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Impact of MGNREGA on Consumption Expenditure of Rural Households

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Abstract

This paper analyses the impact of MGNREGA on household consumption expenditure by using data from the nationally representative NSS surveys .The phased roll out of MGNREGA enables me to use triple difference estimation to identify the impact of this workfare program on rural household expenditure . Findings indicate that MGNREGA led to an increase in expenditure for the BPL households. There has been a significant increase in the expenditure on food items. A shift towards consumption of expensive food items for the BPL households has also been found. However the consumption of non- BPL households have decreased during this period.

Section 1 : Introduction

The term 'workfare' was coined in the United States in the late 1960s to describe the idea of social benefits tied to work requirements. Public Works program are intended to provide security to unemployed and underemployed. Often these are considered as short term palliatives by many mainstream development economists Ravallion Martin (2006) [30] .However Besley and Coate (1992) [8] emphasised about the screening benefits of workfare programs. In their paper they have also derived the conditions as to when workfare will be preferred over direct cash transfers.

While public works programmes have a long standing tradition as policy interventions going back to 1930s and beyond , empirical evidence from mainly developing countries confirms for its contribution to household welfare.NREGA (National Rural Employment Guarantee Act) now known as MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act) is a workfare program in India which was notified on September 7 , 2005.MGNREGA provides a legal guarantee for wage employment. This right based approach of MGNREGA separates it out from the previous public work programs like Drought – Prone Area Programme in the 1970s , Jawahar Rozgar Yojana (JRY) in the 1990s and Sampoorna Grameen Rozgar Yojana in 2001. It is a demand-driven programme where provision of work is triggered by the demand for work by wage-seekers. There are legal provisions for allowances and compensation both in cases of failure to provide work on demand and delays in payment of wages for work undertaken.

This paper attempts to look at the impact of MGNREGA on household consumption expenditure. It has been conclusively shown in the literature that MGNREGA has not led to much significant change in employment (Imbert and Papp (2013) [23] , Zimmerman(2014) [34]). There have been studies on low person days offered in MGNREGA. Simultaneously, there is a debate that the low person days are not due to rationing but self-targeting. Studying on household consumption will help us to know about welfare impacts of MGNREGA which might not be fully answered by looking only at the labour market outcomes. The programme's main aim is to increase welfare and for rural poor and it can come through first increasing their consumption. As consumption is an indicator of poverty for poorest of poor hence a study on consumption expenditure will add more light in evaluating MGNREGA's performance.

A key issue for the evaluation of public works programmes which are not completely randomly assigned and where only limited data is available, like the MGNREGA, is that the decision to participate in public works might be subject to factors which are unobserved and which simultaneously also affect the outcome under consideration, leaving any estimates of effects subject to bias . In this paper, the potential selection bias is reduced by the triple difference estimate . The ripple difference estimate compares the BPL households in Phase 1

and Phase 2 districts (which received the treatment) to the BPL households in control group , Phase 3 district , which was yet to receive the program.

The following section explains this workfare program briefly and summarises the past works on MGNREGA. Section 3 introduces the data and estimation strategy . Section 4 reports the results and Section 5 concludes.

Section 2 :Background and Literature

Public- works program had always been popular public policy tools in India. From the fourth Century BC when the ancient Indian political economist, Kautilya, wrote his *Arthasastra,* there has been emphasis on public relief works, particularly at times of famine. The most important programme at the state level is the Maharashtra Employment Guarantee Scheme (EGS), introduced in 1972. The genesis of the scheme (NREGS) can be traced to the Maharashtra Employment Guarantee Scheme introduced during 1970s.

The National Rural Employment Guarantee Act (NREGA) ,now known as MGNREGA was launched in February 2006 , in the 200 most backward districts and was subsequently extended to another 130 districts in 2007-2008 . It is an entitlement scheme that guarantees 100 days of employment to all those rural households who demand work. This feature makes NREGS one of the most ambitious anti-poverty schemes in developing countries. The program aims to work as an additional source of income for underemployed workers in rural labor markets and as a safety net for the rural poor after bad economic shocks.

The important feature of MGNREGA that distinguishes it from previous work programs is that for the first time households are provided with a legal right to be employed up to 100 days a year per household and individuals are entitled to receive the wages if no work is made available to them within two weeks of an application . NREGS relies on both self targeting as well as community based targeting. Gram Panchayats are supposed to identify the suitable villages and local government institution are given a central role in planning and implementation. MGNREGA mandates that same wage needs to be paid to both men and women. Crèches are provided at the worksites. At least one third of the NREGS workforce in a village is required to be female. Thus NREGS is viewed to contribute towards female empowerment. NREGS emphasises on asset creation. There is a heavy focus on irrigation, minor roads, and land improvement to boost returns to labor at the local level.

However, according to World Bank (2011) , the objective of asset creation “runs a very distant second to the primary objective of employment generation .” This is very clear from the fact that The act bans machines and contractors from worksites and limits material, capital and skilled wage expenditure to 40% of total expenditure. Wages paid for unskilled work are borne entirely by the central government. States pay at most 25% of expenditure on materials, capital and skilled wages. These restrictions further strengthens the incentive to select projects that require mainly unskilled labor .

In the past years MGNREGA has attracted considerable amount of attention and it is reflected on the considerable amount of literature that has been published for MGNREGA .

Imbert and Papp (2013)[23] have used difference in difference strategy and analysed the impact of MGNREGA on labor market outcomes. They found that during dry season there was a significant increase in public works. They also found the there was a difference in employment outcomes between early and late districts and this difference has increased with time which they think is may be due to learning outcomes or awareness in early districts. With regard to private sector employment their finding is that rise in public employment is offset by fall in private sector employment rather than changes in time spent by outside the labour force or unemployed. Surprisingly, they also found that unemployment doesn't seem to fall in early district relative to late districts. This fact highlights to the point that apart from awareness, may be rationing is also governing the changes in employment due to MGNREGA.

Zimmerman (2013) [34] criticized the use of Difference in Difference because of the violation of parallel tends assumption. The rollout of MGNREGA was not random as the backward districts received the program earlier. She didn't find any statistically significant increase in public employment . She too found decrease in private sector employment. She also found increase in farm employment. She therefore attributed the decrease in private employment to increase in farm employment. She found that the employment had significantly increased during bad rainfall shock .This led her to conclude that MGNREGA was effective as a safety net.

One of the issue with Difference in Difference as raised by Zimmerman is the violation of parallel trends framework due to non- random roll out of the program. However Berg et al. (2015)[7] address this issue in their paper by using district specific time trend. Berg et al. also found the effect of seasonal variation in evaluating MGNREGA's impact on agricultural wages. Surprisingly, they found that the wages rose in July-December i.e. in the agricultural season as opposed to Imbert and Papp's finding on the effectiveness of MGNREGA in slack seasons. The two reasons provided by them is that labor become scarce during peak season and thus MGNREGA work at that time increase their wages due to competition. The second reason is that the dependent variable in Berg's paper was wages whereas it was earnings in Imbert and Papp's paper. Berg et al .(2015) also looked at the exposure effects of NREGA by introducing a variable which shows the month for which NREGA has been active in that district . They have looked at the three potential effects of public works on welfare : a direct effect on those who are employed , a labour market effect related to the shift in labour demand and a productivity effect related to the investment in public goods produced under the scheme .

In terms of migration impacts, the slowing down of short-term migration from rural to urban areas has been estimated (Imbert and Papp (2014), Bhatia & Ranjan (2009)[5], Jacob (2008) [18]).

Jha et al .(2008) [19] worked on the issue of targeting and program capture of MGNREGA by using pooled household level data for the Indian states of Rajasthan and India . They used the size of landholdings as a predictor of participation in MGNREGA . Program capture by non poor was evaluated on the basis of the relationship between landholdings and MGNREGA participation in that state . They found that the area of land owned is a negative predictor of MGNREGA participation in Rajasthan whereas the situation is reversed in Andhra Pradesh , indicating less efficient targeting .They concluded that program capture could be a factor. Dutta et al .(2012) [14] also studied about the issue of rationing in NREGS . They concluded that "self – targeting" mechanism of NREGS works well as the demand for work was higher in poorer states. However, the actual participation rates in these states were far from satisfactory. Participation rate was calculated as the demand of work net the rationing rate.

Mehrotra Santosh (2008) [25] highlighted in his article that if MGNREGA is implemented properly then the expenditure allocations might take a U-turn , first increasing and then falling . As MGNREGA is a demand driven programme so if labour's need for work falls , the fiscal requirements of the programme will also fall.

Liu and Deininger (2010) [11] studied the impact of MGNREGA participation on consumption expenditure , calorie consumption , protein intake , and asset accumulation by using a panel data for 2500 households, collected in 2004, 2006, and 2008, from five districts in Andhra Pradesh, a state in the Southern India .Liu and Deininger employed triple difference to rectify the problem of parallel trend assumption in double difference due to non-random roll out of MGNREGA . They assumed that the bias will remain constant across the years and hence by including 2005 (when the program was not in place) the bias could be negated. They found significant impact of MGNREGA participation on calorie consumption, protein intake, and consumption expenditure . They found an impact on consumption greater than direct cash transfer from MGNREGA , and conclude that short term effects of MGNREGA on participating households was greater than the program costs .

Ravi and Englar (2009) [15] studied the impact of program on food security, savings and health outcomes by using Propensity Score Matching , Double Differences and Triple difference. Data was collected from Medhak , a district in Andhra Pradesh .

They used a single cross section data containing 1066 households collected in June 2007 (when MGNREGA was already operational in the district) .To account for the fact that MGNREGA was already operational in the district when their baseline data was collected, they use new joiners, long-term participants, and other constructed groups to implement their double and triple difference strategy. Interestingly, they also found that NREGS significantly lowers emotional distribution and anxiety by 25%.

Jha et al .(2008) [20] examined the nutritional status with respect to two macronutrients as well as various micronutrients by collecting primary household data of rural households in three Indian states : Andhra Pradesh , Maharashtra and Rajasthan . They found significant impacts of the two policy interventions i.e. PDS and MGNREGA on nutritional deficiency.

The growing empirical literature on NREGS has focussed mainly on its effects on labour market outcomes, awareness, rationing, women empowerment and child Labour. However, there is not much work on impact of MGNREGA on household consumption. To the best of my knowledge, there has not been a countrywide study over the impact of MGNREGA on consumption at the household level, except by Emad Ahmad (2013) [16] . He has analysed the impact of MGNREGA on the consumption expenditure of rural agricultural labour household by employing double difference estimation. He has used NSS employment and Unemployment data . My study differs from him in that I have used NSS Consumption rounds. My identification strategy also differs as I have used triple difference estimation. Moreover, study of Emad Ahmad was based on only agricultural rural labourers. Evaluations on a targeted group is criticised on the grounds that the observed effects may not have external validity. However this critique does not apply to my study because I have tried to look at the general equilibrium effects by including all the rural households .This paper attempts to look at the impact of MGNREGA on household consumption expenditure Household level study will provide an in-depth analysis of the programmes impact which might get lost due to aggregation (i.e. District level or state level studies). The uniqueness of this study lies in the fact that it tries to assess the impact of MGNREGA on all the districts of India at the household level. The countrywide study of the program helps in external validity which may not be possible in comparing the outcomes of few states or districts.

Section 3 A Data

Main source of data used in the analysis is "NSS Consumption Expenditure" carried out by NSSO, stratified by urban and rural areas of each district. Surveying is further divided into sub-rounds each lasting three months. In order to make the results representative all statistics and estimates computed using the NSS data are adjusted using the sampling weights.

For pre- program period the data spanning January 2004 to December 2005 form the pre-program period i.e. NSS 61st round. For post program period NSS 64th has been used i.e. data spanning from July 2007 to June 2008 has been used.

The identification depends on the change in the expenditure of BPL households at the district levels. As the workfare program under MGNREGA was extended mainly to rural districts so urban districts have been dropped. My sample excludes Jammu and Kashmir, North Eastern States (but the sample includes Assam) and Union Territories. Jammu and Kashmir has been excluded because the survey data is missing for some quarters because of the conflict in some quarters. Union territories have been excluded as none of the districts surveyed by NSS received the treatment .North – Eastern districts have also been excluded because of low participation. It should also be noted that CPI-RL data is not available for many of the North-Eastern States and Union Territories. Low participation and lack of availability of CPI data led me to drop UT and North-Eastern States. The remaining 486 districts represents 85.37% of the rural population.

All statistics from NSS data has been adjusted by using sampling weights . As CPI-RL also used NSS rounds for the construction of its outcomes so its an added advantage as far as sample weights are concerned.

Data on CPI-RL has been collected from the site of Ministry of Labour Bureau. The base period of this CPI series is the agricultural year (July, 1986 to June, 1987).

The poverty estimates (BPL) are calculated using Tendulkar Committee's report.

Section 3 B Empirical Strategy

The empirical strategy involves comparing changes in households in districts that received the program to households in districts that didn't receive the program.

Starting from 200 districts on 2 February 2006, which were the phase 1 districts, it extended to 130 districts in April 2007 (phase 2 districts), and finally to the rest of rural India in 2008. In my sample of 486 districts, I compare the households in 258 districts which received the program earlier to households in 187 districts which received the program later. The remaining 41 districts didn't receive treatment even during the third phase.

The phased implementation bears the danger that the poorer districts i.e. Phase 1 and Phase 2 will experience slower progress compared to already wealthier districts. This will lead to underestimation of the impact of MGNREGA . To address the selection problem I have constructed BPL households in my data using Tendulkar estimates. As BPL households in both the treated and non-treated districts are the most likely to participate in the program. The BPL households in the non-treated districts serve as an appropriate counterfactual. It should be noted that district fixed effects will take into account the geographical inequalities between these identical BPL households. Thus the double difference estimates capture the general equilibrium effects whereas the triple difference estimates capture the effect of MNREGA on BPL households .

Section 3C Model

The main results come from estimating the below mentioned triple difference regression framework:

$$\mathbf{Y_{hdt} = \alpha + \beta_d + \beta_1\, Post_t + BPL_{ht} + \mu_1\,(\,Treated_d * BPL_{ht}) + \mu_2\ (Post_t * BPL_{ht}) + \mu_3\ (Treated_d * Post_t) + \mu\,(Treated_d * Post_t * BPL_{ht}) + \mu_5\, X_{ht}\ + \mu_7\, \alpha_{st}\ + \xi_{hdt}}$$

Where Y_{hdt} is the outcome of household h surveyed at district d at time t . β_d is the time invariant district fixed effects . $Post_t$ is the time fixed effects which takes a value 0 if the round is 61 and takes a value 1 if the round is 64 . $Treated_d$ takes a value 1 if the district is a Phase I or Phase II districts and 0 if it is a PhaseIII district . BPL_{ht} is a dummy variable

which takes a value 1 if the household falls below poverty line and 0 otherwise. X_{ht} is the household controls.

μ_1 is a time invariant estimate and captures the variation of BPL households in treated districts . μ_2 captures the variation of BPL households over time. It does not vary according to whether the districts received treatment or not.

μ_3 is the coefficient of double difference estimate. As the data is repeated cross section, and regression is done at the household level, whereas implementation of MGNREGA was at district level, there exists high chances that the households in these two districts might be different from each other . Due to repeated cross section I am unable to take household fixed effects.

One of the solutions to take care of the problem of the district trending differentially, as suggested by Berg et al ., is to use district specific time trends . But in my view as the implementation of MGNREGA was at district level so inclusion of district specific time trend will leave very less variation to be captured by the parameter of interest. Therefore I have taken state specific fixed effects (α_{st}).

As I have taken district fixed effects thus MGNREGA phase indicators has been dropped due to multicollinearity .

μ_4 is the triple difference estimate and measures the impact of MGNREGA on BPL households .

X_{ht} contains a bunch of household level controls . I include the land possessed as an indicator of wealth . Further average education of the household is also taken as a control for wealth . In rural areas land and education are good proxies for one's wealth . Then household size has been controlled for by including controls for household size . The average age of the household controls for not only the household size but also for how many of the family members are of working age . The square of average age is included as it is expected that the relationship is non-linear . I have also controlled for whether the household is male headed or not .Controls have been added for Social group and religion as these also are indicators of a household's backwardness.

All estimates are adjusted for correlation of ξ_{hdt} over time within districts by clustering at the district level.

The relevant level of analysis is at the household level and weighing is done as per the NSS weights.

Section 4 A Summary Statistics

Table 1A presents the descriptive statistics for the treated and non-treated districts at the baseline.

Table 1B presents the test for difference of means of the treated districts from the non – treated districts.

$H_0 : \beta_{\text{non-treated}} - \beta_{\text{treated}} = 0$ (i.e, there is no significant difference in the means of non-treated and treated districts)

$H_A : \beta_{\text{non-treated}} - \beta_{\text{treated}} \neq 0$ (i.e. there is significant difference between the means of non-treated and treated districts)

All the coefficients except for the proportion of males and females are positive and significant . As the difference is taken from the non-treated to treated districts so all the indicators of wealth , literacy etc. is positive . This highlights the non-random rollout of MNREGA .

Section 4 B Results

1a) Double Difference without any controls

The real MPCE has significantly increased from 61st to 64th round .It has increased by approximately 39 rupees over time. However, μ_3 which captures the impact of MGNREGA on the treated districts is negative and significant. The implementation of MGNREGA led to decrease in consumption by approximately 26 rupees. (Table 2A)

1b) Double Difference with controls

The real MPCE is still negative and significant. However, now μ_3 is approximately -16 as opposed to -26.32 earlier (without controls). (Table 2b)

The dummies representing the social groups are significant. The base category is general. All the coefficients are negative and it is expected as the consumption of SC, ST and OBC will be less as compared to general category.

The coefficients for education outcomes are also significant. These education variables represent the proportion of a particular education outcome say, literate in a household . As the proportion of educated people in a household increases their consumption increases. These results are not surprising because education and land holdings constitute good proxies for income of an individual in rural areas .

NSS data for household consumption expenditure doesn't have information on the income of the households . In rural areas , land holdings and education can be used as good proxies for income .

Explanatory variable "Treated" is not included in this regression because I have taken district fixed effects .

2) Triple Difference Estimation with BPL households

The consumption of SC and ST are less than general category and the coefficients at 1% level of significance (Table 3) . The coefficient of the square of the average household age is positive and significant at 5% level of significance. It shows that the decrease in MPCE consumption expenditure due to increase in average age of the household increase at an increasing rate. The result is not surprising. The average age of the household not only reflects the working age population in that household but also captures the household size. Thus, an increase in average age has two opposing effects. It increases consumption expenditure due to more working age members but it may also reflect more mouths to be fed if more number of children or senior citizens are the prime source of the high average age of a household and this may lead to decrease in consumption.

The household size is negative and significant at 1% level of significance. The controls for education indicates that an increase in educational degrees increase the consumption expenditure.

The consumption of BPL households is less than non BPL households by approximately 159 rupees. The coefficient is significant at 1 % level of significance .

The triple difference estimates (Table 3) shows that the implementation of MGNREGA in Phase 1 and Phase 2 districts led to increase in the consumption of BPL households by 28 rupees as compared to consumption of BPL households in the phase 3 districts. The estimates are significant at 5 %

The coefficient of $Post_t$ interacted with BPL shows that consumption of BPL households over the period. The coefficient is positive. However it is not significant . The coefficient of $Post_t$ also loses its significance in this triple difference estimation as much of its impact gets captured in ($Post_t$ * BPL) , ($Post_t$ *Treated),($Post_t$ *BPL*Treated) and also the state specific time trends

The coefficient of (BPL * Treated) captures the impact of BPL households in the districts where MGNREGA was implemented. The coefficient is positive but not significant. The coefficients of education variables and dummies representing social group and land possessed are still significant and didn't change sign.

The DID estimate which shows the impact of MGNREGA on treated districts is still significant at 10 % and is negative .It shows that the implementation of MGNREGA led to decrease in overall expenditure by approximately 28 rupees Previous works on MGNREGA have stated that large landowners faced problem of shortage of labour during peak seasons

[Berg et al (2015)] . MGNREGA had led to increase in wages of the agricultural labourers. This might explain as to why the impact of MGNREGA on overall consumption expenditure is negative and significant. The double difference estimate captures the general equilibrium effect and hence is negative .The second reason for the negative and significant double difference estimate can be because of the differential trends in treated and non-treated districts . However I believe that by taking state specific time fixed effects I have controlled for these trends. The double difference estimates are not significant in the placebo tests. Had the reason for the negative signs of double difference estimates be the differential trends then it would have been negative even in the placebo.

3) Triple Difference Estimation using Star States and Non- Star States

Star States are identified by field reports as having implemented the administrative requirements of the act particularly well [Dreeze and Khera (2009)]. Star States include Andhra Pradesh , Madhya Pradesh , Tamil Nadu , Rajasthan and Chattisgarh . The triple interaction term captures the impact of MGNREGA on household's real MPCE in star states (Table 4) . The coefficient though positive is not significant . The coefficient of ($Post_t$ * Star state) is also not significant . The coefficient of $Post_t$ is positive and significant at 1 % . As both the coefficients of the interaction terms i)($Post_t$ * Star state) and ii)($Post_t$ * Star state * Treated)is not significant so $Post_t$ does not loses its significance and a positive coefficient of $Post_t$ indicates that real MPCE has increased over the period .

The R^2 is 36 % which is lesser than that obtained in Table 3 . This indicates that categorizing on the basis of star states and non- star states explains less variation as compared to categorizing on the basis of whether the household belong to Below Poverty Line Household or not . As the analysis of study is at the household level , so the variations within treated and control groups are captured well by BPL and non- BPL households as these outcomes are constructed at the household level . The insignificance of triple difference estimates in Table 4 can also be ascribed to this .

4) Triple Difference Estimation to analyse household's expenditure on food items

The expenditure on food by the BPL households has increased by approximately 10 rupees and it is significant at around 5 % level of significance . However the double difference estimate ($Post_t$ * Treated) which represents the impact of MGNREGA on both BPL households and non-BPL households shows that the food expenditure has declined by approximately 10 rupees. This double difference estimate is also significant at 5% level of significance . R^2 is 49 %. (Table 5A)

The share of money spent on pulses as a proportion of total food expenditure has declined by 0.5% (Table 5B). It is significant at 1 % level of significance .Expenditure on cereals as a proportion of total food expenditure has fallen by 12% and it is significant at 10 % level of significance. However the double difference estimate shows an increase by 13% and it is significant at 5% level of significance. The share of expenditure on eggs have increased by 0.6% and it is significant at 1% level of significance . The share of expenditure on pan and

sugar has increased by 0.7% and 0.3% and is significant at 1 % and 5% level of significance respectively. (Table 5B)

The fall in expenditure of pulses and cereals which is a staple diet in India and increase in expenditure of eggs , pan and sugar products by BPL households due to implementation of MGNREGA is indicative of a shift towards expensive food items .

The findings are similar to the findings of the paper of Emad Ahmad. However , he found an increase in the expenditure on fruits and vegetables whereas I found that the vegetables has declined by 0.8% .

5) <u>Distressed Selling</u>

Public Work program not only aims in providing employment and improving the welfare of the poorest of the poor but also provides a safety net to the marginal poor. Wealth is held in unproductive liquid forms to protect against idiosyncratic income risk. Some households also view these programs as a trump card which can be used in adverse times. Thus by extending a safety net, these programs also stop distressed selling and with the insurance available in the form of Public Works the marginal poor can actually invest to build up an asset buffer.

The impact of MGNREGA on expenditure on gold is not significant(Table 6A column 4). Both the double and triple different estimates are not significant. This result is not surprising as for MGNREGA to have significant impact on asset creation, the period under consideration from its implementation needs to be a little longer.

The responses to risks have effects on human capital . Jacoby and Skoufias (1997) [17] found seasonal effects of income risk on schooling in semi-arid areas of India . Column 2 of Table 6A evaluates the impact of MGNREGA on educational expenditure. The triple difference estimates are not significant. Commenting on the effectiveness of MGNREGA by looking at the changes in education expenditure would lead to underestimation of its impact .Poor households generally send their children to government schools and hence don't need to pay fees . To see the true impact of MGNREGA on household's decision on schooling choice one needs to check if there is any significant impact on the enrolment rates.

Emad Ahmad (2013) found that MGNREGA led to a significant increase of 29.13% in durable goods and 6.2% in clothing and bedding. However my findings are somewhat contradictory. I didn't find any significant impact of MGNREGA on the expenditure in durable goods. For clothing and bedding the triple difference estimates are not significant albeit the double difference estimate is significant. The double difference estimate ($Post_t$ *Treated) shows a decrease in the expenditure by approximately 3 rupees and it is significant at 10% level of significance . The contradictory findings may be because of the difference in the datasets. Emad Ahmad has used NSS Employment and Unemployment round and I have used the consumption rounds. Secondly, his study was limited to the impact of MGNREGA on Agricultural labourers whereas my study looks at the general equilibirium effect of MGNREGA on the consumption expenditures of the rural households.

MGNREGA led to an increase in sundry expenses by 60 paise and cooking appliance by approximately 2 rupees. These are significant at 1% and 10 % level of significance respectively (Table 6B). These results might align to the hypothesis of consumption smoothing by Emad Ahmad.

6) Seasonal effects

Indian Agriculture is heavily dependent on monsoons and hence the incomes in rural households vary seasonally. There have been articles on agricultural economies which discusses the problem of "lean season".

Previous studies have reported about the impact of season in the efficacy of MGNREGA.

Imbert and Papp (2013) [23] found that MGNREGA had led to an increase in private sector wages and the effect was concentrated during the agricultural off – season .Zimmerman(2014)[34] found that MGNREGA take up by men increases by around 3 percentage points after an adverse rainfall shock . Johnson(2009a) [21] found similar results in his study for Andhra Pradesh.

Big landowners have also complained about wage hikes and labour shortages in peak seasons due to implementation of MGNREGA. Berg et al.(2015) found that the wages increased significantly during the agricultural main season . They argued that the effect of season on wages after the implementation of MGNREGA can be identified only when the labour becomes scarce. Imbert and Papp (2015) found that the earning effect of MGNREGA is concentrated on the first half of the year.

Rainy is a dummy variable which takes value 1 for rainy season and 0 for non-rainy season. It has been constructed by using the fact that NSS survey is divided into 4 sub rounds of three month's durations each .

Sub-round 1 : July- September
Sub-round 2 : October-December
Sub-round 3: January –March
Sub –round 4 : April- June
In each of these four sub-rounds equal number of sample villages/ blocks (FSUs) is allotted for survey with a view to ensuring uniform spread of sample FSUs over the entire survey period. Thus Sub-round 1 and 2 corresponds to dry seasons whereas sub-round 3 and sub-round 4 corresponds to rainy seasons.

The coefficient of Rainy is not significant. Table 7 shows that season don't have significant impact on consumption expenditure of the households. The findings is consistent with the past studies by authors Paxson (1992) [29] and Chaudhri and Paxson (2002)[10]. It reflects that the village households are smoothening consumption expenditures across seasons .It also confirms their findings that when compared to incomes , consumption expenditure are less pronounced to seasonal shocks .

The interaction of the triple difference estimate with rain dummy ($Post_t$ * Treated *BPL * Rainy) is also not significant. The result is not surprising because if MGNREGA helps in consumption smoothing then one must expect insignificant estimates for this interaction.

7)Placebo Test

The difference in difference framework relies on very strong assumption of parallel trends. It means that without the reforms the trend in the BPL households would have been same in both the treated and non-treated districts (after including the essential controls) . But it might not be true. It may be that the differential trend in 2007-2008 might not be due to MGNREGA but just to the fact that economic conjecture in treated districts and non – treated districts did not follow the same trend even after including the essential controls. Placebo test helps in validating the assumption of parallel tend which is the backbone of Difference in Difference estimation. Placebo test involves re-estimating the Difference – in Difference Model over the pre – treatment period, but with the assumption that the intervention took place at an earlier date. As the policy was not implemented in the time span of the placebo test so, the difference – in – difference estimator should be statistically insignificant. A significant DD estimate is an indicator of violation of parallel trends assumption. Having data for the rounds before the intervention took place allows me to test if the parallel trends assumption holds for 2004 and 2006. The placebo tests helps to analyse on the appropriateness of identification of difference in difference in difference estimate. Had there been no significant impact due to implementation of MGNREGA and the DDD estimate captured only the differential trend then one must see significant impact when MGNREGA was not in place.

I have compared the NSS59 with NSS 61 and found that both double and triple difference estimates are insignificant (Table8).

Section 5 : Conclusion and Further Discussion

The causal impact of MGNREGA on household expenditure has been studied by using the data from NSSO sample surveys for the years 2004-05 and 2007-08 by employing triple difference estimation.

The double difference estimate ($Post_t$ * Treated) is negative and significant at 10% level of significance. It shows that the implementation of MGNREGA led to a decrease in expenditure by approximately 28 rupees. Attributing this double difference estimate as the identification strategy for the MGNREGA is questionable on 2 grounds. Firstly, the inability to take household fixed effects and district time fixed effects might raise concerns that the double difference estimate is capturing the differential trends. Secondly, if the inclusion of state time fixed effects and district controls may account for much of the differential trends but even then the double difference estimate may not reflect the true impact of MGNREGA on the targeted group. In this case, the double difference estimate may capture the general equilibrium effects and fail to show the impact of MGNREGA on the poor households. As MGNREGA was targeted to poor households and after taking into account the district fixed effects the BPL households in the treated and non-treated districts are essentially the same, so in my view the triple difference estimate reflects the true effect of MGNREGA on the targeted group. The triple difference estimates shows that MGNREGA led to an increase in consumption expenditure by approximately 28 rupees.

The food consumption expenditure increased by approximately 10 rupees and it explains a significant proportion of the increase in overall expenditure. The findings of change in consumption patterns among poor households by Emad Ahmad (2013) align well with my results. The increase in expenditure of some non-food food items and insignificance of seasonality on MGNREGA's impact on consumption expenditures indicate consumption smoothing.

The placebo test confirms that the results are not driven by differential trends.

I refrain myself from making general comments on the effectiveness of MNREGA as the period under my study is not long enough to evaluate and monitor its performance. However the results of this paper highlight that MGNREGA brought significant gains in consumption to BPL households as not only their consumption expenditure has increased but even their consumption patterns have changed.

Self - Targetting or Rationing

Previous works on MGNREGA's effects on labour market outcomes have led authors to conclusively conclude that it has not brought significant change in employment. There is also a debate on whether the low person days in MGNREGA a result of rationing or self – targeting. In my view, by looking at the consumption outcomes the welfare impacts of policies could be better judged. As MGNREGA led to significant gains in consumption , without generating significant changes in employment , so this in a way means that low person days are actually a result of self –targeting rather than rationing . Further studies on

analysing the impact of public work programs on consumption behaviour of the household can help in resolving some of these debates.

Table 1A
Summary Statistics

	Treated	Non-treated
Age	27.968 (19.756)*	29.081 (19.862)*
Real MPCE	164.266 (108.571)*	201.680 (164.244)*
Proportion of BPL	0.873 (0.333)*	0.769 (0.421)*
Proportion of illiterate	2.409 (1.925)*	2.020 (1.842)*
Proportion of males	0.508 (0.499)*	0.513 (0.499)*
Proportion of females	0.492 (0.344)*	0.487 (0.499)*
Proportion of Muslims	0.109 (0.412)	0.091 (0.287)*
Proportion of Male Headed Households	0.891 (0.310)	0.889 (0.315)*
Social Groups		
Proportion of ST	0.138 (0.344)*	0.060 (0.237)*
Proportion of SC	0.217 (0.412)*	0.206 (0.405)*
Proportion of OBC	0.408 (0.491)*	0.469 (0.499)*
Proportion of General	0.237 (0.426)*	0.265 (0.441)*
Land Categories (in increasing order)		
Proportion of Land category 1	0.548 (0.498)*	0.576 (0.494)*
Proportion of Land category2	0.419 (0.493)*	0.381 (0.485)*
Proportion of Land category 3	0.055 (0.227)*	0.067 (0.249)*
Expenditure on food and durable good		
Food	93.011 (47.642)*	106.056 (57.774)*
Milk and Eggs	15.882 (17.809)*	24.111 (23.974)*
Vegetables and Fruits	13.881 (8.971)*	15.648 (11.085)*
Sugar , Salt and Spices	6.947	9.025

	(4.638)*	(5.440)*
Cereals and Cereal Substitutes	31.403	27.301
	(13.008)*	(11.859)*
Tobacco and Intoxicants	3.842	4.391
	(8.601)*	(9.825)*
Edible Oil	7.840	8.534
	(5.729)*	(5.937)*
Pulse and Pulse Products	5.408	5.831
	(4.340)*	(4.001)*
Durable goods	6.780	10.994
	(31.245)*	(75.320)*

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Standard Deviations are reported in the parenthesis . Land Category 1 refers to land possessed from less than 0.005 hectares to 0.4 hectares Land Category2 refers to land possessed from 0.41 hectares to 4 hectares . Land Category 3 refers to 4.01 hectares to 8 hectares. Treated districts are the phase 1 and phase 2 districts whereas the non-treated districts are the phase 3 districts. All expenditure data is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 1B
Difference in Means

Age	1.113 (0.218)*
Real MPCE	37.4142 (1.642)*
Proportion of BPL	-1.036 (0.004)*
Proportion of illiterate	-0.091 (0.003)*
Proportion of males	0.005 (0.005)
Proportion of females	-0.005 (0.005)
Proportion of muslims	-0.018 (0.003)*
Proportion of Male Headed households	0.888 (0.004)
Social Groups	
Proportion of ST	-0.078 (0.002)*
Proportion of SC	-0.011 (0.004)**
Proportion of OBC	0.061 (0.005)*
Proportion of General	0.027 (0.004)*
Land Categories (in increasing orders)	
Proportion of land category 1	0.028 (0.005)*
Proportion of land category2	0.037 (0.005)*
Proportion of land category 3	0.012 (0.002)*
Food and Durable good	
Food	13.045 (0.610)*
Milk and Eggs	8.228 (0.225)*

Vegetables and Fruits	1.767
	(0.109)*
Sugar , Salt and Spices	2.077
	(0.055)*
Cereals and Cereal Substitutes	-4.102
	(0.1408)*
Tobacco and intoxicants	0.548
	(0.095)*
Edible Oil	0.694
	(0.061)*
Pulse and Pulse Products	0.423
	(0.043)*
Durable goods	4.213
	(0.481)*

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note :The difference in means of the treated from the non-treated districts is tested i.e. $H_0 = \beta_{\text{non-treated}} - \beta_{\text{treated}} = 0$ and $H_A = \beta_{\text{non-treated}} - \beta_{\text{treated}} \neq 0$ Robust standard errors are reported in the parenthesis . Land Category 1 refers to land possessed from less than 0.005 hectares to 0.4 hectares Land Category2 refers to land possessed from 0.41 hectares to 4 hectares . Land Category 3 refers to 4.01 hectares to 8 hectares. Treated districts are the phase 1 and phase 2 districts whereas the non-treated districts are the phase 3 districts. The difference in means has been calculated for the baseline period . All expenditure data is deflated to CPI-RL data of the agricultural year July 1986- June 1987.

Table 2A

Regression table for Food Consumption Expenditure (Double Difference Estimation without controls)

Real MPCE	
$Post_t$	39.123
	(0.027)*
$Post_t$ * Treated	-26.352
	(0.029)**
R^2	0.16

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : District Fixed Effects are included . Robust standard errors are reported in the parenthesis . The regression incorporates robust standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates.

Table 2 B

Double Difference Estimation with controls

Real MPCE	
$Post_t$	48.150
	(11.472)*
$Post_t$ *Treated	-15.705
	(7.839)**
Social Group (Taking General as the base category)	
ST	37.660
	(5.538)*
SC	-37.672
	(4.121)*
OBC	-15.741
	(6.065)*
Other household categories	
Muslims	1.422
	(3.260)
Average Age of the household	-0.415
	(0.669)
(Average Age of the household)^2	0.015
	(0.007)**
Male headed household	1.381
	(5.757)
Household Size	-12.832
	(1.125)*
Education Categories	
Illiterate	-23.810
	(3.643)*
Literate without schooling	44.632
	(34.793)
Primary	22.572
	(5.509)*
Middle	35.877
	(5.359)*
Secondary	107.443
	(16.428)*
Senior Secondary	416.369
	(135.781)*
Diploma	458.609
	(109.586)*
Graduate	304.934
	(32.571)*
Post graduate	450.037

	(41.146)*
Land Categories (Taking Land Category 1 as the base)	
Land group 2	8.446
	(3.601)**
Land group 3	54.520
	(3.811)*
R^2	0.36
N	91,971

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Education categories represent the average level of education of a household . District Fixed Effects and State specific time trends are included are included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline period) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. BPL takes the value 1 for BPL households and 0 for non-BPL households

Table 3
Triple Difference Estimation

Real MPCE	
$Post_t$	-1.331
	(17.372)
$Post_t$ *Treated	-27.852
	(16.722)***
$Post_t$ *Treated*BPL	28.595
	(15.949)***
$Post_t$ *BPL	16.075
	(16.043)
Treated*BPL	7.595
	(7.660)
BPL	-159.246
	(7.484)*
Social Groups	
ST	-21.745
	(4.593)*
SC	-23.218
	(3.760)*
OBC	-7.915
	(5.786)
Other Household Characteristics	
Muslims	1.904
	(2.967)
Average Age of the household	-0.938
	(0.662)
(Average Age of the household)^2	0.017
	(0.007)**
Male headed household	1.370
	(5.589)
Household Size	-8.101
	(1.083)*
Illiterate	-10.588
	(3.169)*
Literate without schooling	44.870
	(33.935)
Primary	14.809
	(4.883)*
Middle	15.422
	(4.727)*
Secondary	55.267
	(15.346)*
Senior secondary	341.291

	(136.187)**
Diploma	369.232
	(110.061)*
Graduate	206.399
	(32.667)*
Post graduate	334.593
	(40.424)*
Land Categories (Taking Land Category 1 as base)	
Land Category2	1.700
	(3.651)
Land Category3	31.251
	(3.215)*
R^2	0.43
N	91, 971

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Education categories represent the average level of education of a household . District Fixed Effects and State specific time trends are included are included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. BPL takes the value 1 for BPL households and 0 for non-BPL households

Table 4
Star States

Real MPCE	
$Post_t$	48.823
	(12.331)*
$Post_t$ *Treated	-17.050
	(11.112)
$Post_t$ *Treated*Star State	4.085
	(11.973)
Star State	-121.425
	(18.003)*
$Post_t$ * Star State	-10.234
	(16.486)
Treated * Star State	32.104
	(5.586)*
R^2	0.36
N	91,971

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Star States are identified by field reports as having implemented the administrative requirements of the act particularly well(Dreeze and Khera 2009). Star States include Andhra Pradesh , Madhya Pradesh , Tamil Nadu , Rajasthan and Chattisgarh . District Fixed Effects included and State Specific time trends included . Education categories represent the average level of education of a household . District Fixed Effects and State specific time trends are included are included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. BPL takes the value 1 for BPL households and 0 for non-BPL households

Table 5A
Regression table for Food Expenditure

Real MPCE	
$Post_t$	-4.792
	(3.798)
$Post_t$ *Treated	-9.648
	(3.981)**
$Post_t$ *Treated*BPL	9.971
	(3.977)**
BPL	-62.871
	(2.035)*
$Post_t$ * BPL	7.940
	(3.474)**
Treated * BPL	-1.209
	(2.710)
R^2	0.49
N	71,942

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note :District Fixed Effects and State specific time trends are included are included . District and household level controls are also included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates. BPL takes the value 1 for BPL household and 0 for non-BPL household.

Table 5B

Regression table for Consumption Expenditure as a proportion of total expenditure on food

Real MPCE on food	(1)	(2)	(3)	(4)	(5)	(6)
$Post_t$	-0.006	0.002	0.005	-0.000	0.003	-0.022
	(0.006)	(0.003)	(0.004)	(0.003)	(0.004)	(0.002)*
$Post_t$ * Treated	0.013	0.001	-0.005	-0.005	0.005	-0.000
	(0.006)**	(0.002)	(0.003)	(0.004)	(0.003)	(0.001)
BPL	0.048	0.006	-0.009	0.002	0.015	0.005
	(0.003)*	(0.001)*	(0.002)*	(0.002)	(0.001)*	(0.001)*
$Post_t$ *BPL	-0.008	0.001	-0.003	-0.005	0.001	-0.002
	(0.004)**	(0.001)	(0.002)	(0.003)	(0.002)	(0.001)
Treated * BPL	0.025	-0.000	-0.012	-0.005	0.001	-0.006
	(0.005)*	(0.002)	(0.003)*	(0.004)	(0.002)	(0.001)*
$Post_t$*Treated*BPL	-0.012	-0.005	0.006	0.007	-0.008	0.003
	(0.007)***	(0.002)**	(0.003)***	(0.004)***	(0.003)**	(0.001)**
R^2	0.50	0.36	0.48	0.25	0.35	0.51

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note :Column 1 , 2 , 3 , 4 , 5 and 6 represents proportional expenditure on cerals ,pulses , eggs , pan , vegetables and sugar respectively .District Fixed Effects and State specific time trends are included are included . District and household level controls are also included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates.

Table 6 A

Regression table for Non Food Consumption Expenditure

Real MPCE	(1)	(2)	(3)	(4)	(5)
$Post_t$	55.645	20.846	24.808	-7.374	-9.464
	(2.731)*	(13.137)	(23.887)	(8.893)	(2.459)*
$Post_t$ *Treated	-3.732	-8.914	-22.855	0.107	-0.173
	(1.944)***	(12.739)	(13.869)	(7.000)	(2.942)
$Post_t$*Treated*BPL	-0.307	10.170	15.173	0.113	0.825
	(2.005)	(12.113)	(16.847)	(6.270)	(2.944)
BPL	-9.356	-7.018	-27.444	-13.185	-18.274
	(0.657)*	(4.984)	(9.638)*	(4.683)*	(1.840)*
T*BPL	-8.735	-14.047	-11.489	11.206	10.300
	(1.538)*	(12.502)	(9.701)	(4.084)*	(1.921)*
Treated*BPL	0.179	11.730	-6.006	1.052	0.613
	(0.852)	(5.356)**	(7.791)	(6.393)	(2.786)
R^2	0.59	0.33	0.20	0.09	0.06

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Column 1 , 2 , 3 , 4 and 5 represents expenditure on clothing and bedding , education , medical , gold and durable good respectively. District Fixed Effects and State specific time trends are included are included . District and household level controls are also included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline period) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates.

Table 6B

Impact of MGNREGA on non-food expenditure

Real MPCE	(1)	(2)	(3)
$Post_t$	-0.932	-3.165	0.175
	(0.330)*	(0.934)*	(0.417)
$Post_t$ * Treated	0.781	-2.633	-0.537
	(0.397)**	(1.554)***	(0.328)
BPL	-1.292	-1.796	-2.666
	(0.181)*	(0.450)*	(0.107)*
$Post_t$ *BPL	0.728	1.249	0.217
	(0.187)*	(0.623)**	(0.192)
Treated * BPL	0.198	-1.658	-0.272
	(0.207)	(0.994)***	(0.197)
$Post_t$ *Treated*BPL	-0.477	2.235	0.638
	(0.277)***	(1.257)***	(0.272)**
R^2	0.17	0.21	0.36
N	77225	77225	77225

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Column 1 represents expenditure on crockery , column 2 on cooking appliance and 3 represents sundry expenses .District Fixed Effects and State specific time trends are included are included . District and household level controls are also included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates.

Table 7

Regression table for Seasonal Impact of MNREGAon Consumption

Real MPCE	
$Post_t$	0.378
	(17.396)
$Post_t$ *treated	-27.932
	(16.743)***
$Post_t$ *Treated*BPL	26.279
	(17.040)
$Post_t$ *Treated*BPL*Rainy	4.957
	(5.977)
Treated*Rainy	-7.088
	(7.427)
BPL* Rainy	-8.705
	(10.514)
$Post_t$ *Rainy	-2.930
	(5.946)
BPL	-154.950
	(11.004)*
$Post_t$ *BPL	15.924
	(16.328)
Treated*BPL	7.628
	(7.679)
Rainy	11.298
	(13.201)
R^2	0.43
N	91,971

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note :Rainy is a dummy variable which takes the value 1 for the agriculture main season and 0 for lean season . It has been constructed using the information of subrounds in NSS data . District Fixed Effects and State specific time trends are included are included . District and household level controls are also included .Robust standard errors are reported in the parenthesis . Standard errors clustered at the district level . The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. $Post_t$ takes the value 0 if the round is 61(baseline perid) and 1 if the round is 64(after NREGA got implemented). Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar estimates.

Table 8
Placebo Test

Real MPCE	
$Post_t$	-59.302
	(22.410)*
$Post_t$ * Treated	9.580
	(13.578)
BPL	-194.575
	(8.867)*
$Post_t$ * BPL	19.858
	(11.434)***
BPL * Treated	12.809
	(12.036)
$Post_t$ * Treated * BPL	-4.166
	(13.377)
R^2	0.49
N	87,951

*** $p<0.1$; ** $p<0.05$; * $p<0.01$

Note : Data from NSS 59th and 61st has been used for the placebo test. Household controls , District Fixed Effects and State specific time trends are included .The regression incorporates robust standard errors clustered at the district level .Robust standard errors are stored in parenthesis The MPCE is deflated to CPI-RL data of the agricultural year July 1986- June 1987. District and household level controls are also included . $Post_t$ takes the value 0 if the round is 59 and 1 if the round is 61. Treated takes a value 1 if the district is in Phase 1 and phase 2 and 0 for the phase 3 districts. BPL constitutes of households that falls below the poverty line. It has been constructed using MPCE values with the help of Tendulkar report

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