

Resource Transfers to Local Governments: Political Manipulation and Household Responses in West Bengal *

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December 17, 2018

Abstract

We study how political support of household heads respond to receipt of different private and public good benefits delivered by local governments, and whether upper level governments respond strategically by manipulating program budgets to lower level government in West Bengal, India. We exploit redistricting of electoral boundaries by a non-partisan Election Commission, a plausibly exogenous shock to political competition. Consistent with a model of politically motivated allocation, private recurring benefit programs contracted (resp. expanded) in villages redistricted to more competitive constituencies when bottom and upper tier governments were controlled by opposing (resp. same) parties. The resulting changes in household benefit flows help predict household political support, which in turn rationalize the inter-village targeting patterns. The results illustrate the tendency for political parties to manipulate transfers across constituencies in the absence of formula-based grants to local governments, and more generally for political incentives to focus on delivery of short-term private benefits rather than one-time benefits or public goods consistent with theories of political clientelism. JEL Classification: H40, H75, H76, O10, P48

*For help with the redistricting analysis and feedback at early stages of this project we thank Lakshmi Iyer. For useful comments we are grateful to participants at various seminars and conferences where earlier versions have been presented. For financial support we thank the Economic Development and Institutions network, and the International Growth Center, MacArthur Foundation and the National Science Foundation for past grants that funded collection of the data on which this paper is based.

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1 Introduction

Evaluating the functioning of democracy in poor countries necessitates investigation of allegations of political clientelism and vote-buying. Numerous accounts by comparative politics scholars suggest these practices are widespread in contemporary middle and low income countries (e.g., see Stokes (2005, 2007), Kitschelt and Wilkinson (2007), Hicken (2011), and Stokes et al (2013)). While there are a number of different definitions of clientelism, the most common one involves trades of private benefits delivered to citizens by elected officials or political parties in exchange for their political support. The consequences of such practices are various. By conditioning delivery of benefits to households on their political support, it motivates households to vote insincerely. Instead of expressing their true preferences between competing candidates, households vote strategically based on consequences for benefits they personally expect to receive in return. It allows unpopular, corrupt leaders maintaining successful political machines to continue to remain in power, despite records of poor governance – thereby diluting accountability of elected officials to citizens.

Theoretical analyses of resource allocation implications of clientelism (Robinson and Verdier (2013), Bardhan and Mookherjee (2018a, b)) include distortions in public expenditures with important consequences for development include (a) a bias in favor of short-term recurring private benefits (such as employment in public works, cheap loans, food etc.) which facilitate clientelism, relative to long-term one-time private benefits (such as land titles, citizen registration, access to housing and sanitation facilities) or local public goods (roads, canals, public health, functioning schools) which allow weaker linkages of benefits to political support, and (b) politically motivated inequality in the distribution of benefits both between constituencies (depending on political competition, turnout or political alignment) as well as within constituencies. The latter category of distortions, especially within-constituency targeting of benefits, have figured prominently in discussions of elite capture of local communities in the literature on decentralization in developing countries (see World Bank (2004), Mansuri and Rao (2014) and Mookherjee (2015)). Less is known about across-constituency targeting, and the role of clientelism in generating distortions in these.¹

More generally, rigorous empirical evidence of clientelistic distortions is rare, as we argue in the review of existing literature in Section 2. Direct evidence on conditionality

¹Bardhan and Mookherjee (2006a) find significant inter-village targeting distortions in West Bengal, while corresponding intra-village distortions were negligible. However, they could not provide an explanation of these results in terms of the underlying mechanism.

of benefits on political support is obviously hard to find, as they tend to be expressed informally and form the basis of implicit *quid quo pro* arrangements. Evidence of the effect of benefits delivered on votes for incumbents could be consistent with programmatic politics not characterized by any clientelism. Indeed, most studies of the effect of various benefit programs on votes or political support have been confined to non-discretionary private transfer programs (such as conditional cash transfers in Mexico, Brazil and Philippines).

One possible strategy would be to compare the extent of political manipulation or responsiveness of citizen political support across different categories of benefits: recurring private benefits versus one-time private benefits or public goods. While there is an extensive literature on politically motivated transfers to lower level governments, studies with relatively well-identified effects have focused mainly on infrastructure grants. There is a paucity of studies relating to manipulation of private transfer programs, and none (to the best of our knowledge) comparing manipulation across different categories of benefits.

These considerations motivate the current paper, which examines the delivery of a wide range of government benefit programs to citizens in rural West Bengal, a state in Eastern India. We use various rounds of a household survey to create a panel dataset of benefits of different kinds received by households between 2000-2011, as well the support they expressed for different political parties. The study is conducted at two levels. First we examine variations in benefits across different local governments, to gauge political manipulation of their program budgets by the influence of elected officials at higher levels of the government — we refer to this hereafter as the *upper layer analysis*. This is contrasted with the *household level analysis*, which investigates how receipt of various benefits by households affected political support expressed by their respective heads. Finally, we examine the consistency of the results across the two layers: did upper level governments engage in greater manipulation of the programs whose benefits were more effective in generating political support?

The data used is highly disaggregated, using variations in receipts of benefits of different kinds by households in different years. For the upper layer analysis we estimate program scales at the local government level by the per capita reported household benefits, instead of administrative data of the local governments which are prone to manipulation. An obvious challenge is the identification of political manipulation effects in the upper layer analysis, and of causal effects of benefits delivered on political support in the household-level analysis. We develop a theoretical model of politically

motivated allocations by upper level governments, given the relationship between benefits delivered and political support from citizens, political alignment between upper and lower level governments and the extent of political competition. The model predicts that an exogenous increase in political competition will motivate politicians controlling upper-level governments to contract (respectively expand) budgets to lower level governments that are non-aligned (resp. aligned), i.e, controlled by the principal competing (resp. own) party. In particular the inequality of allocated budgets between aligned and non-aligned lower level governments will expand. Moreover, benefits that have a larger impact on household political support will tend to be manipulated more. The hypothesis of clientelism-based distortions then translates into stronger manipulation of (and household responses to) private recurring benefits, compared with one-time benefits or public goods.

This still leaves open the question how to isolate exogenous sources of variation in political competition. We utilize redrawing of boundaries between state legislative assembly constituencies carried out in 2007 carried out by a politically neutral state Delimitation Commission composed of members of the national judiciary. The Indian Constitution imposes many restrictions on the process in order to ensure that redistricting cannot be manipulated by political parties to extract partisan benefits. Appointed by the Central Election Commission at the federal level, the state Delimitation Commission followed a transparent process to determine the redrawing of constituency boundaries on the basis of changes in population between 1971 and 2001. Iyer and Reddy (2013) who studied the 2007 Delimitation process in two other Indian states, concluded that “for most part the redistricting was politically neutral”. Using our data for West Bengal, we also find no evidence of any significant correlation between redistricting and determinants of political manipulation incentives (incumbency, low caste reservations status, or incumbent presence on the Delimitation Commission). Nevertheless to address concerns for endogenous selection in analyzing the impact of redistricting on resource allocation across local jurisdictions, we use a difference-of-difference specification, besides checking and controlling for pre-treatment trend differences in benefit flows between treated and control areas. Specifically, our estimates represent the effect of moving the same village with the same local government to a different state assembly constituency where the next election is likely to be more contested (proxied by a lower winning margin for the incumbent in the previous election), compared to other jurisdictions which are either not moved or moved to less contested constituencies.

The upper-layer analysis provides evidence consistent with the hypothesis of clien-

telistic distortions. We find ‘recurring’ private benefits (public works employment in particular) in a village contracted in villages redistricted to more competitive constituencies (which we refer to as HC-redistricted) that were controlled by the opposing party, while increasing in those villages controlled by the same party. As a result within the group of villages that were HC-redistricted, the gap between those aligned and those not aligned with the party controlling the upper tier grew significantly after the redistricting compared to the pre-redistricting period. The magnitudes of these impacts were large: HC-redistricted and non-aligned villages received 1.8 standard deviation (s.d.) fewer private benefits per capita, while those aligned received 0.7 s.d. more, thus corresponding to an increase in the gap between aligned and non-aligned treatment groups by 2.5 s.d. The results are robust with respect to controls for district and year fixed effects, pre-reform trends and whether the concerned MP was a member of the Delimitation Commission. Observed impacts for private one-time benefits (such as low income housing, ration cards (entitling holders to subsidized food and fuel through the public distribution system) and access to sanitation and drinking water) were smaller in magnitude (less than 1 s.d. for either treatment group, as well as the gap between them) and statistically insignificant. In the case of public benefits (roads), the point estimate of the treatment effects and their significance was even smaller.

For the household-level analysis, we use the HC-redistricting shock (interacted with alignment) as an instrument for the scale of each program at the village level, which we interact with household characteristics (caste, occupation, landless dummies) to predict effects on benefits received by individual households. The upper layer analysis results indicate these are strong predictors only of private recurring benefits. So we supplement the redistricting shock with a measure of the program scale in the district level (represented by the average benefit received in all other villages in the same district), using the same logic as Levitt and Snyder (1997) that this helps predict program scale in any given jurisdiction but does not incorporate omitted variables specific to the village in question. The full set of instruments includes the HC redistricting shock for aligned and non-aligned villages, the program scale at the district level and interactions between these.

The IV estimates turn out to corroborate the results of the upper-layer analysis: political support is strongly related to private recurring benefits (a 30-40% effect on likelihood for voting for the local incumbent, significant at the 5% level); the effects of private one-time benefits are smaller (a 20-25% effect) and statistically insignificant, while the effect of road benefits is negative and either insignificant (for roads over

which local governments exercise full discretion) or significant (for roads funded by a central government program PMGSY, whose location is subject to central government mandates).²

It could conceivably be argued that these results could be explained by a non-clientelistic hypothesis in which households derive higher marginal utility from private recurring benefits than one-time benefits, or that they derive no marginal utility from public goods. While such an explanation cannot be definitively rejected, it seems implausible for the context in hand. The monetary value of some of the one-time benefits such as low income housing are of the order of at least six times the value of employment in the public works program in any given year. The results suggest that beneficiaries of the employment program expected continued access to public employment in the future, suggesting an implicit long term relationship between the incumbent and beneficiary. The fact that households reported benefitting from the road programs is inconsistent with a zero or negative marginal utility from roads.

Section 2 describes related literature in more detail, followed by Section 3 describes the institutional context and data for our study. Section 4 presents the theoretical model. Sections 5 and 6 respectively present the empirical results for the upper-layer and household-layer respectively. Finally, Section 7 concludes with a summary of the results and their implications.

2 Related Literature

We start by providing an overview of the literature on political manipulation of allocations by upper level government officials. One set of papers provides evidence of ethnic favoritism or home-bias of elected officials. Hodler and Raschky (2014) provide evidence from a cross-section of 126 countries of a significant positive correlation between the birthplace of national leaders and nightlight intensity, which was stronger in countries with weaker political institutions and lower education of citizens. Burgess et al (2013) show within Kenya that districts sharing the ethnicity of the President received twice as much expenditure on roads and have five times the length of paved roads built; this correlation disappeared during periods of democracy. Hoffman et al (2017) show that local ward councillors in Kenya exhibited a strong bias in favor of their home village *vis-a-vis* other villages in the same ward with regard to the placement of chlorine dis-

²In Section 5 we discuss possible explanations for the negative effect of PMGSY roads on household support for the incumbent.

pensers for water purification. Our analysis differs insofar as we focus on the role of political competition and clientelism rather than personal favoritism of higher level officials. Besides, our findings pertain to the relative manipulation of allocation of private benefits and infrastructure.

A number of recent papers provide evidence of the role of political motives of upper-level officials. Sole-Olle and Sorribas-Navarro (2008) show the effects of partisan alignment on municipal grants in Spain in a difference-of-difference analysis, while treating alignment changes as exogenous. Brollo and Nannicini (2012) use a RD-design to overcome potential endogeneity of alignment in the context of Brazil, and show that districts whose mayors were aligned with the President received 30% more discretionary transfers for infrastructure, especially in the two years prior to an election. Regarding the role of political competition, Levitt and Poterba (1999) show that the growth rate of US states were positively correlated with political competition and fraction of senior Democratic members of the House of Representatives. However they found no correlation between political competition or representation in the House by senior members with the allocation of federal spending across states. Their analysis treats political competition as exogenous. This is partially overcome in the recent work of Stashko (2018) at a higher level of disaggregation, the allocation of transfers from US states to counties which is shown to increase in the number of electoral districts in the county, its share of voters in each district, and voter turnout. Finan and Mazzocco (2017) structurally estimate a model of allocation of funds for local public goods within the state of Roriana in Brazil which shows 25% distortions relative to a social optimum, which are affected by competitive incentives such as term limits on politicians. While term limits reduce the scope for such politically motivated allocations they also induce higher corruption. These papers confine attention to the allocation of funds for local infrastructure which are subject to discretion of higher level officials. Part of the reason is that most private transfers are programmatic rather than discretionary in these middle and high income countries. In contrast our analysis focuses on the extent of political manipulation across both private transfers and infrastructure funds in a less developed country. We find the private transfer programs are more effective in mobilizing political support, indicating that when these exist most of the political manipulation is concentrated in these programs.

There is also a corresponding literature on the effect of government benefits on votes or political support from citizens. Levitt and Snyder (1997) provide an IV estimate of US federal spending on votes in House districts, where they use as an instrument the

level of spending in all other districts in the same state. We use a similar instrument in our household level analysis, and like them we also find a large discrepancy between OLS and IV effects. They find a \$100 increase in per capita spending results in a 2% increase in votes for the incumbent. However spending on private transfers generates no effect. This is the reverse of what we find in the context of West Bengal regarding the relative effects of spending on public goods and private transfers on political support.

A number of papers examine the effects of programmatic private transfers on voter behavior and political attitudes in various middle and low income countries, using various methods to overcome possible endogeneity concerns. In the context of Romania, Pop-Eleches and Pol-Eleches (2012) provide RD-estimates of subsidy to purchase computers for children to poor families: beneficiaries were more likely to support parties of the incumbent governing coalition. These effects operated both through intended turnout and vote switching; the vote-switching effect was stronger in the presence of alignment between central and local incumbents. Manacorda et al (2011) use a similar RD-based analysis and find similar effects of a programmatic private transfer program in Uruguay. De La O (2013) and Labonne (2013) find similar results for randomized rollouts of conditional cash transfer programs in Mexico and Philippines respectively. Our analysis differs owing to its focus on political support effects of discretionary private transfers which can be used for clientelistic purposes, and in comparing the effects across different kinds of benefit programs.

Our analysis is closer to the work of Wantchekon (2003) who shows in the context of an RCT involving randomization of campaign promises of Presidential candidates in Benin that promises of private transfers generated higher voting responses than promises of local public goods. However the more recent work of Guardado and Wantchekon (2014) in the context of Benin and Kenya fails to find significant effects of cash handouts by Presidential candidates on intended turnout or voting indicated in voter surveys, a result they attribute to low monitoring of voters by candidates and existence of multiple competing candidates. However, they do not control for potential endogeneity of cash handouts within districts. Such endogeneity problems are overcome in the analysis of discretionary enforcement of local government officials of conditionality provisions in a CCT program in Brazil by Brollo, Kaufman and La Ferrara (2018). Exploiting random variation in when voters learn about noncompliance penalties imposed, they find a negative effect of these penalties on vote shares of candidates aligned with the President. And using an RD design they show that politicians strategically manipulate enforcement before elections in municipalities where mayors can run for re-election.

Their results for politician and voter responses mirror ours for private recurring benefits: when there is scope for discretion by elected officials it is used in a similar way. Our analysis additionally compares the effects of discretion across different categories of benefit programs, thereby throwing light on political clientelism.

Finally, a number of authors have studied effects of dismantling clientelistic programs and rise of formula-bound transfers in Latin American countries, a question different from the one we analyze but is nevertheless broadly related. De Janvry et al (2014) and Dower and Pfütze (2015) present difference-of-difference estimates of effects of PROCEDE, a program which created individual property rights in land in rural Mexico between 1993-2006, and show it resulted in declining vote shares of PRI the incumbent in most areas. Similar results are shown in Brazil as a consequence of Bolsa Familia (BF), a large CCT program. Fried (2011) provides evidence that BF delivery was politically neutral. Frey (2015) examines the impact of BF coverage using an IV-cum-RD design. He estimates that a 10% increase in BF coverage reduced incumbency advantage of local mayors by 8%, increased political competition, lowered private campaign contributions to incumbents by 40%, and increased health care and education spending shares by between 2-3%.

In the Indian context, a number of authors have investigated related issues of clientelism especially in relation to the employment program NREGA. For the state of Rajasthan, Gupta and Mukhopadhyay (2016) use longitudinal data on funds allocated to blocks and elections held for block councils, and find that greater amount of funds were allocated to blocks where the incumbent at the state level (Indian National Congress (INC)) had lower seat share, and the parliamentary representative in the corresponding district was also from the INC. In West Bengal, Dey and Sen (2016) use a regression discontinuity approach based on outcomes of close elections in 2008 which changed political alignment between village councils and next higher tier of local governments. They show that aligned constituencies received larger allotment of NREGA benefits: this raised the vote share of the incumbent by 2% in the subsequent (2013) election. These results are consistent with ours relating to political manipulation of NREGA funds to lower levels of government.

3 Context and Data

India is a federal State with legislative, administrative and executive powers divided between the central and state governments. Each state has a hierarchy of administrative

governments and elected bodies. A large range of benefit programs are administered, with upper level governments raising the funds to pay for these programs and devolving spending authority to lower level governments. Program budgets flow down the hierarchy (shown in Figure 2). District level governments (Zilla Parishads (ZP)) allocate funds to middle tier governments comprising an elected body *Panchayat Samiti (PS)* and appointed bureaucrats Block Development Offices which allocate funds to the GPs within the block. The elected GP bodies then decide the allocation of resources and benefits across and within villages in their jurisdiction. Each district has one ZP, which covers approximately 20 PSs and 200 GPs. Each GP includes 10-15 villages; each village includes 200-400 households. Officials are directly elected to these three tiers; the local government at each tier comprises an elected council representing sub-units at the next tier below. These local government tiers run parallel to different levels of representation in the national parliament and the state legislature. A district includes between two and three parliamentary constituencies represented by a Member of Parliament (MP) each. Blocks overlap with state assembly constituencies, which elect Members of the Legislative Assembly (MLA) every five years. During the period 2003-2011 covered by our data, Parliamentary elections were held in 2004 and 2009, the state assembly elections in 2006 and 2011, and the panchayat elections in 2003 and 2008.

During the period we study (2003-2011), there were two principal political parties competing in West Bengal: the Left Front (LF) coalition led by Communist Party of India (Marxist) and the Trinamool Congress (TMC). The Left Front dominated village, district and state governments from 1977-2011, and lost its majority to the TMC in 2011. In the constituencies included in our sample, the Left Front's vote share dropped from 50% to 41% while the TMC share rose from 24% to 35% between the 2006 and 2011 state legislature elections (Table 1). Figure 1 shows changes in electoral outcomes at the constituency level from the 2006 state assembly elections, to the 2009 Parliamentary elections, and the 2011 Assembly elections, wherein Left Front dominance progressively gives way to TMC dominance.

Boundaries of electoral constituencies for parliamentary and state elections are periodically redrawn in order to equalize population sizes of constituencies. This was the case in all Indian states following the 2001 Census, based on changes in Census population figures between 1981 and 2001. The previous redistricting took place three decades earlier. The National Election Commission set up a three member Redistricting Commission for each state, comprising a retired Chief Justice, a member of the National Election Commission, and the State Election Commissioner. An advisory committee

comprised of 5 MPs and 5 state assembly representatives representing different political parties provided input into the process. The state Redistricting Commission is required to follow various rules concerning the redistricting process, including holding public hearings and addressing complaints. The redistricting went into effect in West Bengal during 2006-07. We therefore treat 2003-2006 as constituting pre-redistricting years, and 2007-2011 as post redistricting years. Iyer and Reddy (2013) studied redistricting in two other states and found the mandated rules were followed, and that the outcomes were ‘politically neutral’ with few exceptions (which arose with regard to redrawing boundaries of constituencies of incumbents on the advisory committee). 26 out of 89 villages in our sample were redistricted. The bottom layer of Figure 2 gives the breakdown of redistricted villages in our sample across jurisdictions classified by political control of the PSs and GPs (in the 2008 panchayat elections), and whether the redistricting was to a more competitive constituency (measured by a lower winning margin in the previous (2006) state assembly election).

Table 2, column 1 provides linear probability regressions of the likelihood that any given village was redistricted, with regressors representing the control of the LF over the corresponding GP, PS and interactions, whether it was represented by an MP or MLA with a seat in the Delimitation Commissions, and whether the assembly constituency seat was reserved for SC/ST candidates. These variables were used by Iyer and Reddy (2013) to examine political motives for redistricting; they found the last two regressors played a role in predicting the likelihood of redistricting in Andhra Pradesh and Rajasthan. In contrast, we find none of these variables predict the likelihood of redistricting. Within redistricted villages, Column 2 examines the likelihood that the stronger competition requirement was met, while column 3 examines the likelihood that it met the twin conditions of alignment and stronger competition. Neither of these were systematically related to SC/ST reservation or representation in the Delimitation Commission.

We subsequently obtain two definitions of ‘treatment’ villages: those redistricted to higher competition constituencies and not meeting the alignment criterion, and those redistricted in a manner meeting both alignment and higher competition criteria. Non-redistricted or those redistricted to lower competition constituencies villages constitute the control.

Turning next to the major benefits provided by the government to rural residents of West Bengal: these include a number of schemes sponsored by the Central government (where the bulk of funds are provided by the Central government, and the remainder by

the state government): an employment guarantee program (NREGA), a road building program (PMGSY) and a low income housing and toilet construction program (IAY). These respectively constitute private recurring, public and private one-time benefits.

The NREGA act was passed by the Indian Parliament in 2005, and implemented in three phases between 2006-2009. It provides an entitlement of 100 days work on a local infrastructure project selected and administered by local governments, with a mandated minimum wage. In practice the number of days provided per participating household in West Bengal has been 30 per year, with 40% of rural households participating in 2011-2012, based on the India Human Development Survey (Desai et al 2015). The nationwide minimum wage in that year was Rs 114 per day. This provides an upper bound of a monetary value of the order of Rs 3000 per participating household per year, assuming a zero opportunity cost of time. NREGA projects can include local roads, irrigation, afforestation and land development, and are selected by the local government in consultation with village meetings and subject to approval by concerned officials at the block level.

The centrally sponsored roads program PMGSY started in 2000, has funded construction of all-weather roads to 200,000 villages in India. State government officials are instructed to provide detailed plans for rural road construction, based on priorities that depend on village population (in relation to set thresholds of 1000, 500 and 250), connectivity to core road network, with adjustments for desert areas, tribal areas. Plans have to be approved by the Central ministry of roads, and subjected to subsequent central audits. A fuzzy RD design shows that crossing the population thresholds led to a 20% increase in probability of road placement (Asher and Novosad 2016). There is some evidence of the role of political alignment between the concerned state legislator and the ruling party at the state level, but no difference between ministers and other legislators within the ruling party (Bohken 2018).

The housing program IAY which started in 1985 provides a lump sum financial amount to households with below-poverty-line (BPL) cards to build houses. They are selected by local governments in consultation with village assemblies. Houses built have to meet certain building norms, such as inclusion of sanitation facilities and smokeless chulahs (cooking fireplaces). Some beneficiaries get allotments to build only toilets. In West Bengal the financial compensation for housing and toilet beneficiaries have been Rs 20,000 and Rs 9,000 respectively. It is evident that their monetary value to the beneficiary is at least six and three times (respectively) the value of NREGA work in any given year.

Another important one-time private benefit is a Below-Poverty-Line (BPL) card. These are supposed to be issued to poor households identified by surveys of assets and incomes by each state government, which entitle recipients to benefit from various welfare schemes. These include ration cards under the public distribution system (for foodgrain, kerosene, cooking gas) at highly subsidized rates, free housing, old age pensions, subsidized healthcare services and many others. It is hard to assign a monetary value to the card. In practice BPL card holders are selected by local government officials in consultation with village assemblies. Ram, Mohanty and Ram (2009) show substantial leakages in this program at the all-India level, where the proportion of top three quintiles of the wealth distribution owning BPL cards were 22, 15 and 5% respectively, compared with 29 and 27% for the bottom two quintiles. Leakages in West Bengal were below the all-India average.

Data for benefits reported by household heads was collected from two rounds of a household survey carried out in 2004 and 2011. The sample was randomly selected (stratified by landownership) in 2004 from 89 villages in 59 GPs spread through all districts of West Bengal, excluding Kolkata and Darjeeling. Approximately 25 households were surveyed in each village, being selected on the basis of a random sampling design stratified by landholding. Further details of the sampling procedure are provided in Bardhan and Mookherjee (2006a) and Bardhan *et al* (2014). Table 3 provides a summary of the demographic characteristics for the 2402 households in the sample in 2004. Over half the households owned no agricultural land, and another quarter owned less than 1.5 acres. Hence landless and marginal landowning households comprised three out of four households. Over 37% of this group consisted of scheduled castes and tribes (SC/STs), compared to approximately a quarter of the remaining population. Education and age of household heads were positively correlated with landownership. Two out of three landowning household heads pursued farming as their principal occupation, in contrast to only a quarter among the landless.

Table 4 provides summary statistics of the distribution of benefits. In the period 2004-2011, 62% of the households received at least one benefit. Among private benefits, employment (in the NREGA program) was the single largest scheme, benefiting one out of three households. Road programs constituted the next largest program, benefitting a quarter of the population. One time private benefit programs such as Below-Poverty-Line (BPL) identification cards, private house or toilets, and drinking water access benefitted 18, 10 and 12% of the population respectively.

We construct political support data from the poll responses of household heads in

the two survey rounds 2004 and 2011. Similar to the observed shift in vote share in favor of the TMC in the state assembly elections between 2006-2011, we see vote shares in the straw poll shift in favor of the TMC and against the LF by a larger magnitude (Table 1). The difference in magnitude of the shift is not surprising since the sample (panel (b) in Table 1) covers a small fraction of the population voting in the corresponding electoral constituencies (panel (a)).

4 Theory

Elections take place at the end of every period $t = 1, 2, \dots$. In period t , constituency C_i is controlled either by the L party ($I_i = 1$) or by the T party ($I_i = -1$) as a result of the outcome of the election at the end of $(t - 1)$. C_i is comprised of villages $v \in C_i$, in which village v is controlled either by the L party ($I_v = 1$) or by the T party ($I_v = -1$) as a result of the past GP election. These villages may have differing populations; n_v denotes the population proportion of village $v \in C_i$. Let η_i denote $\sum_{v' \in C_i} n_{v'} I_{v'}$, which is positive (resp. negative) if the L (resp. T) party has above-average control of villages in the constituency.

Residents in village v are divided into groups $g = 1, \dots, G$ where the demographic share of group g is μ_g , and members of each group have identical preferences for benefits. There are K different benefit programs; some of these are public (nonexcludable) goods, while others are private goods. Benefits are indivisible: each resident either receives one unit or none. Receipt of k generates a utility of β_{kg} for a member of g . For each benefit program the GP is assigned a budget of B_{kv} in period t by the government controlling C_i . If the benefit is a public good, every resident receives B_{kv} units at t . Private benefits by contrast are excludable, so if a fraction π_{kg} of group g members receive benefit k at t , these satisfy the budget constraint $\sum_g \mu_g \pi_{kg} \leq B_{kv}$. π_{kg} is the probability any member receives the benefit in a lottery.

Private benefits could be recurring or one-time. Employment programs and subsidies are of a recurring nature, while others (housing, water access or BPL cards) are one-time. One-time benefits can be provided only once to any given household in its lifetime. This imposes an additional feasibility constraint $\pi_{kg} \leq 1 - \delta_{kg}^{t-1}$ where δ_{kg}^{t-1} denotes the fraction of group g residents that have received one-time benefit k at or before period $t - 1$. We simplify the upper layer analysis by assuming that the size of the one-time programs are small enough relative to the eligible population that this feasibility constraint does not bind in any village. This assumption seems reasonable in light of

the small one-time benefit flows in West Bengal (below 3% a year) compared to the size of the eligible population yet to receive these benefits. Given this assumption, there is no qualitative difference between recurring and one-time benefits in the upper-layer analysis (assuming the benefits are of equal monetary value in present value terms).

Let \mathcal{P}, \mathcal{R} denote the set of public and private benefits respectively. In period t , party $p = L, T$ selects a policy π_{kg}^p , the fraction of group g residents that will receive benefit $k = 1, \dots, K$, satisfying the feasibility conditions $b_{kg}^p = B_{kv}$ for all $k \in \mathcal{P}$, and $\sum_g \mu_g \pi_{kg}^p = B_{kv}$ for each $k \in \mathcal{R}$.

Given an allocated program budget $B_{ki}, k = 1, \dots, K$ from the district government at the higher tier, the party controlling constituency C_i selects an allocation B_{kv} across villages in its jurisdiction, satisfying the budget constraint $\sum_{v \in C_i} n_v B_{kv} = B_{ki}, k = 1, \dots, K$.

4.1 Intra-Village Benefit Allocation

The GP controlling village v allocates the transfer B_{kv} across resident households. The resulting implications for vote share σ_v of L from residents of v in the election held at the end of period t is

$$\sigma_v = \bar{\theta}_v + I_v \sum_k \nu_k B_{kv} \quad (1)$$

where $\bar{\theta}_v$ is a measure of mean popularity of the L-party within village v on ideological grounds, I_v equals +1 if L is the incumbent and -1 otherwise, and ν_k is a parameter measuring effectiveness of the benefit k in switching votes towards L. This parameter depends on underlying household preferences, as well as the presence of clientelism. We now explain how the benefits-vote relationship (1) can be generated by probabilistic voting models either with or without clientelism.³

4.1.1 Underlying Voting Models

Consider first a standard model of ‘program politics’ without clientelism (Dixit-Londregan (1995), Grossman-Helpman (1996)). For the incumbent party, the current distribution pattern μ_{kg} is what voters expect in period $t + 1$ if it were to be re-elected. For its opponent, it is the electoral platform of that party, discounted by a ‘credibility’ parameter $(1 - \alpha) < 1$.

³Bardhan and Mookherjee (2018a) contrast these two models in more detail.

Given their expectations, residents vote partly on the basis of utility they expect in period $t + 1$ from either party occupying office, and partly on the basis of loyalty they feel towards each party based on historical attachment, identity or candidate personality considerations. Suppose L is the current incumbent in the GP. Relative loyalty $\tilde{\theta}$ to the L party is uniformly distributed within group g with constant ‘swing’ density $\frac{1}{s_g}$ and mean θ_g , where $s_g > 0$ is small enough to ensure interior solutions for vote shares. A member of group g with L-loyalty $\tilde{\theta}$ will then vote for L if

$$\tilde{\theta} + \sum_k \beta_{kg} \pi_{kg}^L > (1 - \alpha) \sum_k \beta_{kg} \pi_{kg}^T \quad (2)$$

The resulting vote share of the L party in the period t election among village v residents will be

$$\sigma_v = \frac{1}{2} + \sum_g \mu_g \theta_g + \sum_g \mu_g s_g \sum_k \beta_{kg} \{ \pi_{kg}^L - (1 - \alpha) \pi_{kg}^T \} \quad (3)$$

which can be written as

$$\sigma_v = \bar{\theta}_v + \sum_g \mu_g s_g \sum_k \beta_{kg} \pi_{kg}^L - (1 - \alpha) \sum_g \mu_g s_g \sum_k \beta_{kg} \pi_{kg}^T \quad (4)$$

where $\bar{\theta}_v \equiv \frac{1}{2} + \sum_g \mu_g \theta_g$ represents the mean popularity of party L in village v .

Party L officials controlling the GP allocate benefits in period t to maximize its vote share in the next election. It has a dominant strategy $\{ \pi_{kg}^L \}$ which maximizes $\sum_g \mu_g s_g \beta_{kg} \pi_{kg}^L$ subject to $b_{kg} = B_{kv}$ for public goods, and $\sum_g \mu_g \pi_{kg} = B_{kv}$ for private benefits.⁴ Groups will be ordered by their ‘swing-weighted’ benefit $s_g \beta_{kg}$ for private benefit program k , which will be allocated to groups with the highest priority until the budget is exhausted. If B_{kv} for a private program is small enough that $B_{kv} < \mu_{g^*}$ for the group g^* with the highest swing-weighted benefit, a unit increase in the budget for the village will generate $s_{g^*} \beta_{kg^*}$ more votes for L.⁵ With regard to a public good, the corresponding vote-generating effectiveness of a unit increase in B_{kv} is the average swing-weighted benefit $\sum_g \mu_g s_g \beta_{kg}$. In what follows, we use ν'_k to denote the marginal vote-generating effectiveness of one more unit of B_{kv} , so it is $s_{g^*} \beta_{kg^*}$ for a private benefit and $\sum_k \mu_g s_g \beta_{kg}$ for a public benefit.

The opposition party’s platform will be chosen to minimize the incumbent’s vote share, and will be exactly the same chosen by the incumbent. However, the opposition

⁴We abstract from the feasibility constraint $\pi_{kg} \leq 1 - \delta_{kg}^{t-1}$ for one-time benefits, as mentioned above, by assuming B_{kv} is small enough that this constraint will not bind for any group.

⁵More generally, g^* denotes the lowest swing-weighted benefit amongst all groups receiving a positive benefit.

faces a credibility disadvantage relative to the incumbent. In the resulting equilibrium, L's vote share in the village reduces to (1), where $\nu_k \equiv \alpha\nu'_k$. Note in particular that both public and private benefits are effective in mobilizing votes by the incumbent.

Now consider the implications of clientelism, based on the formulation in Bardhan and Mookherjee (2018a). Here the incumbent can withhold distribution of private benefits to residents that did not vote for it in the previous election.⁶ This provides each party with an added tool to mobilize votes. Each resident will then compare their expected utility of voting for either party, which will incorporate their beliefs regarding the winner of the election (represented by p_L , the probability that L wins) and the subsequent consequences for their receipt of private benefits. The expected utility of a member of group g and preference $\tilde{\theta}$ for the L party in period $(t + 1)$ upon voting for L is

$$\tilde{\theta} + p_L \sum_{k \in \mathcal{R} \cup \mathcal{P}} \beta_{kg} \pi_{kg}^L + (1 - p_L) \sum_{k \in \mathcal{P}} \beta_{kg} \pi_{kg}^T \quad (5)$$

since T will withhold distribution of private goods next period to this household if it wins. Conversely the household will obtain expected utility of

$$p_L \sum_{k \in \mathcal{P}} \beta_{kg} \pi_{kg}^L + (1 - p_L) \sum_{k \in \mathcal{P} \cup \mathcal{R}} \beta_{kg} \pi_{kg}^T \quad (6)$$

if it votes for T instead. Comparing (5) with (6), we see that the resident will vote for L if

$$\tilde{\theta} + \sum_{k \in \mathcal{R}} \beta_{kg} [p_L \pi_{kg}^L - (1 - p_L) \pi_{kg}^T] > 0 \quad (7)$$

Public goods distributed by either party therefore no longer matter: voting decisions depend only on a comparison of private benefits distributed by either party, weighted by their respective likelihoods of winning. The resulting vote share of L in the village is

$$\sigma_v = \bar{\theta}_v + \sum_g \mu_g \sum_{k \in \mathcal{R}} \beta_{kg} [p_L \pi_{kg}^L - (1 - p_L) \pi_{kg}^T] \quad (8)$$

which is independent of public good policies of either party. For every private benefit k , both parties will select a distribution policy $\{\pi_{kg}\}$ to maximize $\sum_g \mu_g \beta_{kg} \pi_{kg}$ subject to the budget constraint $\sum_g \mu_g \pi_{kg} = B_{kv}$. Private benefits will now be distributed on the basis of need, to groups with the highest valuation for those goods. Let $g(k)$ denote the group with the highest β_{kg} . If $B_{kv} < \mu_{g(k)}$, all of benefit k will be distributed by

⁶As explained in the Introduction, voting of residents can be monitored, or can be inferred from their expressions of public support on the eve of the election.

either party to this group, and equilibrium vote shares reduce to

$$\sigma_v = \bar{\theta}_v + \sum_{k \in \mathcal{R}} \beta_{kg(k)} (2p_L - 1) B_{kv} \quad (9)$$

If voters beliefs incorporate a pro-incumbency advantage, where the incumbent is expected to win with probability $p > \frac{1}{2}$, we obtain the same reduced form expression for vote share (1) where ν_k now denotes $(2p - 1)\beta_{kg(k)}$ for private benefits, and 0 for public goods.

One difference between program politics and clientelism is the different prediction concerning the vote generating effectiveness of public goods. Moreover, recurring private benefits could be more effective in generating votes than private one-time benefits under clientelism, when the model is extended to a dynamic setting. Recipients of recurring benefits would be more strongly motivated to vote for the incumbent in order to ensure continued provision of the benefit in the future, since voting for the opposing party would result in suspension of the benefit if the incumbent were to be re-elected.⁷

4.2 Inter-Village Benefit Allocation within a Constituency

Now consider the decisions made by the government controlling C_i , given the budget allotment B_{ki} that it has received from the government one tier above. The vote share of party L in C_i is $\sigma_i \equiv \sum_{v \in C_i} n_v \sigma_v$. The vote share in village v in turn depends on benefit program budgets B_{kv} allocated to the corresponding GPs, as given by (1).

The probability that L wins constituency C_i equals $p(\sigma_i)$, a smooth monotone increasing function of its aggregate vote share. The function p equals $\frac{1}{2}$ at $\sigma_i = \frac{1}{2}$, is concave above $\frac{1}{2}$ and convex below. We additionally assume $p''' \leq 0$.⁸ These conditions are satisfied by the following ‘quadratic’ function:

$$\begin{aligned} p(\sigma) &= \left(\frac{1}{2} - \frac{l_1}{2} + \frac{l_2}{4}\right) + (l_1 - l_2)\sigma + l_2\sigma^2 && \text{if } \sigma < \frac{1}{2} \\ &= \left(\frac{1}{2} - \frac{l_1}{2} - \frac{l_2}{4}\right) + (l_1 + l_2)\sigma - l_2\sigma^2 && \text{if } \sigma > \frac{1}{2} \end{aligned}$$

⁷The argument is augmented by the result in Bardhan-Mookherjee (2018a) that clientelistic equilibria tend to involve stronger incumbency advantage and lower political competition, compared to equilibria of programmatic politics. Hence voters rationally expect current incumbents to be re-elected with higher probability, which raises the marginal impact of delivery of recurring benefits by the current incumbent. In program politics voters expect more frequent political turnover, and also expect election outcomes in successive elections to be less correlated, so future recurring benefit flows are less correlated with present flows.

⁸This condition is not needed for Proposition 1 below, but is used in the extension of the model to a three-tier budgeting problem provided in Appendix B.

where $1 > l_1 > l_2 > 0$. The function p smooths the winning likelihood, owing to possible randomness in turnout or vote counting errors.

The party controlling C_i is the party that controls the corresponding PS. It selects an inter-village allocation $B_{kv}, k = 1, \dots, K$ to maximize

$$I_i R p\left(\sum_{v \in C_i} n_v \sigma_v\right) - \frac{d}{2} \sum_{v \in C_i} \sum_k (B_{kv} - B_{ki})^2 \quad (10)$$

subject to (1) and the budget constraint $\sum_{v \in C_i} n_v B_{kv} = B_{ki}, k = 1, \dots, K$, where R denotes exogenous political rents, and B_{ki} is the budget the PS receives from the district level ZP that it belongs to. The first term in (10) represents the objective of enhancing re-election prospects, which motivates it to bias inter-village allocations in favor of villages where benefit programs are likely to generate most votes for the C_i incumbent. The ability of the incumbent to distort the allocation is restricted by the second term, which imposes a cost proportional to the variance of the inter-village allocation. This represents the cost of coping with complaints of unfair treatment from village level representativeness, media watchdogs or auditors appointed by upper level governments. The parameter d is assumed large enough to ensure that the objective function (10) is concave over the relevant range of vote shares, so that optimal allocations are characterized by interior first-order conditions.⁹

The first order conditions then provides the following characterization of the optimal inter-village allocation:

Proposition 1. *The optimal inter-village allocation of program k across GPs located in constituency C_i satisfies*

$$B_{kv}^* = B_{ki} + \frac{R}{d} \nu_k p'_i(\sigma_i^*) n_v I_i [I_v - \eta_i] \quad (11)$$

where B_{ki} denotes the per capita budget for the constituency, η_i denotes $\sum_{v' \in C_i} n_{v'} I_{v'}$ the ‘average’ control of party L of GPs in the constituency, and σ_i^* denotes the resulting equilibrium vote share of the L party:

$$\sigma_i^* = \sum_{v' \in C_i} n_{v'} \bar{\theta}_{v'} + \sum_{v' \in C_i} n_{v'} I_{v'} \sum_k \nu_k B_{kv'}^* \quad (12)$$

The inter-village allocation of benefit k within constituency C_i is biased in favor of village v by an extent that depends on: (a) ν_k : how effective the benefit is in generating votes; (b) p'_i : how competitive the constituency is; (c) I_v, I_i : which party controls the

⁹We need d bigger than $R p''(\sigma_i^*) (n_v I_v \nu_k)^2$ for all v, k holds at the equilibrium vote share σ_i^* .

village v government and whether it is aligned with the party that controls C_i . If both C_i and v are controlled by the L party, the term $I_i[I_v - \eta_i]$ equals $(1 - \eta_i) > 0$, so the bias is positive. If they are both controlled by the T party, this term equals $(1 + \eta_i)$ and is again positive. If they are controlled by different parties, the term is negative. Hence alignment and competitiveness determine the direction and extent of the bias. More competitive constituencies will seek to bias inter-village allocations more, particularly those benefit programs which are more effective in generating votes.

In the Appendix we show that similar results obtain when the budget B_{ki} received by each PS is endogenized, from the budget allocations decided by the higher district level ZP given an aggregate budget for the entire district.

5 Empirical Results

5.1 Upper Layer Analysis: Effects of Redistricting on Inter-Village Benefit Allocations

Figure 3a depicts the before-after time plots (for private and public (road) benefits respectively) for each treatment category (aligned and non-aligned respectively) and control villages, for the entire sample. The bottom panel breaks down the private benefits into recurring and one-time benefits. For both aggregate private and public benefits the trends prior to redistricting were very similar. After redistricting the allocation to the aligned treatment increased the most, with the pre-post differences more marked for private benefits. In the case of private recurring benefits, the pre-trend was markedly higher for the nonaligned treatment group, but following the redistricting the allocation to this group fell by the most. On the other hand the allocation to the aligned treatment group expanded. This is exactly in line with the predictions of the theory. For one-time private benefits, the pre-trends are the same across the three groups, while the post-redistricting allocations are similar to those observed for private recurring benefits. Figure 3b shows similar patterns in the corresponding graphs for villages in LF dominated PS areas. These are the two samples for which we will test the prediction made by Proposition 1 — owing to the small number of GPs redistricted in TMC constituencies (see Figure 2), we do not have enough power to detect any effects for that sub-sample.

Turn now to the corresponding regression results, which include a range of controls, using the following specification. Let B_{vt} denote per-capita benefits of any specific cat-

egory reported by residents in village v in year t . We express this in standardized units (divide each village-year observation by the sample mean and divide by the standard deviation).

$$\begin{aligned}
B_{vt} &= \alpha_0 + \alpha_1 \text{Post}_t * \text{HC Redistricted}_v * \text{Aligned}_v \\
&+ \alpha_2 \text{Post}_t * \text{HC Redistricted}_v \\
&+ \alpha_3 X_{vt} + F_{d(v)} + \tau_t + \epsilon_{vt}
\end{aligned}$$

where ‘Post $_t$ ’ is a dummy for years 2007-11 following redistricting, ‘HC Redistricted’ is a dummy for villages redistricted to an assembly constituency with a lower winning margin in 2006, and ‘Aligned’ is a dummy for control by the same party in both PS and GP levels. X_{vt} includes each of these three variables and pairwise interactions, pre-2007 trends and dummies for representation on the Delimitation Committee by the MLA/MP of the original constituency. $F_{d(v)}$ is a dummy for district $d(v)$ in which village v is located, and τ_t is a year t dummy. ϵ_{vt} is the error term; standard errors are clustered at the PS level.

The regression results for the effect of the two treatment variables on allocations of aggregate private and road benefits per household are shown in Table 5. Column 1 shows a negative and significant 1.8 s.d. impact on private benefits allotted to villages in the non-aligned treatment category. This effect is reversed in corresponding villages that are in the aligned treatment group. The gap between private benefit flows to aligned and non-aligned areas grew by 2.5 s.d. These effects are significant at the 1% level. Column 2 shows the results are similar in PS’s controlled by the Left Front.

Effects on road allocations are shown in the remaining columns of Table 5. With respect to PMGSY roads, none of the treatment effects are statistically significant, with point estimates close to zero. This is to be expected, given the existence of central mandates for choice of villages to receive PMGSY roads on the basis of village population and connections of the village with pre-existing road networks. With respect to non-PMGSY roads over which state and local governments had more discretionary authority, the effects are not statistically significant, though the point estimates have signs consistent with those for private benefits for the full sample, and the contraction for the non-aligned treatment group is significant at 10%. For the LF dominated subsample, however, the effects are closer to zero and not significant. This suggests some reallocation in areas dominated by the TMC, but none in LF-dominated areas.

Table 6 shows corresponding results for recurring private benefits. The pre-post difference was 1.53 s.d. lower in HC redistricted villages that were not aligned, 0.77 s.d.

higher in those that were aligned. In LS areas (column 2), both effects are significant at 5%. Similar effects appear for employment benefits (columns 3 and 4). Effects for credit and agricultural inputs are in the same direction, but fail to be statistically significant. The same is true for one-time private benefits, with the exception of housing, sanitation and road benefits which contracted by 1 s.d. in the nonaligned treatment group in LF dominated areas (Table 7).

While the preceding regressions already controlled for pre-trends, Table 8 conducts a placebo test using data for 2001-2006, where the redistricting date is moved ahead hypothetically to 2003. For private benefits, we no longer see the results of Table 5. The signs of the redistricting effects on private benefits are reversed and statistically insignificant.

5.2 Household Level Analysis: Effects of Benefits on Political Support

Turn now to the impact of benefits delivered on political support expressed by household heads. Since there was no poll conducted during 2004-2007, we do not have data on support before the redistricting. We therefore examine cross-sectional differences in the likelihood of households expressing support for the GP-incumbent in the 2011 poll. Table 9 reports OLS and IV effects of aggregate private, non-PMGSY road and PMGSY road benefits received by households (during 2007-2011) on whether the household head expressed support for the (post-2008) incumbent party at the GP level in the 2011 poll. Given the formula-bound nature of PMGSY allocations, we treat these as exogenous, while treating non-PMGSY and private benefit allocations as endogenous. We use as instruments the two treatment variables, interacted with household characteristics (in order to predict allocation of private benefits across households within villages), and with the scale of the corresponding program at the district level (proxied by average per household benefits in all other sample villages in the same district). Controls in the second stage equation include district fixed effects, the village level treatment variables (to capture possible effects of redistricting per se on inter-village vote mobilization efforts by party cadres), and household characteristics.

Columns 1 and 2 report the OLS and IV regression coefficients of the likelihood that the household head voted for the GP incumbent in the 2011 poll, with respect to quantities of the three types of benefits received during 2007-2011, in the full sample. Corresponding estimates for the LF dominated subsample are given in the last two

columns. While the F-statistics for each first stage equation are below the conventional threshold of 10, tests for weak instruments are rejected. The rank test for identification is also met, indicating that the instruments predict independent variations in the two endogenous variables. The Hansen test of over-identifying restrictions is rejected for the full sample, but not for the LF dominated sub-sample. As it turns out, the results are robust across the two samples, so the rejection of the Hansen test does not affect the results.

The OLS estimated effects of private benefits are positive and statistically insignificant (with a point estimate ranging between 5-6% rise per private benefit), while locally provided roads had no effect, and PMGSY roads significantly reduced the likelihood of voting for the local incumbent (by 13-16%). The IV estimates are larger and more significant for private benefits, similar in magnitude and significance for PMGSY roads, while locally provided roads failed to have a statistically significant effect. The larger IV effects for private benefits are consistent both with amelioration of measurement error and reverse causality (larger allocations to villages more loyal to the incumbent).

We thus have a striking negative effect of centrally provided roads on political support for the local incumbent, in contrast to locally provided roads which do not have a significant effect. To interpret this finding, first note that for a majority of villages (controlled by the Left Front at the local level) there was a lack of alignment between the local incumbent and the party controlling the Central government. The results are therefore consistent with findings of other papers in the literature (described in Section 2) regarding the effects of formula-driven programs on political support depend on the nature of alignment.

Moreover, the aim of the PMGSY program was to increase nation-wide investment in roads linking villages with central road networks, with priorities set by the central government on the basis of village population and their proximity to the core road network. The program thus shrunk the role of local governments in providing roads. Roads built under the PMGSY program tended to be marked clearly indicating the role of the central government in its construction, thereby rendering salient to local residents the relatively negligible role of local governments.

Table 10 reports results from a survey of perceptions of household heads concerning the role and effectiveness of local government leaders on different dimensions. The former were asked to score their locally elected officials on a scale from 1-5 with 5 being the highest. We regress the assigned scores on road benefits received by the household, after controlling for fixed household characteristics. In villages receiving PMGSY roads, a

household head that reported benefitting from these roads were significantly more likely to assign a lower score to their local leaders on the latter's involvement in provision of infrastructure. This did not obtain in villages without PMGSY roads. Effects on other dimensions such as honesty or performance relative to previous incumbents were not significant. This suggests that the PMGSY program resulted in substitution between the salience of local and central governments in provision of infrastructure.

Additional reasons for a negative effect on votes for local incumbents could be their effect on mobility of local residents to seek employment outside the village (evidence for which is provided by Asher and Novosad (2016)) which reduced their dependence on local labor markets and patronage of the local government. As the majority of villages were dominated by the Left Front party prior to 2011, greater mobility of village residents outside the village may also have exposed them more to the growing discontent with the Left Front policies in other parts of the state during 2007-2011.

Finally, Table 11 breaks down the effect of private benefits into recurring and one-time benefits respectively, treating both as endogenous. We include PMGSY roads in the regression as an exogenous regressor, and drop non-PMGSY road benefits owing to the lack of significance of this variable in Table 9. We use a similar instrument set as in Table 9, with the exception that the district level scales of the program (interacted with the treatment variables) now correspond to the two sets of private benefits. As in the case of Table 9, under-identification and less-than-full-rank tests are rejected, the over-identification test is not rejected for the LF dominated subsample, while the coefficient estimates are robust across the two samples. While the negative effect of the PMGSY roads persist, we see that the IV estimate of the private recurring benefits are large and significant (a point estimate of 30-40%), while one time private benefits are smaller (20-24%) and not significant. As in Table 9, the IV effects are substantially larger than the OLS estimates. The difference is larger for recurring benefits, suggesting either greater measurement error, or sharper reverse causality (which would correspond to a greater tendency for targeting of recurring benefits to swing voters rather than core supporters).

6 Concluding Observations

The results of the upper level analysis and household level analysis thus turns out to be consistent. Households responded more sharply in favor of the local incumbent when they received private recurring benefits, and upper level governments re-allocated these

programs across GPs located in more competitive constituencies depending on political alignment. Household support did not respond positively to roads provided by local governments; accordingly the latter did not reallocate the road programs that they had discretion over. Centrally provided roads lowered household support for the local incumbents (who were not aligned with the party controlling the Central government); the allocation of these were largely formula-based so state level politicians could not manipulate the placement of these roads.

These results are consistent with the hypothesis of clientelism-induced distortions. Households support is more sensitive to delivery of private recurring benefits such as employment in public works, which are of substantially lower value than private one-time benefits such as housing. Household support is not positively affected when either the local or central government provides roads (which households value, as revealed by surveys). And politicians accordingly manipulate the allocation of recurring private benefit programs in response to an exogenous change in political competition, much more than in the case of private one-time benefits or roads. Given the plausible assumption that development is linked more to the supply of public goods and long-term private benefits than to short-term benefits, the evidence suggests that clientelism retards development.

We conclude with a discussion of the policy implications of our findings. An obvious reform to consider is a reduction in the scope for discretion of elected officials at all levels by replacing existing programs with programmatic formula-bound transfers made directly to households on the basis of publicly available measures of need and merit. While our results suggest this could reduce the bias against delivery of private one-time benefits and public goods of state and local government officials, we are unable to provide any quantitative estimates of such effects. An alternative but less radical reform would consist of letting local governments retain discretion over intra-village allocation of benefits, while replacing the current system of transfers with direct formula-based transfers to local governments.¹⁰ However, we do not yet know how this would affect the progressivity of inter-village allocations. Did the upper level officials use their discretionary power to benefit better-off villages? The competitive redistricting shocks happened to favor GPs located in areas with alignment of control at upper and lower levels, and discriminate against those where control was not aligned. As it turns out, on average the aligned group was more deprived in terms of socio-economic characteristics

¹⁰Faguet (2004, 2006) argues the adoption of formula-based grants to local governments in the 1995 decentralization reform in Bolivia dramatically reduced inequality of public expenditures between rural and urban areas.

(such as rates of female illiteracy, SC/ST representation and reliance on agricultural labor).¹¹ This suggests that the reallocations were mildly progressive. Understanding the implications for pro-poor targeting of varying political competition, redistricting, or moving to direct formula-based grants to local governments is an important question to be addressed by future research.

¹¹The majority of aligned local governments were controlled by the Left Front, and these areas tended to include more households of low caste, land and education.

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Appendix: Extension of Model to Endogenous Inter-Constituency Allocations

We now show that similar results obtain if we add one more layer of budgetary allocation at the district level above the PS's located at the block level. To simplify the theory we assume that C_i is controlled by the L party if it has above-average control of villages in the constituency, i.e., that $I_i = 1$ if and only if $\eta_i > 0$. It is of course possible that different parties control upper and lower level governments in the same constituency. In such situations, budget constraints of upper level governments may not bind as they would resist transferring resources to lower level governments, a complication which can easily be accommodated by extending the model.

The district government selects an allocation B_{ki} of the k th benefit program for constituency C_i , satisfying the budget constraint $\frac{1}{I} \sum_{i=1}^I B_{ki} = B_k$, as constituencies have equal populations. If the district level government is controlled by the L party, with a given district level per capita budget B_k for program k , its objective is to select a budgetary allocation $\{B_{ki}\}$ across constituencies C_i under its jurisdiction to maximize

$$R \sum_i p(\sigma_i^*) - \frac{d}{2} \sum_i \sum_k (B_{ki} - B_k)^2 \quad (13)$$

an expression representing a rent-seeking motive traded off against the cost of biasing inter-constituency allocations. If it is controlled by the T party, the objective is instead to minimize $R \sum_i p(\sigma_i^*) + \frac{d}{2} \sum_i \sum_k (b_{ki} - b_i)^2$.

The optimal allocation decided by each constituency implies that if Z is controlled by the L party:

$$\frac{\partial \sigma_i^*}{\partial B_{ki}} = \frac{\eta_i \nu_k}{1 - p_i''(\sigma_i^*) R \nu_k^2 V_i} \quad (14)$$

where V_i denotes the variance of I_v within C_i . As we have assumed $\eta_i > 0$ if C_i is controlled by party L, this ensures that allocating more benefit to C_i will increase the vote share of L; conversely if it is controlled by party T a higher benefit allocated to C_i will result in a reduction in the vote share of L.

Note also that expression (14) is increasing in ν_k if

$$1 > -p_i''(\sigma_i^*) R \nu_k^2 V_i \quad (15)$$

which we shall assume from now on. It amounts to a restriction on the curvature of the p function: in the quadratic case, it amounts to assuming that the curvature k_2 is smaller than $\frac{1}{R \nu_k^2 V_i}$ for all i, k . Also note that in the quadratic case, the derivative

(14) is constant: constituency level vote shares are linear in benefits allocated. In what follows we denote the derivative (14) by γ_{ik} .

Proposition 2. ¹²

(a) Suppose Z is controlled by the L party. Then the optimal inter-constituency allocation satisfies

$$B_{ki}^* = B_k + \frac{R}{d} [p'_i \gamma_{ik} - \frac{1}{I} \sum_j p'_j \gamma_{jk}] \quad (16)$$

resulting in the inter-village allocation

$$\begin{aligned} B_{kv}^* &= B_k + \frac{R}{d} [p'_i \gamma_{ik} - \frac{1}{I} \sum_j p'_j \gamma_{jk}] \\ &+ \frac{R}{d} \nu_k p'_i(\sigma_i^*) I_i [I_v - \eta_i]. \end{aligned} \quad (17)$$

(b) Suppose Z, C_i, C_j are all controlled by the L party. If village v is redistricted from C_j to C_i where it is less popular ($\bar{\theta}_i < \bar{\theta}_j$) but has the same control ($\eta_i = \eta_j$), its budget allocation B_{kv}^* will increase for every benefit program k with positive ν_k . Given assumption (15), the increase will be larger for benefit programs k with higher ν_k .

Part (b) is the main result of interest. Redistricting one L-dominated village from an L-dominated electoral constituency to another where L is in a weaker competitive situation results in an increased allocation of every benefit program. The intuitive reason is that the party controlling the district will want to discriminate more heavily in favor of constituencies and villages within that it also controls, relative to those that it does not.¹³ Specifically, the deviation of the village level budgetary allocation (17) from the district average is the sum of two components: (a) an ‘inter-constituency’ component

¹²The proof of (a) is straightforward, following from first order conditions of Z ’s maximization problem. For (b) we first show that $\sigma_i^* < \sigma_j^*$. Otherwise we have $\sigma_i^* \geq \sigma_j^*$, implying $p'(\sigma_i^*) \leq p'(\sigma_j^*)$ and $p''(\sigma_i^*) \leq p''(\sigma_j^*)$. Since $\eta_i = \eta_j$ we must have $V_i = V_j$. It then follows that $p'(\sigma_i^*) \gamma_{ik} \leq p'(\sigma_j^*) \gamma_{jk}$ for every k . (16) implies that $B_{ki}^* \leq B_{kj}^*$ for each k . Hence (11) implies that $B_{kv}^* \leq B_{kv'}^*$ for each k if $v \in C_i, v' \in C_j$. Then (??) implies that $\sigma_i^* < \sigma_j^*$ since $\bar{\theta}_i < \bar{\theta}_j$, and we have a contradiction. Given that $\sigma_i^* < \sigma_j^*$, similar arguments used above with the corresponding inequalities reversed imply that $B_{kv}^* > B_{kv'}^*$ for each k if $v \in C_i, v' \in C_j$.

¹³The result requires the L party to have similar control in the two constituencies. It may not hold if it has less control over the constituency where it is weaker, since benefits allocated to that constituency will be less effective in generating votes for the L party.

which is proportional to the variation of $p'_i \gamma_{ik}$ from its mean in the constituency, and (b) an ‘intra-constituency’ component $p'_i I_i [I_v - \eta_i]$ which depends on competitiveness and political alignment between constituency and the village government. The first component is higher in a constituency where the L party is in a weaker competitive position. The second is also higher, as the village and constituency are controlled by the same party, and the constituency is more competitive.

Table 1: Election Results and Poll Responses

Panel [a] Official Election Results*

	2006	2011
Party Vote Shares (%)		
TMC	24	35
Left Front	50	42
INC	16	12
Others	11	12
Voter Turnout (%)	84	86

Panel [b] Results from Poll Responses

	2004	2011
Party Poll Shares (%)		
TMC	11	45
Left Front	58	34
INC	19	12
Others	5	2
Didn't Respond	7	7

* The official election results are reported only for constituencies in which survey was conducted.

Figure 1: Changes in Electoral Outcomes for the Left Front - Aggregated to the Assembly Constituency Level

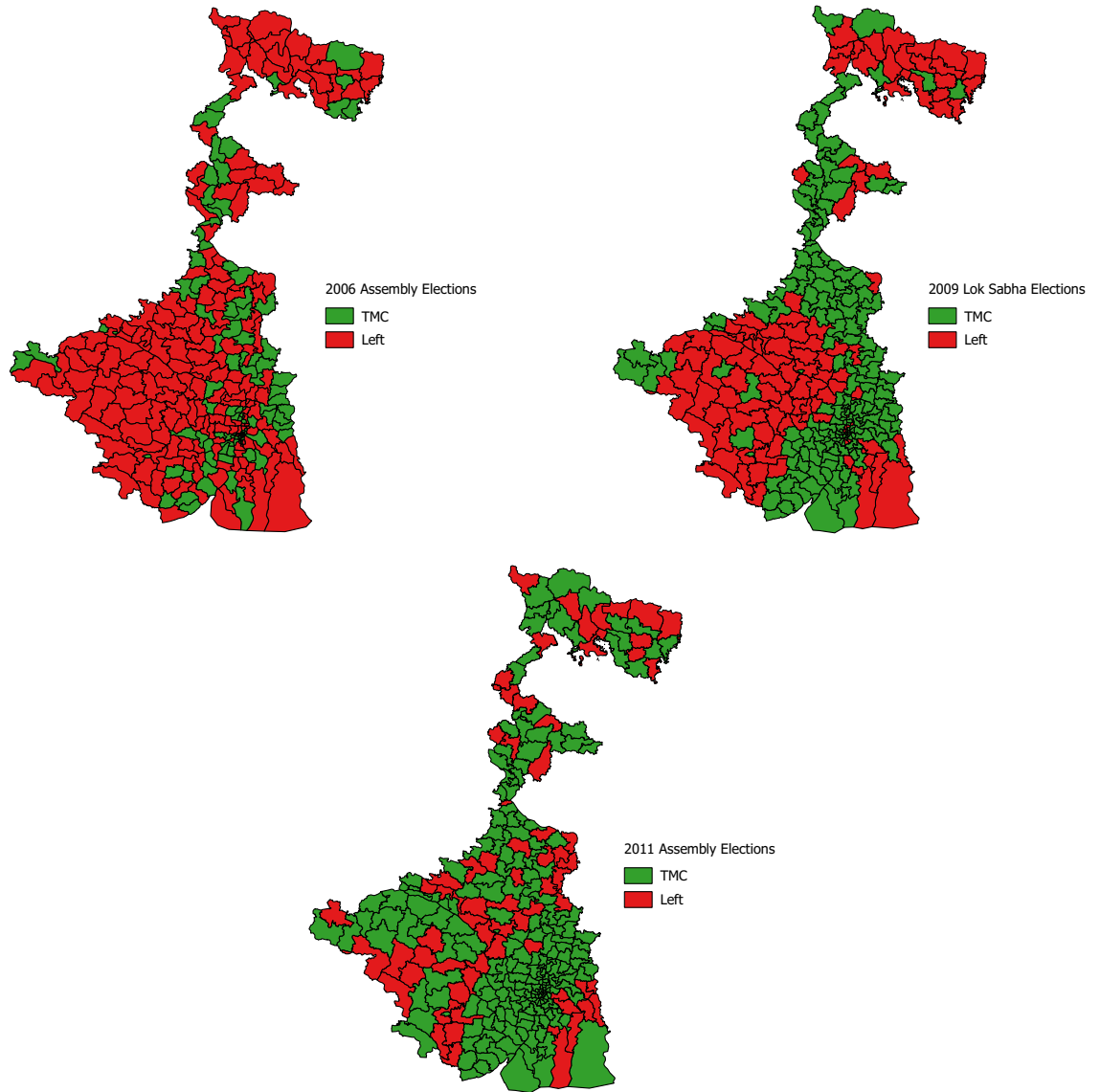
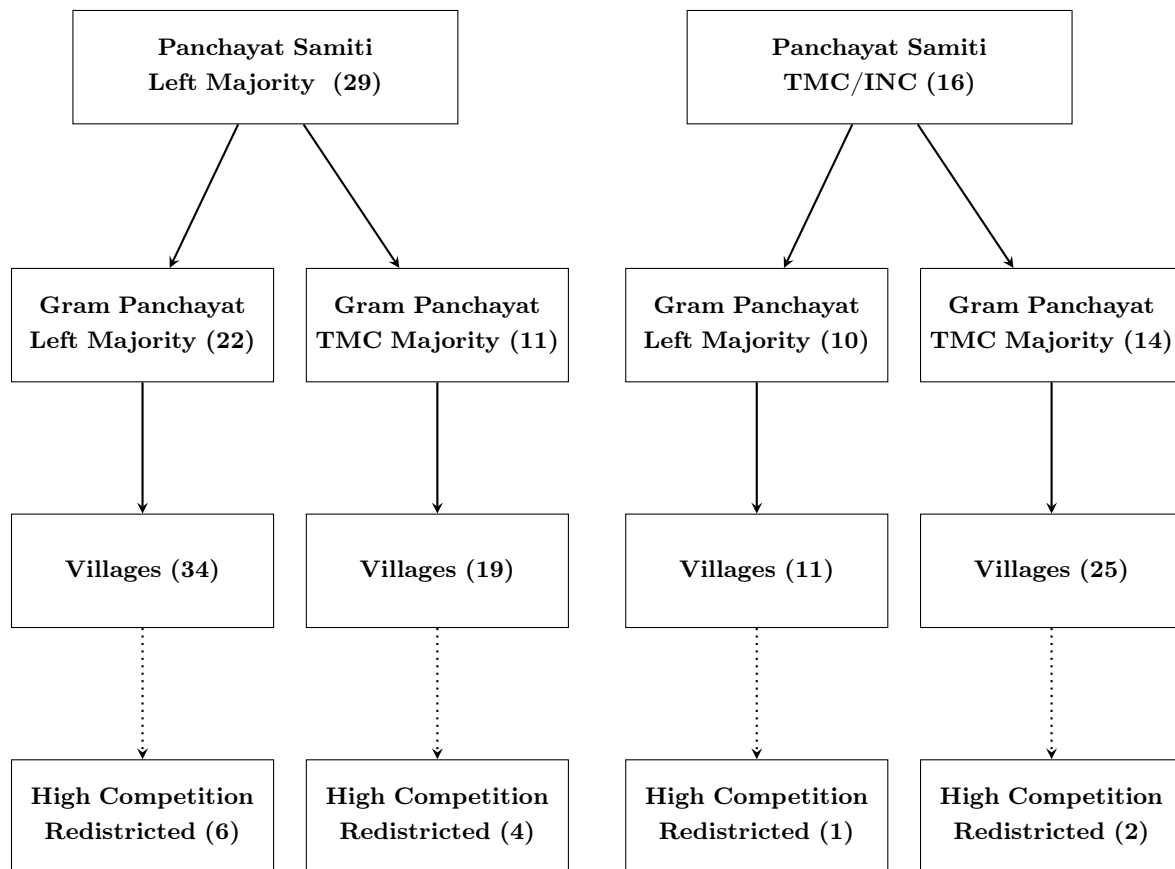


Figure 2: Government Hierarchy and Redistricting in Our Sample



Notes:

1. Panchayat majority is defined according to 2008 panchayat election results.
2. Redistricting is at the Assembly constituency level.
3. HC Redistricted refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

Table 2: Predicting Redistricting

	All Redistricted (1)	High Comptt. Redistricted (2)	High Comptt. * Left Aligned (3)
Left GP* Left PS	-0.06 (0.29)		
Left PS	-0.04 (0.18)		
Left Dominated GP 2008	0.02 (0.25)	0.08 (0.22)	0.26 (0.19)
Delimitation Commission Member	0.17 (0.12)	0.05 (0.39)	0.44 (0.31)
Seat Reserved for SC/ST	-0.03 (0.17)	0.07 (0.19)	-0.12 (0.14)
Observations	89	26	26
Adjusted R^2	-0.039	-0.119	0.083
Mean Dependent Variable	0.29	0.50	0.31

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust standard errors in parentheses, clustered at district level.

[1] All Redistricted is a dummy variable with value 1 if the assembly constituency containing the village changed.

[2] High competition refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

[3] Left Aligned is a dummy that takes value 1 if Left is in power at the GP as well as Panchayat Samiti.

[4] Sample in Columns (2) and (3) consist only of redistricted villages.

Table 3: Summary Statistics: Demographics

Agri Land Owned 2004	No. of Households	Age HoH	% HoH Males	Max Education Years of Schooling	% SC/ST	% HoH Agri Occupation
Landless	1214	45	88	6.6	37.4	26
0-1.5 Acres	658	48	88	7.8	38.9	65
1.5 - 2.5 Acres	95	56	92	10.8	22.4	82
2.5-5 Acres	258	58	93	11.1	27.1	72
5-10 Acres	148	60	89	12.5	26.1	66
> 10 Acres	29	59	100	13.9	30.9	72
All	2402	49	89	8.0	35.4	47

Note: HOH refers to Head of Household.

Table 4: Summary Statistics: GP Disbursed Benefits Received by Households

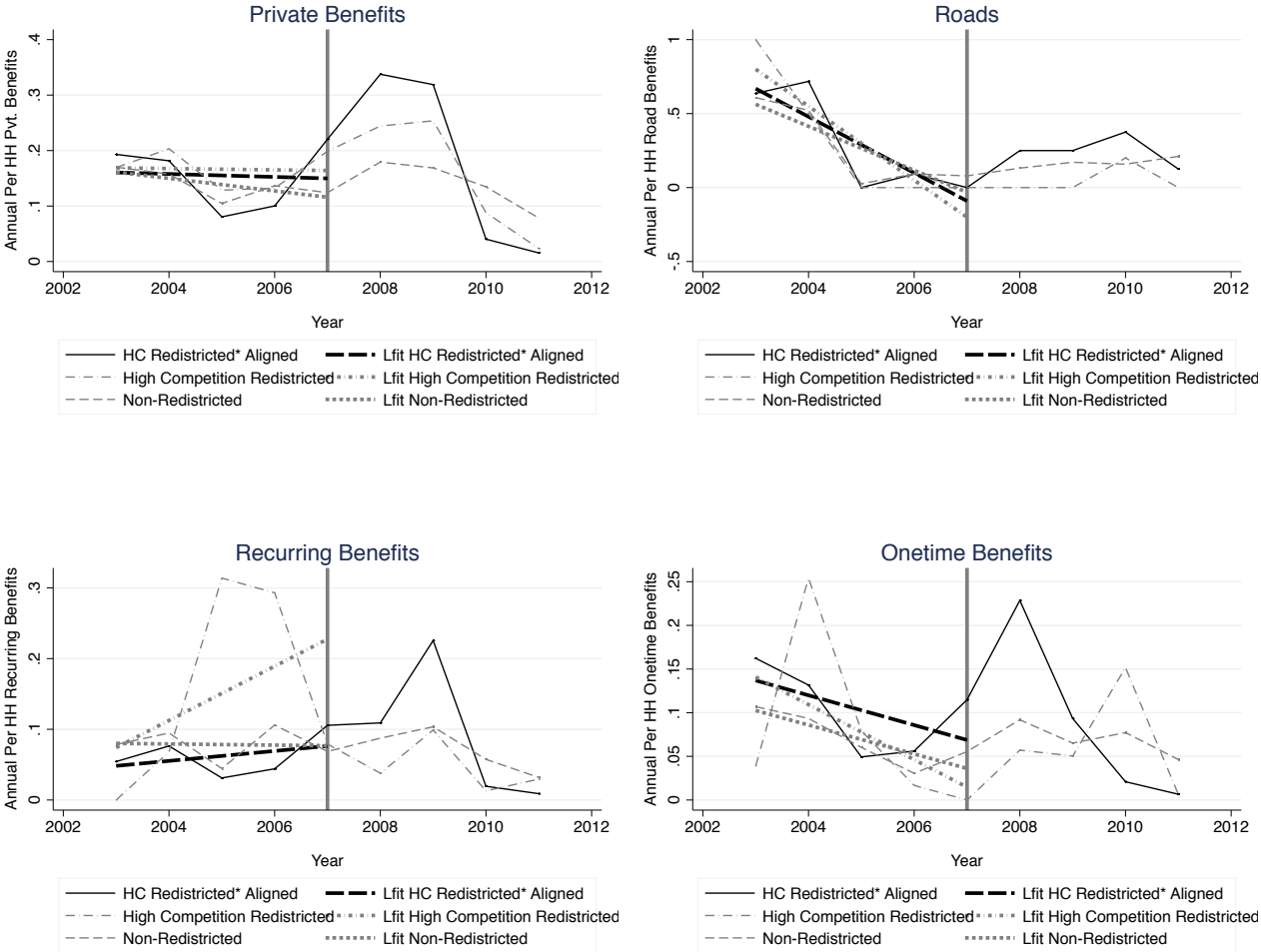
	(1996 - 2003)	(2004-2011)
	% HoH Reporting	% HoH Reporting
Road Benefit	33.7	24.8
Any Private Benefit	48.3	49.3
Any Recurring Benefit	14.2	38.0
Credit	3.5	2.1
Minikit	5.7	10.5
Employment	NA	33.6
Any Onetime Benefit	42.3	28.3
BPL Cards	15.4	18.1
House or Toilet	8.2	10.2
Drinking Water	26.3	12.5
Any Benefit	61.0	62.5

[1] Employment consists of MNREGA and MPLAD employment.

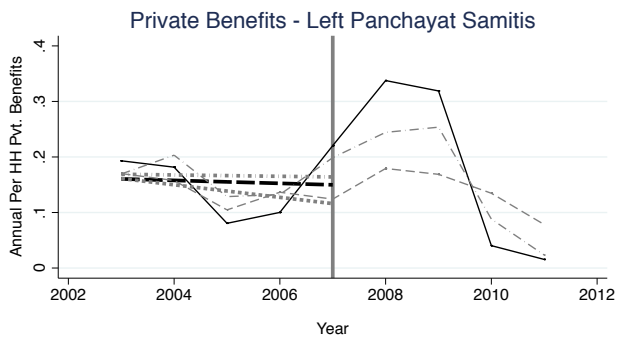
[2] MNREGA scheme began in 2004 and questions regarding MPLAD employment were not asked prior to 2003.

Figure 3: Examining Common Trend Assumption Across Villages

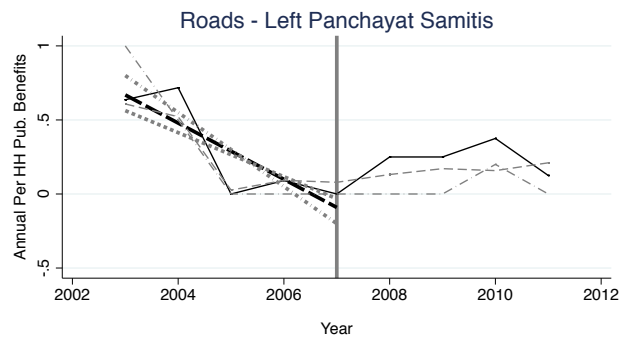
[a] All Panchayat Samitis



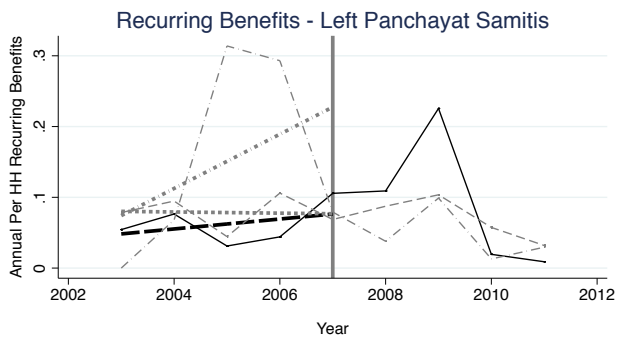
[b] Panchayat Samitis Left Dominated in 2008



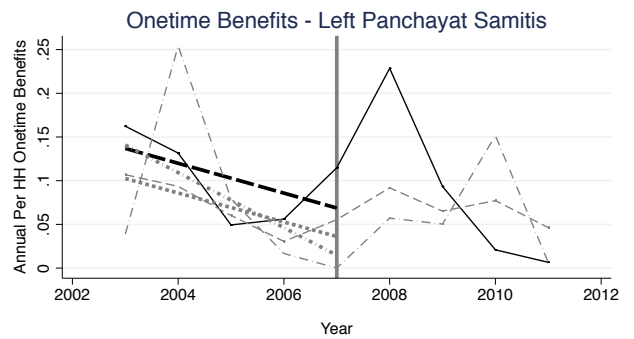
— HC Redistricted* Aligned - - - Lfit HC Redistricted* Aligned
 - - - High Competition Redistricted ····· Lfit High Competition Redistricted
 - - - Non-Redistricted - ····· Lfit Non-Redistricted



— HC Redistricted* Aligned - - - Lfit HC Redistricted* Aligned
 - - - High Competition Redistricted ····· Lfit High Competition Redistricted
 - - - Non-Redistricted - ····· Lfit Non-Redistricted



— HC Redistricted* Aligned - - - Lfit HC Redistricted* Aligned
 - - - High Competition Redistricted ····· Lfit High Competition Redistricted
 - - - Non-Redistricted - ····· Lfit Non-Redistricted



— HC Redistricted* Aligned - - - Lfit HC Redistricted* Aligned
 - - - High Competition Redistricted ····· Lfit High Competition Redistricted
 - - - Non-Redistricted - ····· Lfit Non-Redistricted

Table 5: Diff-in-Diff: Effect of Competition and Alignment on Benefits Distributed

	Private Benefits		Non-PMGSY Roads		PMGSY Roads	
	All PS	Left PS	All PS	Left PS	All PS	Left PS
	(1)	(2)	(3)	(4)	(5)	(6)
Post* HC Redistricted* Aligned	2.51*** (0.73)	2.29** (0.97)	0.61 (0.45)	-0.19 (0.43)	0.00 (0.04)	0.03 (0.06)
Post* HC Redistricted	-1.81*** (0.49)	-1.84** (0.69)	-0.64* (0.37)	0.02 (0.30)	0.03 (0.02)	0.02 (0.05)
Observations	801	477	801	477	801	477
Adjusted R^2	0.136	0.114	0.311	0.288	0.011	-0.002
Mean Annual Per HH Benefits	0.49	0.61	0.42	0.52	0.01	0.02
SD Annual Per HH Benefits	1.77	1.79	1.39	1.46	0.12	0.14
Test: Post* HC Redistricted* Aligned + Post* HC Redistricted = 0						
F Statistic	1.78	0.53	0.04	0.47	1.53	1.84
P-value	0.19	0.47	0.84	0.49	0.22	0.18

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses, clustered at Panchayat Samiti level.

[1] Observations at the village-year level, 2003-2011.

[2] The dependent variable is standardized measure of annual per HH benefits for each village.

[3] Higher Competition Redistricted refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

[4] Private benefits include: MNREGA, IRDP, Minikits, Ration Card, House, Toilet, Drinking Water, Irrigation.

[5] All specifications include other interactions; whether MLA/MP was part of delimitation committee; pre-treatment trends; district and year fixed effects.

[6] Post takes value 1 for years 2007 and onwards.

[7] Aligned means same party is in power at the Panchayat level and in GP.

Table 6: Diff-in-Diff: Effect of Competition and Alignment on Benefits Distributed

	All Recurring		Employment		IRDP and Minikits	
	All	Left	All	Left	All	Left
		PS		PS		PS
	(1)	(2)	(3)	(4)	(5)	(6)
Post* HC Redistricted* Aligned	2.40*** (0.60)	2.18** (0.79)	2.10** (0.79)	2.37** (0.97)	1.30* (0.68)	0.39 (0.74)
Post* HC Redistricted	-1.53*** (0.44)	-1.54** (0.64)	-1.26* (0.65)	-1.48* (0.75)	-0.96 (0.59)	-0.60 (0.68)
Observations	801	477	801	477	801	477
Adjusted R^2	0.086	0.124	0.087	0.120	0.052	0.046
Mean Annual Per HH Benefits	0.51	0.61	0.49	0.61	0.20	0.20
SD Annual Per HH Benefits	1.86	1.83	1.94	1.96	1.79	1.66

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses, clustered at Panchayat Samiti level.

[1] Observations at the village-year level, 2003-2011.

[2] The dependent variable is standardized measure of annual per HH benefits for each village.

[3] HC Redistricting refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

[4] Recurring benefits include: MNREGA, IRDP, Minikits, MPLAD employment.

[5] Employment consists of MNREGA and MPLAD employment.

[6] All specifications include other interactions; whether MLA/MP was part of delimitation committee; pre-treatment trends; district and year fixed effects.

[7] Post takes value 1 for years 2007 and onwards.

[8] Aligned means same party is in power at the Panchayat level and in GP.

Table 7: Diff-in-Diff: Effect of Competition and Alignment on Onetime Benefits Distributed

	All Onetime		Ration Card		Housing, Sanit. & Water	
	All	Left	All	Left	All	Left
		PS		PS		PS
	(1)	(2)	(3)	(4)	(5)	(6)
Post* HC Redistricted* Aligned	0.95 (0.84)	0.55 (1.03)	1.09 (0.70)	0.79 (0.64)	-0.06 (0.81)	0.29 (0.71)
Post* HC Redistricted	-0.83 (0.64)	-0.59 (0.71)	-0.95 (0.57)	-0.58 (0.40)	-0.39 (0.61)	-1.02*** (0.24)
Observations	801	477	801	477	801	477
Adjusted R^2	0.103	0.077	0.022	0.012	0.244	0.280
Mean Annual Per HH Benefits	0.25	0.33	0.16	0.13	-0.16	-0.14
SD Annual Per HH Benefits	1.76	1.82	1.58	1.57	1.18	1.19

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses, clustered at Panchayat Samiti level.

[1] Observations at the village-year level, 2003-2011.

[2] The dependent variable is standardized measure of annual per HH benefits for each village.

[3] HC Redistricting refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

[4] Onetime benefits include: Ration Card, House, Toilet, Drinking Water, Irrigation.

[5] Infrastructure consists of House, Toilet, Drinking Water, Irrigation.

[6] All specifications include other interactions; whether MLA/MP was part of delimitation committee; pre-treatment trends; district and year fixed effects.

[7] Post takes value 1 for years 2007 and onwards.

[8] Aligned means same party is in power at the Panchayat level and in GP.

Table 8: Placebo Test

	Recurring Benefits		Onetime Benefits		Road Program	
	All	Left PS	All	Left PS	All	Left PS
	(1)	(2)	(3)	(4)	(5)	(6)
Post 2005* HC Redistricted* Aligned	-0.17 (0.80)	-0.46 (0.70)	-0.71 (0.94)	-0.51 (0.97)	0.71 (1.00)	0.81 (1.06)
Post 2005* HC Redistricted	0.23 (0.77)	0.60 (0.66)	0.39 (0.79)	0.40 (0.80)	0.17 (0.83)	0.29 (0.88)
Observations	445	380	445	380	445	380
Adjusted R^2	0.094	0.136	0.103	0.099	0.329	0.350
Mean Annual Per HH Benefits	0.28	0.26	0.44	0.47	0.57	0.57
SD Annual Per HH Benefits	1.63	1.40	1.59	1.62	1.97	1.99

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses, clustered at Panchayat Samiti level.

[1] Observations at the village-year level, 2001-2006.

[2] The dependent variable is standardized measure of annual per HH benefits for each village.

[3] Higher Competition refers to those cases where GP was redistricted to an assembly constituency where incumbent party has a lower likelihood of winning based on victory margins.

[4] Private benefits include: MNREGA, IRDP, Minikits, Ration Card, House, Toilet, Drinking Water, Irrigation.

[5] All specifications include other interactions; whether MLA/MP was part of delimitation committee; pre-treatment trends; district and year fixed effects.

[6] Placebopost takes value 1 for years 2003 and onwards.

[7] Aligned means same party is in power in Panchayat Samiti and in GP.

Table 9: Effect of Benefits on Votes for Incumbent in 2011 Straw Poll

	ALL GPs		Left GPs	
	OLS	IV	OLS	IV
Private Benefits	0.050** (0.020)	0.328*** (0.106)	0.061*** (0.020)	0.299* (0.157)
Non-PMGSY Road Benefits	0.007 (0.070)	-0.320 (0.399)	-0.003 (0.077)	-0.206 (0.294)
PMGSY Roads	-0.131** (0.065)	-0.176** (0.072)	-0.166** (0.075)	-0.188*** (0.064)
Observations	2383	2383	1337	1337
Adjusted R^2	0.078	-0.137	0.115	-0.127
F-test (p-value)		6.34, 3.95 (.00), (.00)		5.51, 5.27 (.00), (.00)
Underidentification test (p-value)		19.56 (0.00)		18.99 (0.03)
Weak identification test (maximal relative bias (10%) (maximal relative bias (20%))		2.46 (10.22) (6.20)		4.94 (10.43) (6.22)
Rank test (Ho: $r=K-1$) (p-value)		151.24 (0.00)		98.07 (0.00)
Overidentification Test (p-value)		41.39 (0.06)		9.94 (0.26)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust SE in parentheses, clustered at GP level in (1) and (3).

[1] Voted Left 2011 is a dummy that takes value 1 if HH voted left in 2011.

[2] Private and road benefits are aggregated over period 2007-2011.

[3] OLS includes controls for household characteristics and district fixed effects.

[4] IV regressions include district fixed effects. Private benefits and non-PMGSY roads are endogenous.

[5] HH Characteristics are dummies for following characteristics: SC/ST, landless, cultivator.

[6] Excluded Instruments in IV regression: treatment dummy interacted with household characteristics and average per capita recurring and onetime benefits received in other GPs within the district.

[7] Included Instruments in IV regression: treatment dummy and household characteristics.

Table 10: Correlation: Road Benefits and Household's Perception About Local Leaders

	All Villages	All GPs PMGSY Villages	Non-MPGSY Villages	All Villages	Left GPs PMGSY Villages	Non-MPGSY Villages
[a] Household's perception about local leader's involvement in infrastructure implementation						
HH Received Road Benefits	-0.149 (0.102)	-0.779** (0.390)	-0.154 (0.120)	-0.325** (0.137)	-1.304* (0.713)	-0.278* (0.161)
[b] Household's perception about local leader's honesty						
HH Received Road Benefits	0.174 (0.109)	-0.392 (0.453)	0.155 (0.119)	0.028 (0.144)	-0.447 (0.878)	0.027 (0.158)
[c] Household's perception about local leader's performance compared to others						
HH Received Road Benefits	0.020 (0.109)	0.098 (0.434)	0.033 (0.124)	-0.134 (0.149)	-0.527 (0.828)	-0.101 (0.166)
Observations	2081	120	640	1154	99	487

* p<0.10, ** p<0.05, *** p<0.01.

(1) "Road Benefits" is the number of road benefits reported by the household in the period 2007-2011.

(2) Infrastructure Involvement is on scale 1-5 with 5 being the highest.

(3) All regressions include household characteristics as controls.

Table 11: Effect of Benefits on Votes for Incumbent in 2011 Straw Poll

	ALL GPs		Left GPs	
	OLS	IV	OLS	IV
Recurring Private Benefits	0.044* (0.025)	0.313** (0.139)	0.048* (0.027)	0.412** (0.188)
Onetime Private Benefits	0.057** (0.025)	0.206 (0.137)	0.074*** (0.027)	0.247 (0.311)
PMGSY Roads	-0.131** (0.066)	-0.138*** (0.050)	-0.166** (0.075)	-0.172*** (0.058)
Observations	2383	2383	1337	1337
Adjusted R^2	0.078	-0.084	0.115	-0.183
F-test (p-value)		12.69 , 6.70 (.00), (.00)		17.61 , 5.54 (.00), (.00)
Underidentification test (p-value)		47.06 (0.00)		9.65 (0.16)
Weak identification test (maximal relative bias (10%) (maximal relative bias (20%))		9.84 (10.22) (6.20)		4.43 (10.43) (6.22)
Rank test (Ho: r=K-1) (p-value)		99.12 (0.00)		71.36 (0.04)
Overidentification Test (p-value)		41.43 (0.00)		0.17 (0.77)

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$ Robust SE in parentheses, clustered at GP level in (1) and (3).

[1] Voted Left 2011 is a dummy that takes value 1 if HH voted left in 2011.

[2] Private and road benefits are aggregated over period 2007-2011.

[3] OLS includes controls for household characteristics and district fixed effects.

[4] IV regressions include district fixed effects. Recurring and Onetime benefits are endogenous.

[5] HH Characteristics are dummies for following characteristics: SC/ST, landless, cultivator.

[6] Excluded Instruments in IV regression: treatment dummy interacted with household characteristics and average per capita recurring and onetime benefits received in other GPs within the district.