tr>
<td>Observations (States)</td>
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<table>
<thead>
<tr>
<th>Sample (High+Low)</th>
<th>(5+5)</th>
<th>(5+5)</th>
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<tbody>
<tr>
<td>real income per capita</td>
<td>-0.182 (2.07)**</td>
<td>-0.952 (2.7)***</td>
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<td>real income per cap_low</td>
<td>0.97 (1.6)***</td>
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<tr>
<td>political competition</td>
<td>-0.362 (3.66)***</td>
<td>-1.55 (2.82)***</td>
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<td>political comp_low</td>
<td>0.419 (3.05)***</td>
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<tr>
<td>seat majority</td>
<td>0.161 (1.56)</td>
<td>1.22 (2.25)**</td>
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<tr>
<td>seat majority_low</td>
<td>-0.557 (3.83)***</td>
<td>-0.454 (0.56)</td>
</tr>
<tr>
<td>parties in govt</td>
<td>-0.032 (0.86)</td>
<td>-0.241 (1.23)</td>
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<tr>
<td>parties in govt_low</td>
<td>-0.029 (0.43)</td>
<td>0.175 (0.69)</td>
</tr>
<tr>
<td>reserved seats</td>
<td>-0.332 (1.96)**</td>
<td>1.75 (1.63)?</td>
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<tr>
<td>old</td>
<td>-0.018 (0.04)</td>
<td>2.32 (1.3)</td>
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<tr>
<td>agrilabour</td>
<td>-0.033 (0.24)</td>
<td>-1.29 (1.82)*</td>
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<tr>
<td>popsize</td>
<td>1.29 (2.21)**</td>
<td>8.13 (2.73)***</td>
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<tr>
<td>FRBM</td>
<td>-0.13 (5.59)***</td>
<td>-0.374 (3.04)***</td>
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<tr>
<td>grantsize</td>
<td>-0.041 (1.49)</td>
<td>-0.227 (1.65)*</td>
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<td>-0.612 (5.78)***</td>
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<td>95% C.I. for ec coeff.</td>
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Notes: See notes to table 2. Here the short run specification is the same as in table 2.
* Wages and salaries are approximated by nonplan spending net of pensions and interest payments = wages and salaries plus maintenance. See section A2 of the Appendix.
A5. Using an adaptive measure of political competitiveness (to be updated)

Table A6: Public Spending on Private, Targetable Goods in the Public Budgets of 14 Major Indian States 1987/88 to 2011/12. With Adaptive Measure of Political Competitiveness

Pooled Mean Group Estimation: Cointegrating relation and error correction coefficient

A6. Fixed effects estimation (to be updated)

Table A7: Public Spending on Private, Targetable Goods in the Public Budgets of 14 Major Indian States 1987/88 to 2011/12. With Historical Measure of Political Competitiveness

Dynamic Fixed Effects Estimation (with clustering at state level)