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Bharatee B.
Dash
National Institute of
Public Finance
and Policy

Pinaki
Chakraborty
National Institute of
Public Finance
and Policy

J. Stephen
Ferris
Carleton
University

Stanley L.
Winer
Carleton
University

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UNIVERSITY

Department of Economics

1125 Colonel By Drive
Ottawa, Ontario, Canada
K1S 5B6

The Privatness of Public Expenditure with application to Indian States

Bharatee B. Dash*, Pinaki Chakraborty*
J. Stephen Ferris**, Stanley L. Winer***

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Abstract

Governments provide private goods as well as public services. We present a model of the private good - public good mix in public expenditure, and then apply it to explain the composition of spending by Indian state governments. The model explains why the publically provided private good to public good ratio is a decreasing function of the real income of voters, and is also decreasing in the degree of political competition. These hypotheses are tested on a panel of 14 Indian states for fiscal years 1987/88 to 2011/12. The long run results of three alternative ARDL models are broadly consistent with the proposed hypotheses, particularly the relationship between the private good share of state expenditures and real per capita incomes. They suggest that rising incomes and more effective political competition work together to improve a state's policy mix and, in this sense, economic development becomes at least partially endogenous.

JEL Code: H42, H72, O53, C23.

Key Words: Private versus public goods, the spending composition of Indian State Governments, electoral competition, swing voters, partisan rents, the relative price of publically supplied private goods, ARDL panel models.

- * National Institute of Public Finance and Policy, New Delhi, India
- ** Department of Economics, Carleton University, Ottawa, Canada
- *** School of Public Policy and Administration and Department of Economics, Carleton University, Ottawa, Canada (stanley.winer@carleton.ca corresponding author)

1. Introduction

One of the few generalizations that can safely be made of India is that its individual states differ widely in their physical, cultural and economic characteristics. States differ by size, population, geographic and demographic endowments, their level of development, rural/urban mix, and ethnic and religious composition all of which have produced broadly different types, levels and distributions of income. On the other hand, governance structures across Indian states share a common political heritage derived from British parliamentary government. Hence in comparing election and governing institutions across Indian states one is not comparing political apples and oranges. Rather this combination of distinctive and common features means that the governance structures of Indian states provide an important arena for the testing different public choice hypotheses, hypotheses whose common feature is that governance structures should respond to differences in their specific political and economic environments.

In this paper we focus on a subset of differences across states and examine the extent to which these find expression in different manifestations of political competition as embodied in state budgets. To foreshadow our argument, we expect to find that electoral competition will lead governments in low income states to provide relatively more of their expenditures as private goods, targeted specifically at the core supporters of, and the swing voters available to, the governing party. In such states providing special interest groups with relatively small valued gifts will generate benefits that bulk large relative to existing incomes and this bigger 'bang for the buck' makes targeted expenditures a relatively more productive way to win or retain

electoral support for the incumbent political party. While targeted spending serves to establish a reputation or brand name for the incumbent party seeking special interest support, Krishna (2007) discusses a number of ways by which leaders of these groups can solicit support by credibly delivering group votes to the governing party.

As income levels rise, however, the additional benefit received by a group of voters from the same nominal sized gift can be expected to fall. This implies that the level of political support that can be won by a governing party making special interest transfers will fall relative to the ability to win support from the general public by providing either more or better qualities of public goods. The ability of the governing party to win political support through targeted private spending becomes increasingly costly relative to the alternative of providing good governance by enhancing welfare more generally. For these reasons we expect that the form of political competition in the richest states to be characterized more by the provision of public goods, goods aimed at benefiting the community as a whole, relative to the individualism of specifically targeted private goods. For the same reason, this pattern of change should hold within all states across time as income levels rise. At any particular point in time, however, an increase in political competition will produce greater intensity in the particular form of political competition currently practiced. Thus while both poor and rich states respond by increasing the provision of both types of publically provided goods, poorer states will increasingly be characterized by the intensity of their targeted expenditures. In richer states, greater competition can be expected to result in a greater expansion of public services that more broadly enhance state economic welfare.

Because we are not the first to be concerned with special interest spending as a form of political competition nor are we the first to test for its presence, our contribution to this ongoing debate needs to be highlighted.¹ Here we argue that the essential element needed to test the hypotheses outlined above is a credible distinction between state provided private goods and public welfare enhancing provided goods that utilizes state fiscal data. Our contribution is to provide an explicit model of how targeted private spending works as a form of political competition and more precise and specific measures of what targeted spending means in the context of state expenditures.

Because agreement on a unique measure seems unlikely, we propose three ever tighter measures of private versus public state expenditures. The first defines targeted spending conventionally as the ratio of state consumption expenditure to total state expenditure net of interest. Although this measure is relatively crude, it has been widely used and its categorization of targeted spending in terms of broad spending aggregates means that it could be used for the relatively long 1959 to 2013 time period. The second measure defines targeted spending somewhat more selectively in terms of the greater budget detail that becomes available from 1972/73 onward. The third and most selective measure uses an item by item reclassification of state expenditures. This takes advantage of the greater detail permitted by the line budgets released in state budget documents following the 1987-88 budget year. More detail on the precise items included as targeted expenditures is given in the Data Appendix of

¹ Much of the literature conflates what we are calling targeted private spending with clientism (see Hicken, 2011; Robinson and Verdier, 2013). In our view clientism is much 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.

the paper. Given these alternative categorizations, we expect that more precision in the items included in the private/public expenditure split will allow the predictions of the political competition hypotheses to stand out more cleanly in the data. The particular hypotheses we are interested in testing include: does the form of electoral competition work as suggested through targeted private relative to public government output falling as individual incomes rise?; can electoral competition explain any of the differences arising across rich versus poor states?; and does higher income affect the public/private output mix in the same way as political competition? That is, are income levels and political competition complements or substitutes as a way of explaining the mix of public sector output?

Before answering any of these questions, however, we begin with a model that motivates the analysis and leads to the questions outlined above. It formalizes how we view and propose measuring political competition and answers why we expect higher income levels to change the form of political competition. This is operationalized by the effect of income on the mix of private and publically supplied government output.

2. An election model featuring targeted private spending on core and swing voters in which rents play a key role

In the following pages we develop an election model with core and swing voters in the spirit of Lindbeck and Weibull (1987), Cox and McCubbins (1986), Dixit and Longregan (1996), Lohmann (1998), Golden and Picci (2008), Weitz-Shapiro (2012), Aidt and Mooney (2014) and others . The setup of the model is tailored to focus on the consequences of the level of development and the degree of political completion for the public--private good mix of government policy.

Typically a political party's probability of electoral success depends upon its ability to attract swing voters in addition to its own core supporters. Swing voters are assumed to be uninterested in the party-specific ideas that motivate the party's core supporters and vote purely in response to the levels of private goods, q_t , and public goods, g_t , received from competing political parties. Core supporters, on the other hand, are party partisans but only up to a point. That is, they will not vote for another party until a threshold level of promised individual benefit greater than q_0 is passed. This we assume is exogenously given.² We assume that the initial division of the electorate into core and swing voters depends on factors outside of the party's control (such as demographics) though this may change over time for various reasons. Normalizing the size of the electorate to one, the number of swing voters is n_s and the number of core supporters is kn_c where k is the number of political parties and $n_s + kn_c = 1$. For simplicity we assume that within each voting group members are identical and that core and swing voters differ only in the manner described above. While the fraction of swing voters may be small, they are often of strategic importance.

Assume then that each political party is interested in maximizing its political support in the next election where political support depends in part upon the private benefits, $n_s q_t$, and public goods, g_t , provided to swing voters. In addition, political support will depend on the support given by its core supporters. This in turn requires the provision of a threshold level of specific private benefits to maintain party loyalty, $n_c q_0$ and the commitment by the party to

² Use of a threshold means that core voters will become swing voters only if a large enough level of private benefit is given by competing political parties to overcome party attachment and we reflect this by assuming that $q_0 > q_t$. In our empirical work, we allow for control variables, such as the percentage of voters who are SC or ST, to reflect the size and commitment of the core group,

transfer to them any rents, r_t , that can be generated from governing, where to confer any of these benefits the party must first win the election. Rents are defined as potential government output, G_t , used neither to provide private goods targeted at the groups of swing and core voters, $Q_t = n_c q_0 + n_s q_t$, nor to provide public goods, g_t . Hence rents are a residual. If present they are used to promote the partisan interests of core party supporters and functionaries.

This implies that

$$r_t = G_t - p s_t Q_t - g_t, \quad (1)$$

where $p s_t$ is the relative cost of using government output to acquire political support using private state provided goods relative to public goods providing more general welfare. The cost of using specifically targeted private goods to generate electoral support is assumed to increase in the level of development (per capita income) encountered in any political jurisdiction. Hence as average income levels rise, increasing quantities of the publically provided private good must be given to accomplish the same electoral objective.

Potential voters of all types are assumed to recognize the general structure of the electoral process in that voters expect that political parties will provide some special level of inducement to swing voters and redistribute rents to their core supporters. However, following Lohman (1998), Besley, Persson and Strum (2010) and Aidt and Mooney (2014) costly information means that swing voters will be unable to determine the specific levels of this support. Less than full information arises because voters are assumed to be able to observe only the aggregate level of public government goods actually provided, what will later be called G_{min} , the level of individual tax payments, τ_t , and the specific level of private goods they receive, either q_0 or q_t .

To model the information problem more explicitly we assume that the level of government services that can be produced from any level of tax revenue depends on the ability or competence of the governing party, a_i , and the realization of a common time specific productivity shock, u_t . More explicitly,

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

and where τ_t is the tax revenue used to produce government goods and services.³ It is because voters cannot observe the competence of the governing party in the presence of the productivity shock that voters will be unable to determine precisely the potential services they could get from their taxes and hence the degree to which the governing party can divert government output to swing voters and/or its core supporters. This allows the party (knowing its own competence) to use information compactness to disguise the transfer of rents to its core supporters. Voters for their part will attempt to infer the competence of the governing party from its realized level of performance and, in order to constrain rent-seeking, will establish a minimal level of performance as the basis for voting for the governing party in the upcoming election.

To construct a minimally acceptable level of performance, swing voters use their ability to observe actual output, q_t and τ_t together with their knowledge of the structure of the system. In the absence of other metrics, swing voters will view the ability/competence of any political party that is competing with the governing party as being a random draw from the distribution of party abilities (assumed to be normally distributed with mean \bar{a} and constant

³ Hence even though political parties see the possibility of gaining political support symmetrically, they differ by their ability/competence in producing government services.

variance, σ_a^2). Thus from the voter's perspective it is the presence of the two random effects that prevents them from determining precisely the competence of the governing party and establishes the level of performance that can be expected from a randomly drawn rival as the effective operational constraint on what the governing party must provide from its tax revenues. This implicitly defines what the incumbent can extract as rents for its core supporters.

We now add specificity to the analysis by adopting a specific functional form that allows us to isolate the relative cost of using targeted spending as per capita income rises. Assume that the expected political support that can be received by any political party i is an increasing function of the private goods given to both its clients and swing voters, the utility generated by government public goods and private consumption that can be realized after taxes, $c_t = Y_t - \tau_t$, and can be represented by

$$E_t[S_{it}] = E_t[\beta \ln(n_c q_o + n_s q_t) + \alpha \ln(a_i u_t \tau_t) + \gamma \ln c_t] \quad (3)$$

where $1 > \alpha, \gamma, \beta > 0$, $\gamma = 1 - \alpha - \beta$ are the weights attached to the alternative means of gaining electoral support and $c_t = Y - \tau_t$.⁴ The political effectiveness of private goods is written as $\beta \ln(n_c q_o + n_s q_t)$ to reflect the assumption that the support that can be expected from core and swing voters increases at a decreasing rate. The cost in terms of government output in purchasing that support is later assumed to be increasing in the state's level of development.

⁴ Note that although any realized rent generates utility to core voters, rent is not a cost to the party but a residual realized by the governing party with an above average level of ability.

From the voter's perspective, the level of ability/competence held by political party j is a drawing from the distribution $a_i \sim N(\bar{a}, \sigma_a^2)$ whereas $u_t \sim N(1, \sigma_u^2)$ is a random shock that equally affects the provision of government supplied public goods. Again from the perspective of voters, the two drawings are assumed to be independent of each other. Hence the output that could be expected from a randomly drawn alternative to the governing party is $G_{jt}^e = E_t(G_t) = E_t(u_t a_j \tau_t) = \bar{a} \tau_t$. It follows that because the rent received by core supporters generates no electoral support but imposes a loss by implying a higher τ_t than that needed to provide the same level of q_t, g_t or c_t (through the government budget constraint), competition among otherwise identical political parties will result in the establishment of an expected level of performance that will exhaust the ability of the average ability winning party to realize any rent.⁵ That is, given the information held by voters, the performance criteria established will result from the optimal output choices of an 'average' political party that uses all government output for either g_t, q_0 or q_t , i.e., $r_t = 0$ so that $G_{min} = G_{jt}^e = \bar{a} \tau_t = g_t + p_s(n_c q_0 + n_s q_t)$. Using this information structure and assuming that the two shocks are independent, we can substitute the expected value, G_{jt}^e , back the production function in (3) together with the definitions of G_t and c_t to find the expected support of the average political party as

$$E_t[S_t] = \beta(\ln(n_c q_0 + n_s q_t)) + \alpha(\ln g_t) + (1 - \beta - \alpha) \ln(Y - \tau_t) \quad (4)$$

Looking at the case where $q_0 > q_t$ (so that q_0, n_s, n_c, Y remain parameters), the first order conditions for an internal maximum of (4), subject to the effective performance constraint of $E_t\{\mu a_i \tau\} = \bar{a} \tau = p_s(n_0 q_0 + n_s q_s) + g_t$ are:

$$q_t: \quad \frac{\beta}{n_0q_0+n_sq_s} - \lambda ps_t = 0, \quad (5)$$

$$g_t: \quad \frac{\alpha}{g_t} - \lambda = 0, \text{ and} \quad (6)$$

$$\tau_t: \quad -\frac{\gamma}{Y-\tau_t} + \lambda\bar{a} = 0. \quad (7)$$

To solve for the equilibrium values first combine (5) and (6) to find

$$ps_t(n_0q_0 + n_sq_s) = \frac{\beta}{\alpha} g_t. \quad (8)$$

Note that since $Q_t = n_0q_0 + n_sq_s$, the ratio of private to publically provided goods $\frac{g_t}{Q_t} = ps_t \frac{\alpha}{\beta}$

so that the optimal ratio of publically provided private to public goods will rise with the price of private goods (which in turn is an increasing function of income).

Second, by combining (6) and (7) we get

$$\bar{a}\tau = \bar{a}Y - \frac{\gamma}{\alpha} g_t. \quad (9)$$

Substituting (8) and (9) back into the effective performance constraint, the equilibrium level of public good provision, g^* , and the equilibrium tax, τ^* , can be solved as

$$g^* = \frac{\alpha\bar{a}}{\alpha+\beta+\gamma} Y, \text{ and } \tau^* = Y - \frac{\gamma}{(\alpha+\beta+\gamma)} g^* = \frac{(1-\gamma)Y}{(\alpha+\beta+\gamma)} \quad (10)$$

With g^* known, the substitution of (10) back into (8) solves for the necessary level of private good provision as

$$Q^* = \frac{\beta\bar{a}}{ps_t(\alpha+\beta+\gamma)} Y. \quad (11)$$

Finally, the actual rent that governing party i will realize upon its election in period t will depend upon its actual level of competence, a_i , and the realization of the period specific productivity shock, u_t . That is,

$$r_{it} = a_i u_t \tau^* - \bar{a} \tau^* = (a_i u_t - \bar{a}) \tau^*. \quad (12)$$

If rents need not be taken in the form of government provided goods and services, government tax revenues will be larger than that needed to provide the observable level of performance expected by the community.

With this background we can now establish three testable predictions that follow from our analysis:

Prediction 1: Across states an increase in real per capita income will be associated with a smaller ratio of targeted private to total state spending as a means of purchasing political support. A corollary is that ratio of private targeted spending to public goods should have declined over time in states where income has risen.

Proof:

In our model a reduction in targeted spending means a fall in the ratio of private to publically provided government goods and services, that is $\frac{Q_t}{g_t}$ must fall. Then from (11) and (10) we find,

$$\frac{\partial \left(\frac{Q_t}{g_t} \right)}{\partial Y} = - \frac{\beta}{\alpha p s_t^2} \left(\frac{\partial p s_t}{\partial Y} \right) < 0. \quad (13)$$

The sign of (13) follows because we assume that $p s_t$ is increasing with Y . Thus within each state we should find that special interest spending is declining over time as income levels rise. To the extent that other factors can be controlled for, targeted spending should be used more in states with lower levels of income.

Note that the form of the support function used to illustrate this point has the virtue of making income neutral in its effect on the proportion of the two types of government goods used to win electoral support. This means that the effect on the composition of government output arises only from the substitution effect that follows a relative price change and cannot

be attributed to the income effect arising from the price change. On the other hand, the disadvantage of using the separable form is that while the relative quantity falls, the expenditure share remains constant following a price change, reflecting an imposed elasticity of one. It follows that while the relative use of targeted spending would be expected to fall as the rise in income both within and across the Indian states raises its political cost, the expenditure share spent on targeted spending would rise rather than fall if the demand curve were inelastic. Because the implicit relative price of using targeted private government goods to win political support is not observed, empirical tests of these hypotheses must use expenditures shares in their stead. This implies that an expenditure test for the effect of income on the relative use of targeted expenditures will be overly restrictive in the sense that real spending could be falling even if its expenditure share rose. While such an outcome does not arise in the empirics below, this potential ambiguity should be recognized in interpreting the targeted expenditure literature and the empirical work that follows.

Prediction 2: The effect of an increase in political competition on the type of political competition will depend upon the level of development in the affected state. Incumbent parties in low income states will respond to more competition in the form of relatively more targeted spending while rich states will experience less relative to publically provided goods.

Proof:

In the context of our analysis, an increase in the intensity of political competition means a truncation in the distribution of competencies/abilities across viable political parties. That is, greater political completion brings the elimination at least one of the least able political parties which in turn implies that the (mean) level of ability that can be expected by swing voters from

a randomly chosen alternative to the governing party will rise. From equations (10) and (11) it can be seen that both g^* and Q^* are increasing functions of \bar{a} , the mean value of competing party competence. From the ratio of (10) and (11) we see that $\frac{Q_t}{g_t} = \frac{\beta}{\alpha p s_t}$ which implies that the proportions by which an expansion in government services takes place will depend only on the relative cost of providing the two goods. This in turn is a function of the level of state income. Thus when income levels are low (so that the price of acquiring political support through targeted spending is low) relatively more of the expansion arising from increased political competition will take place through privately targeted government spending. For rich states where the relative cost of using targeted spending is high, expansion will arise relatively more in the form of publically provided public goods that enhance economic welfare more generally.⁶

Prediction 3: While the effect of an increase in political competition will involve a change in neither the form nor the aggregate level of government spending, an increase in political competition will be observed as a fall in the expected number of political parties (ENP) and an unobserved fall in the rents received by core party supporters. The latter becomes observable as a fall in the share of private targeted expenditure in the state budget. Hence the model predicts that the sign of the regression coefficient on ENP will be positive with respect to its effect on the proportion of privately targeted goods in total state expenditures.

Proof:

From equations (10) and (11) it can be seen that g^* and Q^* both increase with \bar{a} . On the other hand, total government output/expenditure $G_{jt} = a_i u_t \tau^*$ is independent of \bar{a} and hence

⁶ Because n_s and n_c are exogenously fixed proportions, the model does not capture directly the effect across states of different total numbers of voters. Intuitively, however, as the total number of voters rise, the cost of using private as opposed to public goods to attract the same proportion of election support must rise. In this sense the analysis predicts that as population size rises, the use of targeted relative to more general forms of welfare reform will fall.

remains constant. It follows that with the minimally acceptable level of government performance $G_{min} = \bar{a}\tau^*$ increasing, the effect of increased political competition is to require the incumbent government to use its unchanged tax revenues more efficiently (from the perspective of the nonpartisan voter) and so squeeze the rents that would otherwise go to core party supporters. The latter follows directly from (12). That is, while the aggregate resources absorbed by government are unchanged, the share of government services going to noncore voters will increase and the rent that can be expected by core party supporters of the incumbent political party (with unchanged competence equal to a_i) will fall. Because rents are received in the form of privately targeted public goods, the effect of a fall in ENP (implying greater political competition) will be observed as a fall in the ratio of privately targeted public expenditures.

The test of our targeted spending hypothesis can then be written as:

$$\left(\frac{\text{Private Targeted}}{\text{Total noninterest Gov't Expenditure}} \right)_{it} = a_0 + a_1 RYPC_{it} + a_2 ENPVOTE_{it} + a_3 CONTROLS_{it}, \quad (14)$$

where $i = 1, \dots, 14$ represents the state, $t = 1959, \dots, 2011$ represents the year. In addition, a_1 , the coefficient on real per capita income (RYPC), is predicted to be negative; a_2 , the coefficient on ENPVOTE (our proxy for political competition) is predicted to be positive; and a_3 , is the coefficient on the set of control variables.

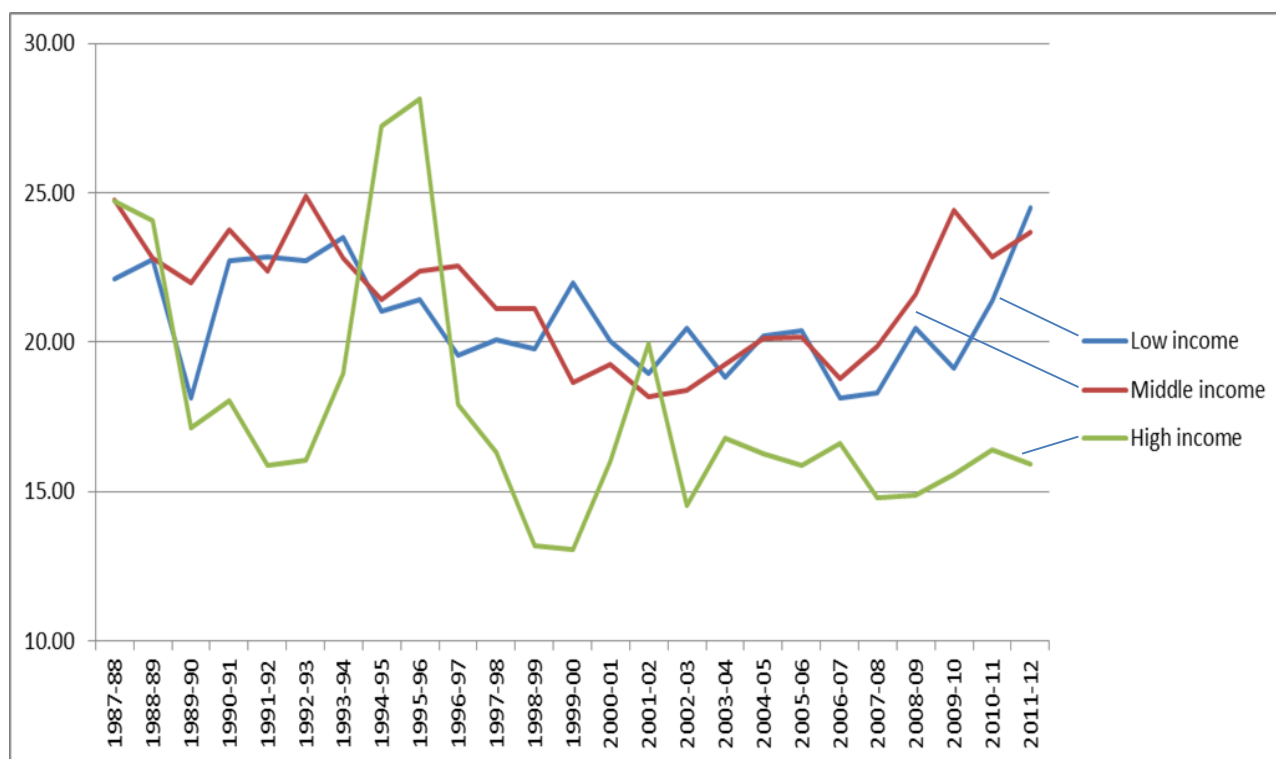
3. Data and some preliminary results

The data used in our tests comes from a panel of fourteen Indian states for which we have annual time series data. A more complete description of the variables used and their

sources is included as a Data Appendix at the end of the paper. Because our test involves a comparison of results for the different measures of the private/public split in state government expenditure, we mainly restrict our attention to the 1987/2011 time period, the maximum length for which we have our most precise measure, (Private/Public)⁸⁷. However, some results for longer periods of time using less precise spending measures are also considered.

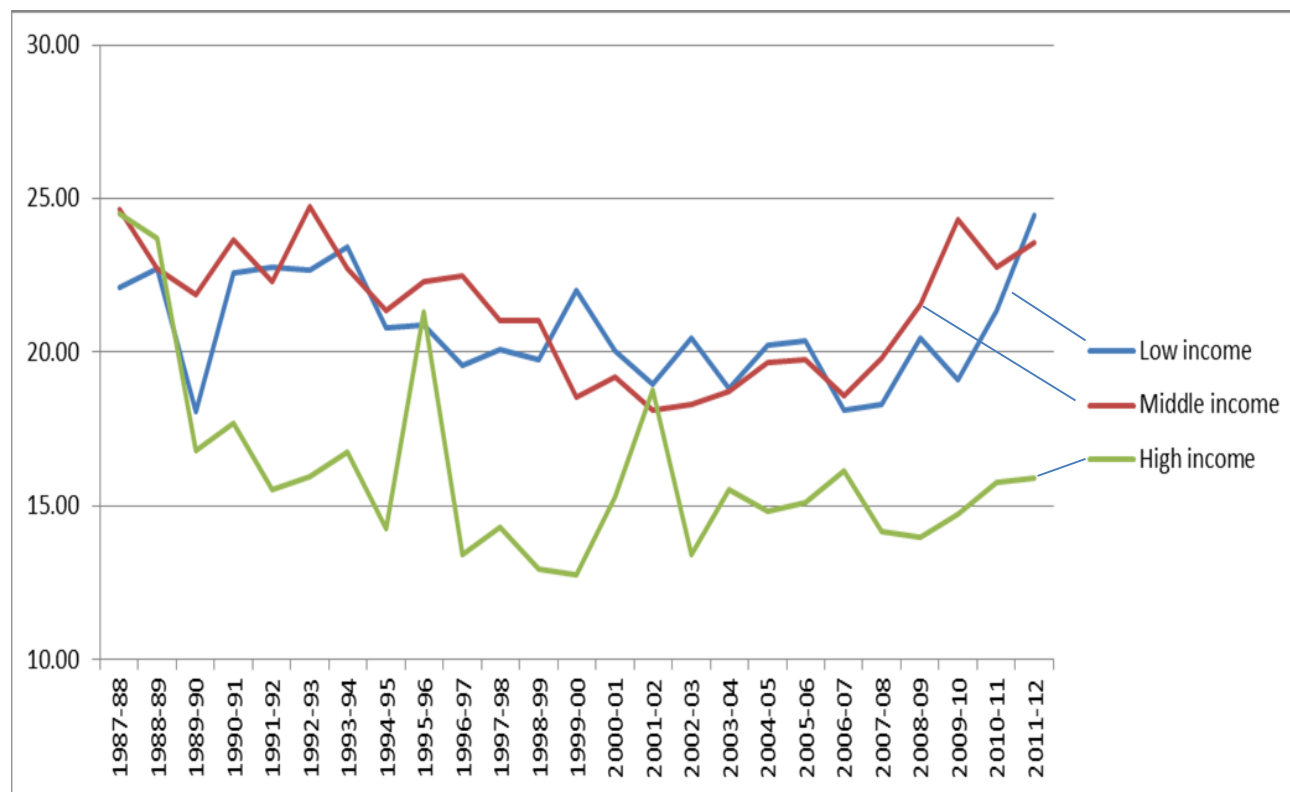
The (Private/Public)⁸⁷ data for 1987/88 to 2011/12 are graphed in the two figures following:

Figure 1
Private state spending to total noninterest state spending, 14 major Indian states
1987-88 to 2011-12



Note: For some years certain states spent large amounts on lottery awards. In this figure, lottery spending is treated as private expenditure.

Figure 2
Private state spending (excluding lotteries) to total noninterest state spending, 14 major Indian states, 1987-88 to 2011-12



It appears that the role of private goods in public spending is lower in the richer states. For the middle income and poorest states, the comparison is not clear, at least not on the basis of simple averages.

We begin the formal statistical analysis in Table 1 by presenting a fixed effects panel regression test of the effect on the three ratios of targeted private government spending to total (non-interest) state expenditure arising from changes in real income per capita (Lrypc) and our

measure of political competition (Lenpvote).⁷ These estimates assume that states respond in the same way to each variable and differ only in ways that can be captured by differences in their intercept. The control variables used to capture complementary reasons for variability in the private to public ratio include the fraction of the seats in the legislature reserved for special tribes and castes (Lreserve_fraction) and the proportion of the population that is old (Lold). Increases in these proportions are expected to increase private spending targeted at special interest groups that traditionally have received special support from the state. We also include a dummy variable for the years in which the governance of state expenditures was taken over by presidential rule (Presidential Rule) so that incumbent party expenditure choices favouring special interests were suppressed. For this reason a negative coefficient is expected. Table 1 is presented in two parts, where the second sub-table shows the effects on the three private spending ratios after adding the proportion of the population that is old (60 and over) as an additional control variable. In this regard note that while the addition does very little to the two more general measures of the private/public split, the addition of the proportion of older voters is itself significant and does significantly improve the fit with the more precise measure of privately targeted public expenditures.

As a general theory explaining the share of privately targeted public spending in the noninterest total, the regression results are only modestly successful, providing a somewhat stronger explanation of spending choices within each state over time than across states at any particular point in time. On the other hand, the individual hypotheses, as represented by the chosen set of covariates, are more successful as explanations of the private/public choices

⁷ The fixed effects estimator rewrites (14) with a_i , where i indexes the state rather than a_0 .

made by state governments with many of the coefficient estimates having their predicted sign and being significantly different from zero. In particular, the ratio of privately targeted to general public expenditure is inversely related to real income per capita as expected for all ratio measures in both tables and is significantly so in five of the six possible cases. The results are then consistent with prediction 1, the hypothesis that because the cost of using private goods to target particular groups of voters becomes increasingly costly as real incomes rise incumbent parties will substitute the use of generally provided public goods for privately targeted goods as a more efficient way of winning support. The results also suggest that while there is very little difference between the 72 and 59 ratio measures, the coefficients of both 72 and 59 measures are significantly smaller than the detailed 87 measure. This is consistent with our expectation that a more precise measure should indicate more of a response to changes in $Lrypc$.

The effects of the political competition variable, $Lenpvote$, on the composition of state expenditure are mixed. In the case of the 72 measure, the result contradicts the proposed hypothesis. On the other hand, the signs of both the 59 and 87 measures are consistent with the hypothesis that greater political competition decreases the relative proportion of private state provided goods in the budget, with the coefficient of the 59 measure significantly different from zero in both forms of the test. What is also of interest is that in both the 87 and 59 cases the coefficient estimates of the income and political competition effects are virtually identical in size (opposite in sign). This implies that the point estimates of the elasticity of the effects of these variables on the composition of state expenditure are roughly equal. The insignificance of the 87 measure will be returned to shortly when we consider other forms of the hypothesis test.

The control variables in the fixed effects estimation typically work as expected. Where the coefficient estimates are significant (in 11 of 15 cases) all but two are consistent with their predicted sign. Here the exception is presidential rule in the 59 measure. (in both tables). Otherwise the results are consistent with the composition of state expenditures shifting towards private spending as the fraction of seats in the legislature reserved for special groups increases and the state population ages and with a fall in that ratio when state expenditures are taken over under Presidential Rule.

While the fixed effects estimator used above allows for differences across states to be reflected in variations in the equation intercepts, it restricts the coefficient estimates to be equal across states and does not distinguish between their long and shorter run effects. Hence in Table 2 we follow Pesaran and Smith (1995) and Pesaran, Shin and Smith (1997) and use the Stata `xtpmg` command to estimate three error correction versions of an autoregressive distributed lag (ARDL) model that allow for different variations in the intercepts, slopes and error variances across states and across time. Because our primary interest is in whether or not the hypothesized variables produce long run effects on the composition of state expenditures across states, the maximum likelihood pooled mean group regression in column (2) that allow intercepts, short run effects and error variances to differ across states while constraining long run coefficients to be equal will be the results of primary interest. The two other approaches represent, in column (1), the average coefficient values from running separate states specific regressions and, in column (3), a dynamic version of the fixed effects model of column (1) in Table 1. In all three ARDL models we also test for the presence of a real business cycle effect in the composition of state expenditures by including a dummy variable (Election Year) that

distinguishes the year in which each state election was held. To the extent that pre-election spending targeted at marginal voting groups takes place using state provided private goods, a positive effect would be expected.

There are two striking features that the three sets of equation estimates in Table 2 have in common: first, real per capita income has a significantly negative long run effect on the proportion of private state expenditures (as expected) in all forms of the test; and, second, all forms give evidence of a dynamic process that converges back to the long run estimated for each separate model.⁸ In this sense the empirical work is consistent with the hypothesis that maximizing political support can explain at least some of the observed variation in the composition of state expenditures and with the more specific hypothesis that rising per capita income has made private goods an increasingly costly way of winning electoral support relative to the use of general welfare enhancements. The latter result is robust across the three different specifications of how the state actions interact both within and across time. For the individual hypotheses more generally, of the 18 coefficient estimates across the three long run models only 2 of these coefficient estimates have the opposite sign and neither estimate is significantly different from zero.

While the individual coefficient estimates differ, sometimes widely, across the three models, it is interesting to note that the relative weight given to the different explanatory variables is broadly similar across the three equations. For example, all three equations suggest

⁸ Note also that the long run coefficient estimates are all significantly larger than the coefficient estimates of the fixed effects models of Table 1.

that the proportion of the population older than sixty will explain most, and the election year least, of the variation in the ratio of private state expenditures. Similarly all suggest that the effect produced by having a higher proportion of reserved seats will outweigh the presence of presidential rule and any effect arising from the political business cycle.

The model used in column (2) assumes that the composition of state expenditures can differ in all ways except for their long run relationship produces the best long run fit with the data. In that form the long run regression coefficients all have their predicted signs and all are significantly different from zero. Hence increases in per capita income, reductions in ENP (greater political competition), fewer seats for special castes and tribes, fewer older persons, and being in a nonelection year in a state under presidential rule are all consistent with a lower ratio of private good spending in the state budget. Moreover, to the extent that the pooled mean group regression produces more efficient as well as consistent coefficient estimates, an increase in political competition (through a decrease in ENP towards 2) is found to have roughly half the effect of rising per capita income in reducing the ratio and thus the use of private good spending as a method of winning political support. This in turn suggests that if economic welfare rather than electoral support is the desired objective of public policy, then political competition becomes complementary with income in promoting a virtuous cycle of growth and development. That is, the analysis suggests that greater political competition and rising per capita incomes will tilt government expenditures away from private spending targeted at special interest groups to spending in policies designed to improve general welfare. To the extent that such policies are effective in raising incomes, growth becomes endogenous with

higher incomes reinforcing the political wisdom of choosing yet more effective welfare enhancing policies.

4. Concluding remarks

In this paper we have argued that the relatively large proportion of government expenditure that takes the form of private goods going to swing voters and special interest groups across Indian states can be explained in part by relatively low levels of per capita income in India and the absence of effective political competition, holding constant other demographic and cultural differences. However to the extent that a lower ratio of private good expenditure would better promote growth and development, a concern that such spending patterns will continue unabated into the future does not seem justified. Rather our analysis suggests that rising incomes and greater effective political competition work hand-in hand to produce better policy mix. Our analysis suggests that even if political parties are only concerned with self-interest, the desire to win re-election will lead political parties to promote general interest policies that are effective. In doing so they will perpetuate a process that makes further growth endogenous.

DATA APPENDIX

The data in the paper covers 14 Indian State, primarily s over the 1987-88 to 2011-12 time period. The 14 states are: Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal.

Measures of the proportion of privately targeted expenditures in state budgets:

Ratio of government consumption to total state expenditures defined as:

(Private/TotalPublic)59 = (revenue expenditures – debt service charges)/(revenue expenditures + capital expenditures – debt service charges).

These broad categories are available from 1959/60 onward.

Ratio of government spending consumption subcategories available for more targeted spending to total state expenditures defined as:

(Private/TotalPublic)72 = (family welfare + housing + welfare (SC-ST-OBC) + social security welfare + nutrition + relief calamities + crop husbandry + animal husbandry + dairy development + fisheries + food nutrition + rural development + civil supplies + state lotteries)/total expenditures – pension and interest payments).

Such detail in state budget accounts is available only from 1972/3 onward.

Ratio of even more tightly defined budget categories from line items from State Government accounts that began only in 1987/88: **(Private/TotalPublic)87**; compiled by Dash and Chakraborty from the line item descriptions in state budgets (available only from 1987/88 onward).

Variable Mnemonics:

Lrypc = Logarithm of real state income per capita; Per capita Net State Domestic Product (NSDP) at 2004-2005 constant prices, Central Statistical Organisation (CSO), India.

Lreserve_fraction = Logarithm of the share of state seats reserved for special tribes and castes Election Commission of India.

Lenpvote = Logarithm of expected number of seats in the state legislature = 1/Herfindahl index of party vote shares; Election Commission of India.

Presidential Rule = 1 for years in which operation of the state was taken over under presidential rule, 0 otherwise; Election Commission of India.

Lold = Logarithm of the percentage of the population older than 60; Statistical Abstract of India.

Lx = Log(x); D.Lx = first difference of Lx.

Election Year = 1 if a state election was held in that state in that year, 0 otherwise.

Table 1
Fixed Effects Panel Regressions for 14 Indian States: 1987-2011
 (absolute value of t-statistic in bracket below coefficient)

a) Seats reserved for special tribes and castes and presidential rule as controls.

Predicted	(1) (Private/TotalPublic)87	(2) (Private/TotalPublic)72	(3) (Private/TotalPublic)59
Lrypc (-)	-0.087*** (4.05)	-0.024* (1.70)	-0.028*** (7.18)
Lenpvote (+)	0.070 (1.18)	-0.089** (2.18)	0.029*** (2.59)
Lreserve_fraction (+)	0.581** (2.53)	0.416*** (2.74)	0.078* (1.87)
Presidential Rule (-)	-0.122* (2.10)	0.053 (1.33)	0.026** (2.40)
R ² – within	0.0717	0.0655	0.1794
- between	0.0203	0.0001	0.0592
- overall	0.0232	0.0004	0.0123
F(13,315)	11.86***	58.14***	13.70***

***,(**), [*], significantly different from zero at 1%, (5%), and [10%]

b) Proportion of the population 60 and older added as a control variable

Predicted	(1) (Private/TotalPublic)87	(2) (Private/TotalPublic)72	(3) (Private/TotalPublic)59
Lrypc (-)	-0.195*** (5.36)	-0.023 (0.90)	-0.033*** (4.82)
Lenpvote (+)	0.050 (0.85)	-0.089** (2.16)	0.028** (2.50)
Lreserve_fraction (+)	0.451* (1.98)	0.418*** (2.71)	0.072* (1.70)
Presidential Rule (-)	-0.125** (2.22)	0.053 (1.33)	0.026** (2.37)
Lold (+)	1.255*** (3.65)	-0.020 (0.08)	0.057 (0.87)
R ² – within	0.1096	0.0655	0.1814
- between	0.0812	0.0001	0.0212
- overall	0.0806	0.0004	0.0310
F(13,314)	11.21***	57.24***	11.15***

***,(**), [*], significantly different from zero at 1%, (5%), and [10%]

Table 2
ARDL Panel State Expenditure Regressions for 14 Indian States: 1987-2011
 (absolute value of t-statistic in bracket below coefficient)

		(1) Mean Group Estimation [†]	(2) Pooled Mean Group Regression [#]	(3) Dynamic Fixed Effects Regression [‡]
Long Run	Predicted	(Private/Total) ⁸⁷	(Private/Total) ⁸⁷	(Private/Total) ⁸⁷
Lrypc	(-)	-0.480*** (2.70)	-0.351*** (5.37)	-0.258*** (3.43)
Lenpvote	(+)	-0.219 (0.33)	0.185*** (4.05)	0.126 (1.07)
Lreserve_fraction	(+)	2.203 (1.13)	0.540** (1.98)	0.264 (0.56)
Lold	(+)	11.98 (1.13)	2.40*** (4.74)	2.13*** (3.05)
Presidential rule	(-)	-0.200* (1.46)	-0.147** (2.10)	-0.282** (2.46)
Election Year	(+)	-0.043 (0.57)	0.092** (2.41)	0.064 (0.56)
Short Run				
Error correction term(-)		-0.982*** (8.77)	-0.609*** (7.77)	-0.440*** (9.06)
D.Lrypc		-0.619 (0.59)	0.140 (0.34)	0.074 (0.41)
D.Lenpvote		-0.105 (0.23)	-0.239 (1.15)	-0.231 (1.26)
D.Lreserve_fraction		-1.14 (0.88)	0.461 (0.94)	0.339 (0.83)
D.Lold		12.36 (0.75)	-7.37 (0.75)	-4.14 (1.30)
D.Election Year		0.004 (0.11)	-0.010 (0.60)	0.005 (0.16)
Constant		-16.02 (0.86)	1.25*** (8.43)	0.631 (1.10)
Log likelihood			190.74	

***, (**), [*], significantly different from zero at 1%, (5%), and [10%].

[†] Under mean group estimation the model is estimated separately for each state and a simple arithmetic average of the coefficients is calculated (see Pesaran and Smith, 1995). Here the intercepts, slope and error variances are all allowed to differ across states.

[#] This maximum likelihood estimator allows the intercept, short-run coefficients, and error variances to differ but constrains the long-run coefficients to be equal across states. See Pesaran, Shin, and Smith (1999).

[‡] The dynamic FE estimator restricts the coefficients of the cointegrating vector to be equal across all panels along with the speed of adjustment and short run coefficients. It does, however, allow for state specific intercepts.

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