Timing of Capture of Anti-poverty Programs: Rural Public Works & Food for Work Programs in Rural India*

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Abstract

Using National Sample Survey data for rural India we examine the incidence of capture in two workfare programs in rural India: the Rural Public Works and the Food for Work Programs for 1993-94 and 2004-05 respectively. We discover a high degree of program capture among the general population. Among the traditionally backward groups in Indian rural society-but with considerable variation in their living standards -there appears to be a higher degree of capture among SC than among ST. Targeting among SC worsened over time. There was an increase in capture by the fourth quintile (of household per capita expenditure) of SC, ST and landowners. This may be reflective of a varying degree of collusion between the elite and the program implementing agencies (e.g., village councils) over time. Thus potential benefits of workfare get undermined. We also provide evidence to suggest that income based targeting could outperform social group based targeting.

JEL Classification: H53, I38; O12
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I. Introduction

Public works have been widely cited as a crucial tool for poverty alleviation, particularly in the rural sector (World Bank, 2001). When properly designed and implemented, rural public works (RPW) have the dual advantage of providing employment to the unemployed (hence reducing poverty) and building much needed rural infrastructure. Besides, as RPW are designed to peak in seasonally slack periods, they help stabilise incomes (Scandizzo et al. 2007). By stabilising and stimulating rural incomes and, therefore demand, RPW have the potential of stimulating the rural economy and, therefore, act as a counterfoil to contracting demand during recessions. RPW have been used in many countries. To take just two examples Ling, and Zhongyi (1996) evaluate the role of RPW in poverty alleviation in China. In the Indian context RPW were accorded special importance in the Tenth Five Year Plan of Development. (Government of India, 2002)

However, public policy towards poverty alleviation, of which RPW are one special case, is often subject to the phenomenon of "capture" whereby the benefits of programs that are ostensibly meant to target the poor are garnered by non-poor. The non-poor can exercise their economic power and contribute to the campaign funds of the major political parties in exchange for preferential treatment in welfare services (Crook and Manor, 1998; Gaiha et al., 1998). Dejaradin (1996) has argued that gender considerations also affect capture of public works. Thus, although RPW have the potential of according substantial benefits to them, women's participation in these programs is highly conditional on the gender division of labour and the ownership of assets, particularly land. Since, on average, women are employed in less skilled occupations or housework and are not the primary owners of land, the benefits of the rural public works often bypass them and are captured by men. In India the recently instituted National Rural Employment Guarantee Program represents a major expansion of RPW. Using primary data for the two states of Rajasthan and Andhra Pradesh for 2007 Jha et al. (2009) provide evidence of program capture. For a review of the political economy of local factors affecting capture of RPW in India, see Pellisserry (2005).

An interesting and important question in this context is the following. If the non-poor manage to garner the bulk of the benefits from an anti-poverty program, do they get satiated over time? Or, alternatively, have they become better aware of the potential advantages of rpw and have sought to overcome the barriers to participation (e.g. collusion between relatively affluent and implementing agencies taking the form of bribery and corruption)? Although we do not have sufficiently detailed data to throw light on these alternative explanations, available evidence favours the latter (Dreze and Khera, 2008). In either case, the marginal odds of participation of the poor will improve.

This issue of capture in the context of anti-poverty programs in India was first addressed by Lanjouw and Ravallion (1999) (henceforth LR). The LR analysis is based on National Sample Survey (NSS) regions and quintiles of households classified on the basis of adjusted per capita expenditure. They then compute average participation rates (for households) at the state level and for each quintile and region.[1] The quintiles are defined at the all-India level over the entire rural population so that the poorest quintile refers to the poorest 20 % in India as a whole. The average odds-ratio of participation (AOP) is given by

[1]Note that only those regions are considered that do not overlap over two states.

the ratio of the quintile-specific average participation rate to the overall average. The marginal odds-ratio of participation (MOP) is defined as the increment to participation in that program. Differences between the two will reflect differences in the incidence of infra-marginal spending. If the MOP is greater than the AOP for the poorest quintile within a particular social group, then the population in the poorest quintile will benefit more than the others from a rupee increase in overall spending. In other words, there will be less capture by the non-poor from the extra spending.

LR focus on Public Works Program, Integrated Rural Development Program and the Public Distribution system for the 50th Round of NSS (1993-94). In contrast, we focus on two workfare programs, the Rural Public Works (RPW) and the Food for Work (FFW) Programs for 1993-94 and 2004-05, respectively, making use of the NSS 50th and 61st round datasets. Thus this paper makes two principal contributions. First, it represents an extension of the analysis to cover the two most recent large household samples of the National Sample Survey. Thus, in contrast to Jha et al. (2009), the analysis of capture in this paper covers the whole country. Second, and in contrast to LR, by explicitly introducing the time dimension we are able to model the evolution of program capture over time.

An important point to be borne in mind is that FFW was introduced in the poorest 150 districts in 2004-05, with extension to the rest of India in subsequent years. It has all the features of a typical RPW program, such as *Sampoorna Grameen Rojgar Yojana* (SGRY) but with a stronger emphasis on wage payment in kind. As part of wages under this scheme, 5 kg of foodgrains per person day is mandatory. The balance of wages is paid in cash. The allocation of resources among the districts is along the lines of the allocation under SGRY. The works selected are identified in consultation with *Panchayati Raj Institutions* (PRI). Their execution vests in line departments/PRIs/NGOs and other official agencies. As in other rural public works, wages are determined by the notified Minimum Wages. To the extent that these are typically higher than slack period agricultural wage rates, targeting accuracy is unlikely to be high. Moreover, since the comparison is between a motley of rural public works that have operated longer than FFW and the initial stage of the latter, as also the fact that allocation of resources to the latter is on a residual basis, the FFW seems to perform less well than its potential.[2]

Given that program capture in India is often characterised by caste and tribal considerations and by the ownership of land, we examine odds of participation in rural workfare programs by quintiles of per capita expenditure classes further categorised into Scheduled Castes (SC), Scheduled Tribes (ST) and land ownership groups as well as for the entire population[3]. The higher the MOP compared with the average odds of participation in each group, the greater will be the benefit incidence on that group. We find high incidence of capture in both programs, and targeting among the SC worsened over time.

Our paper is related to the growing theoretical and empirical literature on program capture.[4] It is also related to a large literature on targeting efficiency and program

[2] For details, see Government of India (2004).

[3] Note that while the headcount index of poverty was the highest among STs (about 44 %), followed by that among SCs (about 32 %), there are large shares of relatively affluent among these traditionally disadvantaged groups. For details, see Gaiha et al. (2008).

[4] See, for example, Bardhan and Mookherjee (2000, 2005), Lanjouw and Ravallion (1999), Alderman (2002), Galasso and Ravallion (2005), and Jha et al. (2009).

performance[5] only to the extent that it adds to the growing body of evidence on how local politics and power of the elite may influence program outcome. Our results, however, are not comparable with these studies as there are differences in country focus, nature of the dataset, and approach.

The remainder of the paper is organised as follow. Section 2 deals with data, estimation strategy, and results. Section 3 concludes.

II. Evidence

Figures 1 and 2 contain the cumulative distribution of participation by monthly per capita consumption expenditure in the RPW program in 1993-94 and the FFW program in 2004-05 for all participants, SC and ST participants and participants who own land.

Figures 1 and 2 here.

A basic poverty profile of program participants and the whole rural population is given in Table 1. This table reports all three FGT measures of poverty and Sen's poverty index for various categories of participants (SC, ST, landowners) and the overall population. As would be expected, poverty is lower for the whole population than for participants. Landowners experience lower poverty than the population as a whole whereas the incidence of poverty among SC and ST participants is high. The incidence of poverty among SC participants has improved over time whereas that for ST has worsened.

Table 1 here.

Table 2 reports on the stochastic dominance of the distribution of per capita expenditures among participants and non-participants. Since first order stochastic dominance obtains, there is evidence that all groups were better off in terms of per capita expenditure in 2004-05 than in 1993-94. In fact, there was a Pareto improvement albeit with some groups gaining more than others.

Table 2 here.

Average participation rates[6] in the RPW in 1993-94 and in the FFW in 2004-05 are given in panel A of tables 3 and 4, respectively. Figures within a column are comparable. Thus, for the poorest quintile (in terms of per capita consumption expenditure) among SC the participation rate in RPW in 1993-94 was 3.1 % with 0.94 as the AOP. The AOP were highest for the richest quintile in this group, indicating substantial program capture. For the RPW program capture was high for ST and the overall population as well. Among landowners AOP were highest for the 2nd and 4th quintiles of the population.

Tables 3 and 4 here.

The incidence of capture changed quite significantly for the FFW program in 2004-05 with the poor getting more benefits than the non-poor overall (table 4). However, for the SC, there is evidence of capture as the AOPs are the highest for the 3rd and 4th quintiles. In contrast, the situation improved for the ST with the poorest quintile reporting the highest AOP and falling steadily across expenditure quintiles. Landowners also register a similar experience. Hence, capture of this program for these groups has fallen over time.

[5] Coady et al. (2004), and Yamauchi (2009) are some of the recent ones. For experimental evidence, see Olken (2007).

[6] Out of a total of 78977 households surveyed 2380 participated in the FFW program in 2004/05. Out of a total of 23670 households surveyed 829 participated in the RPW program in 1993/94.

We now inquire into the MOP in the RPW program in 1993-94 and the FFW program in 2004-05, subject to the caveats stated above. Given that OLS is biased we pursue the following strategy for estimation. For any particular category, say the poorest quintile among the SC, we estimate the following equation:

$$AP_i = \beta_0 + \beta_1 \hat{P}_i + \beta_2 w_i + \varepsilon_i \qquad (1)$$

where AP_i is the average participation rate for poorest quintile of SC in the program in state *i*, $\hat{P}_i$ is a predicted variable derived as follows. We first regress participation rate for the poorest quintile in state *i* irrespective of caste and land ownership status on this same variable leaving out the SC and on the agricultural wage rate (w_i). In view of Gaiha et al. (2008), who show that poor groups are sensitive to the opportunity cost of participation (wages in this case), we include the state specific wage rates in the regressions. This equation is estimated for each quintile for SC, ST, land ownership group and the overall rural population. The estimated coefficient $\hat{\beta}_1$ is reported as the MOP. These coefficients along with robust standard errors are reported in panel B of table 3 for RPW and in table 4 for FFW. All the estimated coefficients are strongly significant (at 1%).

If the MOP for a group is higher than the AOP then its chances of getting into the program are higher. We compare these two magnitudes for the two workfare programs in panel B of tables 3 and 4. We work under the assumption that efficient targeting should focus more on the first and second quintiles of expenditure classes across all these groups. Program capture is likely to be exercised largely by the three highest expenditure classes. Table 3 shows that the RPW was reasonably well targeted toward the poorest quintile among the ST and the landowners but not among the SC and the rural population as a whole. The second poorest quintile among every section of the population had higher MOP than AOP indicating that this expenditure class was better targeted. Among the third poorest expenditure class the MOP was lower than the AOP for all caste and asset groupings except ST. Therefore only the ST experience program capture by the third quintile. MOP was uniformly higher than AOP across all caste and asset groups in the fourth expenditure class, indicating substantial capture.

We now move to the FFW program (table 4). There is remarkable consistency in the rankings between AOP and MOP across panel B of tables 3 and 4 with differences arising only in 6 out of 20 cases considered. In the case of SC MOP is lower than AOP for the second quintile indicating deterioration in targeting. AOP is higher than MOP for the third and fourth quintiles indicating better targeting but MOP is again higher for the richest quintile indicating a substantial deterioration in targeting. Note that, in 2004-05, only the richest quintile among the SC had higher MOP than AOP indicating substantial capture. In contrast**,** targeting improved amongst the ST and the landowners.

In Table 5 we report on instrumental variables regression coefficient of the quintile-specific participation rates in both RPW and FFW programs (in a pseudo panel). In other words, the data from the 1993-94 and 2004-05 samples are pooled and equation (1) is re-estimated with a time dummy for 2004-05. If, for a regression for a particular quintile, the coefficient (called the time effect) on this dummy is positive (negative) and significant then the capture of the program by that quintile has increased (decreased). If the coefficient is not significant then there has been no significant change in the incidence of capture by households in the quintile under consideration.

Table 5 here.

Table 5 reveals that the time effect is not significant in most cases indicating that there has been neither improvement nor deterioration in targeting. However, there are some significant exceptions. In the case of the SC capture has increased for the fourth quintile (coefficient significant at 5%) and for the fourth quintile of the ST (coefficient significant at 10%) and for the fourth quintile of landowners ((coefficient significant at 10%). Thus, in these cases, there has been a clear deterioration of targeting. Against this, however, capture by the richest among the ST and the richest among the landowners dropped (coefficients negative and significant at 10%). On balance then, capture worsened over the time period 1993-94 to 2004-05.

We further examine the efficacy of targeting by examining the stochastic dominance of the per capita expenditures of various groups in the range of ± 25 % of the per capita expenditure associated with the poverty line for each year. This is depicted in Table 6.

Table 6 here.

This table reveals that in 1993-94 non SC RPW participants first order stochastically dominated SC RPW participants. Similarly non ST RPW participants first order dominate ST RPW participants, landowners first order dominate non landowner RPW participants and non-RPW participants first order dominate RPW participants.

Further, the exact same pattern of stochastic dominance persisted in 2004-05. Thus, non SC FFW participants first order stochastically dominated SC FFW participants. Similarly non ST FFW participants first order dominate ST FFW participants, landowners first order dominate non landowner FFW participants and non-FFW participants first order dominate FFW participants.

Thus, in both years the more vulnerable groups were first order stochastically dominated by the less vulnerable groups.

III. Conclusions

This paper makes two key contributions. First, it provides a methodological approach to modelling the evolution and hence timing of program capture. Second, it provides evidence of capture of rural public works at the all India level for the two most recent large rounds of the National Sample Survey household survey.

We discover a high degree of program capture among the general population. Among the traditionally backward groups in Indian rural society-but with considerable variation in their living standards -there appears to be a higher degree of capture among SC than among ST. Targeting among SC worsened over time. An analysis of the pooled data indicates an increase in capture by the fourth quintile of SC, ST and landowners. Hence, targeting should be sensitive to income class and it is not enough to target by social groups. There may be varying degrees of collusion between the elite and the program implementing agencies (e.g., village councils) over time. However, it remains a subject of empirical validation.

Finally, a possible policy implication of our result is that income or expenditure based targeting can perform better than social group based targeting. However, more direct evidence on this is certainly called for.

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Table 1: Overall Poverty and Poverty amongst Program participants in India in 1993 – 94 and 2004 – 05

	Panel A: Rural Public Works Program in 1993 – 94							
Poverty Measures	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	RPW Participants	**Overall**	**RPW Participants**	**Overall**	**RPW Participants**	**Overall**	**RPW Participants**	**Overall**
Headcount Ratio[FGT(α=0)]	52.70	50.39	35.78	43.95	35.75	36.47	36.50	37.21
Poverty Gap [FGT(α=1)]	13.40	13.20	8.54	11.55	8.43	8.70	8.70	9.03
Poverty Gap Squared[FGT(α=2)]	5.09	4.83	2.89	4.32	2.93	3.01	3.04	3.16
Sen's Index	18.64	17.91	11.64	15.81	11.69	11.99	12.05	12.41
	Panel B: Food for Work Program in 2004 – 05							
Poverty Measures	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	FFW Participants	**Overall**	**FFW Participants**	**Overall**	**FFW Participants**	**Overall**	**FFW Participants**	**Overall**
Headcount Ratio[FGT(α=0)]	45.32	39.17	43.55	32.28	39.89	27.74	40.51	28.73
Poverty Gap [FGT(α=1)]	12.34	12.21	15.21	10.83	12.02	8.40	12.41	8.88
Poverty Gap Squared[FGT(α=2)]	5.08	5.60	6.99	5.24	5.16	3.75	5.40	4.07
Sen's Index	17.23	16.92	20.08	14.90	16.44	11.67	16.96	12.35

Note: All the poverty measures reported above are expressed in percentages. FGT implies Foster – Greer – Thorbeck poverty index expressed by the formula $P_\alpha = \sum_{y_i<z} [(z - y_i)/z]^\alpha / n$ where y_i is the monthly consumption expenditure of the i^{th} household, z is the poverty line, n is the population, and α is a non-negative parameter. The official poverty line is used to generate all the estimates reported above. Sen's poverty index is also reported.

Table 2: Stochastic Dominance Test of Monthly per capita Consumption Expenditure across1993 – 94 and 2004 – 05

Stochastic Dominance Tests	Schedule Caste		Schedule Tribe		Land Owners		Total	
	RPW Participants	**Overall**	**RPW Participants**	**Overall**	**RPW Participants**	**Overall**	**RPW Participants**	**Overall**
First Order Dominance $FGT_{(\alpha=0)}^{1993-94} > FGT_{(\alpha=0)}^{2004-05} \forall z$	YES*** t-stat:2.99 p-val: 0.001	YES*** t-stat: 2.69 p-val:0.004	YES*** t-stat:3.2 p-val: 0.001	YES*** t-stat:3.2 p-val: 0.001	YES*** t-stat:3.2 p-val: 0.001	YES*** t-stat:3.3 p-val: 0.001	YES*** t-stat:3.2 p-val: 0.001	YES*** t-stat:3.3 p-val: 0.001
Second Order Dominance $FGT_{(\alpha=1)}^{1993-94} > FGT_{(\alpha=1)}^{2004-05} \forall z$	YES	YES	YES	YES	YES	YES	YES	YES
Third Order Dominance $FGT_{(\alpha=2)}^{1993-94} > FGT_{(\alpha=2)}^{2004-05} \forall z$	YES	YES	YES	YES	YES	YES	YES	YES

Note: *** , ** and * indicates significance levels of 1%, 5% and 10% respectively against a one-sided alternative. Foster – Greer – Thorbeck (FGT) poverty index with $\alpha = 0,1,2$ are calculated for all possible poverty lines using the formula $P_\alpha = \sum_{y_i < z} [(z - y_i)/z]^\alpha / n$ where y_i is the monthly consumption expenditure of the i^{th} household, z is the poverty line, n is the population, and α is a non-negative parameter. These measures are used to test $H_0 : FGT_{(\alpha=k)}^{1993-94} - FGT_{(\alpha=k)}^{2004-05} = 0$ where $k = 0(1)2$ against the alternative $H_A : FGT_{(\alpha=k)}^{1993-94} - FGT_{(\alpha=k)}^{2004-05} > 0$. Note that *t*- statistics and *p*-values of the tests are also reported in the parenthesis. Also note that first order dominance is sufficient but not necessary condition for second or third order dominance. However, both second and third order dominance obtain in our case.

Table 3: Average and Marginal Participation Rates in Rural Public Works program in India in 1993 – 94

	Panel A: Average Participation Rates							
Quintile	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	Average Participation Rate (%)	**Average odds of Participation (AOP)**	**Average Participation Rate (%)**	**Average odds of Participation**	**Average Participation Rate (%)**	**Average odds of Participation**	**Average Participation Rate (%)**	**Average odds of Participation**
Poorest	3.1	0.94	4.3	0.72	3.2	0.91	3.2	0.91
2nd	3.3	1.00	4.6	0.77	3.5	1.00	3.4	0.97
3rd	3.3	1.00	5.2	0.87	3.4	0.97	3.4	0.97
4th	3.2	0.97	5.4	0.90	3.5	1.00	3.5	1.00
5th	3.8	1.15	7.8	1.30	3.3	0.94	3.5	1.00
	Panel B: Marginal Participation Rates							
Quintile	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	Marginal odds of Participation (MOP)	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**
Poorest	0.86*** (0.4178)	AOP > MOP	1.01*** (0.1939)	AOP<MOP	1.21*** (0.4789)	AOP<MOP	1.17*** (0.0549)	AOP<MOP
2nd	1.14*** (0.3969)	AOP<MOP	0.99*** (0.1157)	AOP<MOP	1.12*** (0.1417)	AOP<MOP	1.17*** (0.1903)	AOP<MOP
3rd	1.12*** (0.2927)	AOP<MOP	0.86*** (0.1187)	AOP>MOP	1.76*** (0.6798)	AOP<MOP	1.25*** (0.1839)	AOP<MOP
4th	1.11*** (0.0170)	AOP<MOP	0.97*** (0.0265)	AOP<MOP	1.18*** (0.1462)	AOP<MOP	1.04*** (0.0545)	AOP<MOP
5th	0.94*** (0.0396)	AOP>MOP	1.01*** (0.1251)	AOP>MOP	0.96*** (0.1316)	AOP<MOP	0.80*** (0.1539)	AOP>MOP

Note: *** indicates a significance level of 1% against a two-sided alternative. The table gives the instrumental variables estimate of the regression coefficient of the quintile-specific participation rates in RPW program across 34 states and union territories on the average rate by state for that program, based on the NSS 1993 – 94. The leave-out mean state participation rate is the instrument for actual mean. Wage is used as a control variable. The numbers in the parenthesis are robust standard errors. The average participation rate is expressed as percentages. The odds of participation are defined as the ratio of participation rate for each quintile and the overall participation rate for that group.

Table 4: Average and Marginal Participation Rates in Food for Work program in India in 2004 – 05

	Panel A: Average Participation Rates							
Quintile	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	Average Participation Rate (%)	**Average odds of Participation (AOP)**	**Average Participation Rate (%)**	**Average odds of Participation**	**Average Participation Rate (%)**	**Average odds of Participation**	**Average Participation Rate (%)**	**Average odds of Participation**
Poorest	3.2	0.94	9.8	1.51	4.4	1.52	4.2	1.45
2nd	3.9	1.15	8.2	1.26	3.9	1.34	3.9	1.34
3rd	3.7	1.16	7.6	1.17	3.6	1.24	3.6	1.24
4th	3.7	1.16	7.1	1.09	3.3	1.14	3.2	1.10
5th	2.1	0.62	4.2	0.65	1.6	0.55	1.6	0.55
	Panel B: Marginal Participation Rates							
Quintile	**Schedule Caste**		**Schedule Tribe**		**Land Owners**		**Total**	
	Marginal odds of Participation (MOP)	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**	**Marginal odds of Participation (MOP)**	**AOP vs. MOP**
Poorest	0.63*** (0.1647)	AOP > MOP	1.58*** (0.1822)	AOP<MOP	1.58*** (0.6667)	AOP<MOP	1.64*** (0.0699)	AOP<MOP
2nd	0.65*** (0.1573)	AOP>MOP	1.69*** (0.1106)	AOP<MOP	1.64*** (0.0521)	AOP<MOP	1.64*** (0.0537)	AOP<MOP
3rd	0.56*** (0.1339)	AOP>MOP	1.61*** (0.0914)	AOP<MOP	1.48*** (0.0529)	AOP<MOP	1.48*** (0.0540)	AOP<MOP
4th	0.49*** (0.1422)	AOP>MOP	1.34*** (0.0890)	AOP<MOP	1.21*** (0.0234)	AOP<MOP	1.22*** (0.0252)	AOP<MOP
5th	1.14*** (0.1249)	AOP<MOP	0.41*** (0.0786)	AOP>MOP	0.45*** (0.0465)	AOP>MOP	0.47*** (0.0454)	AOP>MOP

Note: *** indicates a significance level of 1% against a two-sided alternative. The table gives the instrumental variables estimate of the regression coefficient of the quintile-specific participation rates in FFW program across 34 states and union territories on the average rate by state for that program, based on the NSS 2004 – 05. The leave-out mean state participation rate is the instrument for actual mean. Wage is used as a control variable. The numbers in the parenthesis are robust standard errors. The average participation rate is expressed as percentages. The odds of participation are defined as the ratio of participation rate for each quintile and the overall participation rate for that group.

Table 5: Marginal Participation Rates in Rural Public Works and Food for Work programs in India using a Pseudo Panel

Quintile	Marginal Participation (MOP) Rates using a Pseudo Panel											
	Schedule Caste			Schedule Tribe			Land Owners			Total		
	MOP	Time Effect	AOP vs. MOP	MOP	Time Effect	AOP vs. MOP	MOP	Time Effect	AOP vs. MOP	MOP	Time Effect	AOP vs. MOP
Poorest	2.35*** (0.33)	0.01 (0.05)	AOP=MOP	1.27** (0.57)	0.08 (0.14)	AOP=MOP	1.76*** (0.20)	0.06 (0.05)	AOP=MOP	2.03*** (0.02)	0.04 (0.05)	AOP=MOP
2nd	1.42*** (0.33)	0.01 (0.04)	AOP=MOP	1.57*** (0.24)	0.03 (0.07)	AOP=MOP	1.56*** (0.09)	0.01 (0.02)	AOP=MOP	1.36*** (0.09)	0.01 (0.02)	AOP=MOP
3rd	1.18*** (0.26)	0.01 (0.03)	AOP=MOP	1.59*** (0.14)	0.09** (0.03)	AOP<MOP	1.67*** (0.15)	0.06** (0.03)	AOP<MOP	1.48*** (0.07)	0.03** (0.01)	AOP<MOP
4th	1.46*** (0.35)	0.09** (0.04)	AOP<MOP	1.27*** (0.14)	0.05* (0.03)	AOP<MOP	1.27*** (0.06)	0.02* (0.01)	AOP<MOP	1.19*** (0.04)	0.01 (0.006)	AOP=MOP
5th	0.79** (0.29)	0.03 (0.03)	AOP=MOP	0.69*** (0.18)	-0.07** (0.03)	AOP>MOP	0.70*** (0.11)	-0.04* (0.02)	AOP>MOP	0.62*** (0.09)	-0.01 (0.02)	AOP=MOP

Note: *** , ** and * indicates significance levels of 1%, 5% and 10% respectively against a two-sided alternative. The table gives the instrumental variables estimate of the regression coefficient of the quintile-specific participation rates in both Rural Public Works and Food for Work programs (in a pseudo panel) across 34 states and union territories on the average rate by state for that program, based on the NSS 1993 – 94 and 2004 – 05. The leave-out mean state participation rate is the instrument for actual mean. Wage is used as a control variable. The numbers in the parenthesis are robust standard errors. All regressions are estimated using a time dummy and state dummies.

Table 6: Stochastic Dominance Test of Monthly per capita Consumption Expenditure in the Poverty Line Neighbourhood

Panel A: Rural Public Works Program in 1993 – 94	
Stochastic Dominance Test Results	Non Schedule Caste RPW Participants First Order Dominates Schedule Caste RPW Participants (t=-111.76, p-value=0.00) Non Schedule Tribe RPW Participants First Order Dominates Schedule Tribe RPW Participants (t=-160.73, p-value=0.00) Landowners RPW Participants First Order Dominates Non Landowners RPW Participants (t=-250, p-value=0.00) Schedule Tribe RPW Participants First Order Dominates Schedule Caste RPW Participants (t=-81.51, p-value=0.00) Non RPW Participants First Order Dominate RPW Participants (t=-31.49, p-value=0.00)
Panel B: Food for Work Program in 2004 – 05	
Stochastic Dominance Test Results	Non Schedule Caste FFW Participants First Order Dominates Schedule Caste FFW Participants (t=-7.79, p-value=0.00) Non Schedule Tribe FFW Participants First Order Dominates Schedule Tribe FFW Participants (t=-2.13, p-value=0.02) Landowners FFW Participants First Order Dominates Non Landowners FFW Participants (t=-42.9, p-value=0.00) Schedule Tribe FFW Participants First Order Dominates Schedule Caste FFW Participants (t=-3.31, p-value=0.002) Non FFW Participants First Order Dominate FFW Participants (t=-24.38, p-value=0.00)

Note: Foster – Greer – Thorbeck (FGT) poverty index with $\alpha = 0,1,2$ are calculated for all possible poverty lines using the formula $P_\alpha = \sum_{y_i<z} [(z - y_i)/z]^\alpha / n$ where y_i is the monthly consumption expenditure of the i th household, z is the poverty line, n is the population, and α is a non-negative parameter. These measures are used to test whether all distributions mentioned above are the same over the range $[\frac{3}{4}z, \frac{5}{4}z]$. First order dominance implies that the dominant distribution lies below its match-up for all possible poverty lines within the range $[\frac{3}{4}z, \frac{5}{4}z]$. Note that *t*- statistics and *p*-values of the tests are also reported in the parenthesis. Also note that first order dominance is sufficient but not necessary condition for second or third order dominance. In our case, both second and third order dominance are also satisfied.

Figure 1: Cumulative Density Function of Rural Public Works (RPW) Participation in India in 1993 – 94

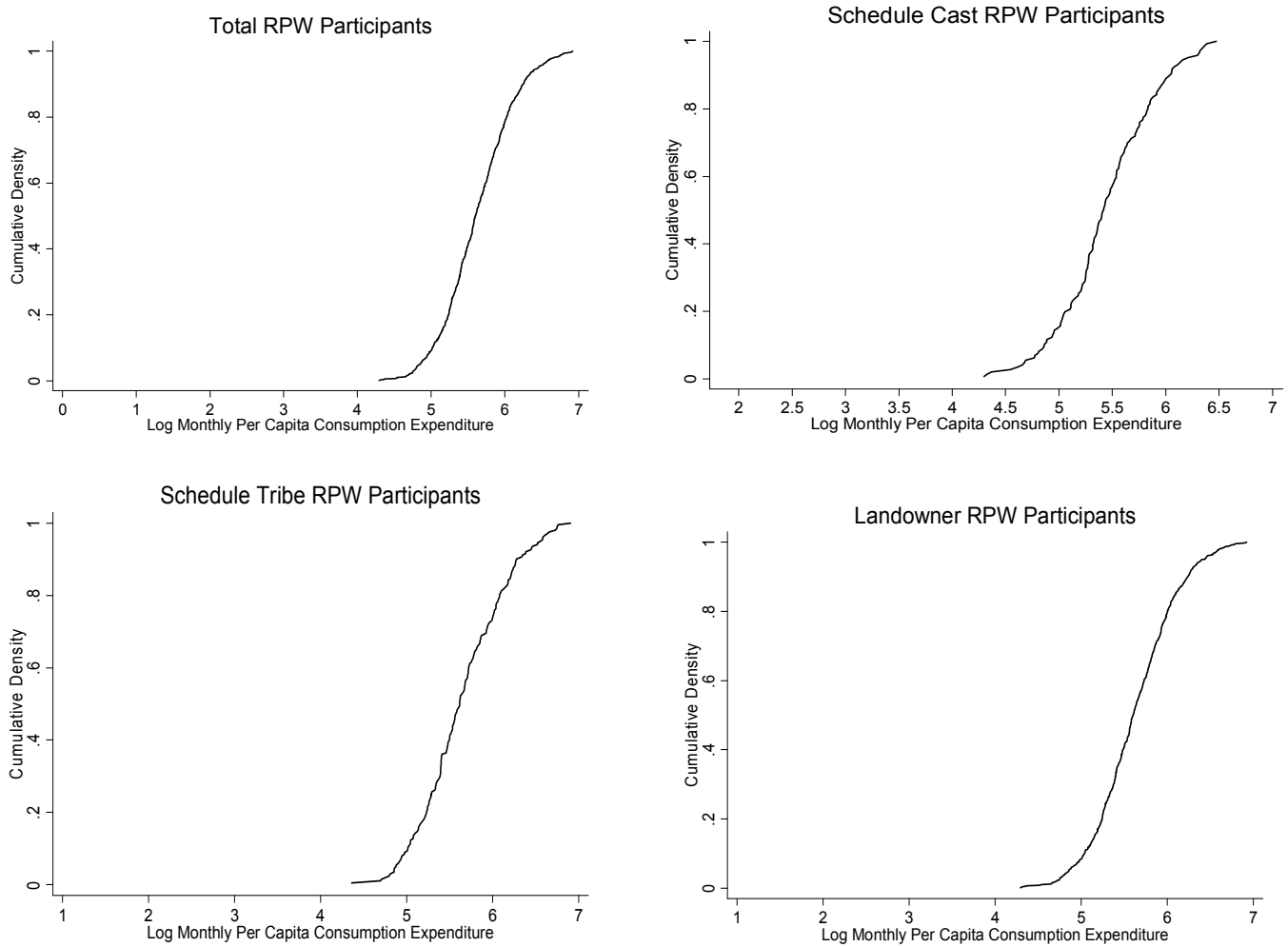

Figure 2: Cumulative Density Function of Food for Work (FFW) Participation in India in 2004 – 05