

Growth and Deprivation in India: What Does Recent Evidence Suggest?*

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Abstract

We investigate the relationship between growth and deprivation in India, an issue of immense interest. Given the continuing controversy over poverty lines, we use a framework that rigorously addresses this issue over a range of poverty lines. Using National Sample Surveys on consumption expenditure, we show that while growth has ‘trickled down’, it has not been in favor of the poor. Extending this framework, we show that growth has not been in favor of the poor among disadvantaged caste groups and lower classes. Our findings raise concerns about the ‘inclusiveness’ of Indian growth. We discuss plausible explanations for our findings and the policy implications.

Keywords: Pro-poor growth; Poverty; Inclusion; India; South Asia

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1. INTRODUCTION

This paper deals with economic growth and deprivation¹ in India. India has been one of the fastest growing economies in the world during the past three decades² and has therefore attracted worldwide attention: among scholars (e.g. Balakrishnan (2010, 2011) and references therein), policy makers, and intelligent lay people (e.g. Economist 2012). Given perceptions that the extent and depth of Indian poverty are severe and that its contribution to world poverty is significant, one question that has interested many observers is whether or not growth is benefiting the poor. There is also concern regarding the impact of growth on disadvantaged groups (e.g. lower castes and classes).³ We examine these questions by drawing upon a methodology that is appropriate for the Indian context, and by using data on consumption expenditure.⁴

The dominant approach towards the above issues has involved examining changes in absolute money-metric poverty for the whole population, and for various groups.⁵ An increase in the rate of poverty reduction over time and faster rates of reduction for disadvantaged groups (over time or relative to other groups) have been interpreted as signs of progress. This approach suffers from certain limitations. First, considerable controversy exists over official poverty lines and there is widespread perception that they are artificially low, implying that both the extent of poverty and rates of poverty reduction have been estimated incorrectly. Recent discussions have centred on the recommendations of the 2009 expert (Tendulkar) committee, which suggested new poverty lines. Several scholars (e.g. Suryanarayana 2011; Subramanian (2012), which also presents an historical overview) have persuasively argued that these lines are not based upon any coherent methodology. Responding to these critiques, the Indian government has appointed another committee to come up with new poverty lines. Hence, poverty and rates of poverty reduction based upon

official poverty lines lack credibility, particularly since rates of poverty reduction are sensitive to poverty lines.⁶

Second, the Indian policy stance has converged on ‘inclusion’ or ‘inclusive growth,’ which have been defined vaguely/broadly. Most economists have interpreted inclusive growth as growth that raises all incomes and is therefore poverty reducing (Balakrishnan 2012). The draft approach paper to the latest (12th) national five-year plan (Planning Commission 2011) states:

‘Inclusive growth should result in lower incidence of poverty, broad-based and significant improvement in health outcomes, universal access for children to school, increased access to higher education and improved standards of education, including skill development. It should also be reflected in better opportunities for both wage employment and livelihood, and in improvement in provision of basic amenities like water, electricity, roads, sanitation and housing. Particular attention needs to be paid to the needs of the SC/ST and OBC population’.

It is unclear how seriously one should take such broad statements referring to desirable outcomes on many fronts, without specific targets/commitments. But, for even modest progress, the incomes of the poor should not only grow, but grow reasonably fast and reach some absolute level that will allow them to meet basic needs. It is worth noting that public provision of many basic services (e.g. health, education) is inadequate and of poor quality (Dreze and Sen 2002, Motiram and Osberg 2012) and therefore even the poor are forced to access these services privately (and at considerable cost). This also implies that in order to assess inclusion, one should use more expansive approaches/criteria than those involving mere reductions in absolute poverty, based upon unacceptably low poverty lines.⁷

Given the above, we draw upon literature on pro-poor growth to rigorously assess how recent growth has affected the poor. We use the methodology of Duclos (2009) and

Araar et al. (2009) since it has some advantages: it is based upon a systematic axiomatization; it synthesizes different ideas/approaches in the literature; and it allows for statistical assessment using various standards and poverty lines. The last feature is particularly relevant for India given the controversies over official poverty lines and the absence of an official poverty line at present. Also, consensus on a particular poverty line may be difficult to obtain, so one should explore how robust one's conclusions are to different poverty lines. Briefly, pro-poorness involves evaluating growth of the poor against a desirable standard. We can use *Relative* standards if we are interested in growth in relative terms, e.g. are the poor growing at 2 percent? *Absolute* standards deal with absolute changes, e.g. have the incomes of the poor increased by Rs. 50? With either of these standards, there are two approaches. The *First Order* approach requires *all* the poor to grow at least at the standard imposed, whereas the *Second Order* approach allows for some poor to fall short of the standard *provided that* those poorer are growing at higher than the standard. The first (second) order approach is equivalent to checking for first (second) order stochastic dominance of the distribution of the poor in the first period by the normalized (using the standard, details below) distribution of the poor in the second period. Note that first order stochastic dominance implies second order stochastic dominance, i.e. the first order approach is stronger than the second order approach.

Duclos (2009) and Araar et al. (2009) ignore sub-groups of the population, an important issue, so we extend their analysis. We describe this in detail below, but essentially a growth process is (first order) pro-poor for a group if all the poor quantiles of the group grow at least at the standard imposed. Although we are using the language of pro-poor growth, our analysis captures the idea and spirit of 'inclusion' and 'inclusive growth'.

Before continuing further, it is worth summarizing our analysis and findings. We examine the period 2004-5 to 2011-12 using National Sample Survey data on consumption expenditure and the growth rate of the median and mean as standards. For relative standards,

with both the mean and the median, we find no evidence for pro-poor growth in rural or urban areas. There is no evidence for pro-poor growth for any disadvantaged caste group or for the lower classes (laborers, marginal farmers and small farmers in rural areas, and casual laborers and self-employed in urban areas). With absolute standards, we find evidence for anti-poor growth (discussed below), both in rural and urban areas. Essentially, Indian growth in recent times has been biased in favor of the middle and richer groups, and not towards the poor. We have focused on the period 2004-5 to 2011-12 because our interest is in recent changes and the survey from 1999 is not comparable.⁸ Moreover, by focusing on this period, we can incorporate Other Backward Classes (a disadvantaged caste group) which were not enumerated earlier. Nevertheless, we have used the data from the 1993-4 survey to examine separately the periods 1993-4 to 2004-5 and 2004-5 to 2011-12. We do not find evidence for pro-poor growth in the former period too. We perform several robustness checks.⁹

Our results are consistent with and therefore complement those from a few other studies (discussed below) that have used other methodologies, e.g. Suryanarayana (2008) and Jayaraj and Subramanian (2012a). Our findings imply that the picture emerging from some studies (e.g. Dubey and Thorat 2011) which have argued that recent growth has been ‘more inclusive’, by showing that the rates of poverty reduction during the period 2004-5 to 2009-10 are higher compared to those during 1993-4 to 2004-5 have to be viewed cautiously. The issue of relative vs. absolute standards is analogous to the issue of relative vs. absolute inequality measures. Our results imply that given no solid theoretical basis for preferring one approach vis-à-vis another, we may benefit from examining both, and also trying to find a compromise between these two. The empirical literature on inequality, particularly on India has been dominated by the relative approach.¹⁰

The rest of the paper is organized into four sections. The next section describes the relevant literature and the methodology that we are using, the third section describes the data,

the fourth section presents the analysis and results and the final section concludes with a discussion (robustness, explanations and policy implications).

2. RELEVANT LITERATURE ON PRO-POOR GROWTH

In the interests of space, we do not review all the studies in the literature on pro-poor growth, but instead focus on the ideas that are relevant for us. Klasen (2008) and Duclos (2009) present excellent surveys, which we will draw upon.¹¹

There is agreement in the literature that pro-poor growth is growth that benefits the poor. However, beyond this, there is considerable disagreement and debate. Broadly speaking, two different approaches exist: relative and absolute. In the former, a growth process is pro-poor if the poor grow at least at some standard (usually the average growth rate). In the latter, growth is pro-poor if the absolute incomes of the poor increase by at least some standard. A distinction can be made between ‘strong absolute growth,’ where high standards are imposed (usually the absolute change of the average) and ‘weak absolute growth,’ where zero standards are imposed, i.e. any growth, or trickle-down.

Duclos (2009) presents an axiomatic formulation of the above ideas and Araar et al. (2009) provide statistical tests. We present only the essential details. Let real monthly per-capita consumption expenditure distributions in 2004-5 (*prior* period) and 2011-12 (*posterior* period) be denoted by c_{2004-5} and $c_{2011-12}$, respectively. c_{2004-5} and $c_{2011-12}$ are vectors of *individual* consumptions.¹² Let z denote the poverty line in terms of monthly per-capita consumption expenditure. All expenditures are denominated in 2011-12 prices. We first describe the relative approach. The illfare (negative/lack of welfare) in 2004-5, P_{2004-5} is a function of the distribution of consumption expenditure in 2004-5 and the poverty line. Let g denote the standard i.e., we would like the incomes of the poor to grow by at least g . The illfare in 2011-12, $P_{2011-12}$ is a function of the distribution of consumption expenditure in 2011-12, the standard, and the poverty line. An evaluation function can be defined as:

$$(1) \quad W(c_{2004-5}, c_{2011-12}, (1+g), z) = P_{2011-12}(c_{2011-12}, (1+g), z) - P_{2004-5}(c_{2004-5}, z)$$

Growth is pro-poor if W is non-positive. Let F_{2004-5} , $F_{2011-12}$ and $F'_{2011-12}$ denote the cumulative distribution functions for expenditures in 2004-5, 2011-12 and the normalized expenditures in 2011-12 ($c_{2011-12}/(1+g)$), respectively. If W satisfies the Axioms of *Focus*, *Population Invariance*, *Symmetry*, *Monotonicity*, *Normalization* and *Proportionality*¹³ then Duclos (2009) shows that W is non-positive (i.e. first-order pro-poor growth) if,

$$(2) \quad F_{2004-5}(x) - F'_{2011-12}(x) \geq 0 \forall x \in [0, z]$$

The above implies that for the poor, the normalized distribution in 2011-12 first-order stochastically dominates the distribution in 2004-5. An equivalent condition is:

$$(3) \quad Q'_{2011-12}(p) - Q_{2004-5}(p) \geq 0 \forall p \in [0, p_z]$$

Q and Q' denote the 'quantile functions' for the 2004-5 and normalized 2011-12 distributions, respectively. p_z denotes the quantile corresponding to the poverty line in 2004-5. (3) implies that all the poor quantiles have to grow at least at the rate of g . Araar et al. (2009) provide statistical tests for pro-poor growth by constructing confidence intervals for the difference of quantiles. If the lower bound of the confidence interval lies below the null horizontal line for *any* poor quantile, then there is no evidence for pro-poor growth. Otherwise, there is evidence for pro-poor growth. If the upper bound of the confidence interval lies below the horizontal null line for *all* the poor quantiles, then there is evidence for 'anti-poor' growth; essentially all the poor are growing at rates less than the standard, which of course implies that there is no evidence for pro-poor growth.

For second-order pro-poor growth, we impose the additional axiom of *Distribution Sensitivity*, to account for inequality among the poor.¹⁴ Duclos (2009) shows that there is pro-poor growth if:

$$(4) \quad D_{2011-12}((1+g)x) - D_{2004-5}(x) \leq 0 \forall x \in [0, z]$$

$D_{2011-12}$ and D_{2004-5} denote the “poverty deficit” functions for 2011-12 and 2004-5, respectively.

$$(5) \quad D_{2004-5}(x) = \sum_{i=1}^n \{(z - c_{2004-5}^i) * I(c_{2004-5}^i \leq z)\} / zn$$

n is the population in 2004-5 and I is the indicator function (similarly for 2011-12). The poverty deficit function is nothing but the Poverty Gap Ratio (PGR) and (4) boils down to the PGR in 2011-12 being lower than the same in 2004-5 for all poverty lines until and including z and where the poverty line in 2011-12 is $(1+g)z$. Duclos (2009) shows that a sufficient condition for second-order pro-poor growth is that for none of the poor quantiles, the Generalized Lorenz Curve for the normalized distribution in 2011-12 is below the distribution in 2004-5. As in the first-order approach, we can construct confidence intervals and test for pro-poor growth.

The absolute approach is similar to the relative approach except that the standard (a) that we impose is in terms of absolute changes. Given this, the technical details are similar. The only difference is that the normalization involves subtracting ‘ a ’ from the distribution in 2011-12. The axiom of *Proportionality* is replaced by *Translation Invariance* - the evaluation function is unaffected if the same amount is subtracted from all the incomes in the posterior distribution.

Duclos (2009) and Araar et al. (2009) ignore sub-groups of the population, but we can extend their analysis to consider pro-poor growth for specific groups. We present an informal discussion for the first order approach; the case of second order approach is similar. Let the population comprise of $G (>1)$ mutually exclusive sub-groups. Let the poverty line and the standard (g) be the same for each sub-group and the population. A sub-group can be

considered as experiencing pro-poor growth if all the poor quantiles are growing at least at the rate g . From equation (2), we can observe that when we have first-order pro-poor growth for the population, for every poverty line x ($\in [0, z]$) the Head Count Ratio (HCR) for the normalized distribution in 2011-12 is not higher than the same for 2004-5. HCR is sub-group decomposable, so the HCR in both 2011-12 and 2004-5 can be represented as a weighted average of the HCRs for each sub-group, the weights being the population shares of the sub-groups. Given the above, if we find pro-poor growth for the population, then at least one sub-group should display pro-poor growth; if we do not find pro-poor growth for the population, we cannot have all the groups displaying pro-poor growth, but one or more sub-groups could display pro-poor growth. Once we note this, we can apply the same procedure as above for each sub-group. We are interested here in caste and occupational groups/classes. The motivation here (in the spirit of inclusion) is that we would like the poor among the disadvantaged caste groups and lower classes to experience adequate growth (which is possible whether the poor, in general, are experiencing adequate growth, or not).

3. DESCRIPTION OF DATA

We use data from the Indian National Sample Surveys (NSS) on consumption expenditure conducted by the National Sample Survey Organization (NSSO). These surveys are well known, large, nationally representative¹⁵ and are used by many researchers working on India, and Indian policy makers. The quinquennial surveys, which are repeated every five years, and conducted in various 'rounds', provide reliable estimates of consumption expenditure. In a departure from usual practice, the NSSO conducted a survey in 2011-12 (68th round), two years after the previous survey in 2009-10 (66th round) because 2009-10 was a bad agricultural year. This has resulted in controversy, with some accusing the statistical agencies of conducting the survey because the 2009-10 figures on poverty and unemployment would look bad for the government (Hindu 2013 a, b). To focus upon recent

changes, i.e. in the 2000s, we use data from the surveys for the years 2004-5 (61st round) and 2011-12 (68th round), although we analyze data from other years and discuss trends. In particular, given the controversy referred to above, it is worth highlighting that our results hold even if we focus upon quinquennial surveys only (2004-5 and 2009-10). The methodology (sample design, schedule etc.) can be obtained from NSS reports.¹⁶ We use Uniform Reference Period (URP) data although our results hold with Mixed Reference Period (MRP) data too (more below). We do not use the 55th round (1999-2000) since it is not comparable to other rounds. It is unnecessary to go into details here, but briefly put, this is due to differences in survey methodology (Sen and Himanshu 2004 a, b). We express all consumption expenditures in 2011-12 prices. We deflate (or rather inflate) 2004-5 nominal consumption expenditures by using the state level indices that are implicit in the official poverty lines for 2011-12 and 2004-5 for various states. Literature (e.g. Deaton and Tarozzi 2000) has argued that there are some problems in using the other popular indices, viz. Consumer Price Index for Agricultural Laborers (CPIAL) and Consumer Price Index for Industrial Workers (CPIIW).¹⁷

It is worth highlighting two limitations of the data. First, these provide cross-sections across time and not panel data, so we cannot track individuals or households over time. Second, as pointed out by several authors (e.g. Jayadev et al. 2007) the rich and wealthy are likely to be undersampled; to the extent that they are present in the sample, their consumption expenditures are likely to be undervalued or underreported. Given that we find the poor to be growing at rates that are less than the same for middle and richer groups, our conclusions are likely to be stronger in the absence of these biases. We have also performed several robustness checks (see section 4).

4. ANALYSIS AND RESULTS

4.1. Basic Patterns

Before we proceed with the analysis, we will discuss some basic patterns. Figure 1 presents the Cumulative Distribution Functions (CDF) of monthly per-capita consumption expenditure for rural and urban areas for various caste groups for 2011-12. Four groups are enumerated in the data: Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBCs) and Others. SCs, STs and OBCs have been historically discriminated against. From figure 1(a) for rural areas, we can observe the order of dominance as: Others, OBCs, SCs, and STs. Using the simple (but popular) measure of Head Count Ratio (HCR), the absolute and relative deprivation among Scheduled Castes and Tribes (SC and STs) is higher than the same for the Other Backward Classes (OBCs) for all plausible absolute and relative poverty lines, e.g. for till the 60th percentile. Others fare the best.

Insert figures 1 (a) and 1 (b) here

The NSS divides rural households into five types: Self-employed in agriculture (Farmers), Self-employed in Non-agriculture, Agricultural Laborers, Other Laborers and Others.¹⁸ Farmers possess different amounts of land, and it is inappropriate to equate ‘large’ and ‘small’ farmers. We therefore use household type and land possessed to divide households into seven classes: Large farmers, Medium farmers, Small farmers, Marginal farmers, Self-employed in non-agriculture, Agricultural and other laborers, and Others. The first four classes are Self-employed in agriculture, possessing land: greater than 10 hectares, between 2 and 10 hectares, between 1 and 2 hectares, between 0 and 1 hectare, respectively.¹⁹ Agricultural laborers are those who own no land or who are enumerated as such. Figure 2 (a) presents the CDFs for these classes for 2011-12. We can observe (as expected) that for all plausible absolute and relative poverty lines (e.g. until 60th percentile), absolute and relative

deprivation among the ‘lower classes’ (agricultural and other laborers, marginal farmers) is higher than the same for the other classes.

Insert figures 2 (a) and 2 (b) here

Moving to urban areas (figure 1 (b)), the caste patterns of deprivation are similar to those in rural areas, except that STs are better off than SCs. However, STs are sparsely represented in urban areas (about 3.5 percent). For occupational categories, we use the NSS classification of households itself: Self-employed, Regular wage, Casual labor and Others. From figure 2 (b), we can see a clear pattern: the absolute and relative deprivation is highest among Casual labor, followed by Self-employed, and then by Regular wage earners.

In the interests of space, we have not presented the 2004-5 patterns, but these are roughly similar. The ranking of deprivation among caste and class/occupational groups has remained stable during 2004-5 and 2011-12. We will now investigate the nature of growth between 2004-5 and 2011-12.

4.2 Analysis of Pro-poor growth

4.2.1. Relative approach

We start with the relative first-order approach. Figure 3 presents the results using rate of growth of the average (median) for rural ($g=21.90\%$) and urban ($g=26.48\%$) areas. These are simple relative growth rates over 7 years (2004-5 to 2011-12). We present the lower bound of the 95% confidence interval and for clarity, restrict ourselves till 60th percentile. For rural areas (figure 3(a)), the curve is initially below the null horizontal line, and crosses it around the 20th percentile. The lower bound of the confidence interval lies below the null horizontal line, implying no evidence for pro-poor growth for any reasonable absolute or relative poverty line. Figure 3 (b) reveals a similar picture for urban areas, although the curve crosses the horizontal line around 15th percentile.

Insert figures 3 (a) and 3 (b) here

Given lack of pro-poor growth at the median standard, we considered the growth rate of the mean and obtained a similar result for both rural and urban areas. To investigate further, we examine ‘growth incidence curves,’ which we present in figures 4 (a) (rural) and 4 (b) (urban). These curves depict the ‘point estimates’ of growth rates of monthly per-capita consumption expenditure during the period 2004-5 to 2011-12 for various quantiles of the population (also see table 1). In rural areas, all the quantiles of the population have shown growth, implying that for all reasonable absolute and relative poverty lines, we have evidence for trickle-down, i.e. *some growth* for the poorer groups. However, the richer groups have grown faster (in general) than the poorer groups and also faster than the median. In urban areas too, we find trickle-down. The richest groups (e.g. 90th and 95th percentiles) have grown much faster than the others.

Insert figures 4 (a), 4 (b) and table 1 here

We now focus on socioeconomic groups. For STs, we present the pro-poor curves with the median standard in rural and urban areas in figures 5 (a) and 5(b), respectively. We use the growth rate of the overall median as the standard since this is more appropriate than the growth rate of the median of STs themselves. We find no evidence for pro-poor growth in rural or urban areas. In figures 6 and 7, we present the pro-poor curves for SCs and OBCs, respectively for the median standard. We can observe no evidence for pro-poor growth.

Insert figures 5 (a), 5 (b), 6 (a), 6 (b), 7 (a) and 7 (b) here

Turning to classes, we first look at rural areas. Figures 8 (a) and 8 (b) present the relative pro-poor curves for labourers and marginal farmers, respectively. We again use the median (for the entire population) standard. There is no evidence for pro-poor growth for either of these classes. For marginal farmers, we have presented the upper bound of the confidence interval. Almost the entire upper bound is below the horizontal line; but for a few exceptions (around 24th and 36th percentiles), we could have termed this anti-poor growth.

We find no evidence for pro-poor growth for small farmers and non-agricultural self-employed (figures available upon request). Moving to urban areas, figures 9 (a) and 9 (b) present the relative pro-poor curves for self-employed and casual workers, respectively. There is no evidence for pro-poor growth. For the self-employed case, we have presented the upper bound because both the curve, and hence the lower bound lie below the horizontal line.

Insert figures 8 (a), 8 (b), 9 (a) and 9 (b) here

The first-order approach requires that *all* the quantiles of the poor grow at the standard that is imposed. This may appear too strong, so we considered the second-order approach, and present the results in figures 11 and 12 (Appendix 1). Figure 11 (figure 12) shows that that there is no evidence for pro-poor growth in rural (urban) areas, for the entire population, or for the various disadvantaged groups.

4.2.2. Absolute approach

We have observed above that there is trickle-down or weak absolute pro-poor growth ($a=0$). However, this is insufficient and we should investigate whether evidence for strong absolute pro-poor growth exists. Figures 10 (a) and 10 (b) present the absolute pro-poor curves with the median standard for rural and urban areas, respectively. There is evidence for anti-poor growth in both rural and urban areas. The absolute growth incidence curves are actually increasing: absolute increases in expenditure (between 2004-5 and 2011-12) for richer groups are higher than the same for poorer groups. For none of the socioeconomic groups, do we find evidence for absolute pro-poor growth at the median or mean standard (figures available upon request).

Insert figures 10 (a) and 10 (b) here

We have also conducted the analysis above for the period 2004-5 to 2009-10 and found that all the above results hold: no evidence for pro-poor growth in rural or urban areas, either for the entire population, or for any of the disadvantaged socioeconomic groups.²⁰ The

growth rates for the period 2004-5 to 2009-10, for both rural and urban areas, and for all percentiles are lower than the same for the period 2004-5 to 2011-12. This is unsurprising since 2009-10 was an adverse agricultural year. What is interesting though is that during 2004-5 to 2009-10, there was a strong growth bias against the poor in urban areas e.g. the growth rates for the 5th percentile, median and 90th percentile were 6.59%, 9.87% and 11.67%, respectively. Such a trend is absent for the period 2004-5 to 2011-12 (table 1). However, the super-rich (90th and 95th percentiles) grew at substantially faster rates during the period 2004-5 to 2011-12 compared to the other groups; this is not the case during the period 2004-5 to 2009-10.

We have also conducted the analysis for individual states using the standard of the national median. We find that for most of the states, there is no evidence for pro-poor growth. It is beyond the scope of the paper to go into all the regional variations and explain them. However, it is important to learn from good and bad experiences. For example, in rural areas, Andhra Pradesh and Orissa have demonstrated pro-poor growth. In urban areas, Andhra Pradesh and Maharashtra have experienced pro-poor growth. It is interesting to investigate what policies and measures have led to this, and whether there are lessons for other states. One should also raise the issue of sustainability, e.g. previous governments in Andhra Pradesh have been accused of adopting populist policies which have burdened the exchequer, apart from leading to other problems (Vakulabharanam and Motiram 2014). Coming to bad experiences, in rural Rajasthan, the poorest decile has experienced very low growth (compared to the median); in urban Assam, there is evidence for anti-poor growth. What led to these adverse outcomes? It is worth investigating.

5. DISCUSSION AND CONCLUSIONS

In the analysis above, we have examined the issue of pro-poor growth in India during 2004-5 to 2011-12 using data from the NSS consumption expenditure surveys. We have

considered the entire population in rural and urban areas and also SCs, STs, OBCs and occupations that are at the lower rungs of the rural (e.g. laborers, marginal farmers) and urban (casual laborers and self-employed) economies. Our broad conclusion is that there is no evidence for pro-poor growth, although growth has trickled down. Table 2 summarizes our findings. We have also examined various states separately and found that for most of the states, there is no evidence for pro-poor growth, either in rural or urban areas. Future research can focus on explaining the within-country variation and the lessons that can be drawn from both the good and bad experiences.

Insert table 2 here.

Our focus has been on recent changes. But, we have also used data from the surveys in 1993-4 and 2004-5 to investigate whether growth has been pro-poor during this period.²¹ We find no evidence for pro-poor growth during this period too for either rural or urban areas using the first order approach. We have performed other robustness checks. Instead of URP, we used Mixed Reference Period (MRP) data and found that our results hold.²² Putting everything together, we believe that our conclusions are strongly suggestive that Indian growth is making marginal (although some) difference to the poor, and disproportionately benefiting the middle and richer income groups. Our findings raise serious questions and concerns about the 'inclusiveness' of Indian growth.

Further evidence can be obtained by examining changes in inequality. Between 2004-5 and 2011-12, the inequality in nominal consumption expenditure has increased slightly in rural areas (0.305 to 0.311), increased in urban areas (0.376 to 0.390) and increased at the all-India level (0.363 to 0.375). Looking at real consumption expenditures reveals similar trends. More importantly, as pointed out in the literature, pro-poor growth is associated with a decrease in inequality between the poor and the non-poor (Klasen 2008). Evidence suggests

that this may not be occurring in India. The ratio of the richest decile (90th percentile) to the poorest decile (10th percentile) has increased between 2004-5 and 2011-12 in both rural (3.281 to 3.430) and urban (4.775 to 4.972) areas. The ratio of the median to the poorest decile has increased in both rural (1.683 to 1.729) and urban (2.010 to 2.042) areas.²³ Actually, both interpersonal inequality and inequality along several axes (e.g. class, state) have increased since the 1990s (Motiram and Vakulabharanam (2012), Vakulabharanam (2012) on class).²⁴

We can also ask whether any other country has exhibited pro-poor growth roughly during the period that we have investigated, using the methodology that we have deployed. If very few countries have exhibited pro-poor growth, then one could argue that we have imposed standards that are too stringent. However, we do find several countries, e.g. Peru, Ecuador, Venezuela (Araar, 2012), Ethiopia, Malawi, and Central African Republic (Bibi et.al., 2012). More appropriately, Ravallion and Chen (2003) show that in the period 1993-6, in China, which was experiencing growth rates comparable to those of India, poorer quantiles were growing faster than the average.²⁵

Since there is no consensus in the literature on pro-poor growth as to the right approach to this issue, we want to be cautious and add that our findings may be sensitive to the methodology that we have used. However, we do believe that this methodology is appropriate for India. Moreover, our results are consistent with those from other studies that have used different approaches towards assessing inclusion. Suryanarayana (2008) constructs a measure of inclusion based upon the share of the population which is below 60% of the median (essentially a relative poverty line) and uses older NSS consumption expenditure data (till 2004-5). This poverty line is actually low and the methodology (unlike ours) does not involve examining all poor quantiles. Nevertheless, he finds that Indian growth has not been inclusive. Jayaraj and Subramanian (2012a) conceptualize inclusion in terms of the literature

on the ‘Talmudic estate problem’, which deals with various ways in which an estate can be divided among competing heirs. The analogy is the different ways in which the increase in the Indian pie can be apportioned among various quantiles and groups (castes, occupations). They consider different fairness criteria and use NSS consumption expenditure data to argue that the actual/observed distribution in India falls short of even the minimally acceptable criterion. Their methodology is in the spirit of the absolute approach, which is stronger; we have shown that even with the relative approach, there is no evidence for inclusion.

What explains our findings? We can draw upon the literature (e.g. Kotwal et al. 2011 and the references therein) to answer this question. In the rural areas, agriculture has been going through a crisis (Vakulabharanam and Motiram (2011) and Mishra and Reddy (2011) present details) and the farm and non-farm sectors are not performing well enough to raise the incomes of the poor adequately. Farmers have also been witnessing an increase in the prices of their inputs. In the urban sector, labor intensive manufacturing has not grown adequately enough to absorb either the rural poor or the poor in the urban informal sector. Thomas (2014) has estimated that in the period that we are considering (2004-5 to 2011-12) half of the non-agricultural jobs that were created were in the construction sector, largely in rural areas, and mostly unremunerative (‘poor quality’). In contrast, job-growth in the manufacturing sector was small (5.1 out of 48 million) and actually slower than the same during 1993-4 to 2004-5. There is considerable debate on the reasons for this, but one interesting and persuasive argument is that the skewed growth process is itself responsible.²⁶

Given our findings, what are the policies that are required to ensure pro-poor growth and ‘inclusion’? A comparison with Brazil is instructive here. Kakwani et al. (2010) use a rigorous methodology to show that despite negative growth of per-capita real income during 2001-4, poverty fell and growth was pro-poor due to a fall in inequality. A crucial role was played by government social policies (e.g. social security, government transfers) under a

social democratic government, which protected the poor from adverse shocks. In contrast (as noted above), inequality has grown in India; the Indian state has prioritized growth, and has not displayed a serious commitment to implementing pro-poor policies (Kohli 2012). This suggests that non-distorting redistribution and better targeting of the poorer groups is important in India. A large-scale employment guarantee scheme (Mahatma Gandhi National Rural Employment Guarantee Scheme) was initiated in rural India in early 2000s. Proper implementation of this scheme can go a long way towards protecting the rural poor. No such scheme exists in urban areas - protection has to be provided to the urban poor too. While protection of the poor is crucial, it is also important to focus on policies that enhance growth, and create better opportunities for the poor. Recent analysis has suggested the importance of public investment for sustained growth, and how it can provide an impetus to private investment, rather than replacing it ('crowding out') (Nagaraj 2013). Public investment should go into infrastructure and the social sector (e.g. skills, education and health). By international standards, investment, particularly public investment in India on the social sector is quite low. For example, public expenditure on health is only 1.2 % of GDP, which is much lower compared to several developing (Brazil: 4.2%, Mexico: 2.9%, China: 2.7%) and developed countries (US: 8.5%, UK: 8.0%, Norway: 8.1%) (Government of India 2013). We also believe that simply relying on growth to deliver on 'inclusion' may be counterproductive.

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¹ ‘Deprivation’ refers to poverty in general (absolute or relative). We use absolute and relative poverty wherever appropriate.

² Gross Domestic Product grew at the rate of 3.6%, 5.6% and 6.8% during 1951-80, 1981-91 and 1992-2010, respectively. The corresponding figures for Gross National Product per-capita are 1.4%, 3.0% and 5.0%, respectively (Nagaraj 2011).

³ On the importance of addressing horizontal/group-based disparities, see Stewart (2002).

⁴ Reliable data on income is unavailable for India, so researchers use consumption expenditure.

⁵ A large number of studies have used this approach, e.g. Himanshu (2007), Dubey and Thorat (2011) and Planning Commission (2012). A number of studies have also analyzed poverty using official poverty lines, e.g. Deaton and Dreze (2002).

⁶ To illustrate, the Tendulkar committee’s rural poverty lines for 2004-5 and 2009-10 are Rs. 446.68 and Rs. 672.88, respectively. These yield a poverty reduction rate of 1.602 percentage points per annum. Increasing the poverty lines for 2009-10 by Rs. 10 and Rs. 20 and suitably adjusting the 2004-5 poverty lines would yield rates of 1.574 and 1.816, respectively. Also see Kotwal et al. (2011).

⁷ Balakrishnan (2012) makes a similar argument that inclusive growth should go beyond mere poverty reduction. Also see the other studies that we cite below.

⁸ In section 5 we describe problems involved in comparing poverty over long periods.

⁹ One could argue (particularly given the policy statement on inclusive growth that refers to multiple facets) that we should be focusing on multidimensional deprivation, but we have not done so because the debate on India has almost exclusively focused on moneymetric/unidimensional poverty. Moreover, the literature on pro-poor growth has also largely restricted itself to unidimensional poverty.

¹⁰ Kolm (1976 a, b) present a discussion. A few studies on India have used absolute and intermediate measures, e.g. Jayadev et al. (2007) and Jayaraj and Subramanian (2012b).

¹¹ Also see Ravallion and Chen (2003) and Son (2004).

¹² The analysis is the same for incomes. We discuss consumption because this is what we use.

¹³ These are standard in the literature on poverty measurement. *Focus* implies that only the incomes of the poor matter. *Population Invariance* implies that cloning the entire income distribution does not matter. *Symmetry* or *Anonymity* implies that only incomes (and not those earning them) matter. *Monotonicity* implies that for a given g if the income of some individual in the posterior distribution increases, then the evaluation function cannot increase. *Normalization* implies that if the prior and posterior distributions are the same, then for a given poverty line, $g=0$ would result in a zero evaluation function. *Proportionality* (or *Scale Invariance*) implies that the evaluation functions are the same if for a given prior distribution and a given poverty line, the normalized posterior distributions are the same. This is equivalent to saying that for a given prior distribution and a poverty line if the posterior distribution is scaled up or down by a certain factor (e.g. if all incomes are doubled or halved), then the evaluation function is unaffected.

¹⁴ Ceteris-paribus, the evaluation function cannot be higher for a progressive transfer (from a richer to poorer person) in the posterior distribution.

¹⁵ 79,726 (45,346) households and 403,207 (206,529) individuals were surveyed in rural (urban) areas spread across all the states and union territories of India in the 2004-5 survey (NSSO 2007, p.3).

¹⁶ Downloadable from the NSSO website:

http://mospi.gov.in/nssso_4aug2008/web/nssso/reports.htm

¹⁷ In a previous version of this paper, we have shown that using CPIAL and CPIIW does not change the main results. For a description of the indices being used in the poverty lines, and how they are different from CPIAL and CPIIW, see Government of India (2009).

¹⁸ Broadly, a household is ‘Self-Employed in agriculture’ if self-employment in agriculture is more important as a source of income compared to other sources. Similarly for other types. In the 68th round, a new type (regular wage/salary) was added, which we included in the category ‘Others’. Moreover, agricultural and other laborers were referred to as ‘casual labor in agriculture’ and ‘casual labor in non-agriculture’, respectively.

¹⁹ These thresholds are not sacrosanct. We can use different thresholds, e.g. as used in the NSS land and livestock surveys, and our results do not change.

²⁰ The analysis, presented in a working paper, is available upon request.

²¹ In comparisons over such a long period, the bundle of commodities that is considered to be ‘reasonable’ (Poverty Line Bundle (PLB)) could itself change over time. Conceptually, as Amartya Sen has argued, poverty can be relative in the space of commodities, even if it is absolute in the space of functionings. This would make the process of simply adjusting poverty lines for inflation and the use of stochastic dominance techniques problematic. Essentially, even if one distribution first order stochastically dominates another, if the PLBs are different for the two distributions, poverty in the first case could still be higher than poverty in the second case. In India one could think of commodities that are considered to be ‘essential’ in the 2000s which were sparsely available (and hence not essential) in the 1990s, e.g. mobile phones. On this issue, see the statement of the minister of state for planning, Aswani Kumar: ‘We don’t send a letter through 20 paise post card these days rather we call from our mobile phones to communicate. Everybody wears Reebok shoe and people ride scooter instead of cycles’ (Hindu, 2012). Note that given this issue, since we do not find

evidence for pro-poor growth, our results would hold even if we have different PLBs for various years.

²² MRP data is based upon different recall periods as compared to URP data and yields slightly different trends. For details, see the NSS reports cited above.

²³ All these computations are based upon nominal values.

²⁴ An issue that has been hotly debated²⁴ is the divergence between the NSS estimates and those from the National Accounts Statistics (NAS). While this issue is unresolved, the NAS estimates show higher growth compared to the NSS estimates. Given that the bias in the growth rate of the rich from the NSS is likely to be higher compared to the same for the poor, our results will only be strengthened if the divergence between the NSS and NAS is resolved.

²⁵ Topalova (2008) has shown that in India, the poorer groups were growing at higher than average rates during 1983 to 1993-4, whereas this trend reversed during 1993-4 to 2004-5.

²⁶ ‘... if the growth in incomes is skewed in favor of high skilled and therefore high-income groups, it will be the kind of goods and services catered to by the rich that will be found lucrative by investors. Few of them will be unskilled labor intensive. As a result, the trickle down to the unskilled (and hence the poor) will be weak’. (Kotwal et al. 2011, p. 1195).

TABLES AND FIGURES

Table 1 – Real Growth of Rural and Urban Quantiles between 2004-5 and 2011-12*

Percentile	Rural			Urban		
	Rural 2004-5 Overall (Rs.)	Rural 2011-12 Overall (Rs.)	Growth of the quantile	Urban 2004-5 Overall (Rs.)	Urban 2011-12 Overall (Rs.)	Growth of the quantile
5	432.53	525.80	21.56%	586.92	726.50	23.78%
10	497.70	598.80	20.31%	691.62	861.00	24.49%
15	549.05	665.30	21.17%	774.68	983.50	26.96%
20	591.58	721.63	21.98%	854.60	1089.00	27.43%
25	632.44	772.25	22.11%	935.56	1191.50	27.36%
30	675.18	826.00	22.34%	1015.25	1296.00	27.65%
35	714.80	877.17	22.72%	1093.67	1397.89	27.82%
40	757.16	923.25	21.94%	1184.75	1510.25	27.47%
45	802.36	976.00	21.64%	1285.65	1633.33	27.04%
50	849.49	1035.50	21.90%	1389.92	1758.00	26.48%
55	898.71	1099.63	22.36%	1505.73	1905.40	26.54%
60	952.26	1167.20	22.57%	1626.67	2070.00	27.25%
65	1013.08	1248.50	23.24%	1783.85	2236.00	25.35%
70	1083.05	1335.86	23.34%	1936.06	2459.33	27.03%
75	1170.16	1447.60	23.71%	2145.05	2717.25	26.68%
80	1281.28	1582.70	23.52%	2415.98	3068.00	26.99%
85	1431.20	1771.75	23.79%	2762.24	3510.50	27.09%
90	1668.92	2053.67	23.05%	3313.48	4280.60	29.19%
95	2174.28	2626.25	20.79%	4446.99	6014.40	35.25%

Source: Authors' calculations from the respective NSS consumption expenditure rounds. Real growth rates have been arrived at using the price indices implicit in official poverty lines.

**: Data for 2004-5 and 2011-12 are expressed in constant 2011-12 prices.*

Table 2 – Evidence on Pro-Poor Growth in India between 2004-5 and 2011-12 – Summary of Results

	Relative Approach		Absolute Approach	
	Median Standard		Weak Absolute	Strong Absolute*
	First Order	Second Order	First Order	First Order
All-India				
Rural	No Statistical Evidence	No Statistical Evidence	Evidence for Pro-poor growth	Evidence for Anti-poor growth
Urban	No Statistical Evidence**	No Statistical Evidence	Evidence for Pro-poor growth	Evidence for Anti-poor growth
Caste Groups				
Rural STs	No Statistical Evidence	No Statistical Evidence		
Urban STs	No Statistical Evidence	No Statistical Evidence		
Rural SCs	No Statistical Evidence	No Statistical Evidence		
Urban SCs	No Statistical Evidence	No Statistical Evidence		
Rural OBCs	No Statistical Evidence	No Statistical Evidence		
Urban OBCs	No Statistical Evidence	No Statistical Evidence		
Class Groups - Rural				
Marginal Farmers	Evidence for Anti-Poor Growth			
Agricultural and other Casual Laborers	No Statistical Evidence	No Statistical Evidence		
Class Groups - Urban				
Self-employed	No Statistical Evidence***	No Statistical Evidence		
Casual Labour	No Statistical Evidence	No Statistical Evidence		

Note: *: Median Standard; **: Evidence for Anti-Poor Growth with Mean Standard with Mixed Reference Period Data; ***: Evidence for Anti-Poor Growth with Mean Standard.

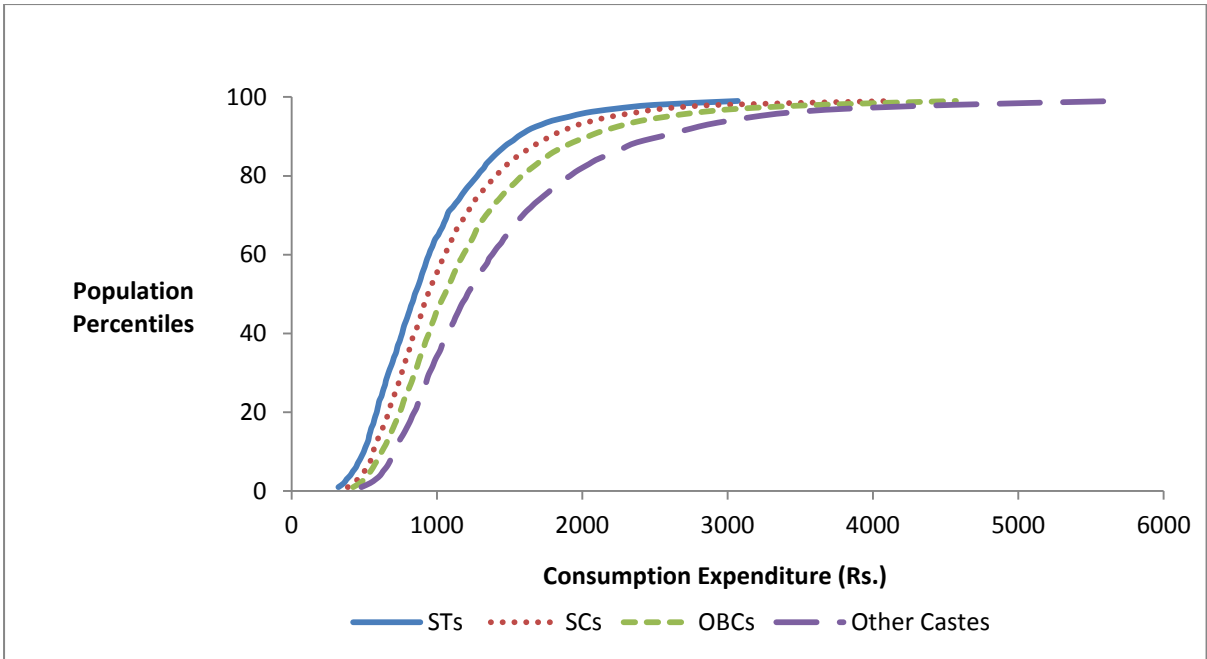


Figure 1.A: Caste-wise Comparison – 2011-12 (RURAL)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various castes in the Rural areas for the year 2011-12.

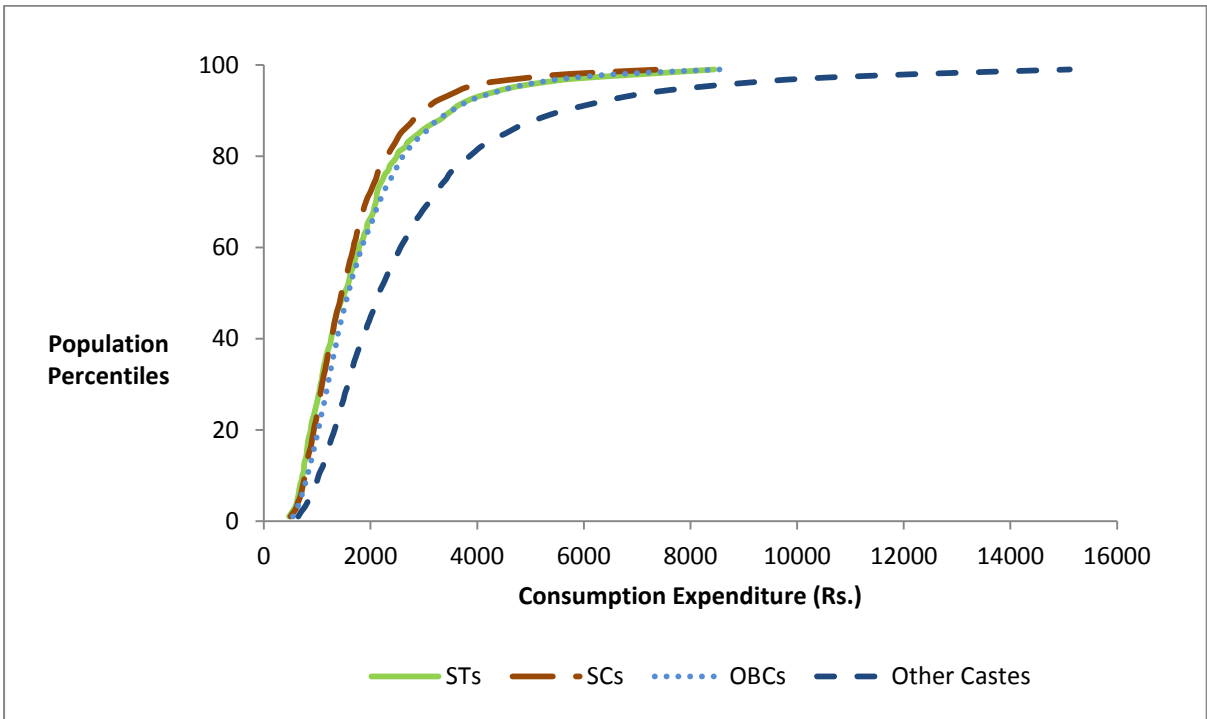


Figure 1.B: Caste-wise Comparison - 2011-12 (URBAN)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various castes in the Urban areas for the year 2011-12.

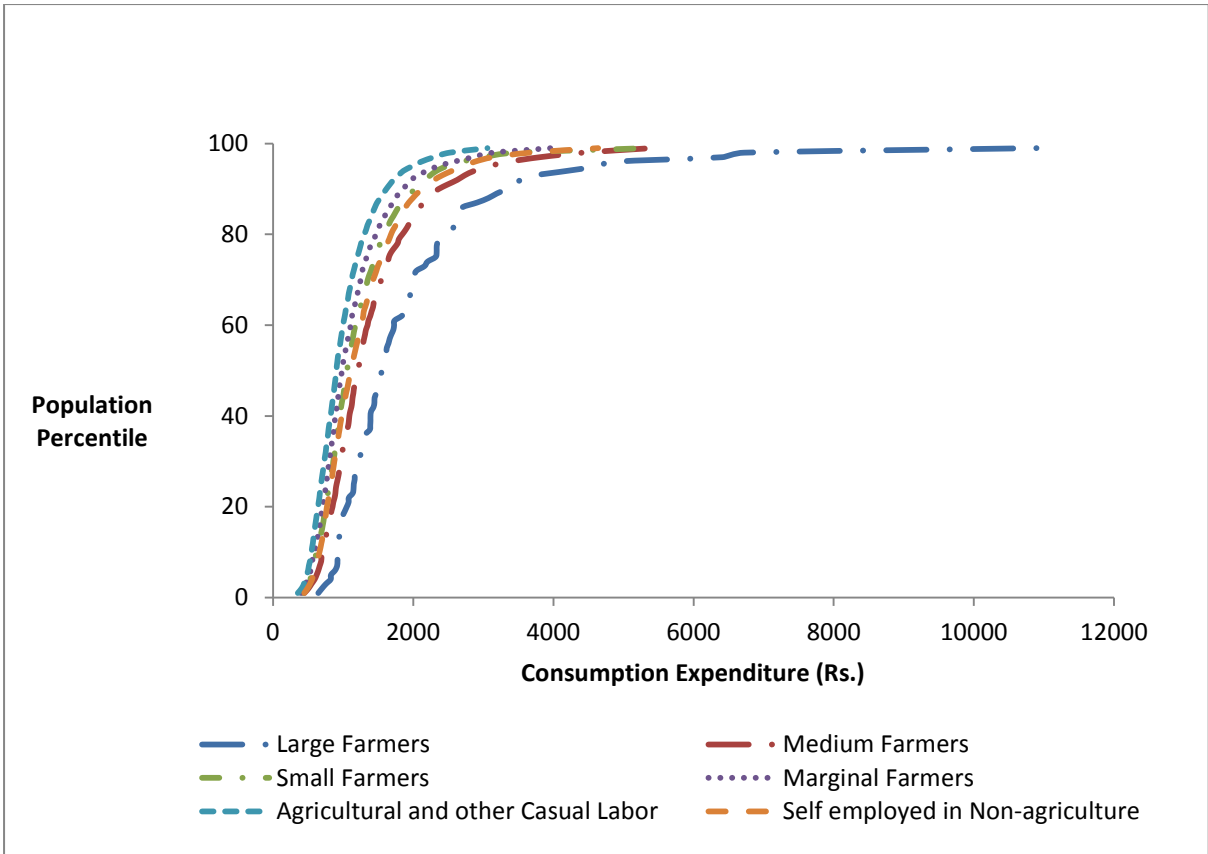


Figure 2.A: Class-wise Comparison - 2011-12 (RURAL)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various occupational classes in the Rural areas for the year 2011-12.

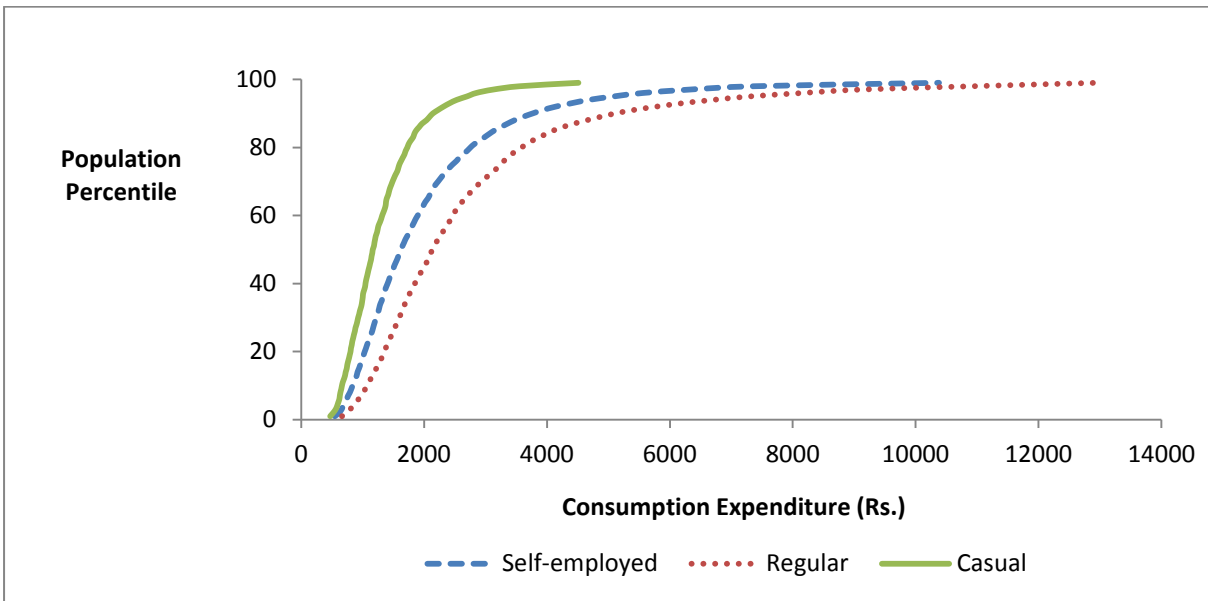


Figure 2.B: Class-wise Comparison – 2011-12 (URBAN)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various occupational classes in the Urban areas for the year 2011-12.

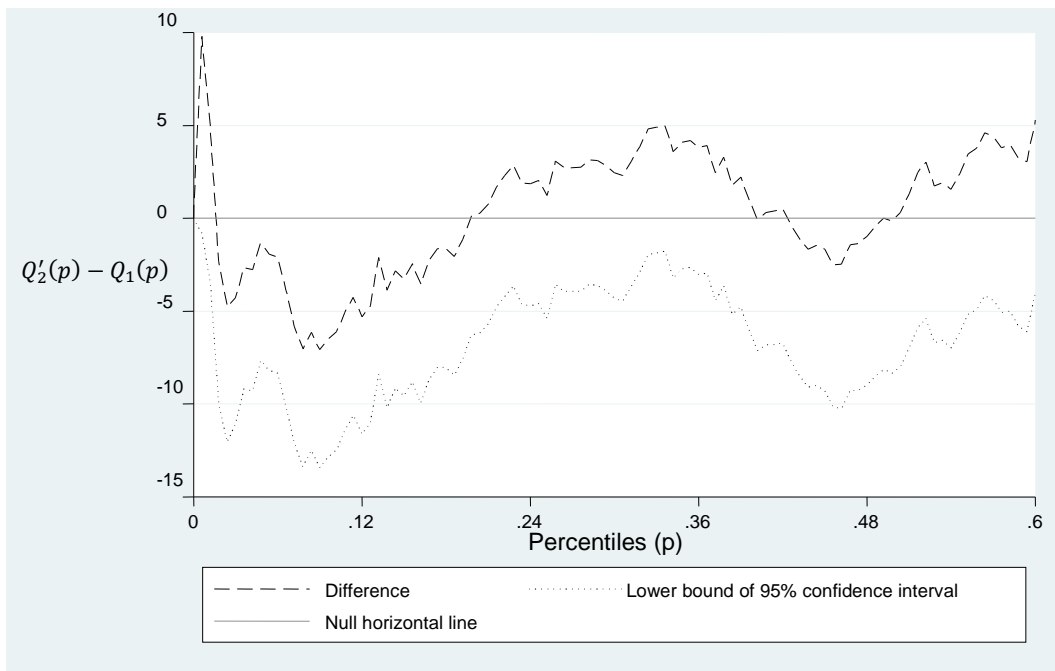


Figure 3.A: Rural - Overall - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Rural areas for 2011-12 normalised with relative standard of growth rate of the median; $Q_1(p)$ is the quantile function for the overall distribution in Rural areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

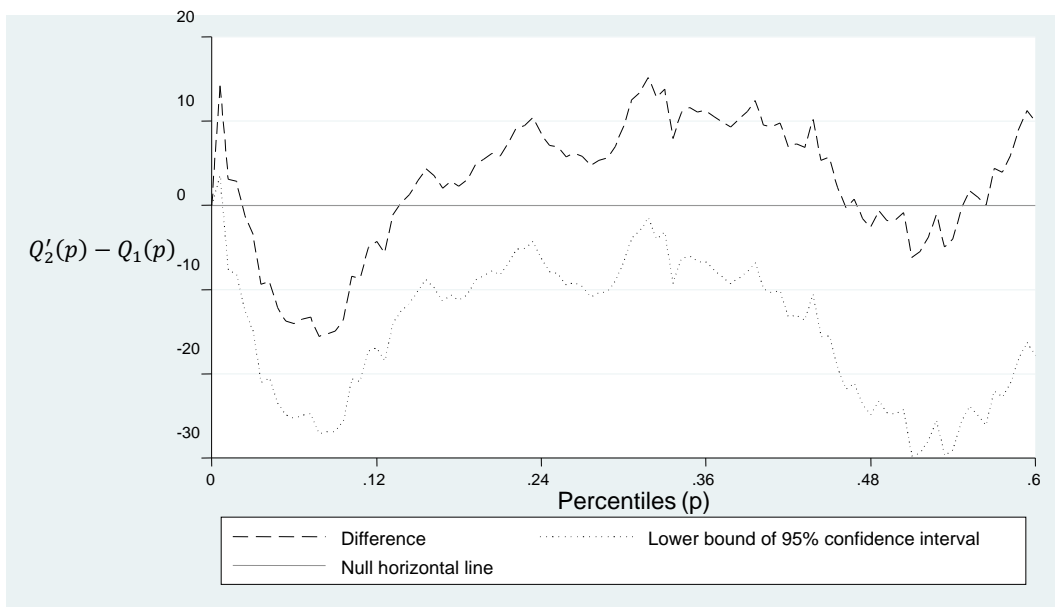


Figure 3.B: Urban - Overall - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Urban areas for 2011-12 normalised with relative standard of growth rate of the median; $Q_1(p)$ is the quantile function for the overall distribution in Urban areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

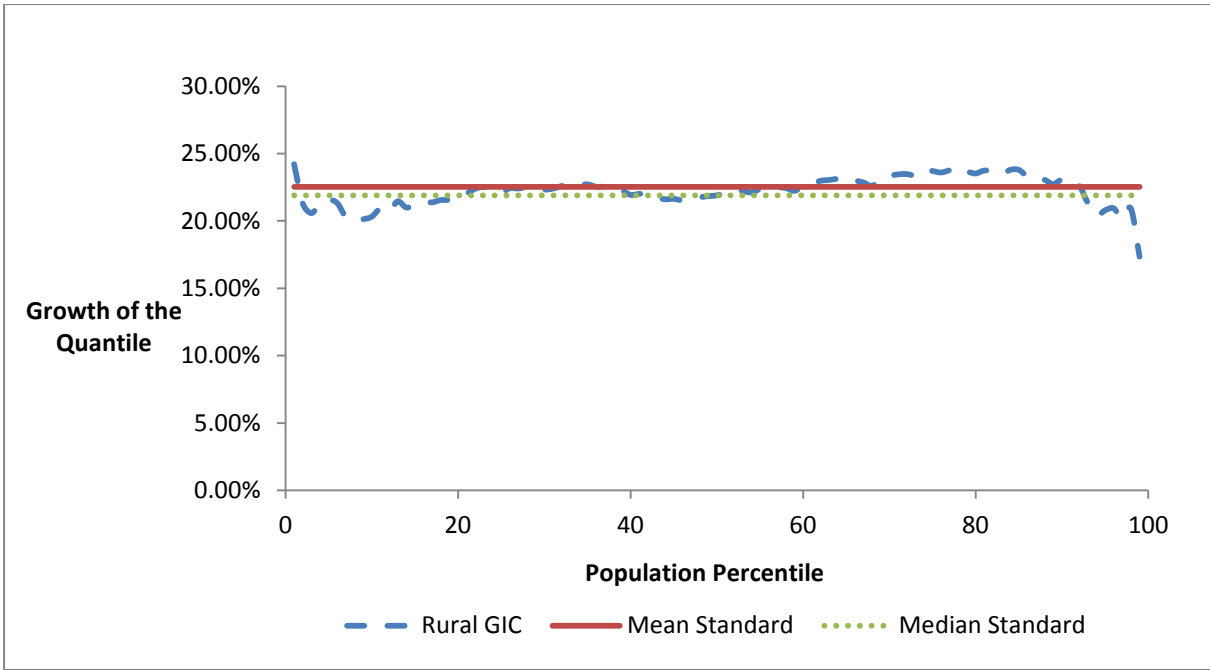


Figure 4.A: Growth Incidence Curve – Rural

Note: The above graph denotes the growth in the consumption expenditure for a quantile in 2011-12 over its consumption expenditure in 2004-5 in Rural areas i.e.: $\{Q_{2011-12}(p) - Q_{2004-5}(p)\}/Q_{2004-5}(p)$

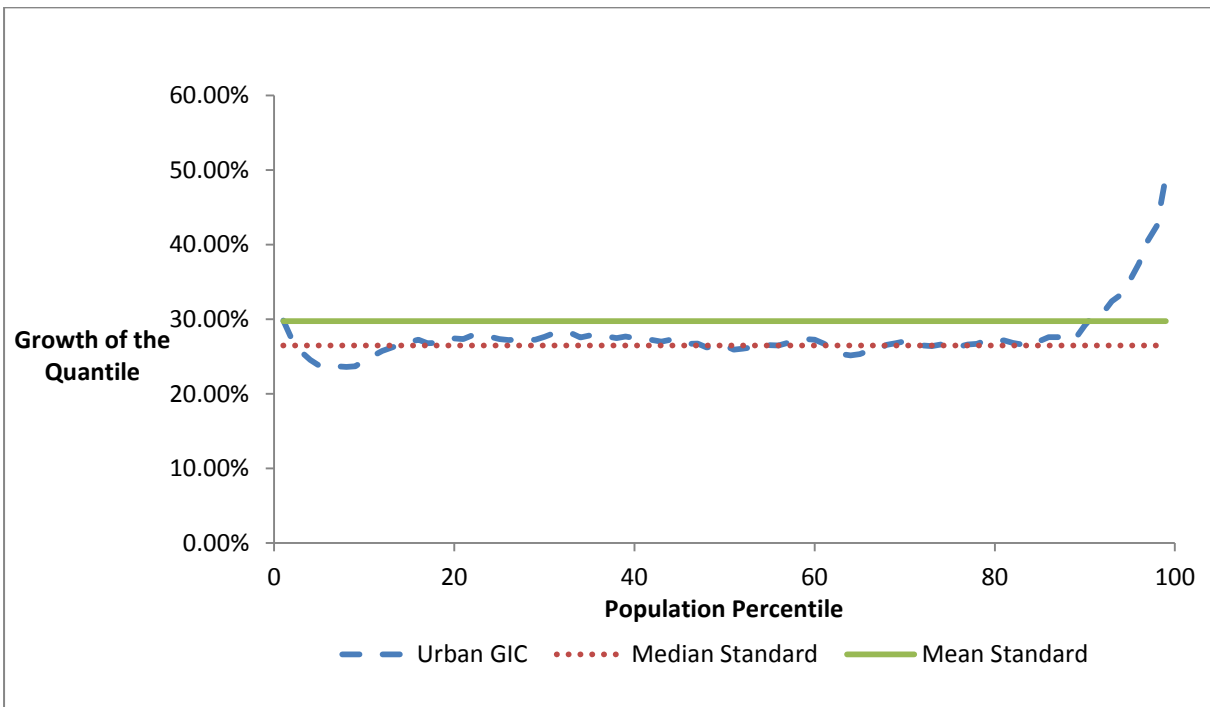


Figure 4.B: Growth Incidence Curve – Urban

Note: The above graph denotes the growth in the consumption expenditure for a quantile in 2011-12 over its consumption expenditure in 2004-5 in Urban areas i.e.: $\{Q_{2011-12}(p) - Q_{2004-5}(p)\}/Q_{2004-5}(p)$

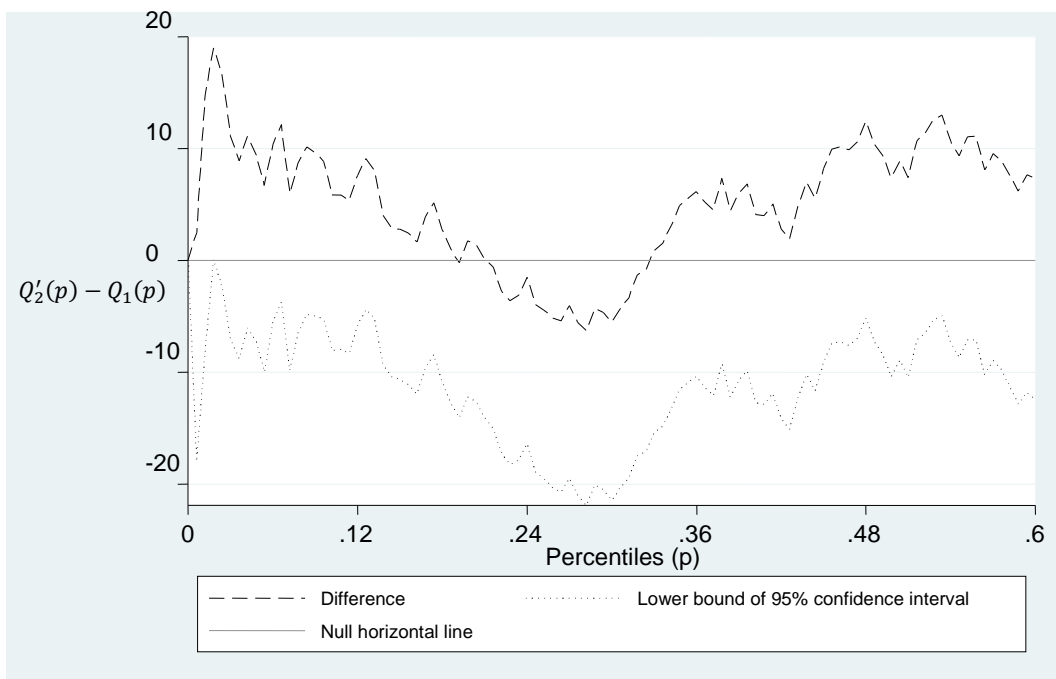


Figure 5.A: Rural - STs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the STs in Rural areas for 2011-12 normalised with relative standard of growth rate of the overall median for Rural areas; $Q_1(p)$ is the quantile function for the STs in Rural areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

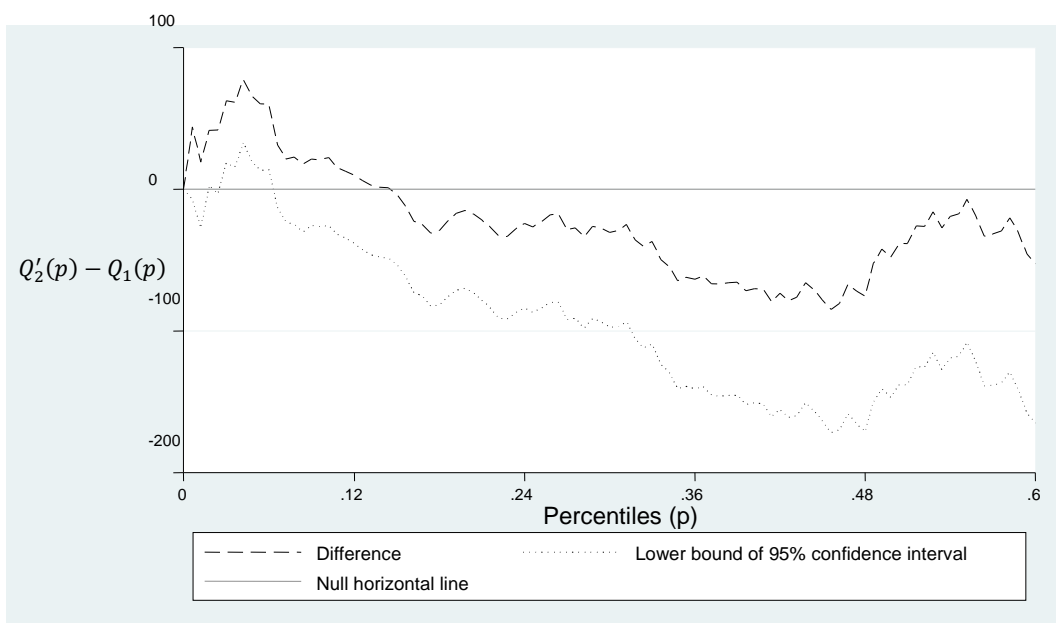


Figure 5.B: Urban - STs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the STs in Urban areas for 2011-12 normalised with relative standard of growth rate of the overall median for Urban areas; $Q_1(p)$ is the quantile function for the STs in Urban areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

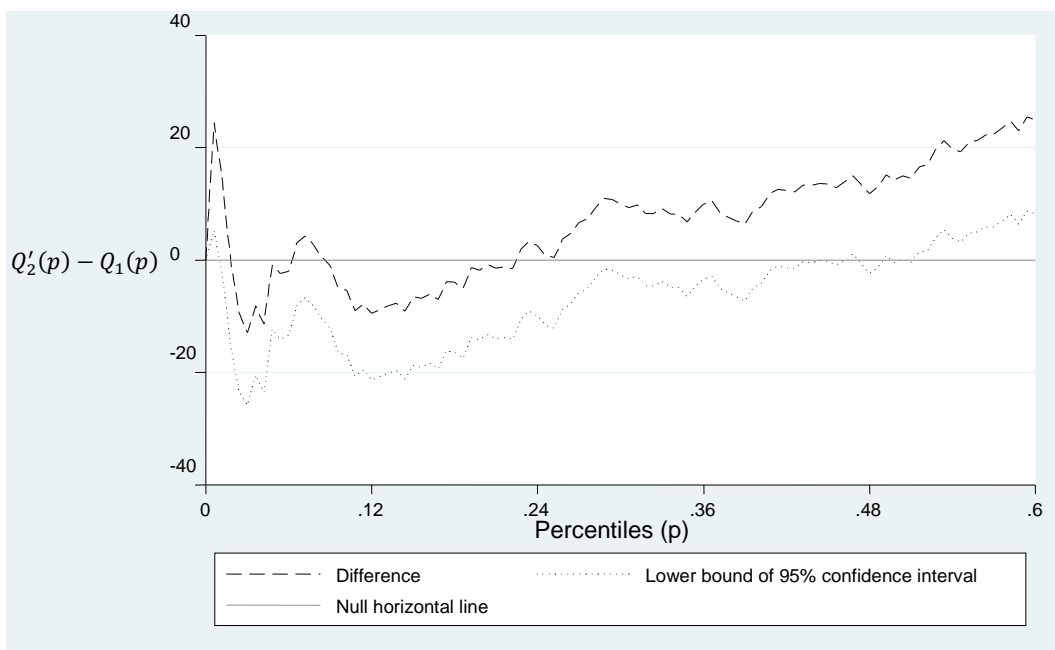


Figure 6.A: Rural - SCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the SCs in Rural areas for 2011-12 normalised with relative standard of growth rate of the overall median for Rural areas; $Q_1(p)$ is the quantile function for the SCs in Rural areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

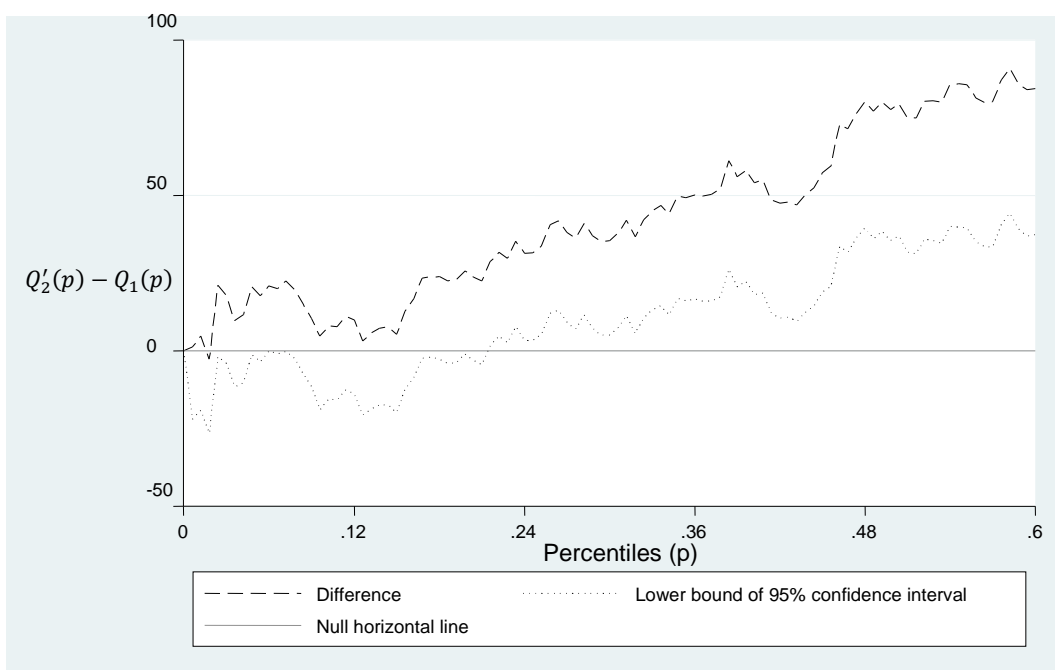


Figure 6.B: Urban - SCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the SCs in Urban areas for 2011-12 normalised with relative standard of growth rate of the overall median in Urban areas; $Q_1(p)$ is the quantile function for the SCs in Urban areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

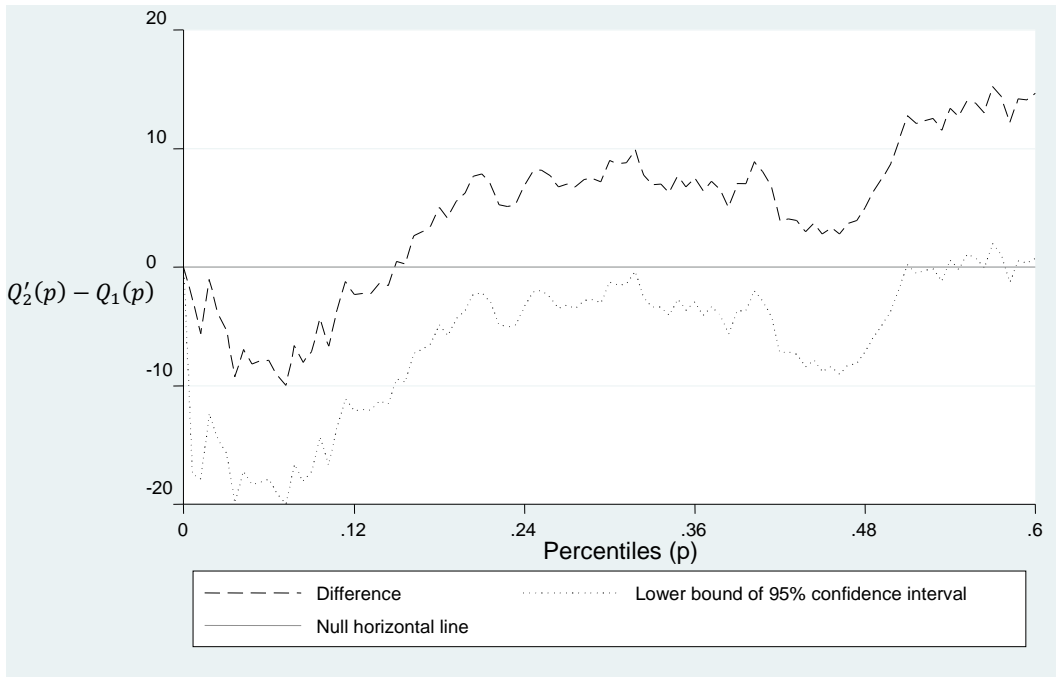


Figure 7.A: Rural - OBCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the OBCs in Rural areas for 2011-12 normalised with relative standard of growth rate of the overall median in Rural areas; $Q_1(p)$ is the quantile function for the OBCs in Rural areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

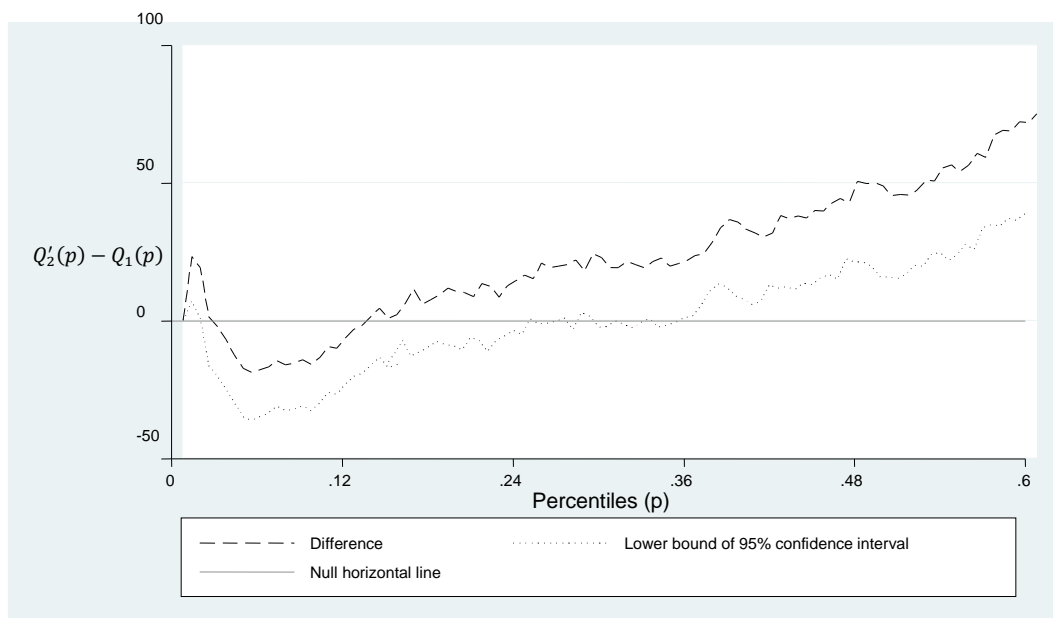


Figure 7.B: Urban - OBCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the OBCs in Urban areas for 2011-12 normalised with relative standard of growth rate of the overall median in Urban areas; $Q_1(p)$ is the quantile function for the OBCs in Urban areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

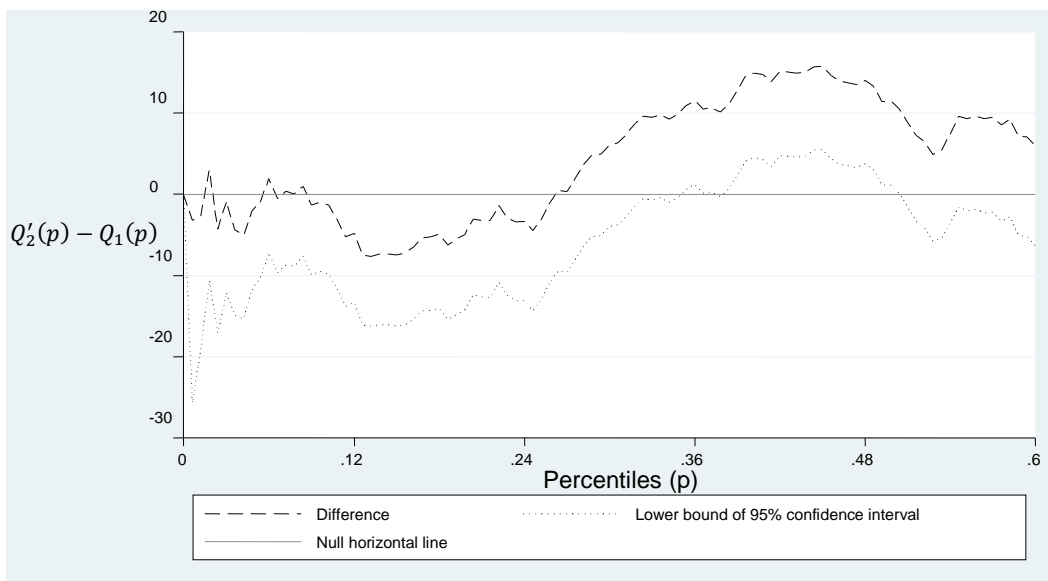


Figure 8.A: Agricultural and other Casual Laborers - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the Agricultural and other Casual laborers for 2011-12 normalised with relative standard of growth rate of the overall median in rural areas; whereas $Q_1(p)$ is the quantile function for the Agricultural other Casual laborers for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

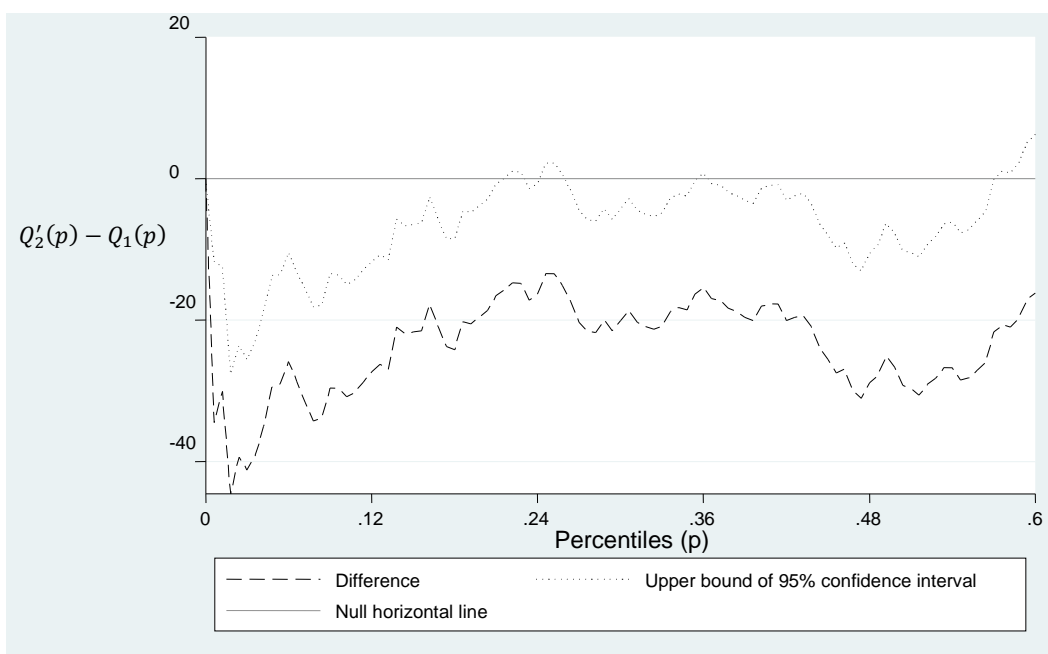


Figure 8.B: Marginal Farmers - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the Marginal Farmers for 2011-12 normalised with relative standard of growth rate of the overall median in rural areas; whereas $Q_1(p)$ is the quantile function for the Marginal Farmers for 2004-5. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

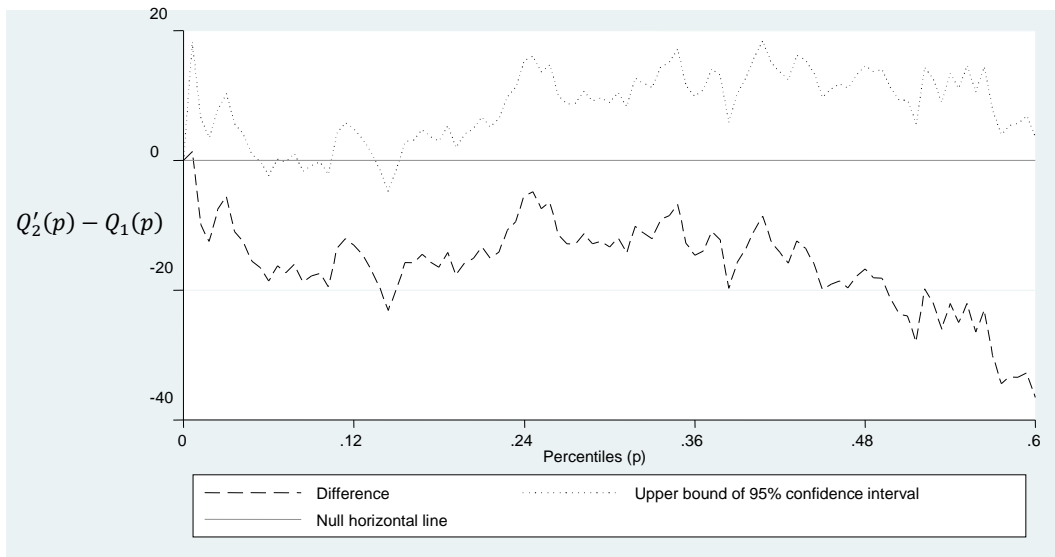


Figure 9.A: Urban - Self-Employed - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the Self-Employed in Urban areas for 2011-12 normalised with the relative standard of growth rate of the overall median in Urban areas; whereas $Q_1(p)$ is the quantile function for the Self-Employed in Urban areas for 2004-5. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

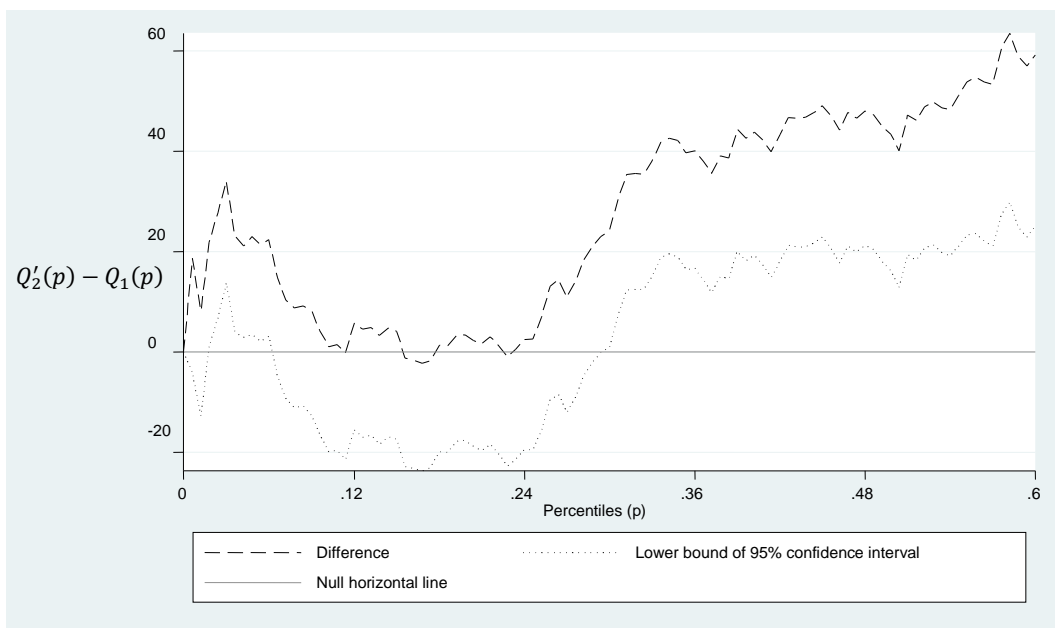


Figure 9.B: Urban - Casual Laborers - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the Casual Labourers in Urban areas for 2011-12 normalised with the relative standard of growth rate of the overall median in Urban areas; whereas $Q_1(p)$ is the quantile function for the Casual Labourers in Urban areas for 2004-5. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

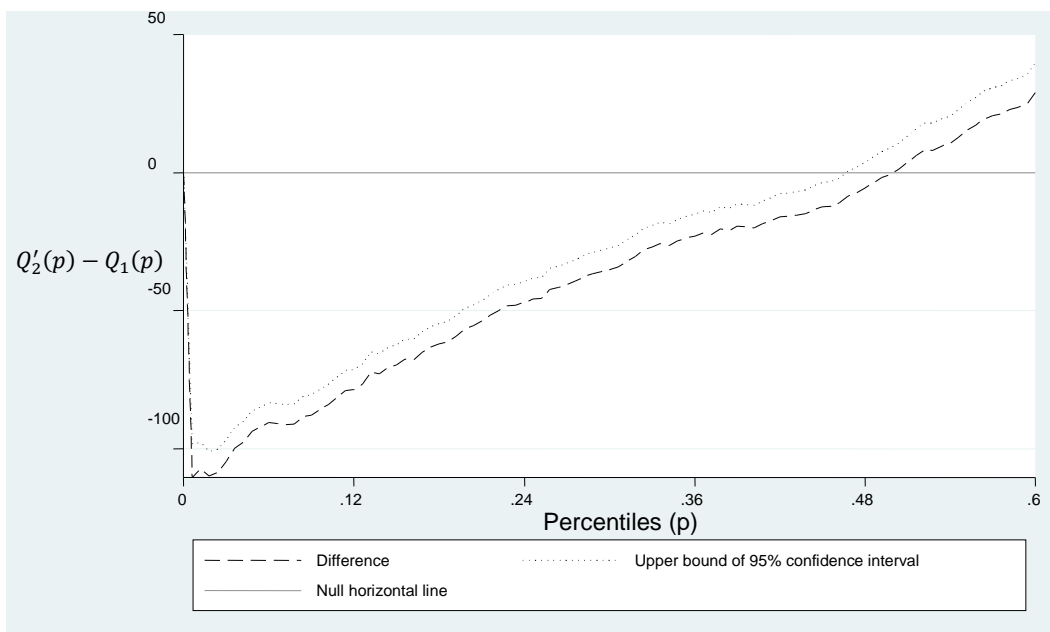


Figure 10.A: Rural Overall - Absolute Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Rural areas for 2011-12 normalised with absolute standard of growth of the median; $Q_1(p)$ is the quantile function for the overall distribution in Rural areas for 2004-5. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

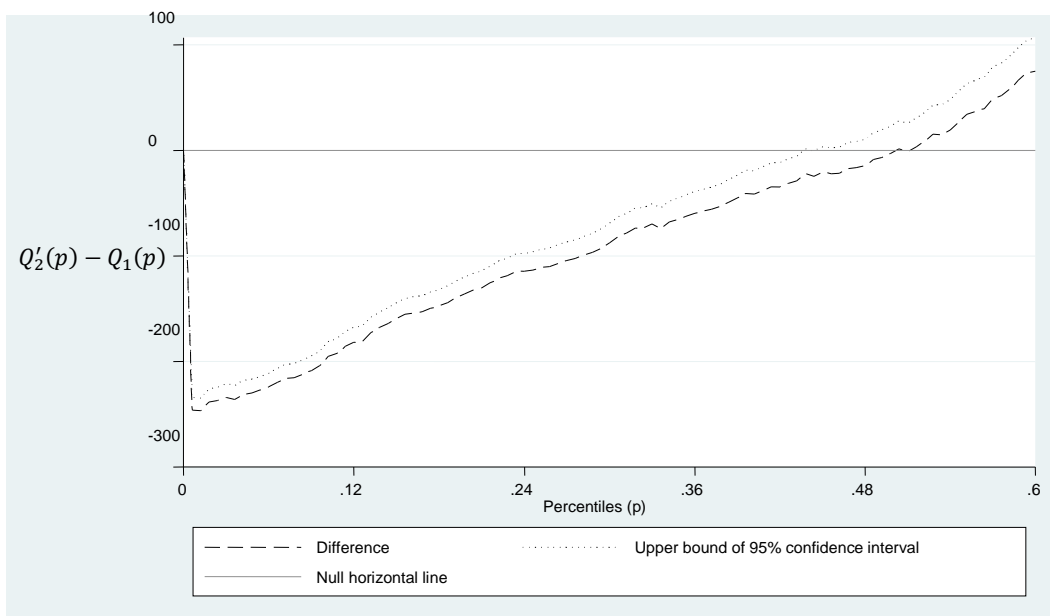
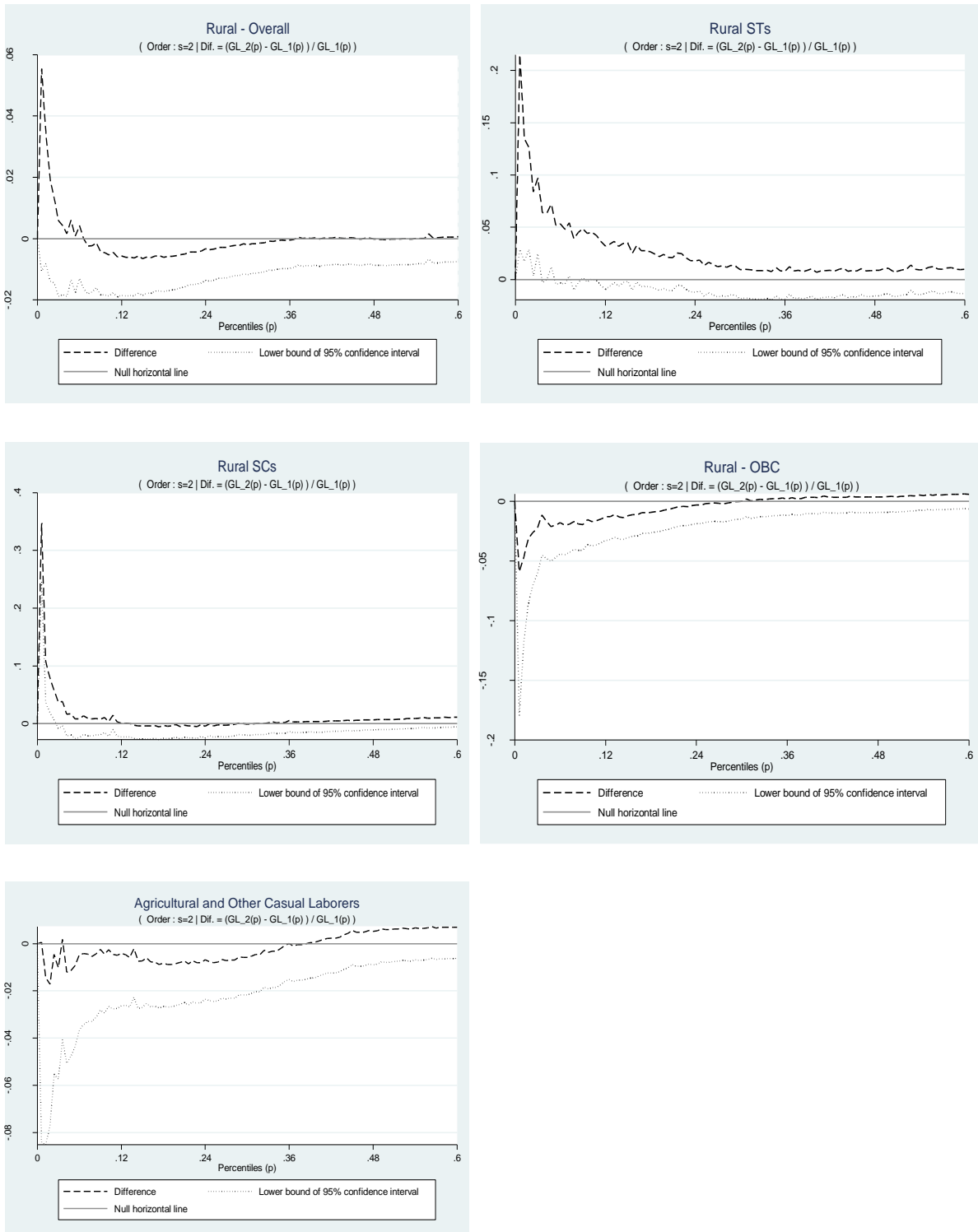


Figure 10.B: Urban Overall - Absolute Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Urban areas for 2011-12 normalised with absolute standard of growth of the median; $Q_1(p)$ is the quantile function for the overall distribution in Urban areas for 2004-5. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

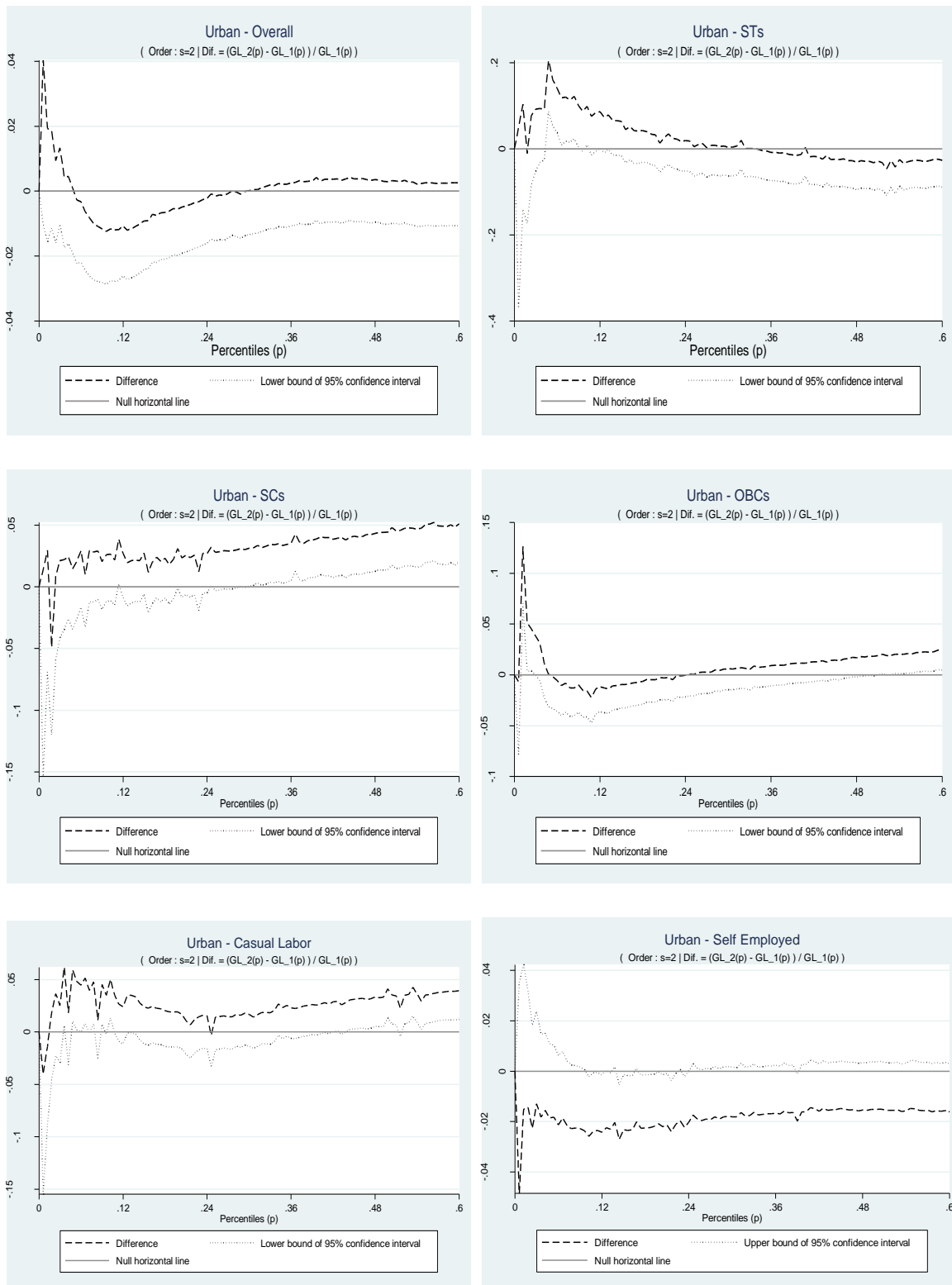
APPENDIX 1

Figure 11: Testing for Second-Order Pro-Poor Growth – Rural – Relative Standards - Median Norm



Note: In each of the graphs above, GL 2 corresponds to the median normalised Generalised Lorenz curve for the respective distribution for 2011-12 and GL 1 corresponds to the Generalised Lorenz curve for the respective distribution for 2004-5.

Figure 12: Testing for Second-Order Pro-Poor Growth – Urban — Relative Standards - Median Norm



Note: In each of the graphs above, GL 2 corresponds to the median normalised Generalised Lorenz curve for the respective distribution for 2011-12 and GL 1 corresponds to the Generalised Lorenz curve for the respective distribution for 2004-5.