

Growth and Deprivation in India: What Does Recent Data Say?

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Abstract

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Keywords: Pro-poor growth; Poverty, Inclusion, India

JEL Code: D63, I32

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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,³ policy makers and intelligent lay people (e.g. Economist 2012). Given the perceptions (both within India and abroad) 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 in the Indian society (e.g. caste groups - Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Classes (OBCs); lower classes).⁴ In this paper, we examine these questions by drawing upon a methodology that is appropriate to the Indian context, and by using data from the National Sample Surveys (NSS) on consumption expenditure.

The dominant approach to analyzing the above issues has involved examining how absolute poverty (as measured by the Head Count Ratio (HCR) or Poverty Gap Ratio (PGR)) calculated using official money-metric poverty lines has declined over time 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 the disadvantaged groups (either over time or as compared to the same for the other groups) have been interpreted as signs of progress. It is well known that

¹ We use the term deprivation to refer to poverty in general – absolute or relative. We also use the terms “absolute poverty” and “relative poverty” wherever appropriate.

² Gross Domestic Product (GDP) 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 (GNP) per-capita are 1.4%, 3.0% and 5.0%, respectively. Figures are from Nagaraj (2011).

³ The recent scholarly literature on Indian growth is voluminous - see Balakrishnan (2010, 2011) and the references therein.

⁴ SCs, STs and OBCs are communities that have been historically discriminated against.

⁵ The number of studies that have done this is large, but see e.g. Himanshu (2007), Dubey and Thorat (2011) and Planning Commission (2012), and the references therein.

measures like HCR and PGR do not take into account the inequality among the poor,⁶ but apart from this, the above approach suffers from certain limitations. First, considerable controversy exists over official poverty lines and there is widespread perception that these lines have been kept artificially low,⁷ 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 committee (the Tendulkar committee) appointed by the Indian government, which suggested new rural and urban poverty lines for various states. Several scholars (e.g. Suryanarayana 2011, Subramanian 2011) have persuasively argued that these lines are not based upon any coherent methodology. The Indian government has in a way acknowledged this, and has since appointed another committee to come up with new poverty lines. Given the above, it is not clear how much credence can be attached to poverty rates and rates of poverty reduction that are based upon such poverty lines, particularly since the rates of poverty reduction change if we vary the poverty lines even slightly.⁸

Second, the policy stance in India on these issues has converged on “inclusion” or “inclusive growth.” These terms have been defined vaguely and broadly, and most economists seem to have interpreted them as growth that raises all incomes and is therefore poverty reducing (Balakrishnan 2012). An important policy document, viz., the draft approach paper to the latest (12th) national five-year plan defines inclusive growth as:

⁶ So, regressive transfers (from a poorer person to a better off, but poor person) that keep the recipient poor will not make a difference to the measure of poverty.

⁷ For an historical overview of the setting of poverty lines in the Indian context and the associated problems, see Subramanian (2011).

⁸ For example, the Tendulkar committee’s poverty lines at the all-India level for 2004-5 and 2009-10 for rural areas are Rs. 446.68 and Rs. 672.88, respectively. Using these, we compute a poverty reduction rate of 1.602 percentage points per annum during the period 2004-5 to 2009-10. Increasing the poverty lines for 2009-10 by Rs. 10 and Rs. 20 and suitably adjusting the 2004-5 poverty lines would give poverty reduction rates of 1.574 and 1.816 percentage points per annum, respectively. Also see Kotwal et al. (2011).

“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.” (Planning Commission 2011)

It is not clear how seriously we should take such broad statements that refer to desirable outcomes on many fronts without specific targets or commitment on many of these. But, if we want even modest progress on any of the above fronts, the incomes of the poor should not only grow, but also grow at reasonably fast rates and reach some absolute level that will allow them to meet basic needs. This is particularly true for India because the public provision of many basic services (e.g. health, education) is inadequate and of poor quality (PROBE 1999, Dreze and Sen 2002, Motiram and Osberg 2012) and therefore even the poor are forced to access these services privately (and at considerable cost). What this also means is that in order to assess inclusion, we should use approaches and criteria that are more expansive than those that involve mere reductions in absolute poverty rates, based upon poverty lines that are unacceptably low.⁹

Given the above, we try to address this issue using a more rigorous methodology. We draw upon the literature on pro-poor growth (discussed below) to assess how recent growth has affected the poor. Our basic concern is whether growth (of consumption expenditure) of the poor has been “adequate” or not. We use the methodology suggested by Duclos (2009) and Araar et al. (2009) since it has some distinct advantages – it is based upon a systematic axiomatization of

⁹ See Balakrishnan (2012) for a similar argument that inclusive growth should go beyond mere poverty reduction. Also see the other studies that we cite below.

the relevant concepts, it synthesizes different ideas and approaches in the literature, and it allows for the statistical assessment of the growth of the poor by various standards, and over a range of poverty lines. The last feature is particularly relevant for India given the controversies over official poverty lines (referred to above) and the fact that India does not actually have an official poverty line at present. Also, since it may be difficult to achieve a consensus on a particular poverty line (official, or otherwise), it is important to explore how robust one's conclusions are by using various poverty lines. We will discuss this methodology in detail below, but it essentially involves evaluating the growth (over the period of interest) of the poor against a standard that we desire. If we use *Relative* standards, then we are interested in the growth of the poor in relative terms, e.g. are the poor growing at 2 percent? If we use *Absolute* standards, then we are interested in absolute changes in the incomes of the poor, e.g. have the incomes of the poor increased by Rs. 50? As we argue below, this is analogous to the question of using relative or absolute measures to examine changes in inequality, e.g. relative vs. absolute Gini. With either of these standards, there are two approaches - in the *First Order* approach, we require that *all* the poor grow at least at the standard imposed, whereas in the *Second Order* approach we are willing to allow for some of the poor to fall short of the standard *provided that* those even poorer are growing at higher than the standard. A sufficient condition in this case is that the cumulative incomes (and not necessarily the incomes) of all the poor grow at this 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, more 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.

As in Duclos (2009) and Araar et al. (2009), we refer to a growth process as “pro-poor” if it satisfies the above condition (i.e. growth of the poor in relation to the standard). We use the growth rate of the “average” person (mean and median) as our standard, so “pro-poor” would also mean growth that is biased *in favor of the poor*.¹⁰ Duclos (2009) and Araar (2009) do not consider the presence of sub-groups of the population, which is an important issue in India (e.g. as reflected by the statement on various caste groups in the 12th five year plan), so we extend their analysis. We describe the conceptual issues in doing so in greater detail in section 2, but essentially a growth process is (first order) pro-poor for a group (e.g. a caste group) if all the poor quantiles of the group grow at least at the standard imposed. Since we impose as the standard the growth of the average person, finding pro-poor growth implies that the poor are growing at least at the same rate as the average person in the country (who need not belong to the particular group that we are interested in). 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 to 2009 using NSS consumption expenditure data and use the growth rate of the median and mean (i.e. growth for the average person) as our standards. For relative standards, with both the mean and the median standards, we find no evidence for pro-poor growth in rural or urban areas. Moreover, in urban areas, growth has actually been anti-poor (to be explained below) with the mean standard. There is no evidence for pro-poor growth for any disadvantaged caste group, except for STs in rural areas with the median standard. We find no evidence for pro-poor growth 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, both in rural and urban areas. Essentially,

¹⁰ The poor are growing at a faster rate than the average, i.e. “pro” as it is used in the English language.

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 2009-10 because our interest is in recent changes and the survey from 1999 is not comparable.¹¹ Moreover, by focusing on this period, we can incorporate the OBCs explicitly since they were not enumerated in 1993-4 and earlier surveys. Nevertheless, we have used the data from the 1993-4 survey to examine separately the periods 1993-2004 and 2004-5 to 2009-10. We do not find evidence for pro-poor growth in the former period too.¹²

Although we use this particular methodology, our results are consistent with and therefore complement those from a few other studies that have used other methodologies, e.g. Suryanarayana (2008) and Jayaraj and Subramanian (2012a). We discuss these studies below. Our findings imply that the picture that emerges from some recent 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 1993-2004 have to be viewed cautiously – there may be little room for such optimism. Our analysis reinforces the fact that the relationship between growth and deprivation is complex and we need to work with and evolve rigorous methodologies to address this issue. Our findings about the contrast between relative and absolute standards imply that given no solid theoretical basis for preferring one approach vis-à-vis another, we may benefit from examining both and

¹¹ There are some methodological problems involved in making poverty comparisons over long periods of time, which we describe in section 4 below.

¹² It could be argued (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 for two reasons. First, the debate in the Indian context has almost exclusively focused on moneymetric or unidimensional poverty. Second, the literature on pro-poor growth has also largely restricted itself to unidimensional poverty.

also trying to find a compromise between these two. The empirical literature on inequality, particularly in the Indian context has been dominated by the relative approach.¹³

The remaining part 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) of our results.

2. RELEVANT LITERATURE ON PRO-POOR GROWTH

The literature on pro-poor growth is still evolving, but there are several studies. In the interests of space, we do not review all of them, but instead focus on the ideas in the literature that are relevant for us. Excellent surveys of the literature are presented in Klasen (2008) and Duclos (2009) and we will draw upon them.¹⁴

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. There are, broadly speaking, two different approaches – relative and absolute. In the relative approach, we label a growth process as pro-poor if the growth rate of the poor exceeds some standard (usually the average growth rate – of the median or the mean). In the absolute approach, we label growth as pro-poor if the absolute incomes of the poor increase by at least some standard. There are two variants here – strong absolute growth, where we impose high standards (usually the absolute change of the average) and weak absolute growth, where we impose zero standards, i.e. any growth, or trickle down.

¹³ See the discussion on leftist and rightist measures of inequality in Kolm (1976 a, b). Examples of a few studies that have used absolute and compromise measures in the Indian context are Jayadev et al. (2007) and Jayaraj and Subramanian (2012 b).

¹⁴ Some other important references are Ravallion and Chen (2003) and Son (2004).

Duclos (2009) presents an axiomatic formulation of the above ideas and Araar et al. (2009) illustrate how we can statistically test for pro-poor growth. We draw upon their methodology, and so that our analysis can be understood, present only the essential details here. The readers are referred to further details and proofs in the abovementioned references. Let the real monthly consumption expenditure distributions in 2004-5 (referred to as the *prior* period) and 2009-10 (referred to as the *posterior* period) be denoted by c_{2004-5} and $c_{2009-10}$, respectively.¹⁵ Let the poverty line in terms of monthly consumption expenditure be denoted as z . All expenditures are denominated in 2009-10 prices. We will first describe the relative approach. The illfare (negative welfare, or lack of welfare) in 2004-5, P_{2004-5} is a function of the distribution of consumption expenditure in 2004-5 (c_{2004-5}) and the poverty line (z). Let the standard that we would like to impose be denoted g – broadly speaking, we would like the incomes of the poor to grow by at least g . The illfare in 2009-10, $P_{2009-10}$ is a function of the distribution of consumption expenditure in 2009-10 ($c_{2009-10}$), the standard g , and the poverty line (z). An evaluation function can be defined as:

$$(1) \quad W(c_{2004-5}, c_{2009-10}, (1+g), z) = P_{2009-10}(c_{2009-10}, (1+g), z) - P_{2004-5}(c_{2004-5}, z)$$

Growth is pro-poor if W is non-positive. Let F_{2004-5} , $F_{2009-10}$ and $F'_{2009-10}$ denote the cumulative distribution functions for 2004-5, 2009-10 and the normalized incomes in 2009-10 (i.e. $c_{2009-10}/(1+g)$), respectively. If W satisfies the Axioms of *Focus*, *Population Invariance*, *Symmetry*, *Monotonicity*, *Normalization* and *Proportionality*¹⁶ then Duclos (2009) shows that W is non-positive (i.e. there is first-order pro-poor growth) if,

¹⁵ We are describing these ideas in terms of consumption expenditure since we are using consumption expenditure, but the analysis is the same if use incomes.

¹⁶ These are standard and well known 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 the people who earn these incomes) matter.

$$(2) \quad F_{2004-5}(x) - F'_{2009-10}(x) \geq 0 \forall x \in [0, z]$$

Note that the above implies that the normalized distribution in 2009-10 first-order stochastically dominates the 2004-5 distribution (for the poor). An equivalent expression of this condition is:

$$(3) \quad Q'_{2009-10}(p) - Q_{2004-5}(p) \geq 0 \forall p \in [0, p_z]$$

Q and Q' are the “quantile functions” for the 2004-5 and normalized 2009-10 distributions, respectively and p_z is the quantile corresponding to the poverty line in 2004-5 (denominated in 2009-10 prices). Note that the above condition implies that all the poor quantiles have to grow at least at the rate of g . Araar et al. (2009) describe how one can perform statistical tests to test for pro-poor growth by constructing confidence intervals for the difference of quantiles. If the lower bound of the confidence interval lies below the horizontal axis 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 axis for *all* the quantiles corresponding to the poor, then there is evidence for “anti-poor” growth – essentially all the poor are growing at rates less than the standard – this of course implies that there is no evidence for pro-poor growth since the lower bound lies below the horizontal axis.

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 (i.e. in the absence of any distributional change), then for a given poverty line, $g=0$ would mean that the evaluation function is zero. *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. Note that 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 the incomes are doubled or halved), then the evaluation function is unaffected.

For second-order pro-poor growth, we impose in addition to the above axioms, the axiom of *Distribution Sensitivity*.¹⁷ Duclos (2009) shows that the evaluation function is non-positive, i.e. there is pro-poor growth if:

$$(4) \quad D_{2009-10}((1+g)x) - D_{2004-5}(x) \leq 0 \forall x \in [0, z]$$

$D_{2009-10}$ and D_{2004-5} are the “poverty deficit” functions for 2009-10 and 2004-5, respectively, being defined as:

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

n is the total population in 2004-5 and I is the indicator function (similarly for 2009-10). The poverty deficit function is nothing but the poverty gap ratio and what the above conditions boil down to is that the poverty gap ratio in 2009-10 is lower than the same in 2004-5 for all poverty lines less than z and where the poverty line used in 2009-10 is higher, at $(1+g)z$. Duclos (2009) shows that a sufficient condition to ensure second-order pro-poor growth (i.e. that the above condition is satisfied) is that the Generalized Lorenz Curve for the normalized distribution for 2009-10 should not be below the same for 2004-5 for any of the poor quantiles in the normalized distribution. 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 standards (a) that we impose are 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 2009-10.

¹⁷ This axiom maintains that *ceteris-paribus*, the evaluation function cannot be higher if in the posterior distribution, there is a progressive transfer, i.e. a transfer of income from one person to another person with lower income. This takes into account the inequality among the poor.

The axiom of *Proportionality* is replaced by the axiom of *Translation Invariance* which implies that the evaluation function is unaffected if all the incomes in the posterior distribution are scaled down by a , i.e. a is subtracted from them.

Duclos (2009) and Araar et al. (2009) do not discuss the presence of sub-groups in the population, but we can extend their analysis. We may be interested in pro-poor growth for specific groups, particularly those that are historically disadvantaged. We will present the ideas in a simple informal manner 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. We can consider a sub-group 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 2009-10 is lower than the same for 2004-5. Since the HCR is sub-group decomposable, the HCR in both 2009-10 and 2004-5 can be represented as a weighted average of the HCRs for each sub-group with 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-group 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 (i.e. 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 household consumption expenditure conducted by the National Sample Survey Organization (NSSO). These surveys are well known, large, nationally representative¹⁸ 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. To focus upon recent changes, i.e. in the 2000s, we use data from the surveys for the years 2004-5 (61st round) and 2009-10 (66th round). The methodology (sample design, estimation procedure, schedule used etc.) can be obtained from NSS reports¹⁹ - for the 61st round, in Appendices B and C of NSSO (2007) and for the 66th round, in NSSO (2011). We use the Uniform Reference Period (URP) data, which is comparable across these rounds and also to data from the earlier rounds (1993-94 (50th round), 1987-88 (43rd round) etc.). It is not necessary to go into the details here, but briefly put, due to differences in survey methodology (recall periods), data from the 55th round (1999-2000) is not comparable to that from the other rounds (see e.g. Sen and Himanshu 2004 a, b; Himanshu 2007) – so, we do not use this data. We express all consumption expenditures in 2009-10 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 2009-10 and 2004-5 for various states.

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), these data are likely to undersample

¹⁸79,726 (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).

¹⁹ Downloadable from the NSSO (2011) website: http://mospi.gov.in/nssso_4aug2008/web/nssso/reports.htm

the rich and wealthy; to the extent that the rich and wealthy 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 (particularly in urban areas), our conclusions are likely to be stronger in the absence of these biases.

We have used other indices and performed several other robustness checks (described in section 4) to find that our results are essentially unchanged.

4. ANALYSIS AND RESULTS

(a) Patterns and findings

Before we proceed with the detailed analysis, it is worth discussing some basic patterns. Figure 1 presents the Cumulative Distribution Functions (CDF) of monthly consumption expenditure for rural and urban areas for various caste groups for 2009-10. Let us first focus on rural areas. From figure 1 (a), we can observe that the CDF for Others dominates the same for OBCs, which itself dominates the CDF for SCs. The CDF for STs lies at the top. From this, it is quite clear that if we use 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 any poverty line till the 60th percentile. Similarly, the absolute and relative deprivation among Other castes is lower than the same for OBCs, SCs and STs.

Insert figure 1 here

The NSS divides rural households into five types: Self employed in agriculture (i.e. Farmers), Self-employed in Non-agriculture, Agricultural Laborers, Other Laborers and Others.²⁰

²⁰ A household is classified as belonging to Self-Employed in agriculture if its income from self-employment in agriculture is higher than that from other sources. Other household types are similar.

Farmers could of course possess different amounts of land and it would be inappropriate to equate a “large” farmer with a “small” farmer. We therefore use the information on household type and land possessed to classify households into seven classes: Large farmers, Medium farmers, Small farmers, Marginal farmers, Self-employed in non-agriculture, Agricultural and other laborers, and Others (a residual category). 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.²¹ Agricultural laborers are those who own no land or those who are enumerated as such. Figure 2 (a) presents the CDFs for these classes for 2009-10. From the CDFs, we can observe (as expected) that the absolute and relative deprivation among the “lower classes” (agricultural and other laborers, marginal farmers) is higher than the same for the other classes. This is true for all plausible absolute and relative poverty lines, e.g. any poverty line till the 60th percentile.

Insert figure 2 here

Moving to urban areas, we can observe from figure 1 (b) that the caste patterns of deprivation in urban areas are similar to those in rural areas. However, in contrast to rural areas, the STs are better off than the SCs. This, however, has to be seen in the context of the fact that the percentage of STs in urban areas is relatively low (about 3 and half 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 wage earners, followed by the Self employed, and then by the Regular wage earners.

²¹ 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.

In the interests of space, we have not presented the above patterns for 2004-5, but they are roughly similar, implying that ranking of deprivation among caste and class/occupational groups has not changed during the period 2004-5 to 2009-10. Having laid down these basic patterns, we will now investigate changes in deprivation between 2004-5 and 2009-10 below.

(i) Relative approach

We will start with the relative first-order approach. If we use the standard of “average growth,” then we could use the rate of growth of either the median or the mean. In figure 3, we present the results using the rate of growth of the median for rural ($g=0.1139$) and urban ($g=0.0987$) areas – these are simple relative growth rates over 5 years, i.e. between 2004-5 and 2009-10. We also present the lower bound of the 95% confidence interval. We have restricted ourselves till the 60th percentile to make the figure appear clearer. From figure 3 (a), we can observe that for rural areas, the curve is initially below the horizontal axis, but then crosses it around the 24th percentile. This implies that the poorer quantiles have grown at rates below the median standard. When we observe the lower bound of the confidence interval, we notice that it lies below zero. Given this, we can conclude that there is no evidence for pro-poor growth at the median standard for any reasonable absolute or relative poverty line (e.g. until the 60th percentile).

Insert figure 3 here

Figure 3 (b) presents the corresponding analysis for urban areas and it reveals a somewhat different and starker picture. The curve lies almost entirely below the horizontal axis, implying that all the quantiles below the 60th percentile have grown at a lower rate than the median. Moreover, the shortfalls from the median standard are larger compared to the same for rural areas. Observing the lower bound of the confidence interval, we can note that it lies entirely

below zero. Hence, in the urban areas too, there is no evidence for pro-poor growth at any reasonable absolute or relative poverty line (e.g. until the 60th percentile).

Given that there is no evidence for pro-poor growth at the median standard, we can examine what standards are compatible with pro-poor growth. We have tried the growth rate of the mean and obtained a similar result (i.e. no evidence for pro-poor growth) for both rural and urban areas. In urban areas, we find evidence for anti-poor growth.²² To investigate this issue further, we examine the “growth incidence curves” for rural and urban areas, which we present in figure 4. The corresponding data is presented in table 1. These curves depict the growth rates of monthly per-capita consumption expenditure during the period 2004-5 to 2009-10 for various quantiles of the population. From figure 4 (a), for the rural areas, we can observe that all the quantiles of the population have shown growth. This implies that for all reasonable absolute and relative poverty lines (e.g. until the 60th percentile), we have evidence for trickle down, i.e. *some growth* for the poorer groups. However, the growth incidence curve flattens (i.e. growth tapers off) around the 30th percentile and rises again around the 65th percentile, i.e. growth is highest for the richer among the poor and the richer groups. The figure for urban areas (in figure 4 (b)) reveals a different picture. As in the case of rural areas, all the poorer quantiles in the urban areas have shown growth, implying trickle down. However, the growth rates are generally increasing with expenditure, i.e. the middle and richer quantiles are growing at much faster rates than the poorer quantiles. Both in rural and urban areas, since the poorer quantiles are starting from a low base (i.e. lower consumption expenditures), this difference in growth rates implies that the *absolute difference* in consumption expenditures between the poorer groups and the rest of the

²² In the interests of space, we are not presenting these figures, but they are available on request from the authors.

population has increased. This is clear from the data from table 1, as is the fact that the absolute incomes of the poor are quite low in 2009-10 despite growth.

Insert figure 4 and table 1 here

From the growth incidence curve for rural areas, we can observe that the lowest rate of growth ($I+g$) for a poorer quantile is about 1.085 (the rate at which the bottom 2nd percentile is growing). Since in the first order approach all the poor quantiles have to grow at the standard set, in the rural areas, this is the standard that is compatible with pro-poor growth. A similar exercise yields a standard of about 1.0659 (the rate at which the bottom 5th percentile is growing) for urban areas. Essentially, only at very low standards can one achieve first-order pro-poor growth in the relative approach in both rural and urban areas.

We now focus on socioeconomic groups. For STs, we present the pro-poor curves with the median standard in rural and urban areas in figure 5. For normalization, we use the growth rate of the overall median since this is more appropriate than the growth rate of the median of STs themselves (also see discussion in section 2 on sub-groups). From figure 5 (a), we find evidence for pro-poor growth in rural areas at this standard. This is however not true for urban areas (see figure 5 (b)). Since the STs are the groups characterized by the highest incidence of poverty in rural areas, this finding is encouraging. However, we have to view this finding in conjunction with the fact that these poor among the STs are starting from a much lower base compared to the average, but also compared to the poor among the other groups. In figures 6 and 7, we present the pro-poor curves for the SCs and OBCs, respectively for the median standard. We can observe that for SCs and OBCs in both rural and urban areas, there is no evidence for pro-poor growth.

Insert figures 5, 6 and 7 here

Turning to classes, we first look at rural areas. Figures 8 (a) and 8 (b) present the relative pro-poor curves for laborers and marginal farmers, respectively. We again use the median (for the entire population) standard. We can observe that there is no evidence for pro-poor growth for any of these classes. Although we have not presented the figure, we do not find evidence for pro-poor growth in the case of small farmers and non-agricultural self-employed too. Moving to urban areas, figures 9 (a) and 9 (b) present the relative pro-poor curves for the self-employed and casual workers, respectively. We can observe that there is no evidence for pro-poor growth.

Insert figures 8 and 9 here

The first-order approach requires that *all* the quantiles of the poor grow at the standards that are imposed. This may appear too strong as a condition for pro-poor growth. Given this, we considered the second-order approach. In the interests of space, we have not presented the figures, but we observe that there is no evidence for pro-poor growth even with second-order pro-poor standards.

(ii) Absolute approach

From the discussion above, we can find that there is trickle down, so we find evidence for weak absolute pro-poor growth (i.e. $a=0$). However, this is not sufficient and we can investigate whether there is evidence for strong absolute pro-poor growth. In figure 10, we present the absolute pro-poor curves with the median standard for rural and urban areas. As we can observe, there is evidence for anti-poor growth in both rural and urban areas. The absolute growth incidence curves are actually increasing, i.e. the absolute increases in expenditure (between 2004-5 and 2009-10) for richer groups are higher than the same for poorer groups, indicating that

strong absolute pro-poor growth is not possible. For none of the socioeconomic groups, do we find evidence for pro-poor growth at the median or mean standard.²³

Insert figure 10 here

5. DISCUSSION AND CONCLUSIONS

In the analysis above, we have examined the issue of pro-poor growth in India during 2004-5 to 2009-10 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 and small farmers) and urban (casual laborers and self-employed) economy. Our broad conclusion is that there is no evidence for pro-poor growth, although growth has trickled down. It is worth pointing out here that our results hold even if we impose much lower standards (than average – median or mean). Essentially, the groups at the bottom of the distribution (i.e. the poorer among the poor) are not growing at rates that are comparable to the growth rates of even the richer among the poor. We have also examined the all-India distribution (rather than separately examining the rural and urban distributions) and found no evidence for pro-poor growth. Instead of looking at the entire country, we have 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.²⁴ Our focus has been on recent changes. But, we have also used data from the surveys in 1993-4 and 2004-5 to investigate

²³ We have not presented these figures or the growth incidence curves in the interests of space, but they are available upon request from the authors.

²⁴ Rural areas of Maharashtra and Orissa are the notable exceptions displaying first-order pro-poor growth with the all-India standards.

whether growth has been pro-poor during this period.²⁵ We find that there is 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 using indices based upon poverty lines for deflation, we also checked that our results hold with Consumer Price Index for Agricultural Laborers (CPIAL) and Consumer Price Index for Industrial Workers (CPI-IW) for rural and urban areas, respectively. Devising and implementing a procedure that takes into account different prices that different individuals face, is beyond the scope of the paper.²⁶ However, if we consider price changes between 2004-5 and 2009-10, and various commodity groups that are used to construct consumer price indices in rural (CPIAL) and urban (CPIIW) areas, we find that price of the “Food” group has increased at a faster rate than price of the “Miscellaneous” group. In other words, price changes have been biased against the poor. Given this, our results are likely to hold even if we implement such a procedure. Also, instead of URP data, we used Mixed Reference Period (MRP) data²⁷ and found that even with this data, our results hold. Putting everything together, we believe that our conclusions are strongly suggestive that the growth process that India has been experiencing is making marginal (although some)

²⁵ One issue that would arise in comparisons over such a long period is that the bundle of commodities that is considered to be “reasonable” (i.e. Poverty Line Bundle (PLB)) could itself change. 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 distribution, 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 paisa 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 result would hold even if we have different PLBs for various years.

²⁶For example, recently, Mishra and Ray (2011) have suggested a procedure for deriving equivalence scales and for capturing the impact for different households of differential movement of prices of items over time. They implement this procedure for India using consumption expenditure data from NSS 50th, 55th and 61st rounds.

²⁷ The MRP data is based upon different recall periods as compared to the URP data and yields slightly different trends. For details, see the NSS reports cited above.

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 2009-10, the inequality in nominal consumption expenditure has decreased slightly in rural areas (0.305 to 0.300), increased in urban areas (0.376 to 0.393) and increased at the all-India level (0.363 to 0.370). 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). Since we do not have an official poverty line, we cannot examine this issue rigorously (e.g. using decomposition analysis), but evidence suggests that the inequality between the poor and the rich/non-poor may not be declining. Examining the ratio of the richest decile (i.e. 90th percentile) to the poorest decile (i.e. 10th percentile), we can observe that it has remained roughly stable in rural areas, changing from 3.281 in 2004-5 to 3.282 in 2009-10, whereas it has increased sharply in urban areas (4.775 to 4.935). Looking at the ratio of the median to the poorest decile, we can observe that it has increased in both rural (1.683 to 1.699) and urban (2.010 to 2.037) areas. 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).

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 used. 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. the Andean countries of Peru, Ecuador, Venezuela, (Araar, 2012) as well as African countries of Ethiopia, Malawi, and Central African Republic (Bibi et.al., 2012) are some of the countries that have experienced relative pro-

poor growth with the mean standard. More appropriately, Ravallion and Chen (2003) show that in the period 1993-96, in China, which was experiencing growth rates comparable to those of India, the poorer quantiles were growing faster than the average.

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 the caveat that our findings may be sensitive to the method that we have used. However, we do believe that the method we have used is appropriate in the Indian context. 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 the 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 (see Vakulabharanam and Motiram (2011) and Mishra and Reddy (2011) for

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. There is considerable debate on the reasons for this, but one interesting and persuasive argument is that the skewed growth process is itself responsible.²⁸

Given our findings, what are the policies that are required to ensure pro-poor growth and “inclusion”? This is a difficult question and addressing it is beyond the scope of this paper. However, 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 we have noted), 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 may go a long way in India. This is particularly true in urban areas, where we found stark results. We also believe that simply relying on growth to deliver on “inclusion” may be counterproductive.

²⁸ “... 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).

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FIGURES AND TABLES

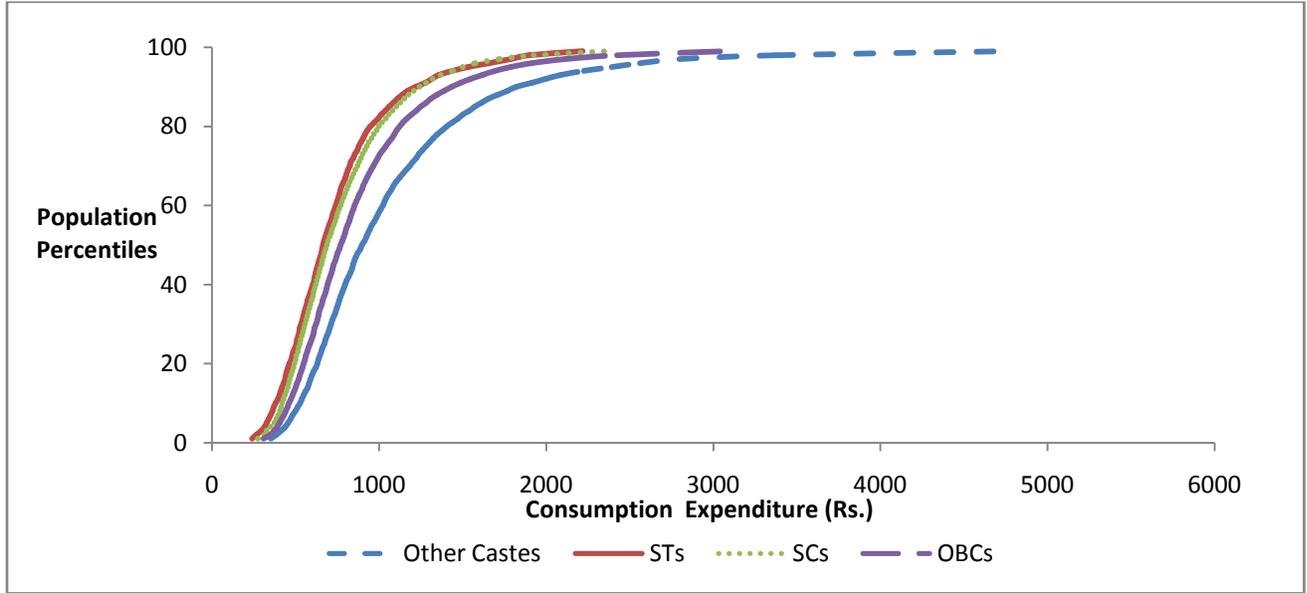


Figure 1.A: Caste-wise Comparison - 2009-10 (RURAL)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various castes in the rural areas for the year 2009-10.

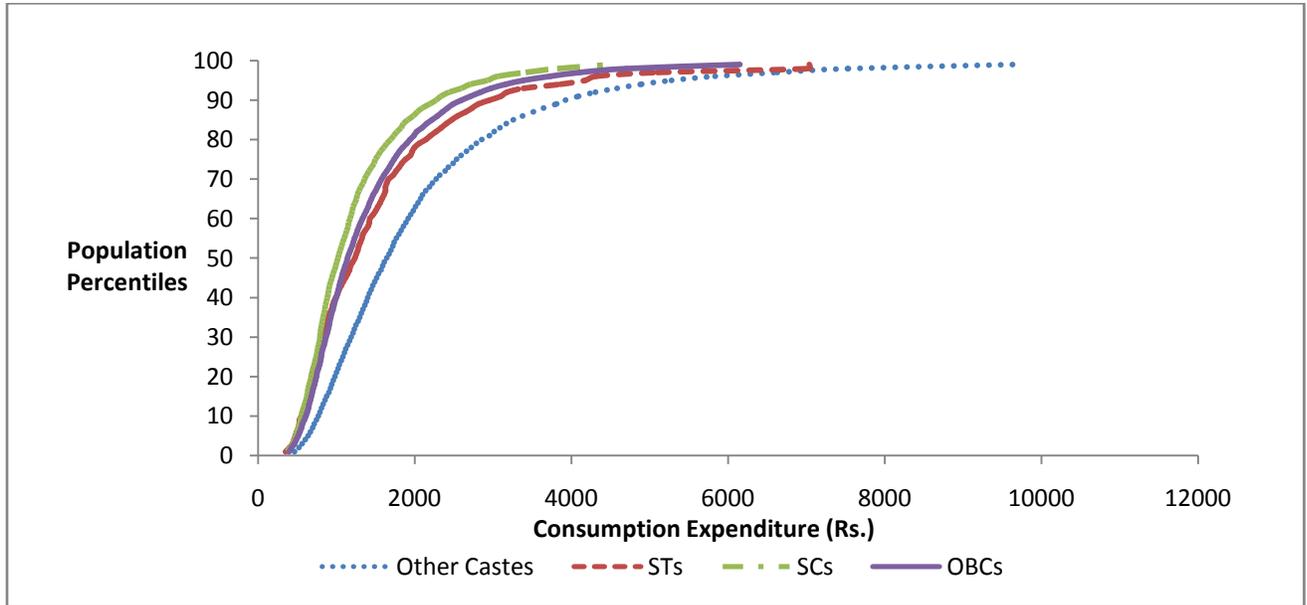


Figure 1.B: Caste-wise Comparison - 2009-10 (URBAN)

Note: In the above graph, we plot the cumulative distribution function of consumption expenditure for various castes in the urban areas for the year 2009-10.

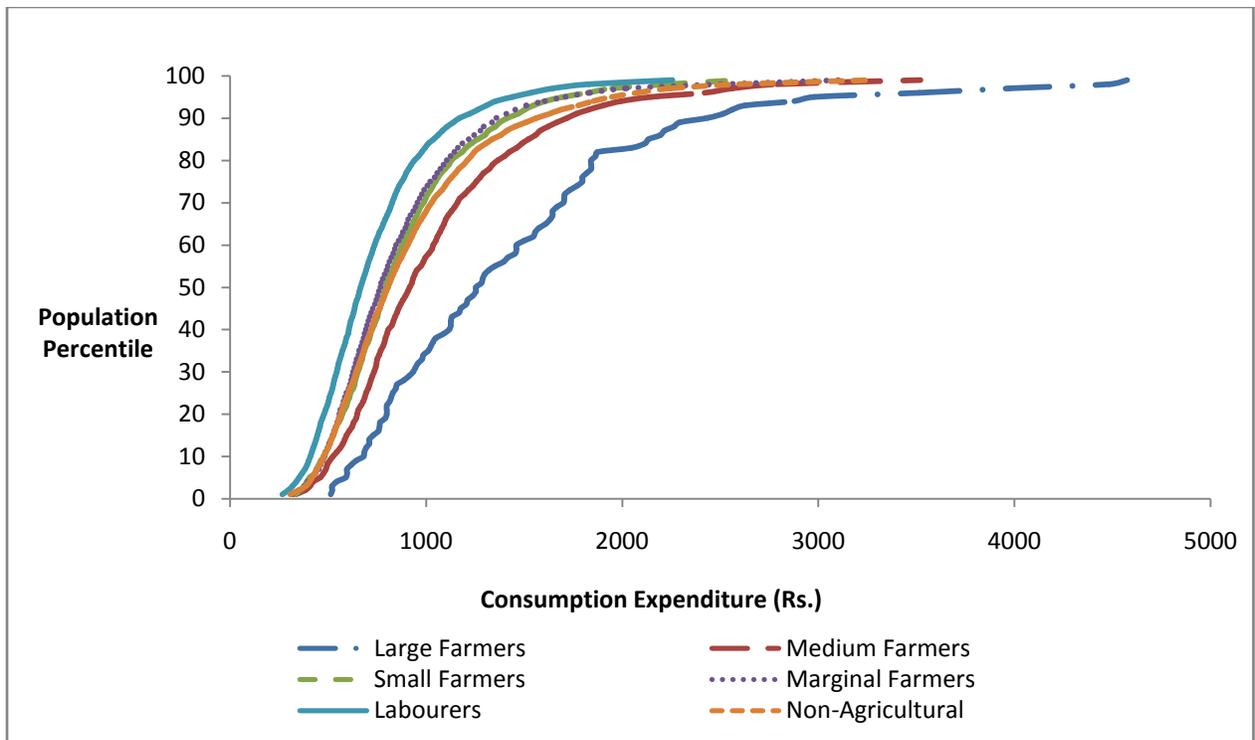


Figure 2.A: Class-wise Comparison - 2009-10 (RURAL)

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 2009-10. For the description of these classes, see pp. 15-16.

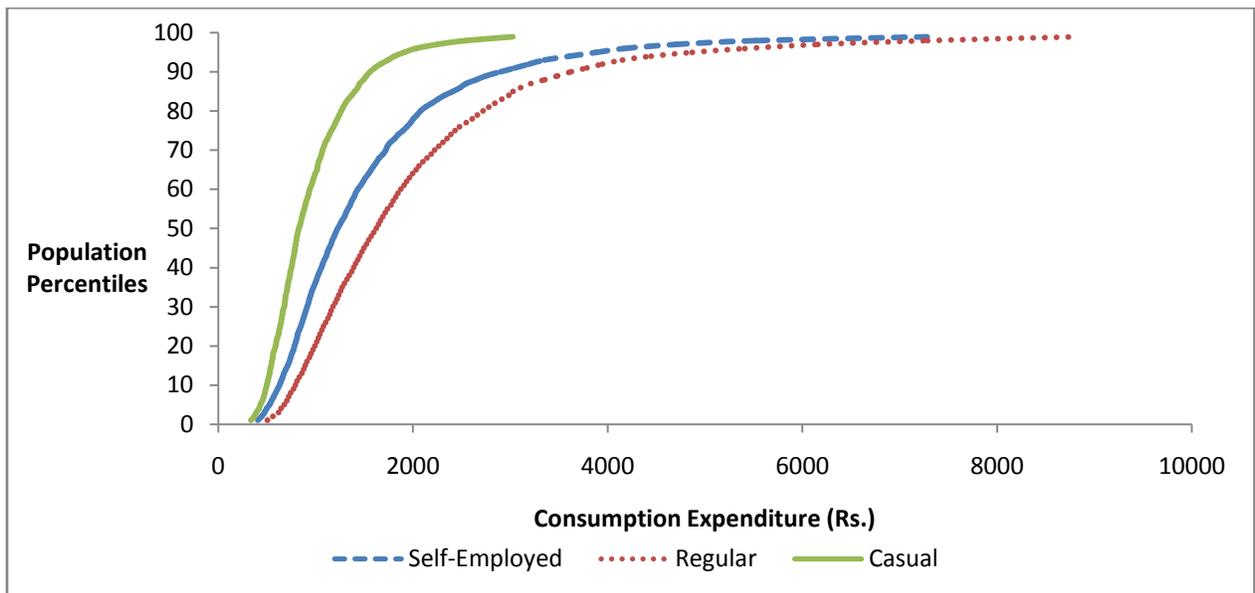


Figure 2.B: Class-wise Comparison - 2009-10 (URBAN)

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 2009-10.

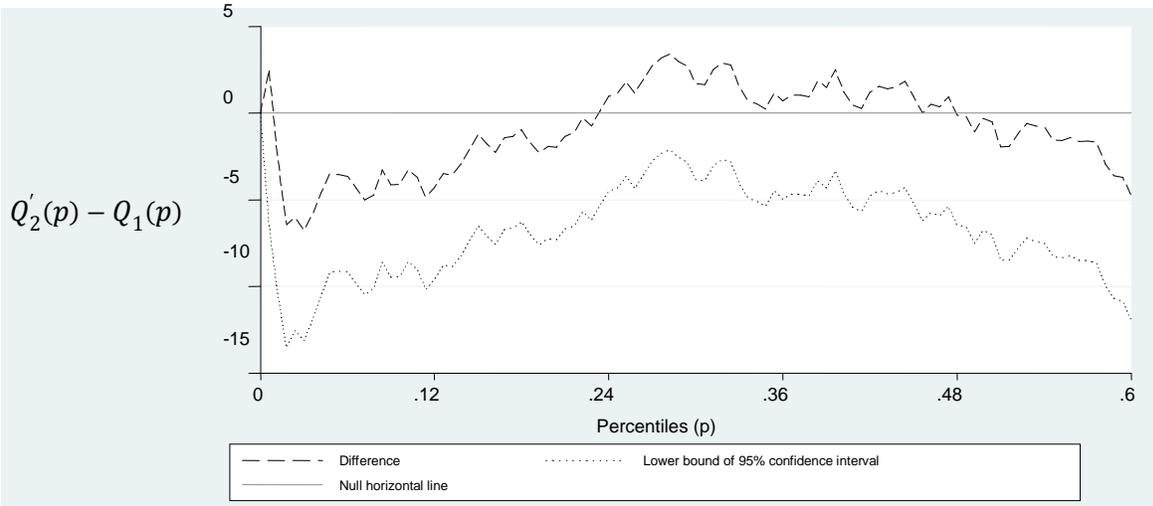


Figure 3.A: Rural - Overall - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Rural areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth. For details of the methodology (also applicable below), see Section 2.

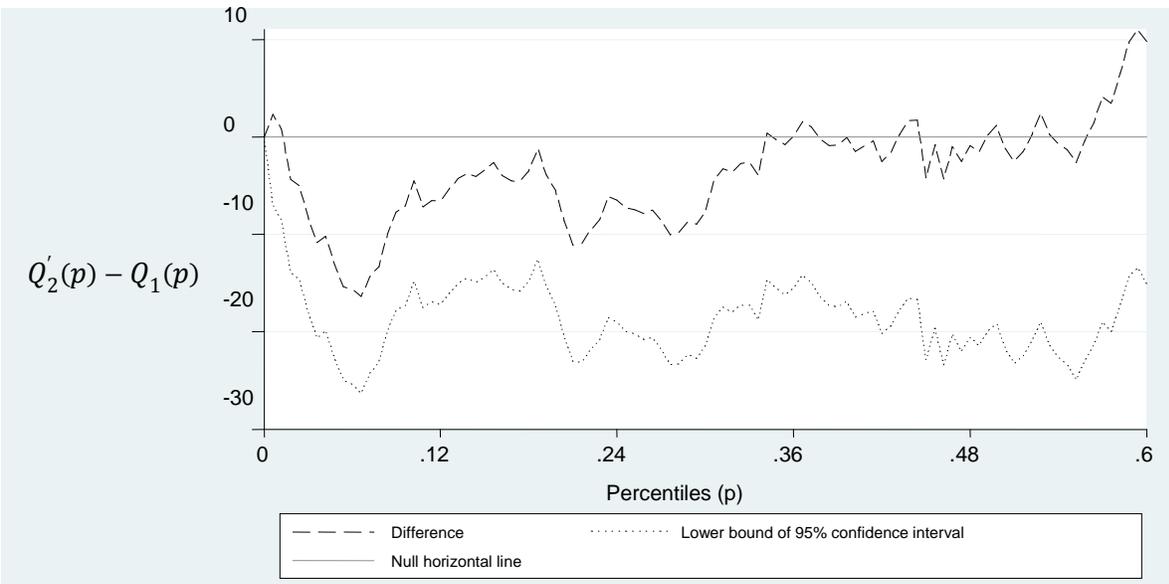


Figure 3.B: Urban - Overall - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the overall distribution in Urban areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

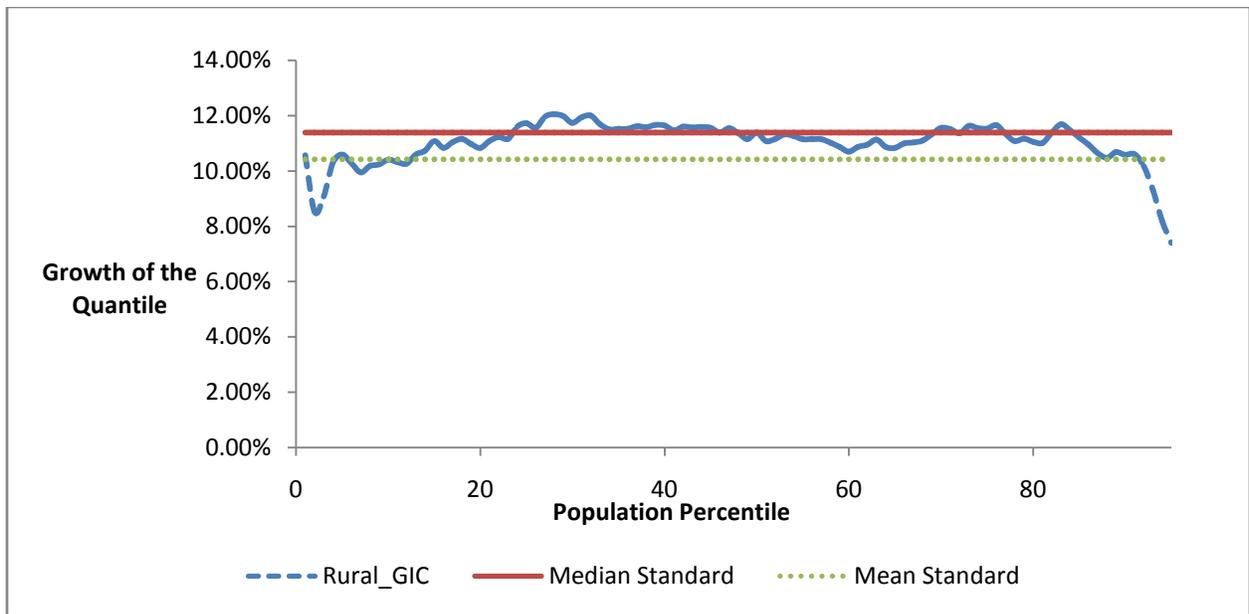


Figure 4.A: Growth Incidence Curve – Rural

Note: The above graph denotes the growth in the consumption expenditure for a quantile in 2009-10 over its consumption expenditure in 2004-05 in Rural areas i.e.: $\{Q_{2009-10}(p) - Q_{2004-5}(p)\}/Q_{2004-5}(p)$

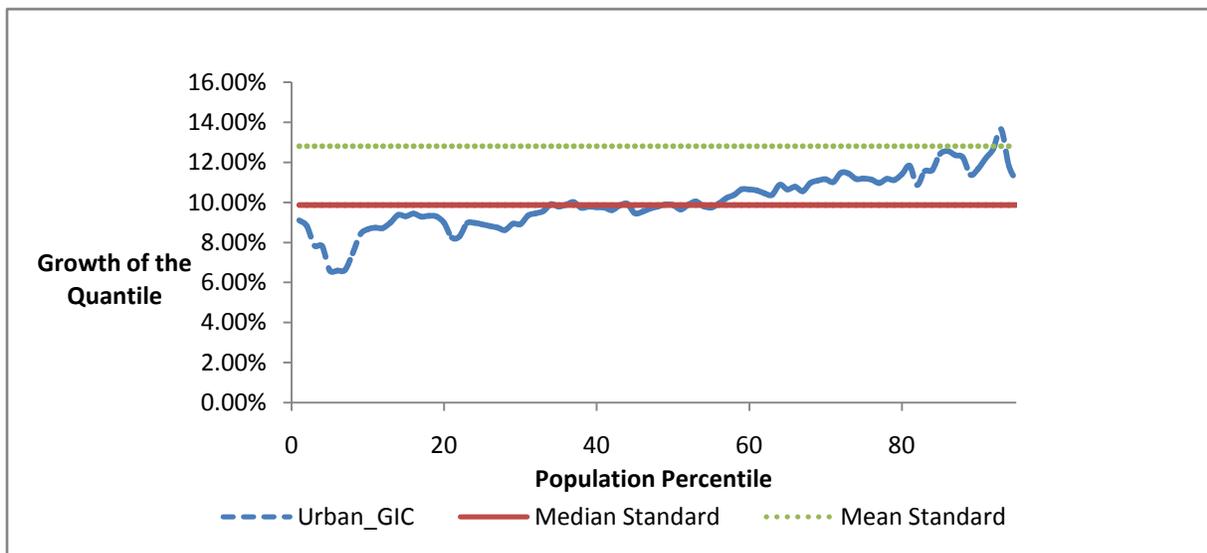


Figure 4.B: Growth Incidence Curve – Urban

Note: The above graph denotes the growth in the consumption expenditure for a quantile in 2009-10 over its consumption expenditure in 2004-05 in Urban areas i.e. $\{Q_{2009-10}(p) - Q_{2004-5}(p)\}/Q_{2004-5}(p)$

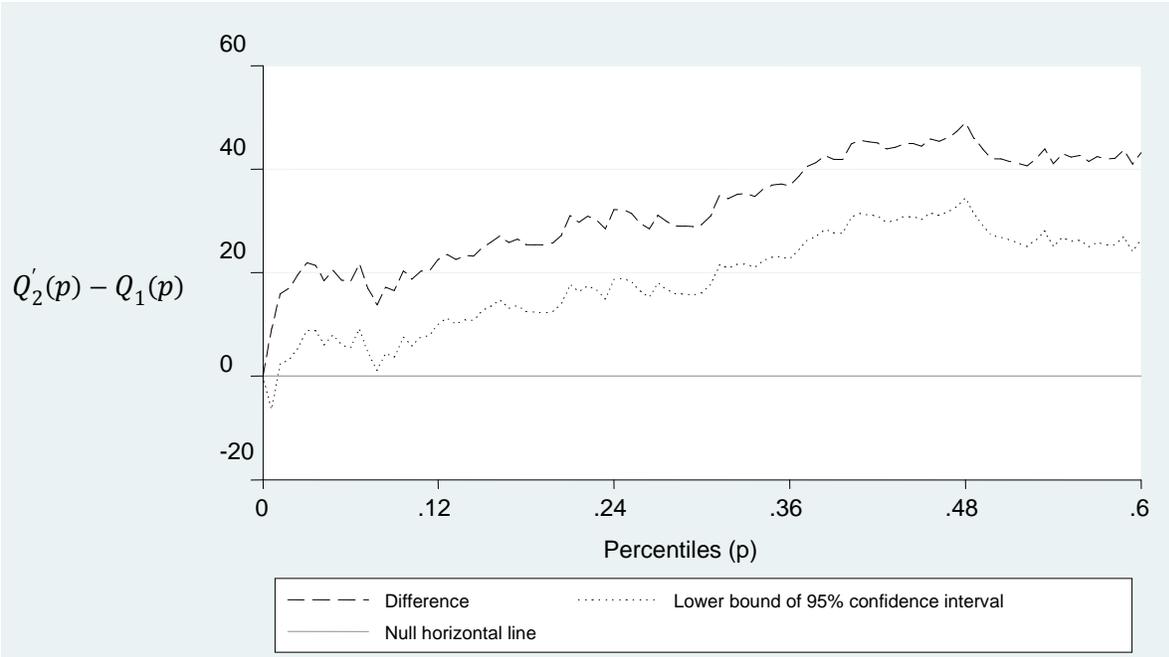


Figure 5.A: Rural - STs - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the STs in Rural areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

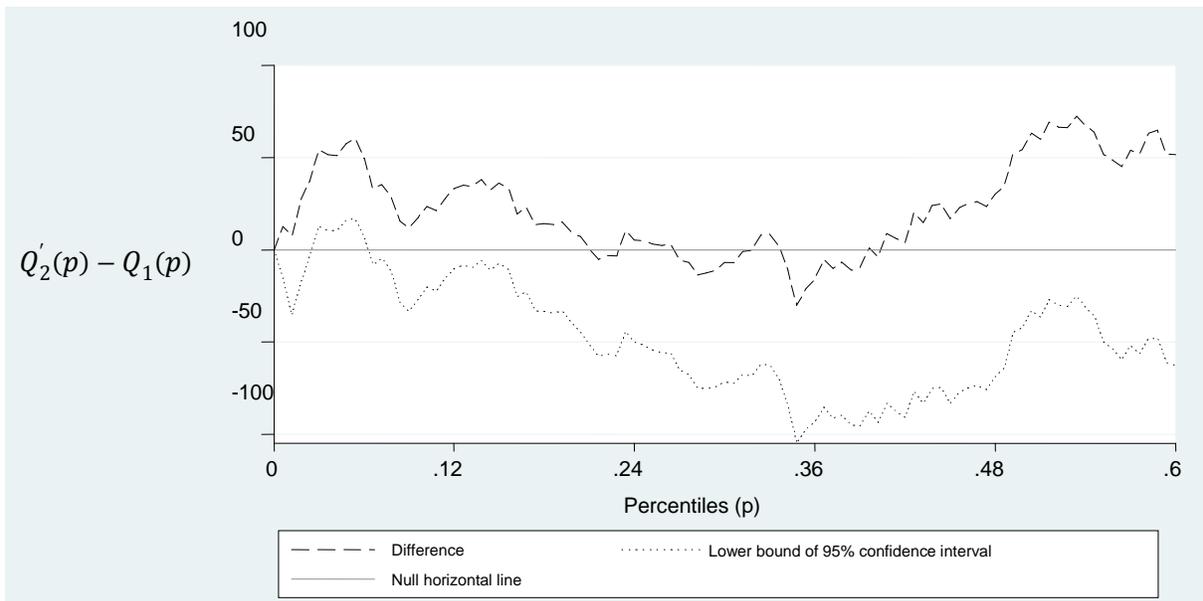


Figure 5.B: Urban - STs - Median Norm

Note: In the above graph, $Q'_2(p)$ is the quantile function for the STs in Urban areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

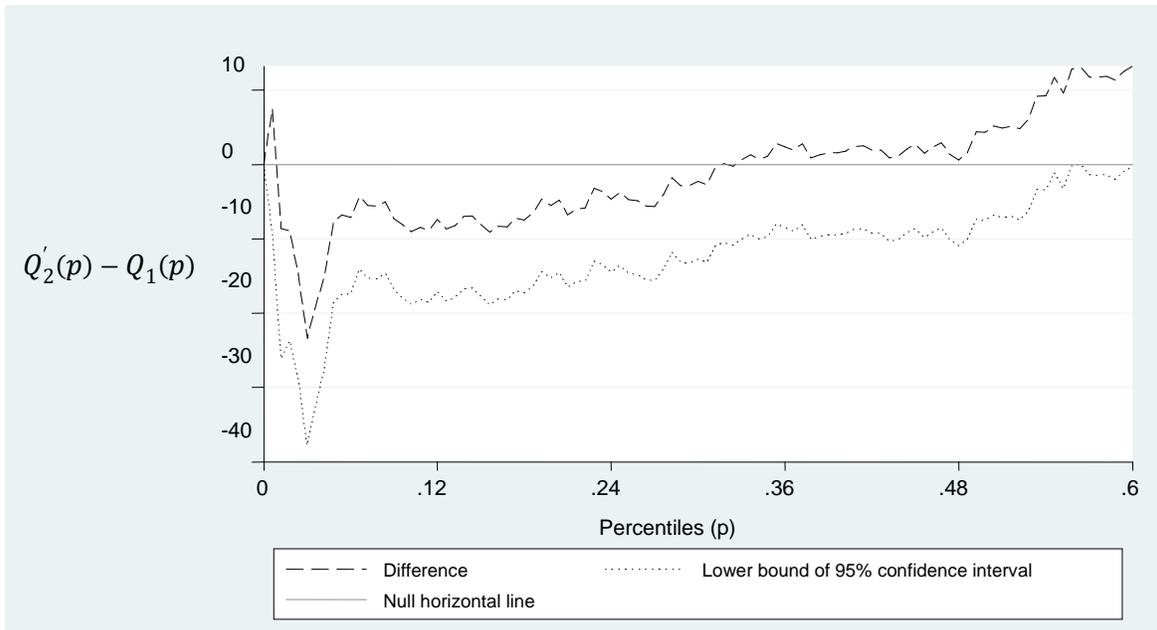


Figure 6.A: Rural - SCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the SCs in Rural areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

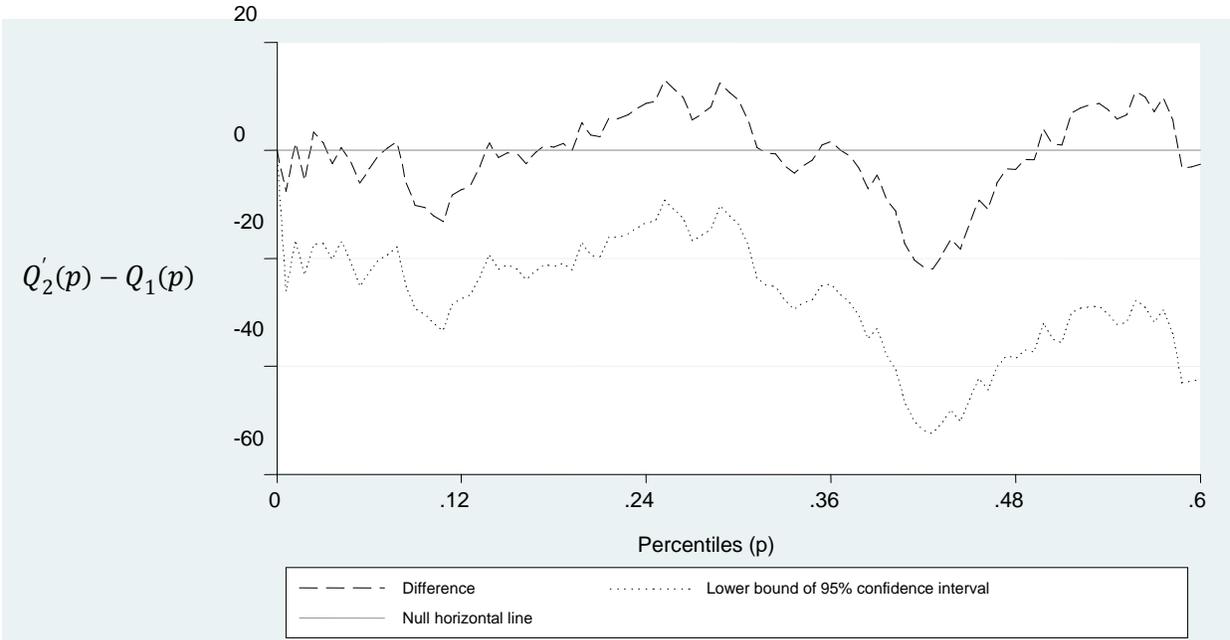


Figure 6.B: Urban - SCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the SCs in Urban areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

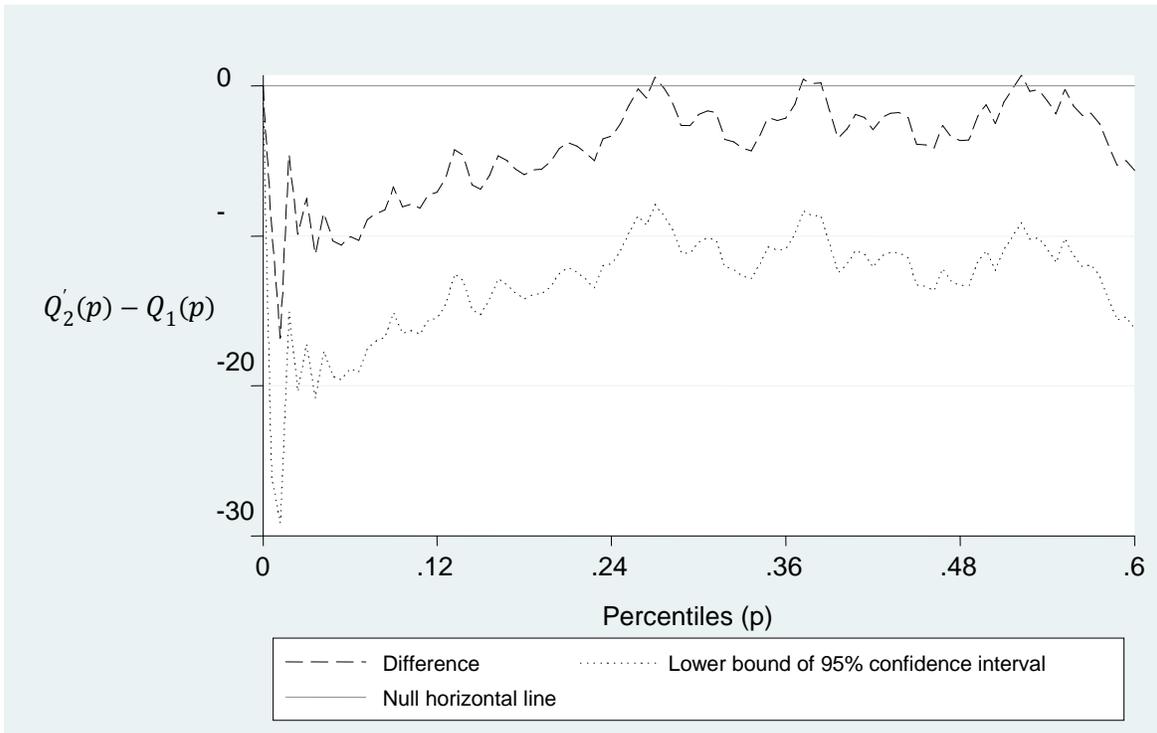


Figure 7.A: Rural - OBCs - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the OBCs in Rural areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

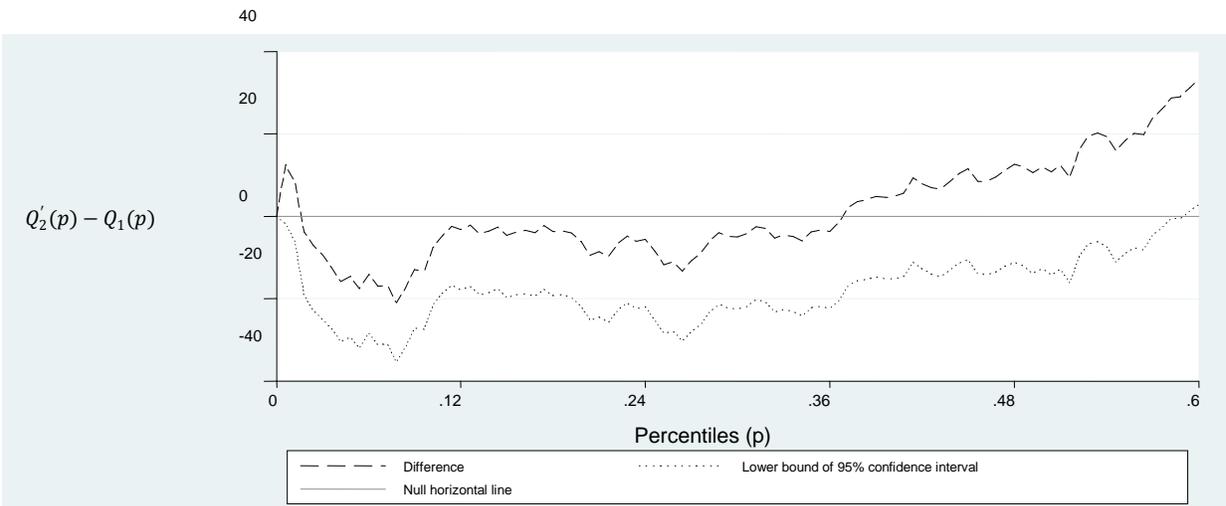


Figure 7.B: Urban - OBCs - Median Norm

Note: In the above graph, $Q_2(p)$ is the quantile function for the OBCs in Urban areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

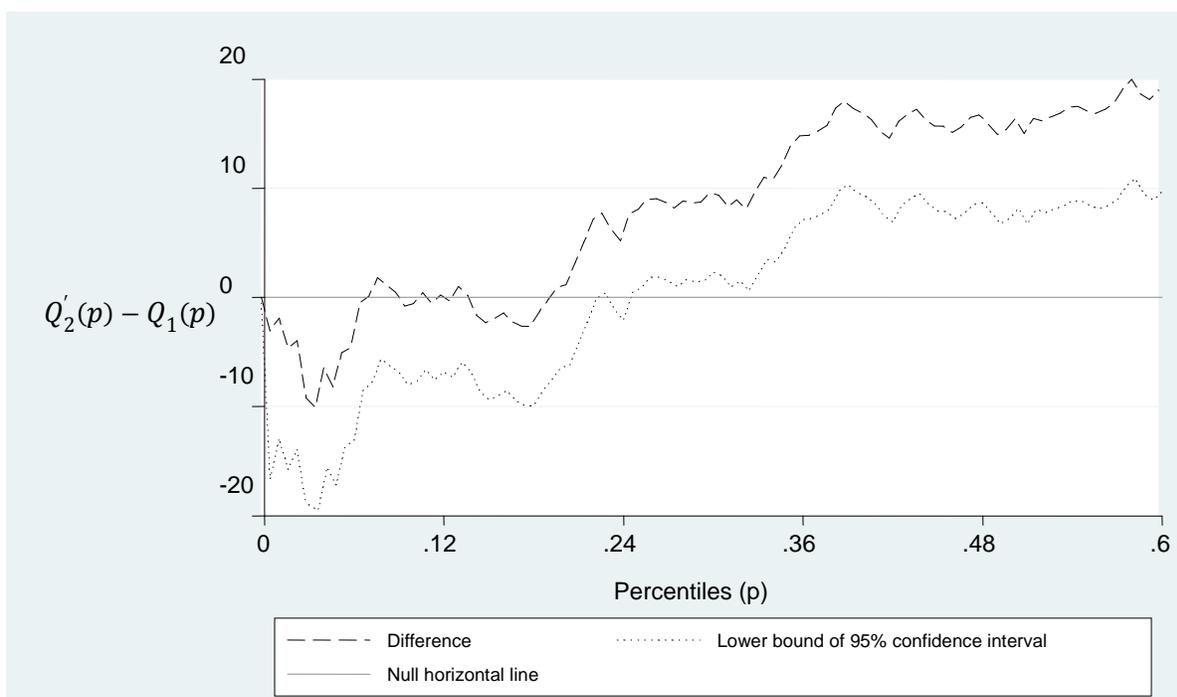


Figure 8.A: Agricultural Laborers - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the Agricultural labourers for 2009-10 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 labourers for 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

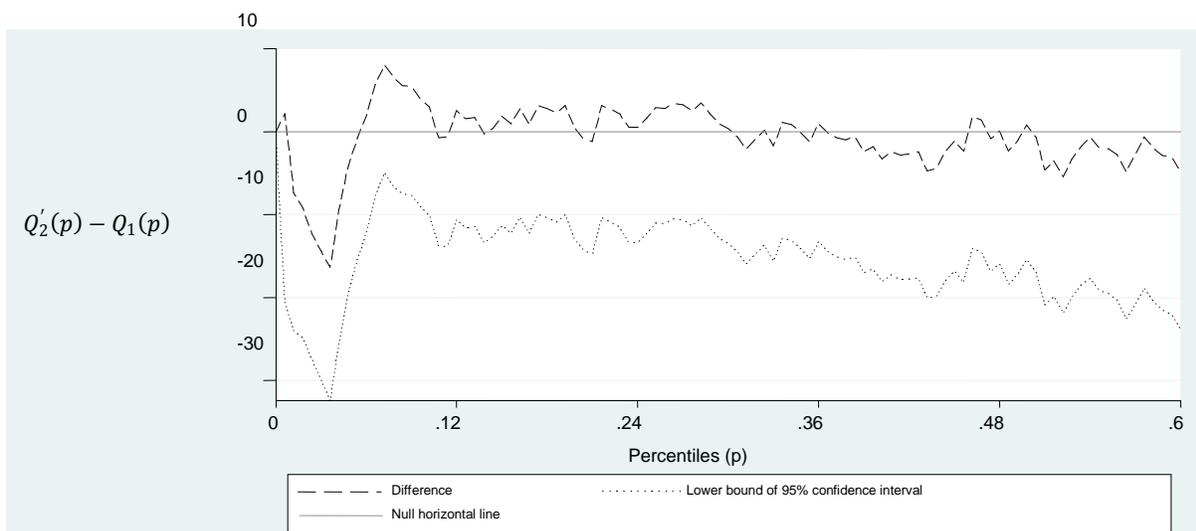


Figure 8.B: Marginal Farmers - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the Marginal Farmers for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

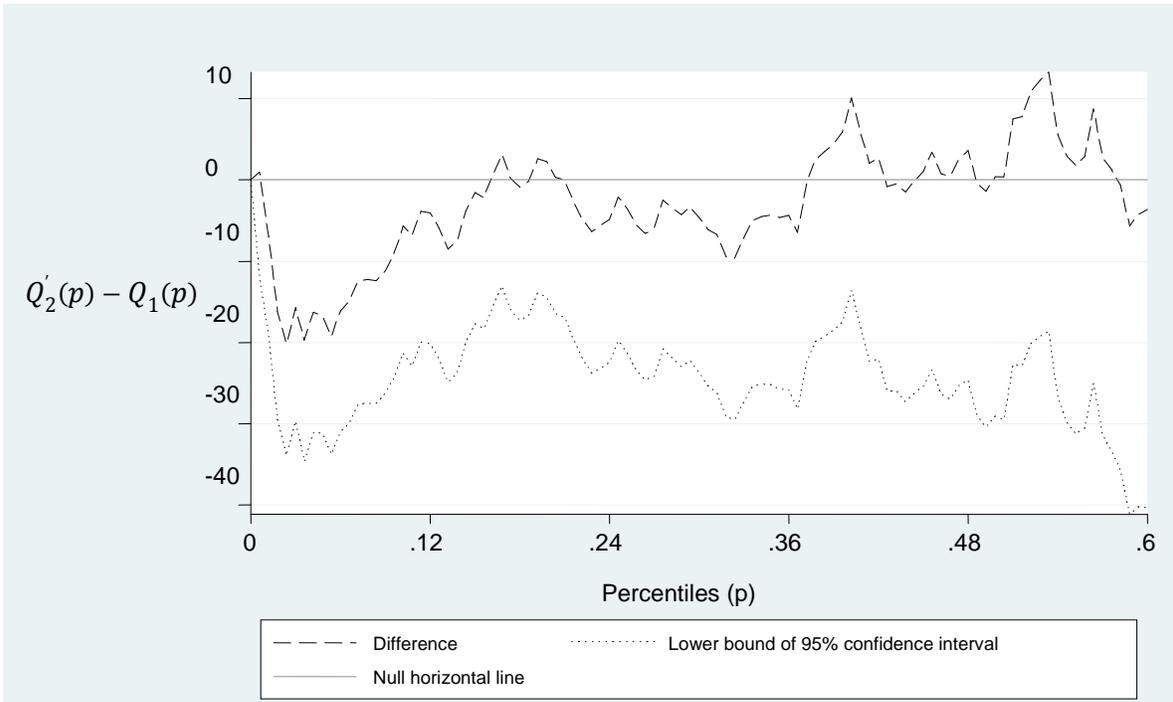


Figure 9.A: Urban - Self-Employed - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the Self-Employed in Urban areas for 2009-10 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 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

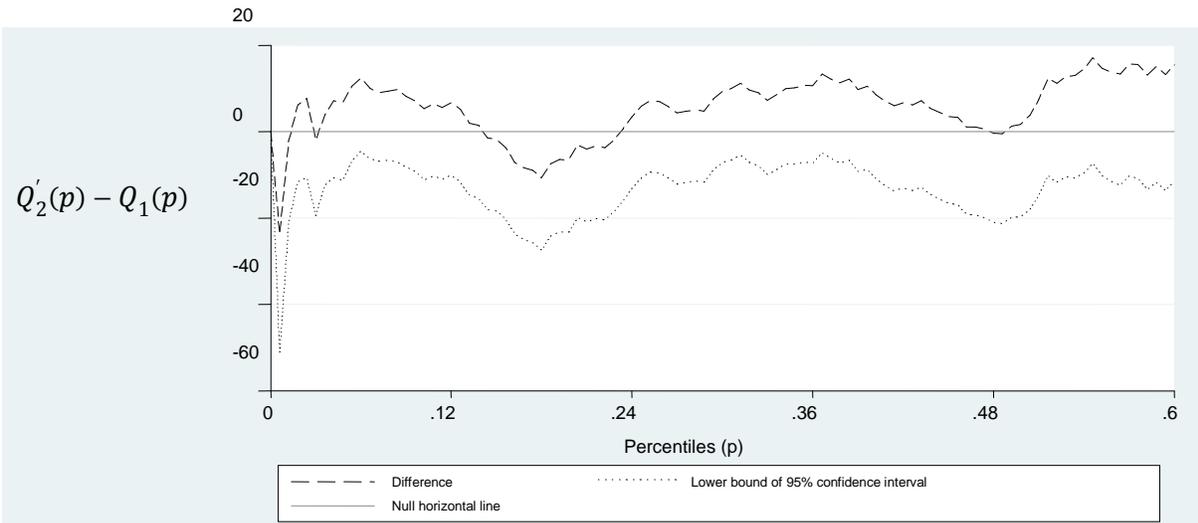


Figure 9.B: Urban - Casual Laborers - Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the Casual Laborers in Urban areas for 2009-10 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 Laborers in Urban areas for 2004-05. The lower bound of the confidence interval is used in order to statistically test for pro-poor growth.

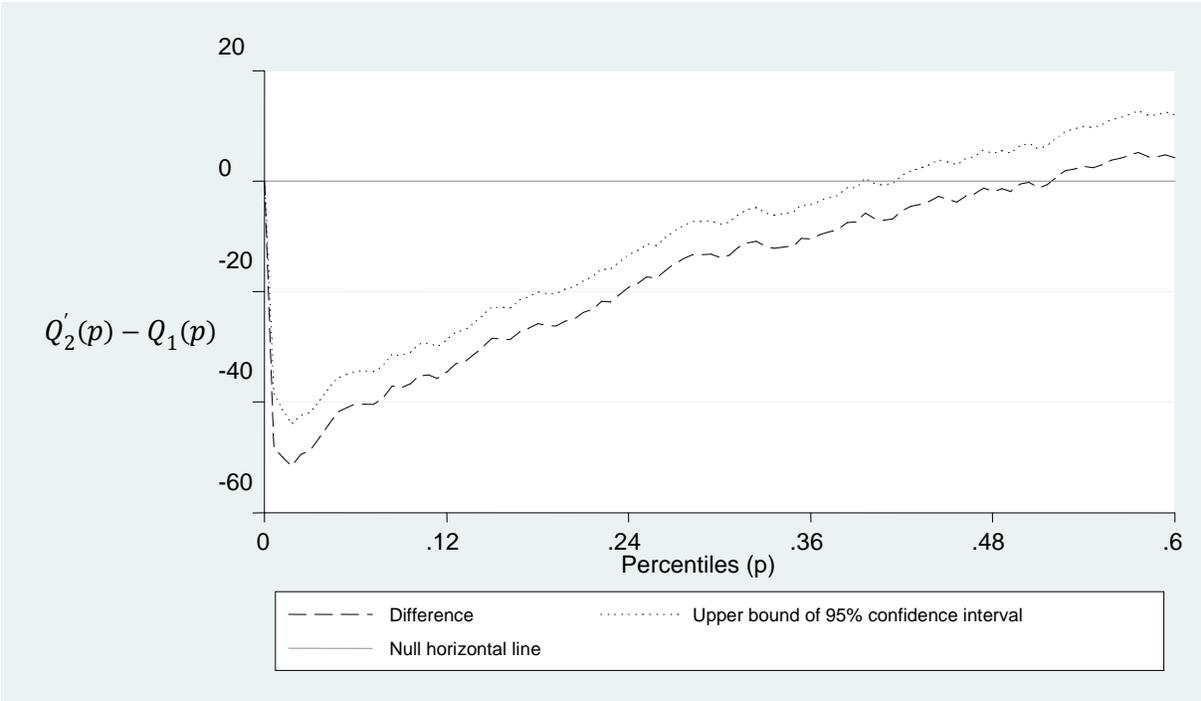


Figure 10.A: Rural Overall - Absolute Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the overall distribution in Rural areas for 2009-10 normalised with absolute standard of growth of the median; $Q_1(p)$ is the quantile function for the overall distribution in Rural areas for 2004-05. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

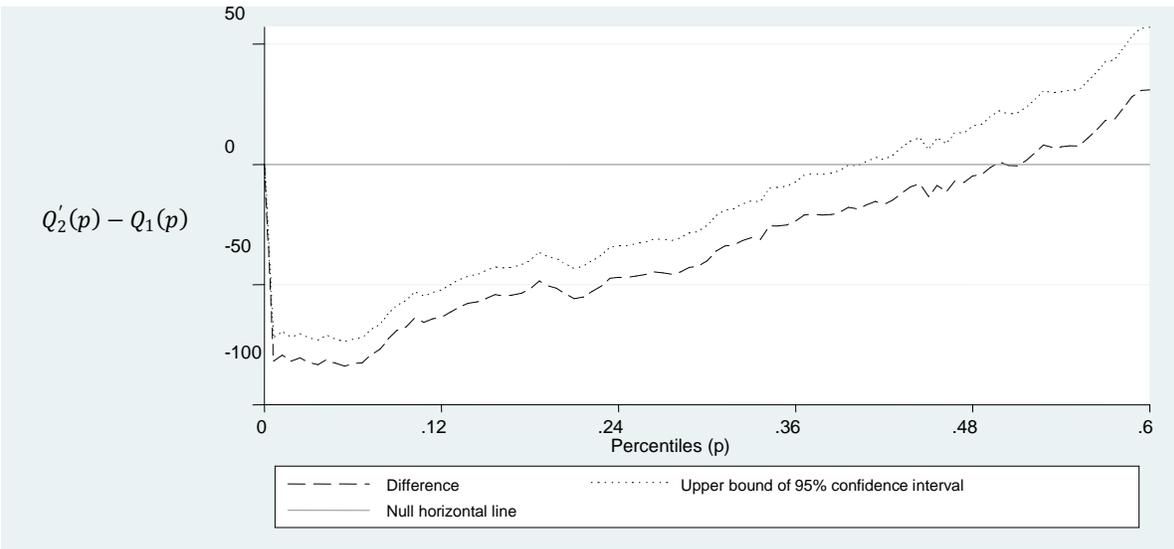


Figure 10.B: Urban Overall - Absolute Median Norm

Note: In the above graph, $Q_2'(p)$ is the quantile function for the overall distribution in Urban areas for 2009-10 normalised with absolute standard of growth of the median; $Q_1(p)$ is the quantile function for the overall distribution in Urban areas for 2004-05. The upper bound of the confidence interval is used in order to statistically test for anti-poor growth.

Table 1 – Real Growth of Rural and Urban Quantiles between 2004-05 and 2009-10*						
Percentile	Rural			Urban		
	Rural 2004-05 Overall (Rs.)	Rural 2009-10 Overall (Rs.)	Growth of the quantile	Urban 2004-05 Overall (Rs.)	Urban 2009-10 Overall (Rs.)	Growth of the quantile
	5	355.79	393.50	10.60%	501.24	534.29
10	407.65	450.08	10.41%	590.41	641.50	8.65%
15	448.65	498.40	11.09%	661.77	723.33	9.30%
20	484.21	536.67	10.84%	731.76	797.38	8.97%
25	515.36	575.80	11.73%	798.58	869.67	8.90%
30	548.60	613.00	11.74%	867.49	944.80	8.91%
35	581.65	648.67	11.52%	936.19	1027.86	9.79%
40	613.93	685.40	11.64%	1015.14	1114.20	9.76%
45	649.16	724.20	11.56%	1100.80	1204.83	9.45%
50	686.77	765.00	11.39%	1189.73	1307.17	9.87%
55	726.41	807.40	11.15%	1291.22	1417.00	9.74%
60	770.41	852.86	10.70%	1394.61	1543.00	10.64%
65	819.02	907.80	10.84%	1522.94	1685.08	10.65%
70	872.94	973.82	11.56%	1658.37	1843.33	11.15%
75	942.19	1050.83	11.53%	1833.37	2038.50	11.19%
80	1030.37	1144.33	11.06%	2067.26	2303.00	11.40%
85	1151.32	1280.33	11.21%	2358.97	2651.56	12.40%
90	1335.63	1477.00	10.58%	2835.16	3166.00	11.67%
95	1723.96	1851.50	7.40%	3787.96	4206.00	11.04%

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 2004-05 and 2009-10 are expressed in constant 2009-10 prices.*