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A Simple Metric for Inclusive Growth with Illustrations from India (1983-2012)

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A Simple Metric for Inclusive Growth with Illustrations from India (1983-2012)

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Abstract

"Inclusive growth" has emerged as a catch-all term for describing the distributional consequences of economic growth. However, there are no widely accepted metrics to quantify inclusive growth. We develop a simple metric based on Atkinson's classic inequality measure. Our metric, like the original Atkinson measure, is fully decomposable and allows for both 'horizontal' and 'vertical' characterizations of inclusive growth. We illustrate our framework using consumption expenditure data from several waves of nationally representative data from India (1983-2012). Overall, growth has been sporadically inclusive with the rural sector marginally more inclusive. However, the urban sector shows relatively greater social group inclusion. Vertical decomposition indicates that middle deciles in the urban sector have experienced longer periods of inclusive growth.

Keywords: Atkinson's index, National Sample Surveys, inequality aversion, inclusion elasticity

1 Introduction

The relationship between growth and inequality has been a central puzzle in development theory and practice (Kuznets, 1955; Lundberg and Squire, 2003; Banerjee and Duflo, 2003; Stiglitz, 2015). While the historical contribution of economic growth in lifting large swathes of developing country populations out of poverty is well-documented (Kakwani and Krongkaew, 2000; Datt and Ravallion, 2002; Adams, 2004), recent evidence suggests that the impact of economic growth is mixed with only a mild coupling between growth and reduction in poverty or inequality (Ostry and Berg, 2011; Zaman et al., 2020). Prominent contributions that introduced the so-called 'elephant curve' (Lakner and Milanovic, 2015; Milanovic, 2016) and the 'Loch Ness Monster Curve' (Alvaredo et al., 2018) document the wedge between within-country income disparity (that has been growing), and between-country income disparity (that has been reducing). A common thread connecting these otherwise disparate methodologies and data sources is the quest for *inclusive growth*. The near universal appeal of inclusive grown lies in delivery of the promised 'inclusion' - non-discriminatory growth that "reduces disadvantages of the disadvantaged while benefiting everyone" (Ranieri and Ramos, 2013). Despite the emergence of inclusive growth as a central normative goal within the inequity-growth discourse cutting across theory and policy, there is little consensus on how it must be measured or tracked. We propose a simple metric for inclusive growth adapted from the classic formulation of Atkinson (1970, 1975).

Inclusion and exclusion, unlike growth, are irreducibly normative constructs. While poverty alleviation has served as a proxy for inclusive growth (Ali, 2007b; ADB, 2012; Klasen, 2010; Rauniyar and Kanbur, 2010; Kireyev, 2017b), even a minimally adequate normative conception of inclusion must also account for distributional consequences of economic growth in addition to its effect on poverty levels (Ali, 2007a; Jayaraj and Subramanian, 2012, 2013; Anand et al., 2013). Any analytic measurement of inclusive growth thus ought to be an exercise in normatively evaluating growth outcomes. A normative evaluation of growth assumes that the overall welfare of a society is contingent on the distribution of the economic product – for example between individuals, social groups, or geographic regions.

For growth to be "inclusive," the distribution of the product of growth must be egalitarian.

Using Atkinson's (1970) canonical equally distributed equivalent income framework to characterize society's inequality aversion, we introduce an "inclusion elasticity" metric to identify when growth is inclusive. Atkinson's normative measure of inequality (Atkinson, 1970) is fully decomposable and allows for an adequate characterization of both "horizontal" and "vertical" dimensions of what constitutes inclusive (or exclusive) growth. The framework that we develop is flexible enough to accommodate heterogeneous preferences for inequality tolerance across space and time.

We illustrate our framework using the nationally representative National Sample Survey (NSS) consumption expenditure data in India from 1983 to 2012. Our dataset includes over 1.3 million households across 19 rounds of nationally representative surveys. India shifted to a high economic growth regime in the early 1980s, and emerged out of the import substitution shadow in the early 1990s (Kohli, 2006). Thus the Indian example presented here encompasses major changes in political economy of growth, and serves as an evaluation of one of the central promises of Indian economic liberalization – inclusive growth.

We present the analyses for vertical (deciles) and horizontal (social groups and religion) decomposition. We find that the urban sector was far less inclusive than the rural sector across three decades. Furthermore, aggregate measures for both sectors mask the unequal pattern of distribution between groups. Lower deciles and marginalized social groups (specially Scheduled Tribes) with historically poor well-being outcomes benefited the least from the rapid economic growth in India.

2 Inclusive Growth and Inequality

Prima facie, inclusive growth appears to be a straightforward, intuitive concept. Yet, it has no universally accepted definition even two decades after the first use

of this term (Kakwani and Pernia, 2000).[1] Two primary conceptualizations have characterized the literature on inclusive growth thus far (Ranieri and Ramos, 2013; Biswas, 2016). The first and dominant interpretation of inclusive growth continues to be based directly on pro-poor growth (PPG) with a focus on sustainable and effective poverty reduction. Accordingly, empirical assessments lean heavily on PPG metrics including decomposition of growth and growth incidence curves (Kireyev, 2017a), and relative or absolute impact of growth on the poor (Duclos, 2009; Araar et al., 2009). This nearly interchangeable definition of inclusive growth with PPG (Habito, 2009) arguably makes it difficult to distinguish between the two concepts (Rauniyar and Kanbur, 2010). Additionally, focus on absolute measures of poverty is problematic as there are issues surrounding poverty lines itself.[2]

At the other end of the spectrum, all-encompassing conceptualizations of inclusive growth have been used to describe broad patterns of growth (Ianchovichina and Lundström, 2009). Such comprehensive frameworks include at least two broad dimensions: outcomes or *benefit-sharing* (income); and processes or *participation* in, and benefit from, economic growth — non-income dimensions such as opportunities of employment, health care, and education (Ali and Son, 2007; Habito, 2009; Klasen, 2010; Ramos et al., 2013; Hasmath, 2015).[3] In fact, Rauniyar and Kanbur (2010) suggested that this issue can be reconciled by calling inclusive growth with non-income dimensions as 'inclusive development'. Most recently, OECD (2018) framework for inclusive growth proposes four categories of indicators: growth and ensuring equitable sharing, inclusive and well-functioning markets, equal opportunities and foundations of future prosperity, and governance. Similarly, WEF

[1] Kakwani and Pernia (2000) first used the term 'inclusive economic growth' to focus on attributes that make pro-poor growth distinct. They defined the term as "one that enables poor to actively participate in and significantly benefit from economic activity".

[2] Global absolute poverty benchmarks are criticized for the PPP exchange rates used (Rao, 2003), divergence in data on consumption and income from different sources (Deaton, 2003), and falling short on reflecting the cost of achieving basic human needs (Sen, 1999).

[3] The most frequent operationalization of non-income dimensions is productive employment, which also subsumes 'employability' i.e. productivity attributes such as health, education. This approach to inclusiveness can be viewed as rooted in Sen's capabilities approach such that it aims to achieve level of equity by enhancing the quality of life and capabilities of all individuals. For instance, Ali (2007a) presents three pillars of such growth- full, protective and decent employment; social protection, and capability enhancement.

(2017) identifies seven broad pillars of inclusive growth and development framework with median income and poverty, and income and wealth Gini indexes as performance indicators of inclusion. However, operationalization of these broad definitions continues to be a challenge as they are either vague or too specific (Klasen, 2010). Combining multiple dimensions for inclusive growth measurement has already been noted as difficult (Kireyev, 2017b). Further, extending poverty and inequality indices to non-income/non-money-metric dimensions can be fraught with concerns (Atkinson, 2011).

Focussing on the benefit-sharing dimension, we present a case for measuring inclusion with a focus on inequality. This will help disentangle inclusive growth from PPG as an important complement to extant normative (distributional) analysis of economic growth. Such an approach is consistent with both theoretical and empirical motivations for (analytically) studying inclusive growth.

2.1 Theoretical motivation

Inclusive growth measurements implicitly assume some tradeoff between "equality and efficiency" even if is not necessarily a "big tradeoff" (Okun, 2015). Inclusive growth measurement makes Okun's celebrated "subjective threshold of deprivation" analytically tractable. We present three central arguments at both the micro and macro levels to show why accounting for inequality is the most attractive analytic strategy for quantifying inclusive growth.

2.1.1 Micro Channels

At the micro-level, first, it has been repeatedly demonstrated that *homo economicus* is indeed averse to inequality (Fehr and Schmidt, 1999; Bolton and Ockenfels, 2006). Individuals can value equality more than efficiency (Fehr et al., 2006), and are willing to pay in order to live in living in a more equal societies (Carlsson et al., 2005). In fact, neural evidence based on MRI confirms the existence of inequality-averse social preferences with further indications of sensitivity to advantageous and disadvantageous inequality (Tricomi et al., 2010). Insights from experimental economics and subjective well-being further report that individuals

care about relative consumption with negative impacts of inequality on aggregate welfare (for a review, see Klasen, 2006).

Second, there is the possibility of the 'tunnel effect' (Hirschman and Rothschild, 1973) breaking down with persistent inequalities, especially in homogeneous regions.[4] Indeed there have been a noteworthy number of socio-political movements protesting widening income gaps within countries over the last decade.[5]

Third, inequalities may influence individual well-being through many indirect channels as well. Inequality alters preferences for redistributive policies through multiple channels including endogenous socio-economic stratification, political influence, and education (Bénabou, 2017). Such inequality of 'opportunities' may result in increased or persistent inequality of outcomes over generations. The 'Great Gatsby Curve' is one illustration of this scenario which depicts an inverse relationship between income inequality and intergenerational mobility (Krueger, 2012). While substantive interpretation of international Gatsby curve is problematic, it offers insights on transmission process of income from parents to children and its relationship with inequality for relatively homogeneous regions such as the United States (Durlauf and Seshadri, 2018), and OECD countries (Causa and Åsa Johansson, 2010). These channels may be more pronounced in developing countries with non-homogeneous populations (for a detailed examination of mobility in India, see Krishna, 2017). Inequality exists between urban-rural sector in provisioning of public utilities such as education (including for training skilled labour) and health care which, in turn, increases intra and intergenerational income inequality. Furthermore, inequality is worsened by attitudes and beliefs entrenched in the social system, poor quality of grass-root governance, and lack of social security.

[4] An individual has a certain threshold for tolerating inequality assuming that economic gains of others will soon be experienced by her as well. However, if there is no change in her economic well-being relative to others, a negative sentiment arises from this relative deprivation. Illustrated using a simple yet deeply insightful parable of a two lane highway with two drivers in each lane, Hirschman's (1973) tunnel effect contextualizes the potential social impact of relative deprivation.

[5] The Occupy Wall Street Movement in US is one such example (Gautney, 2013).

2.1.2 Macro Channels

At the aggregate macro-level, first and foremost for any notion of inclusion, inequality affects the rate of poverty reduction. Assessments of growth elasticity of poverty reduction have shown that increase in inequality offsets the poverty reduction due to growth (Bourguignon, 2002; Ravallion, 1997, 2001). Even with distribution-neutral growth, preexisting inequalities can dampen the pace of poverty reduction (Ravallion and Chen, 2011).

Second, the celebrated Kuznet's hypothesis (Kuznets, 1955) that predicts an "inverted-U" relationship between growth and per capita income is supported by limited empirical evidence. In fact, economic product of growth may bypass the poor or marginalized groups as the people with larger initial share of the (economic) pie tend to gain more from a growing pie (Ravallion, 2009). For instance, Ali (2007b) finds that growth in Asia since 1990s is characterised by the rich getting richer faster than the poor.

Third, it is now well-established that inequality influences economic growth directly and indirectly through weak aggregate demand, inequality of opportunity (especially with reduced provision of education and health), lower public investments, higher taxation, and innovation (Alesina and Rodrik, 1994; Stiglitz, 2015). Indeed, the channel linking inequality and inclusion is modulated by the impact that inequality has on business cycles and conduct of monetary policy (Furman and Stiglitz, 1998).

2.2 Empirical motivation

The theoretical case for using a normative inequality as the basis for measuring inclusive growth is also supported by a broad swathe of empirical research. The expected 'trickle down' effect of benefits of economic growth to the disadvantaged sections have long since been questioned (Arndt, 1983) including in the empirical assessments of convergence of per capita income (Andersson et al., 2013). Moreover, cross-country studies showing the benign impact of growth on poverty (for example, Dollar and Kraay, 2002) have been questioned for focussing on aggregate

outcomes that mask the experience of individual countries (Ravallion, 2001).

Growth Incidence Curves (GICs) (Ravallion and Chen, 2003) for a country are also illustrative of the importance of such disaggregated analysis. For instance, some of the conclusions from GICs for India between 1983 and 2012 (Figure 1) are consistent with the key conclusions from the two global GICs i.e. Elephant and Loch Ness Monster curves. For rural as well as urban sectors, top 5 percentile have consistently gained the most with growth rate exceeding that for mean MPCE. The upper middle class (60-80) and the rich (80-95 percentile) as well as the lower middle class (40-60 percentile) have also grown more than the growth in median MPCE over the three decades. The bottom percentiles (1-40 percentile) experienced increasingly lower growth rates indicating that they are ones clearly left behind in the economic growth of India. While the rural sector largely follows the overall growth trends, urban sector has recorded increasing growth rates for bottom percentiles. In fact, lower middle class (40-60 percentile) has grown at a faster pace than growth rate in median MPCE for the urban sector. These differences in GICs - for sectors within a country and across countries - indicate that inequality may matter differently for different regional aggregation. Hence, decomposability is a useful attribute in an inclusion metric.

Contrasting ex-post growth trajectory of a country against a defined threshold for egalitarian distribution is a noteworthy starting point for visualizing inclusiveness. Significant contributions in this direction include Jayaraj and Subramanian (2012, 2013); Anand et al. (2013). Jayaraj and Subramanian (2012, 2013) consider the anti-poverty budget, which is less than adequate to eradicate poverty, as a Talmudic estate problem.[6] They propose three possible solutions for the division of this budget - lexicographic maxi-min principle[7], proportionality solution[8]

[6]Talmudic estate problem refers to possible divisions of the estate of a deceased person whose debt exceeds the value of his estate.

[7]Income-equalising transfers start from the poorest of the poor till the budget is exhausted. The transfers end at the marginal person while the rich receive nothing, making this division strongly egalitarian.

[8]In this less radically egalitarian solution, allocations are made based on the shortfall of a person's CE from the poverty line.

and equal division rule[9]. Another way to more explicitly visualize efficiency and equity of growth together is by using social welfare functions. Using the utilitarian social welfare function, Anand et al. (2013) propose an integrated measure of inclusiveness that incorporates income growth as well as its distribution. Based on the concept of concentration curves (Kakwani, 1980; Ali and Son, 2007), they use social mobility curves to decompose inclusiveness into growth in average incomes and change in equity. The change in income distribution is measured as the ratio of individual incomes with mean income.[10] Similarly, we present a simple but elegant way of identifying what ideal division of product of economic growth as a function of inequality.

It is important to differentiate these metrics of inclusion from relative PPG. Relative PPG requires a greater improvement of income of the poor relative to the non-poor resulting in reduced income inequality (Kakwani et al., 2004). We make this distinction by using a normatively defined inequality aversion, and accounting for distribution elasticity of growth.

2.3 Empirical Context: India

India is a particularly interesting case to study the outcomes of rapid economic growth. Its economy has been growing at a remarkable pace since the liberalization reforms of 1990s (Figure 2).[11] This growth trajectory raised expectations of improvement in well-being for a country struggling with high levels of depriva-

[9]Under this form of division, surplus product of growth between two time periods, i.e. after each decile is allowed to retain the mean consumption expenditure of the preceding time period, should be equally divided across the deciles. Thus, each decile receives one-tenth of this surplus. This corresponds to strong absolute PPG. They use grouped consumption expenditure data to empirically assess inclusiveness of Indian growth between 1970 to 2010 using this most minimally egalitarian solution of the three.

[10]This ratio is defined as 'income equity index'. Authors differentiate this ratio to arrive at their measure of inclusiveness. They test their measure using individual income gains and shortfalls from the mean for 143 countries between 1980 and 2010 using the World Bank Povcal database.

[11]Real GDP growth between 1950s and 1980s averaged at around 3% (euphemistically called the 'Hindu growth rate'). Since the economic reforms in 1990s, there has been a marked increase in the growth rate. Real GDP grew at an average of 5.7% per annum in the 1990s and 7.3% per annum in 2000s (Mohan, 2008; Mohanty, 2011; Anand, 2014)

tion.[12] While there is a general consensus that poor did benefit from this fast-paced growth[13], the sheer magnitude of poverty remains unacceptably high (Wade and Wolf, 2002). For instance, despite approximately 140 million people moving out of absolute poverty between 2008 and 2011, India still accounted for 30% of the global poor.[14] Moreover, the effect of growth on poverty reduction has not been consistent across sectors (both urban and rural as well as agriculture and non-agriculture), states and social groups (Ravallion and Datt, 2002; Datt and Ravallion, 2010, 2011). Acknowledging these disparities[15], the last two five-year policy plans since 2006 emphatically called for the pursuit of inclusive growth. The XI^{th} five year plan[16] (2007-08 to 2011-12) stressed on rapid growth as the means to achieve a rather loosely-defined broad-based and inclusive growth. The XII^{th} five year plan[17] (2012-13 to 2017-18), outlined inclusive growth more comprehensively. The plan viewed inclusion as a multidimensional concept including poverty reduction, improvements in health outcomes, access to and improvements in standards of education, opportunities for employment, and improvement in provision of basic amenities. It acknowledged that, in addition to uninterrupted growth, core strategy of inclusion should pay special attention to disadvantaged groups. Schemes and interventions specifically directed towards SC, ST, OBC, women and other minorities are required to uplift their status.[18] Despite paucity of data to assess all these dimensions appropriately, the plan[19] listed the achievements during 2007-2012 on decline in incidence of poverty, increase in employment and livelihood among other goals (including agriculture, health, education, infrastructure development, energy, and natural resource management).

[12] As per the Tendulkar method, poverty ratio in India was 45.3 in 1993-94, 37.2 in 2004-05 and 21.9 in 2011-12 (Press Note on Poverty Estimates, 2011-2012; Planning Commission of India, 2013).

[13] For a critical review of the official figures published by Planning Commission of India, see Deaton and Dreze (2002); Himanshu (2007).

[14] World Bank's Global Monitoring Report for 2014-15 on the Millennium Development Goals

[15] Approach paper to XI^{th} five year plan (2006); pp. 1

[16] The XI^{th} plan is titled "Towards Faster and More Inclusive Growth".

[17] The XII^{th} plan, titled "Faster, Sustainable and More Inclusive Growth".

[18] Approach paper to XII^{th} five year plan (2006); pp. 2

[19] This is also discussed in the latest Economic Survey 2014-2015; Statistical Appendix, pg A-129 - A-140.

More rigorous assessments of inclusive growth, however, reveal a rather dismal picture. Overview of performance of India since economic reforms on multiple dimensions of human development such as poverty, employment, education and gender equality is reportedly underwhelming on all counts (Mohapatra and Sharma, 2013). While we focus the discussions on the benefit-sharing component of growth here-on, a review of the few studies available on other components of growth are indicative of an overall lack of inclusion.[20]

Empirical evaluations, based mainly on the detailed quinquennial consumption expenditure surveys of NSSO, reveal that growth has been highly uneven, with the urban sector and backward social groups performing the worst, in the post-liberalization era. Thorat and Dubey (2012) observed that incidence of poverty has declined for all socio-religious groups between 2004-05 and 2009-10, although poverty for backward social groups (specially SCs) declined at a relatively lower rate. Upon decomposing this reduction in poverty into growth and distribution components (following Kakwani and Pernia (2000)), the author concluded that poverty reduction due to growth in consumption expenditure was affected negatively[21] by increasing inequality in the 2000s. Motiram and Naraparaju (2013, 2014) evaluate the growth rate of mean and median consumption expenditure using both, absolute and relative, PPG measures for 2004-2010. They find that, despite the 'trickle down' of growth in urban and rural sectors, growth has been biased in favour of the middle and richer groups and has largely evaded the backward social groups. They also found growth in the urban sector to be anti-poor (using either PPG measure). Tripathi (2013)'s study on 52 large cities[22] confirms the general trend of increased inequalities and lower level of inclusion in urban India.

[20] Even the proposed plans for development of education as outlined in *Approach to XI^{th} five year plan* document did not pay sufficient attention to critical issues of delivery and lack a holistic integrated view towards education (Tilak, 2007). Similarly, employment growth in 1993-2004 was slower as compared to 1983-1993 (with a significant decline in real wage rate of regular salaried workers and urban casual workers too) (Raveendran and Unni, 2007) followed by an overall increase in socio-economic inequalities in regular employment between 1993 and 2010 (Singh et al., 2013).

[21] Thorat and Dubey (2012) observed that inequalities in urban areas increased more than in rural area.

[22] Tripathi (2013) uses 'Borda ranking' to assess inclusiveness.

Ray and Kar (2020) review the trade-off between inclusive growth and structural transformation in India to conclude that lack of manufacturing growth between 1980-2010 and rise in inequality during this period (as expected based on Kuznet's hypothesis) resulted in "growth without inclusion". This was one of the primary drivers for aggressive anti-poverty measures in the country. However, this policy focus only on poverty while inequality was increasing is one main reasons for slow and uneven pace of poverty reduction in India (ADB, 2012; Kapoor, 2013)).[23] Economic inequality increased during the 1990s and, as a consequence, pace of poverty reduction decreased (Sen and Himanshu, 2004). Poverty reduction is also starkly different between urban and rural sector, as well as across social groups and states. For instance, the rural-urban gap in poverty headcount ratio was 16.5 in 2004-2005 and 12.9 in 2009-10 (Shukla and Mishra, 2014). It is, thus, vital to examine the change in disaggregated inequality before drawing any conclusions about benefits of growth.

Emphasis on growth elasticity of poverty for India is problematic for another reason. There is considerable debate surrounding the official poverty lines pertaining to methods used ranging from the calories-based norms proposed by the 1993 Lakadwala Expert Group (Sen, 2005; Himanshu, 2010) and the 2014 Rangarajan Expert group (Subramanian, 2014b), the money-metric poverty identification proposed by the 2009 Tendulkar Committee (Subramanian, 2011) as well as the deflators used (Deaton, 2008). A few recent studies have proposed inclusive growth metrics that look beyond poverty lines. For instance, Suryanarayana (2008); Suryanarayana and Das (2014) measure the proportion of population with consumption expenditure below 60% of the median - the 'inclusive coefficient' - using unit level data for 1993-94 to 2004-05 and 2009-10 to 2011-12 respectively. They conclude that while the average consumption expenditure has increased across rural and urban sectors between 1993 and 2012, the growth process has been uneven. Post-reforms growth has largely benefited the rural sector, and better-off states and social groups.

[23]This includes PPG assessments for India most notable of which are Ravallion and Datt (2002); Ravallion (2004).

3 Measuring Inclusive Growth

A welfare-theoretic normative assessment of a society with mean income ($\bar{Y}$), and inequality ($I;\ 0 \leqslant I \leqslant 1$), can be written as (Lambert, 1989):

$$W = \bar{Y}(1 - I);\ \ 0 \leqslant I \leqslant 1 \tag{1}$$

Let $\left(W_0, \bar{Y}_0, I_0\right)$ be the welfare, mean income, and inequality respectively at time t_0, and economic growth ($\bar{Y}_1 > \bar{Y}_0$) is accompanied with a change in inequality levels ($I_1 \gtreqless I_0$). What are the conditions under which this economic growth is *inclusive*? Is an increased welfare ($W_1 > W_0$), a sufficient condition for inclusive growth? We investigate this question using the more flexible Atkinson's index to operationalize the intuition in (1). The specification of W in (1) imposes a constant inequality penalty on welfare that is only contingent on the mean income levels in the society ($\frac{\partial W}{\partial I} = -\bar{Y}$). In the development of our framework, we use consumption rather than income. A welfare function defined on consumption is theoretically more attractive, and more practically, our illustrative empirical exercise uses the Indian consumption data. However, our primary focus here is on a welfare-theoretic framework, and we abstract from the income versus consumption debates (Krueger and Perri, 2006; Aguiar and Bils, 2015; Gradín and Wu, 2020). The inclusive growth metric developed here can be used with both income and consumption data.

Consider a society with average per-capita consumption, $\bar{Y}_t$ (in time period, t). Let Φ_t be the distribution of per-capita consumption across all households. We posit that there exists a social welfare function $U(\cdot)$ that measures social welfare as a function of the mean level of consumption as well as how consumption is distributed across different households.

$$W_t \ = \ U\left(\bar{Y}_t, \Phi_t\right) \tag{2}$$

The existence of the social welfare function $U(\cdot)$ defined in (2) is necessary and sufficient to construct metrics that normatively evaluate the 'inclusiveness' of economic growth. While comparing $U(\cdot)$ evaluated at two different time periods is

fraught with theoretical difficulties, the 'inequality penalty' on social welfare is comparable across time. The maximum social welfare, W^*, that can be achieved at a given level of mean consumption, $\bar{Y}$, corresponds to perfect consumption equality ($\Phi = \Phi^*$):

$$W_t^* = U\left(\bar{Y}_t, \Phi^*\right) \tag{3}$$

With standard egalitarianism assumptions for $U(\cdot)$, we have ($W \leqslant W^* \; \forall \; \Phi \neq \Phi^*$), with the equality holding in the case when the social welfare function is perfectly utilitarian. We can now define the welfare cost of inequality as:

$$\Delta_t = 1 - \left(\frac{W_t}{W_t^*}\right) \tag{4}$$

Δ represents the fraction of welfare lost as a result of society's aversion for inequality, and ($0 \leqslant \Delta \leqslant 1$).

We use the classic formulation of Atkinson (1970) to operationalize normative measures of inclusive growth derived from (2) and (4). We adapt Atkinson's "Equally Distributed Equivalent Income" and define EDEC or Equally Distributed Equivalent Consumption. EDEC represents perfectly equal consumption ($\Phi = \Phi^*$) such that the aggregate social welfare, W_t is unaltered from the one obtained under actual extant distribution, Φ_t. Let Θ_t be the EDEC in time t with actual distribution of consumption, Φ_t. Using (2), we get:

$$W_t = U\left(\bar{Y}_t, \Phi_t\right) = U\left(\Theta_t, \Phi^*\right) \tag{5}$$

EDEC enables a straightforward computation of welfare loss in (4).

$$\Delta\mathbf{A}_t = 1 - \left(\frac{\Theta_t}{\bar{Y}_t}\right) \tag{6}$$

This Atkinson welfare loss metric is consistent with the general metric defined in (4). The difference between the mean consumption level ($\bar{Y}_t$) and EDEC (Θ) represents the inequality penalty on welfare; $\Theta_t \leqslant \bar{Y}_t$, so that $0 \leqslant \Delta\mathbf{A} \leqslant 1$.

Consider an elementary additive social welfare function, $W_t(\cdot)$ that is com-

puted across consumption bundles of $(1, \ldots n)$ households as a simple average of individual household utilities U, that takes aggregate household consumption:

$$W_t = \frac{1}{n} \sum_{i=1}^{i=n} U_{it} \left(Y_{it}, \, \Phi_t \right) \tag{7}$$

Using Atkinson's specification (1970), we get:

$$U_{it} = \begin{cases} \frac{(Y_{it})^{1-\varepsilon_t}}{1-\varepsilon_t} & ; \quad \varepsilon_t \neq 1, \; \varepsilon_t \geqslant 0 \\ \\ \ln \left(Y_{it} \right) & ; \quad \varepsilon_t = 1 \end{cases} \tag{8}$$

In (8), ε_t represents the extent of inequality aversion at time t. For a perfectly utilitarian case, $\varepsilon_t = 0$. Combining (8), (7), and (5) we obtain EDEC (Θ) as:

$$\Theta_t = \begin{cases} \left(\frac{1}{n} \sum_i \left((Y_i)^{1-\varepsilon_t} \right) \right)^{\frac{1}{1-\varepsilon_t}} & ; \quad \varepsilon_t \neq 1, \; \varepsilon_t \geq 0 \\ \\ \left(\prod_i \left(Y_i \right) \right)^{\frac{1}{n}} & ; \quad \varepsilon_t = 1 \end{cases} \tag{9}$$

The Atkinson welfare loss metric $(\Delta \mathbf{A}_t)$ is now easily computed by substituting (9) in (6). For $\varepsilon = 1$, $\Delta \mathbf{A}_t$ is the same as welfare loss calculated using a Foster welfare function based on the log-mean deviation (or the, "Theil-L").

3.1 Inclusive Growth Metric

In (6), we set $\eta_t = \frac{\Theta_t}{\bar{Y}_t}$ so that $\Delta \mathbf{A}_t = 1 - \eta_t$. The ratio of EDEC and mean income is a measure of the distributive efficiency. Thus, a minimal condition for inclusive growth is that distributive efficiency improves with an increase in mean consumption growth. Formally, we can write this condition as:

$$\frac{\partial \eta}{\partial t} > 0 \; \forall \; \frac{\partial \bar{Y}}{\partial t} > 0, \text{ and } \eta_t < 1 \tag{10}$$

(10) lays out a necessary condition for consumption path to be normatively classified as being "inclusive." We operationalize the inclusive growth condition in (10) by defining a metric to measure inclusive growth across a given time interval,

$[t-1, t]$. We define inclusion elasticity of consumption growth as:

$$\left.\begin{aligned} E_{(\Delta \mathbf{A}_t, G_t)} &= \frac{\partial \ln \Delta \mathbf{A}_t}{\partial \ln G_t} \\ G_t &= \frac{\bar{Y}_t - \bar{Y}_{t-1}}{\bar{Y}_{t-1}} \end{aligned}\right\} \tag{11}$$

In order to empirically evaluate (11), we write out an arc-elasticity approximation as:

$$E_{(\Delta \mathbf{A}_t, G_t)} \approx \left(\frac{\Delta \mathbf{A}_t - \Delta \mathbf{A}_{t-1}}{\left(\frac{\Delta \mathbf{A}_t + \Delta \mathbf{A}_{t-1}}{2}\right)} \right) \cdot \left(\frac{\left(\frac{G_t + G_{t-1}}{2}\right)}{G_t - G_{t-1}} \right) \tag{12}$$

The inclusive growth condition in (10) requires that elasticity computed in (12) be negative for consumption growth to be "inclusive" at time t (when consumption growth is positive). In order to simply our exposition, and retain our focus on inclusive *growth*, we define $E_{(\Delta \mathbf{A}_t, G_t)}$ only when growth is positive. Our approach is consistent with the so-called "centrist" interpretation of inequality (Kolm, 1976; Subramanian, 2014a, 2015).

An inclusive growth metric based on the Atkinson index also allows for perfect sub-group decomposition, and thus shed light on horizontal inclusiveness (between social groups, between geographic regions, etc). The Atkinson inequality index (the welfare loss metric, $\Delta \mathbf{A}$, that we have used here) is a sum of 'between,' and 'within' components — $\Delta \mathbf{A} \equiv \Delta \mathbf{A}^B + \Delta \mathbf{A}^W$. In order to investigate the impact of consumption growth on horizontal groups, we simply re-compute elasticity in (12) for between ($\Delta \mathbf{A}^B$), and within ($\Delta \mathbf{A}^W$) components. If $E_{(\Delta \mathbf{A}_t, G_t)}$ represents the overall inclusion elasticity, $E_{\left(\Delta \mathbf{A}_t^B, G_t\right)}$ represents the horizontal inclusion elasticity of consumption growth.

4 Data

We use the nationally representative household level micro-data from Consumption Expenditure Surveys (CES) of National Sample Survey (NSS) from 1983 to

2012.[24] In total, we have 19 rounds of survey data including seven quinquennial (thick) CESs corresponding to the following agricultural years: 1983 (38^{th} round), 1987-1988 (43^{rd} round), 1993-1994 (50^{th} round), 2004-2005 (61^{st} round), 2009-2010 (66^{th} round) and 2011-2012 (68^{th} round). We do not use the CES of 1999-2000 (55^{th} round) despite it being a thick round as several issues have been documented with that round (Sen, 2000).[25] The 55^{th} round (1999-2000) is a particularly problematic round as NSS used an experimental questionnaire. Unlike the previous and later rounds where data on 30 day and 7 day recall periods was collected from different households, 55^{th} round recorded expenditure for both these recall periods from the same household. This lead to 'reconciliation' of expenditure between these two recall periods by households (Deaton and Dreze, 2002; Deaton and Kozel, 2005). 55^{th} round also recorded expenditure on low frequency items for the last 365 days. This resulted in lower average expenditure reported but increased the number of households reporting something (Sundaram and Tendulkar, 2003). These changes in the questionnaire design led to a lower mean but higher expenditure estimates for bottom tail of the distribution which reduced poverty and inequality figures. To maintain uniformity across the rounds, we use the expenditure recorded using the uniform recall period of 30 days.

To deflate the MPCE reported in each NSS round, we have used the Consumer Price Index for Agricultural Labour (CPI-AL) for the rural sector and CPI for Industrial Workers (CPI-IW) for the urban sector. The average monthly data for the months corresponding to each NSS survey was used to construct both sectoral deflators. Base year for CPI-AL is 2004 and for CPI-IW is 1982. For all our analysis that combines rural and urban sectors, we have normalized CPI-AL to CPI-IW to create a common deflator.

[24] The thin rounds between the quinquennial rounds involve smaller sample sizes and a different sampling design. These rounds are often not used in the routine analyses using CES as they give seemingly anomalous results. For instance, Deaton and Dreze (2002) note that MPCE reported in the thin 54th round (1998) has not increased since the 50^{th} thick round of 1993-94. While this might raise a red flag for poverty figures, we only use inequality indexes. Moreover, we choose to use the average MPCE from the thin rounds as well for continuity of data collected by the same organization.

[25] We also do not use (thin) Round 47 and Round 58 since there were two rounds in the years 1990 and 2002 respectively. We do not use the data for thin Round 45 (1989-1990).

There are a few important points that need to be highlighted while using CES data of the last three decades. First, information on the tails of the distribution is not likely to be accurate. We remove the top and the bottom one percentile of data to account for this. Second, the classification of social groups was threefold upto the 50^{th} round - Scheduled Castes (SCs), Schedules Tribes (STs) and General category. 55^{th} round added Other Backward Classes (OBCs) to these categories, which was further broken down into OBCs and Other Social Groups (OSGs) in later rounds (61^{st} onwards). For the horizontal decomposition of our results based on social groups, we continue to subsume OSGs in the OBCs group for rounds after the 55^{th}. So, the classification of groups is threefold upto 50^{th} round and fourfold afterwards. Third, there is a lack of convergence in the consumption recorded by NSS and National Accounts Statistics (NAS) of the Central Statistics Office (CSO). The mean consumption reported by NAS has been consistently and progressively larger than the NSS estimates. Last, there are issues reported with specific CES rounds of NSS. The 66^{th} round (2009-2010) was a drought agricultural year resulting in a downward bias in MPCE for rural sector. Despite these well-documented limitations, the NSS-CES data continues to be the most robust nationally representative portrait of consumption expenditure in India

5 Results

Growth incidence curves for the six thick rounds between 1983 and 2012 (Figure 3) reveals that rate of growth has varied considerably for the top and bottom percentiles. This indicates that growth has been sporadic across the percentiles. The last three decades have witnessed a slow increase in consumption expenditure in India. The average rate of growth observed is 0.03% for rural and 0.02% for the urban sector. Growth incidence curves for 1983 to 2012 are starkly different for rural and urban sector. In the rural sector, the lower consumption expenditure percentile have fared better. In fact, the rate of increase in consumption expenditure of the bottom 40 percentile has been greater than the growth in mean and median expenditure. The top 5 percentile continues to perform better as well. GIC for the urban sector, on the other hand, resembles the Elephant's curve albeit

with a depressed back from 5^{th} to 20^{th} percentiles and an elongated forehead from 75 to 90 percentiles. Expenditure of the top 20 percentile continues to increase at a rate greater than increase in mean and median expenditure. 40^{th} to 60^{th} percentiles have also grown faster than other percentiles. Thus, we find evidence of India being cleaved into the 'rupee economy' i.e. rural sector and the 'dollar economy' i.e. urban sector (Krishna, 2017). Mean MPCE has consistently increased in both sectors with an average CAGR of 0.019 and 0.027 in rural and urban sectors respectively. Both sectors have experienced periods of economic contraction i.e. negative CAGRs as well.

Overall, growth has been inclusive in nine out the thirteen time periods analysed. In the combined sample, growth was not inclusive only 1993-1995, 1999, 2005-2006, and 2012 using the three standard inequality aversion values (Table 1). Depending on inequality aversion, the distributive efficiency of overall growth has varied between 0.93 to 0.71 (Figure 4)[26]. However, data from the thick rounds indicates that 2012 has been the only phase of inclusive growth over all with negative inclusion elasticity accompanied with positive growth in mean consumption (Table 2 and Appendix; Figure 7). However, if the inequality aversion is greater than 1, i.e. the emphasis is on change in consumption of lower end of the distribution, the growth has not been inclusive over the three decades. Sector-wise analysis indicates that growth in rural sector has been inclusive in five out of the seventeen relevant time periods analysed - 1991-1993, 1998, 2002, and 2007 (Table 3). 2008 is an interesting year as inclusion elasticity is negative only for inequality aversion of 2 indicating redistribution i.e. the households with lower consumption expenditure gained while those will greater consumption experienced contraction. Analysis of only thick rounds indicates that the sector recorded negative inclusion elasticity with positive change in CAGR only between 2005 and 2010 (Table 4). Positive inclusion elasticity in 2012 could be an outcome of reduced consumption in the preceding year as 2010 was a drought year. Similarly, urban sector had twelve inclusive growth periods out of seventeen with the exceptions being 1990, 1993, 1994, 1998, 2005, and 2006 (Table 5). In contrast, thick rounds' data indicates that the sector did not gain inclusively until the last phase in 2012 (Table 6).

[26]The distributive efficiency for thick rounds is presented in the Appendix; Figure 6.

Neither sector experienced inclusive growth even a decade post liberalization.

To illustrate the decomposability of inclusion elasticity metric, we also present horizontal (deciles) and horizontal (social groups and religion).

Horizontal Decomposition: Social Groups and Religion

Between social groups', overall the inclusion elasticity is negative for 1994, 2010, and 2012 in the overall sample (Table 7). Social groups in rural sector experienced inclusive growth only in 2010 (Table 8). In contrast, social groups in the urban sector experienced inclusive growth in all periods except 1994-2005 (Table 9). Figure 8 (appendix) presents the inclusion elasticity for overall sample and both sectors. For horizontal decomposition by religion (Appendix; Figure 9), between groups inclusion elasticity was negative only for 2010 in the overall (Table 10) and urban (Table 12) sample. Religious groups did not experience inclusive growth in any of the time periods in rural sector (Table 11).

Vertical Decomposition: Deciles

We created deciles based on consumption in the thick rounds of NSS data i.e. for years 1983, 1987, 1994, 2005, 2010 and 2012. We find that overall, growth has been more inclusive in rural sector as opposed to the urban sector (Appendix; Figure 10). 1994-2005 was the the only period that was not inclusive for the bottom two deciles (Appendix; Table 7). The top two deciles experienced inclusive growth in 1987-1994, and 9^{th} decile in the period between 2005 and 2010 and 10^{th} decile between 2010 and 2012. In the rural sector, bottom three deciles experienced inclusive growth between 2005-2012 (Appendix; Table 14). 5^{th}, 6^{th}, 8^{th}, 9^{th}, and 10^{th} deciles experienced two periods of inclusive growth. The top decile experienced inclusive growth only in 2005-2010 period, 9^{th} decile did not experienced inclusive growth at all, and 8^{th} decile experienced inclusive growth between 1994-2010. However, in the urban sector, middle deciles experienced greater number of inclusive growth periods (Appendix; Table 15). 4^{th} decile experienced inclusive growth throughout, 5^{th} decile in 1994 and 2010 period, 6^{th} decile in the 1994, 2005 and 2012 period, and 7^{th} decile in the 1994, 2010 and 2012 period. These groups benefited in the

early 2000s, post liberalization of the Indian economy. Similar to the rural sector, top two deciles did not experience inclusive growth during the last three decades.

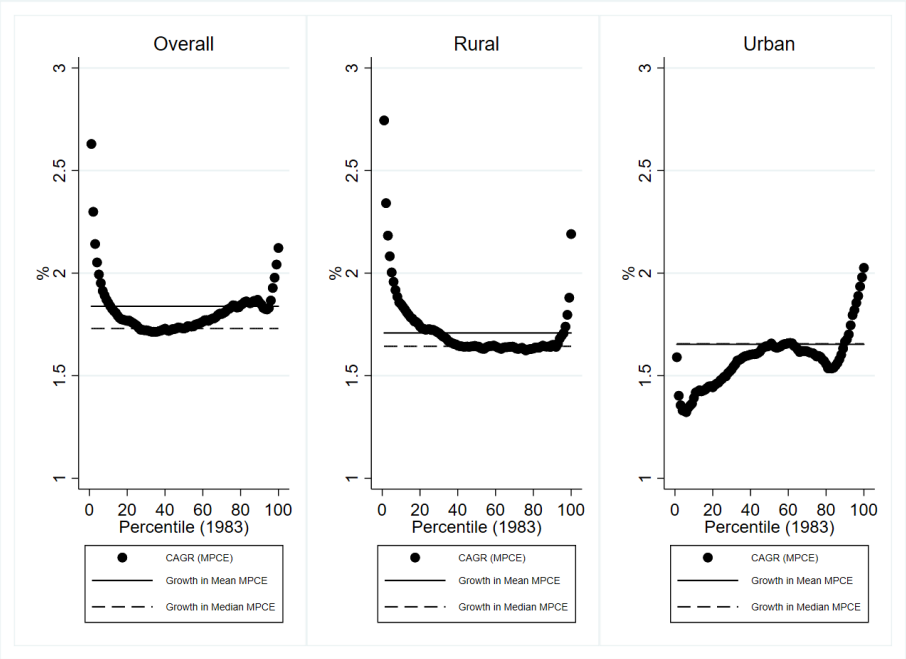
6 Conclusions

A fundamental challenge currently facing countries is to redirect economic growth to make it more equitable. Inclusive growth has been presented as the way forward in this discourse on economic development. However, the conceptualization of it varies starkly - from attempts at making it as comprehensive as possible to only focussing on poverty reduction. Subsequently, there is a lack of robust metrics to measure inclusive growth. Focussing on the benefit-sharing i.e. consumption component, we argue that comment on inclusive growth mandates normative assumption of an underlying macro social welfare function based on mean consumption and its distribution. We operationalise this by using the canonical Atkinson inequality measure. We first define distributive efficiency of current growth as the ratio of mean consumption and *equally distributed equivalent consumption* - consumption that, if achieved by all individuals equally, will result in the same welfare as the present unequal one. Following this, we propose inclusion elasticity of consumption growth: percentage change in the loss in this distributional efficiency with a percentage change in growth rate of mean consumption. We present the metric as the lower bound for inclusion assessment using three inequality aversions. While we assume constant inequality aversion, this metric can easily be adapted to reflect evolving (increasing) inequality aversion over time.

We use several waves of nationally representative consumption expenditure data in India to illustrate the metric. We find limited evidence of inclusion across sectors with rural sector faring marginally better than urban sector. Overall, both sectors experienced inclusive growth only in 2010 (rural) and 2012 (urban). Horizontal decomposition indicates that social as well as religious groups experienced little to no share in growth of consumption and their counterparts in urban sector fared better. Vertical decomposition indicates that lower deciles have experienced inclsuion in recent years in the rural sector. In the urban sector, middle deciles have been consistently faring well.

Figures

Figure 1: Growth Incidence Curves: 1983-2012



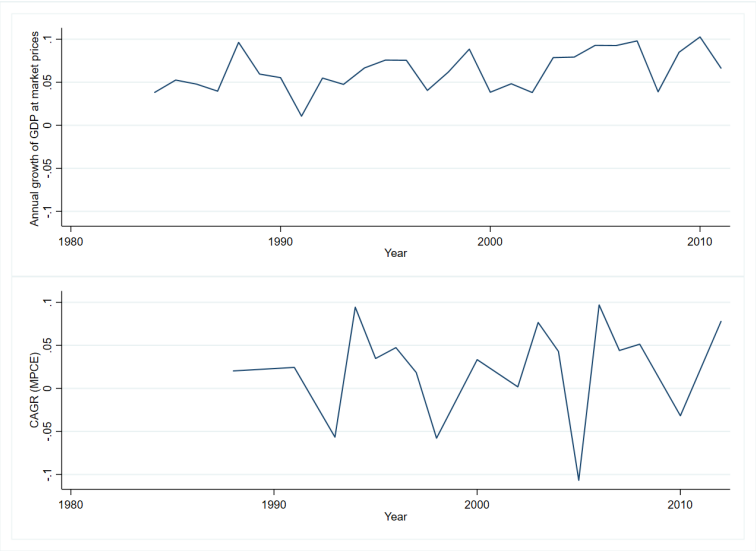


Figure 2: GDP and MPCE: 1983-2012

Constant prices of 2004

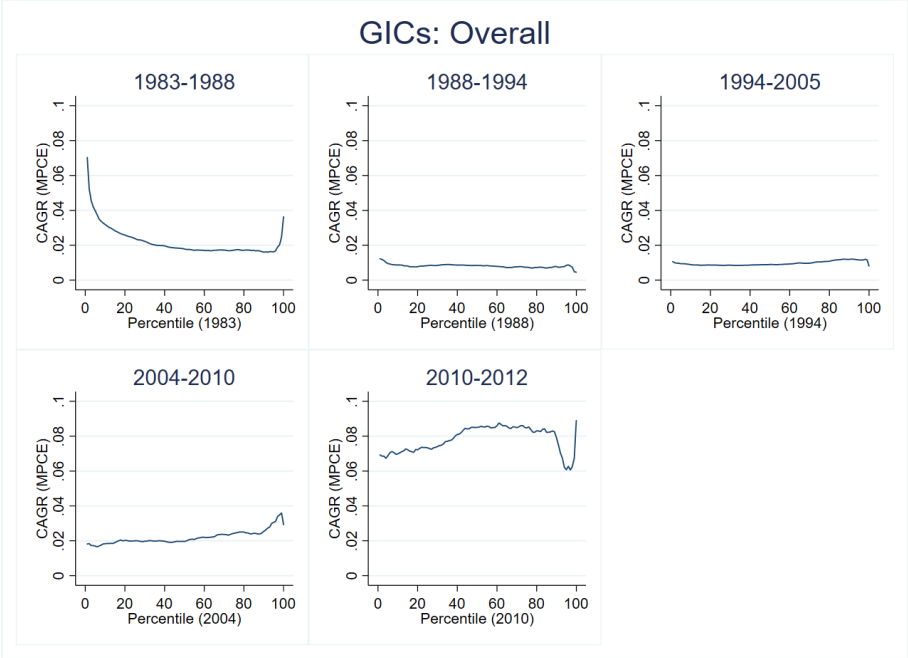


Figure 3: Growth Incidence Curves (thick rounds)

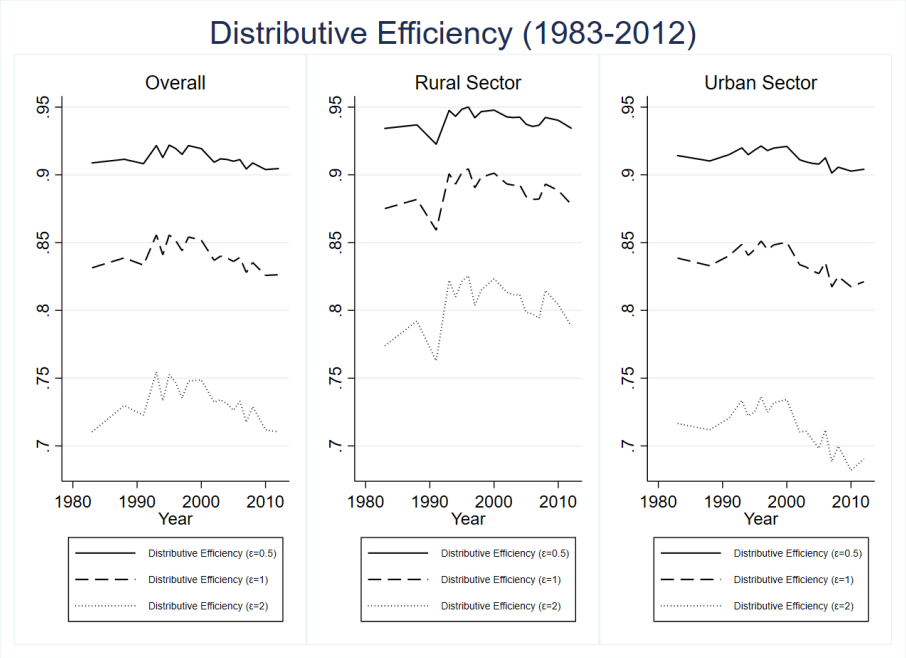


Figure 4: Distributive Efficiency : 1983-2012

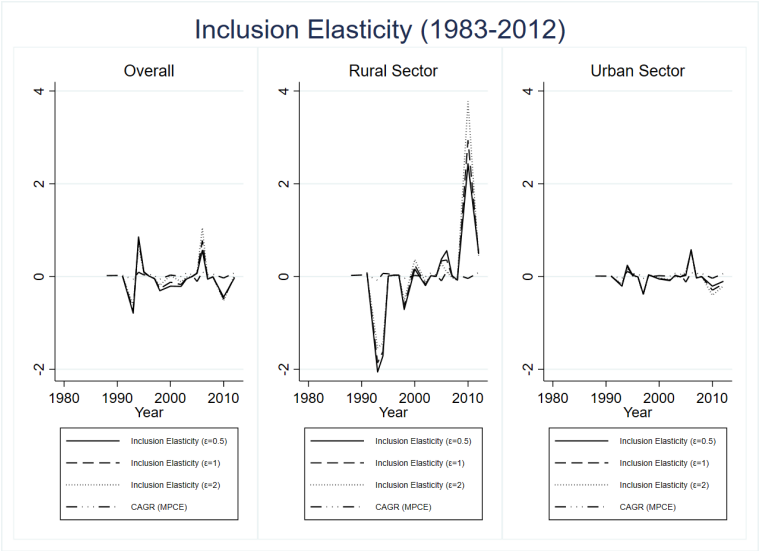


Figure 5: Inclusive Growth: 1983-2012

Tables

Table 1: Inclusive Growth: Both sectors combined

			ϵ=0.5		ϵ=1		ϵ=2	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	501.039	.	0.909	.	0.831	.	0.710	.
1988	553.955	0.020	0.911	.	0.839	.	0.730	.
1990	595.461	0.024	0.908	0.007	0.833	0.006	0.723	0.005
1991	529.943	-0.057	0.922	-0.789	0.856	-0.724	0.755	-0.614
1993	579.935	0.094	0.913	0.854	0.841	0.781	0.733	0.666
1994	600.081	0.035	0.922	0.102	0.856	0.089	0.753	0.070
1995	628.503	0.047	0.919	0.010	0.852	0.008	0.747	0.007
1997	640.085	0.018	0.915	-0.046	0.844	-0.044	0.735	-0.040
1998	603.066	-0.058	0.922	-0.305	0.854	-0.261	0.748	-0.189
1999	644.002	0.033	0.919	-0.207	0.852	-0.122	0.749	0.024
2002	646.268	0.002	0.909	-0.212	0.837	-0.172	0.732	-0.114
2003	695.748	0.077	0.912	-0.054	0.840	-0.037	0.734	-0.013
2004	725.610	0.043	0.911	-0.003	0.839	-0.005	0.731	-0.006
2005	648.171	-0.107	0.910	0.068	0.836	0.074	0.726	0.085
2006	711.011	0.097	0.911	0.565	0.839	0.775	0.733	1.051
2007	742.302	0.044	0.904	-0.056	0.828	-0.050	0.718	-0.042
2008	780.409	0.051	0.909	-0.007	0.835	-0.007	0.729	-0.006
2010	731.534	-0.032	0.904	-0.443	0.826	-0.481	0.712	-0.523
2012	849.764	0.078	0.905	-0.036	0.826	-0.014	0.710	0.024

Table 2: Inclusive Growth: Both sectors combined (Thick rounds only)

			ϵ=**0.5**		ϵ=**1**		ϵ=**2**	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	501.039		0.909		0.831		0.710	
1988	553.955	0.020	0.911		0.839		0.730	
1994	579.935	0.008	0.913	0.013	0.841	0.013	0.733	0.012
2005	648.171	0.010	0.910	0.009	0.836	0.008	0.726	0.007
2010	731.534	0.024	0.904	0.055	0.826	0.050	0.712	0.042
2012*	849.764	0.078	0.905	-0.008	0.826	-0.003	0.710	0.005

* indicates inclusive growth.

Table 3: Inclusive Growth: Rural

			ϵ=0.5		ϵ=1		ϵ=2	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	131.163		0.934		0.875		0.774	
1988	148.463	0.025	0.937		0.882		0.792	
1990	165.731	0.037	0.923	0.080	0.859	0.069	0.763	0.052
1991	139.702	-0.082	0.948	-2.057	0.901	-1.861	0.822	-1.536
1993	149.195	0.068	0.943	-1.711	0.893	-1.614	0.810	-1.437
1994	158.150	0.060	0.948	0.012	0.902	0.010	0.822	0.008
1995	161.422	0.021	0.950	0.031	0.905	0.028	0.826	0.022
1997	165.587	0.026	0.942	0.032	0.890	0.030	0.804	0.026
1998	158.764	-0.041	0.947	-0.710	0.898	-0.638	0.815	-0.519
1999	166.664	0.025	0.948	0.162	0.901	0.244	0.823	0.368
2002	166.395	-0.001	0.943	-0.195	0.893	-0.167	0.813	-0.117
2003	179.641	0.080	0.942	0.017	0.892	0.016	0.812	0.020
2004	185.628	0.033	0.943	0.004	0.893	0.002	0.811	0.000
2005	168.593	-0.092	0.937	0.374	0.884	0.338	0.798	0.287
2006	187.173	0.110	0.936	0.558	0.882	0.357	0.797	0.098
2007	190.171	0.016	0.937	0.022	0.882	0.002	0.794	-0.023
2008	197.520	0.039	0.942	-0.078	0.893	-0.082	0.815	-0.087
2010	181.651	-0.041	0.940	2.432	0.888	2.939	0.804	3.779
2012	214.379	0.086	0.934	0.519	0.878	0.488	0.789	0.428

Table 4: Inclusive Growth: Rural (Thick rounds only)

			ϵ=0.5		ϵ=1		ϵ=2	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	131.163		0.934		0.875		0.774	
1988	148.463	0.025	0.937		0.882		0.792	
1994	149.195	0.001	0.943	0.197	0.893	0.187	0.810	0.167
2005	168.593	0.011	0.937	0.169	0.884	0.144	0.798	0.103
2010*	181.651	0.015	0.940	-0.014	0.888	-0.012	0.804	-0.009
2012	214.368	0.086	0.934	0.130	0.878	0.122	0.789	0.108

* indicates inclusive growth.

Table 5: Inclusive Growth: Urban

			ϵ=0.5		ϵ=1		ϵ=2	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	794.961		0.914		0.839		0.717	
1988	839.343	0.011	0.910		0.833		0.712	
1990	864.083	0.010	0.915	0.006	0.840	0.005	0.720	0.004
1991	801.417	-0.037	0.920	-0.208	0.849	-0.185	0.734	-0.164
1993	890.190	0.111	0.915	0.243	0.841	0.209	0.722	0.168
1994	935.668	0.051	0.918	0.030	0.845	0.020	0.725	0.008
1995	994.855	0.063	0.921	-0.008	0.851	-0.009	0.736	-0.009
1997	954.758	-0.040	0.918	-0.377	0.845	-0.382	0.725	-0.386
1998	949.874	-0.005	0.920	0.035	0.848	0.036	0.732	0.041
1999	986.384	0.019	0.921	-0.053	0.850	-0.043	0.734	-0.030
2002	1003.601	0.009	0.911	-0.087	0.834	-0.078	0.710	-0.065
2003	1074.703	0.071	0.910	0.028	0.832	0.015	0.711	-0.004
2004	1128.127	0.050	0.908	-0.004	0.829	-0.006	0.704	-0.008
2005	993.593	-0.119	0.908	0.025	0.827	0.053	0.698	0.104
2006	1076.738	0.084	0.913	0.578	0.835	0.556	0.712	0.527
2007	1146.345	0.065	0.901	-0.031	0.817	-0.027	0.688	-0.020
2008	1222.620	0.067	0.906	-0.001	0.825	-0.001	0.700	-0.001
2010	1134.673	-0.037	0.903	-0.207	0.817	-0.293	0.682	-0.403
2012	1278.882	0.062	0.904	-0.106	0.821	-0.161	0.690	-0.210

Table 6: Inclusive Growth: Urban (Thick rounds only)

			ϵ=0.5		ϵ=1		ϵ=2	
Year	**Average MPCE**	**CAGR (MPCE)**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**	**DE**	**Inclusion Elasticity**
1983	794.961		0.914		0.839		0.717	
1988	839.343	0.011	0.910		0.833		0.712	
1994	890.190	0.010	0.915	0.005	0.841	0.005	0.722	0.004
2005	993.593	0.010	0.908	0.001	0.827	0.002	0.698	0.002
2010	1134.673	0.027	0.903	0.050	0.817	0.050	0.682	0.048
2012*	1278.882	0.062	0.904	-0.011	0.821	-0.016	0.690	-0.021

* indicates inclusive growth.

Table 7: Horizontal Decomposition of Inclusive Growth by Social Groups: Both sectors combined

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	554.383	0.020			
1994*	579.917	0.008	-0.119	-0.111	-0.085
2005	648.214	0.010	0.203	0.204	0.200
2010	731.534	0.024	0.010	-0.024	-0.091
2012	849.777	0.078	-0.119	-0.076	0.009

* indicates inclusive growth.

Table 8: Horizontal Decomposition of Inclusive Growth by Social Groups: Rural Sector

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	148.583	0.025			
1994	149.200	0.001	-0.004	0.030	0.095
2005	168.605	0.011	1.042	1.040	1.027
2010*	181.651	0.015	-0.096	-0.105	-0.116
2012	214.368	0.086	0.216	0.268	0.356

* indicates inclusive growth.

Table 9: Horizontal Decomposition of Inclusive Growth by Social Groups: Urban Sector

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	840.210	0.011			
1994*	889.977	0.010	-0.003	-0.008	-0.017
2005	993.572	0.010	0.049	0.049	0.047
2010	1134.673	0.027	-0.038	-0.019	0.020
2012*	1278.884	0.062	-0.079	-0.115	-0.164

* indicates inclusive growth.

Table 10: Horizontal Decomposition of Inclusive Growth by Religion: Both sectors combined

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	553.963				
1994	579.874	0.007			
2005	648.171	0.019	0.554	0.562	0.543
2010*	731.534	0.024	-0.017	-0.013	0.003
2012	849.764	0.078	0.066	0.083	0.137

* indicates inclusive growth.

Table 11: Horizontal Decomposition of Inclusive Growth by Religion: Rural Sector

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	148.463				
1994	149.192	0.001			
2005	168.593	0.021	1.330	1.237	1.025
2010	181.651	0.015	0.048	0.031	-0.009
2012	214.368	0.086	0.097	0.132	0.213

* indicates inclusive growth.

Table 12: Horizontal Decomposition of Inclusive Growth by Religion: Urban Sector

Year	**Mean MPCE**	**CAGR (mean MPCE)**	**Between groups (ϵ=0.5)**	**Between groups (ϵ=1)**	**Between groups (ϵ=2)**
1988	839.37				
1994	889.9558	0.008			
2005	993.5926	0.019	0.241	0.270	0.311
2010*	1134.673	0.027	-0.017	-0.026	-0.044
2012	1278.882	0.062	0.075	0.079	0.119

* indicates inclusive growth.

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7 Appendix

Figures

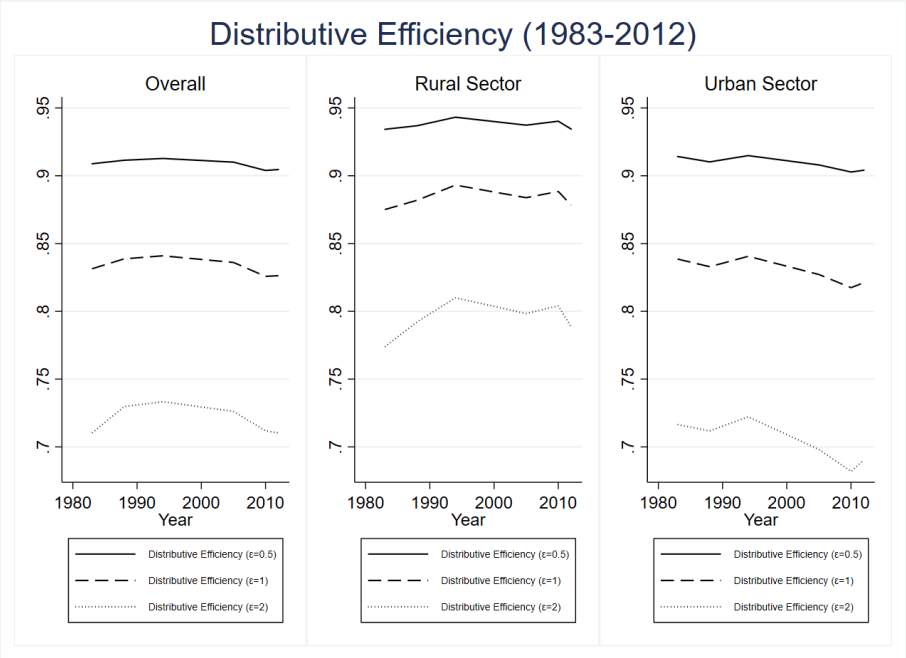


Figure 6: Distributive Efficiency: 1983-2012 (Thick rounds only)

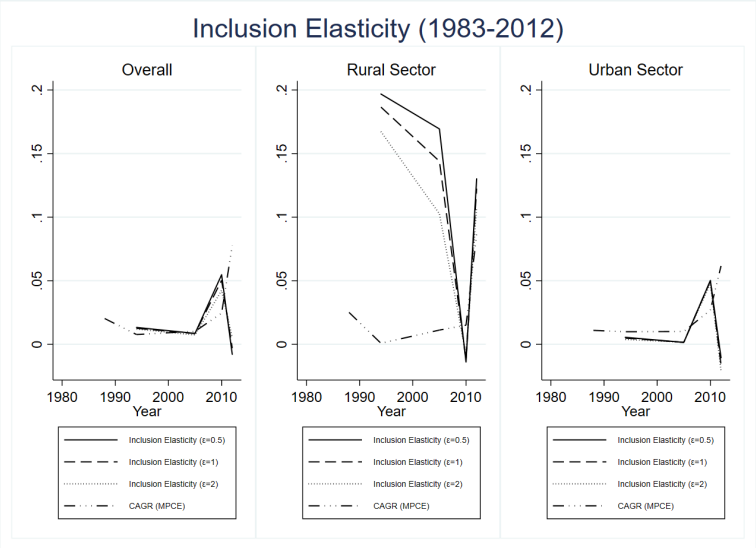


Figure 7: Inclusive Growth: 1983-2012 (Thick rounds only)

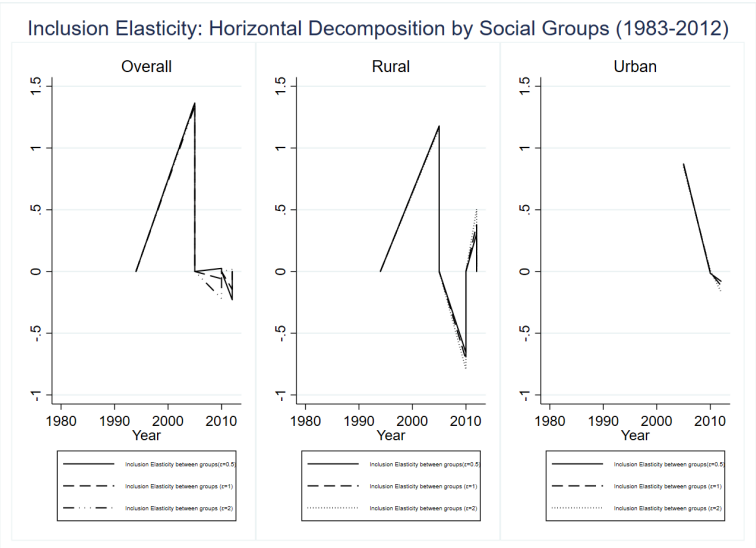


Figure 8: Horizontal decomposition by social groups : 1983-2012

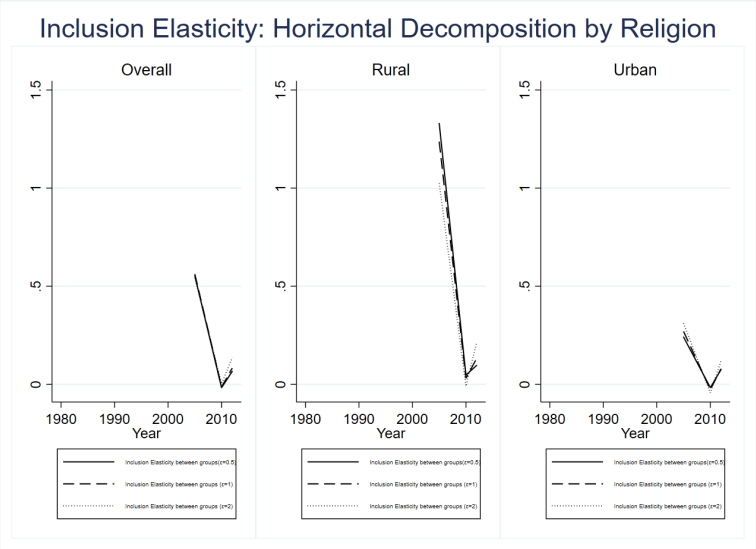
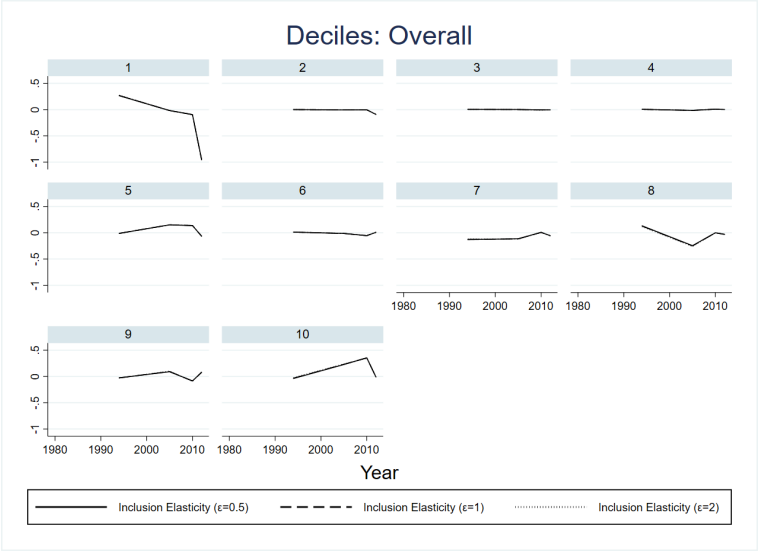
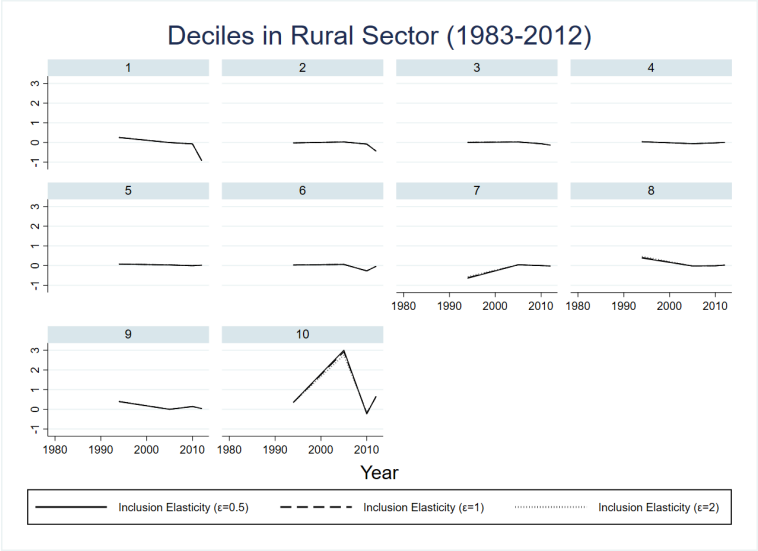


Figure 9: Horizontal decomposition by religion : 1983-2012

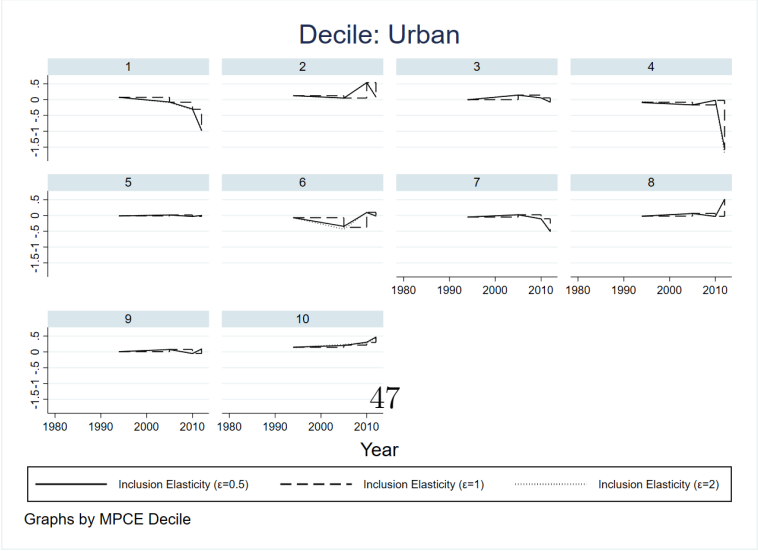
Tables



(a) All India



(b) All India



(c) Rural

Figure 10: Vertical decomposition by deciles : 1983-2012

Table 13: Vertical Decomposition of Inclusive Growth by Deciles: Both sectors combined

Year	Decile	Mean MPCE	CAGR	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1983	1	228.791		0.987	0.973	0.943			
1987		244.869	0.014	0.993	0.986	0.970			
1994		249.101	0.003	0.994	0.988	0.976	0.266	0.270	0.276
2005		257.449	0.003	0.996	0.992	0.983	-0.017	-0.017	-0.017
2010		262.562	0.004	0.997	0.994	0.988	-0.094	-0.095	-0.097
2012		273.759	0.021	0.999	0.997	0.994	-0.953	-0.957	-0.963
1983	2	335.277		0.999	0.999	0.997			
1987		335.569	0.000	0.999	0.999	0.997			
1994		336.030	0.000	0.999	0.999	0.997	0.002	0.002	0.002
2005		336.574	0.000	0.999	0.999	0.997	-0.004	-0.005	-0.005
2010		336.598	0.000	0.999	0.999	0.997	-0.003	-0.002	-0.002
2012		337.984	0.002	0.999	0.999	0.997	-0.091	-0.089	-0.086
1983	3	394.245		1.000	0.999	0.998			
1987		394.463	0.000	1.000	0.999	0.998			
1994		394.652	0.000	1.000	0.999	0.998	0.005	0.005	0.005
2005		394.920	0.000	1.000	0.999	0.998	0.003	0.002	0.002
2010		394.839	0.000	1.000	0.999	0.998	-0.004	-0.006	-0.011
2012		395.359	0.001	1.000	0.999	0.998	-0.003	-0.003	-0.002
1983	4	450.788		1.000	0.999	0.999			
1987		451.082	0.000	1.000	0.999	0.999			
1994		451.319	0.000	1.000	0.999	0.999	0.006	0.006	0.006

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Table 13 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
2005		451.458	0.000	1.000	0.999	0.999	-0.014	-0.014	-0.015
2010		451.957	0.000	1.000	0.999	0.999	0.009	0.009	0.009
2012		452.146	0.000	1.000	0.999	0.999	0.003	0.003	0.003
1983	5	513.593		1.000	0.999	0.999			
1987		514.043	0.000	1.000	0.999	0.999			
1994		514.185	0.000	1.000	0.999	0.999	-0.012	-0.012	-0.012
2005		514.023	0.000	1.000	0.999	0.999	0.151	0.151	0.151
2010		514.421	0.000	1.000	0.999	0.998	0.137	0.137	0.139
2012		515.086	0.001	1.000	0.999	0.999	-0.066	-0.066	-0.065
1983	6	591.997		1.000	0.999	0.998			
1987		592.424	0.000	1.000	0.999	0.998			
1994		593.114	0.000	0.999	0.999	0.998	0.012	0.012	0.012
2005		593.203	0.000	0.999	0.999	0.998	-0.013	-0.013	-0.013
2010		593.991	0.000	1.000	0.999	0.998	-0.055	-0.055	-0.055
2012		594.445	0.000	0.999	0.999	0.998	0.009	0.009	0.009
1983	7	699.017		0.999	0.999	0.997			
1987		700.474	0.000	0.999	0.999	0.997			
1994		699.164	0.000	0.999	0.999	0.997	-0.130	-0.127	-0.119
2005		700.409	0.000	0.999	0.999	0.997	-0.114	-0.117	-0.121
2010		700.455	0.000	0.999	0.999	0.997	0.007	0.007	0.007
2012		700.662	0.000	0.999	0.999	0.997	-0.056	-0.056	-0.056
1983	8	857.542		0.999	0.998	0.996			

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Table 13 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1987		858.215	0.000	0.999	0.998	0.996			
1994*		857.011	0.000	0.999	0.998	0.996	0.132	0.127	0.116
2005		858.568	0.000	0.999	0.998	0.995	-0.246	-0.251	-0.260
2010		859.373	0.000	0.999	0.998	0.996	-0.001	-0.001	0.000
2012		858.133	-0.001	0.999	0.998	0.996	-0.030	-0.031	-0.033
1983	9	1135.178		0.998	0.995	0.990			
1987		1135.317	0.000	0.998	0.995	0.990			
1994		1134.264	0.000	0.998	0.995	0.991	-0.026	-0.027	-0.029
2005		1138.365	0.000	0.998	0.995	0.990	0.091	0.095	0.103
2010		1134.297	-0.001	0.998	0.995	0.991	-0.083	-0.086	-0.093
2012		1138.662	0.002	0.998	0.995	0.990	0.078	0.082	0.087
1983	10	1759.796		0.992	0.985	0.971			
1987		1882.438	0.014	0.986	0.973	0.950			
1994		1882.899	0.000	0.986	0.973	0.950	-0.038	-0.032	-0.022
2005		1934.314	0.002	0.984	0.969	0.943	0.228	0.233	0.239
2010		2057.227	0.012	0.979	0.960	0.926	0.356	0.354	0.346
2012		2106.433	0.012	0.973	0.949	0.909	-0.011	-0.010	-0.009

Table 14: Vertical Decomposition of Inclusive Growth by Deciles: Rural sector

Year	Decile	Mean MPCE	CAGR	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1983	1	69.017		0.987	0.974	0.943			
1987		73.709	0.013	0.993	0.986	0.972			
1994		75.083	0.003	0.995	0.989	0.977	0.253	0.256	0.263
2005		77.681	0.003	0.996	0.993	0.985	-0.002	-0.002	-0.002
2010		79.218	0.004	0.997	0.995	0.989	-0.071	-0.071	-0.072
2012		82.401	0.020	0.999	0.997	0.995	-0.912	-0.918	-0.929
1983	2	99.487		0.999	0.999	0.997			
1987		99.469	0.000	0.999	0.999	0.997			
1994		99.559	0.000	0.999	0.999	0.998	-0.022	-0.022	-0.020
2005		99.624	0.000	0.999	0.999	0.998	0.027	0.027	0.027
2010		100.076	0.001	0.999	0.999	0.998	-0.081	-0.079	-0.076
2012		99.999	0.000	0.999	0.999	0.997	-0.432	-0.431	-0.429
1983	3	115.577		1.000	0.999	0.999			
1987		115.510	0.000	1.000	0.999	0.999			
1994		115.609	0.000	1.000	0.999	0.999	0.004	0.008	0.014
2005		115.672	0.000	1.000	0.999	0.999	0.028	0.028	0.028
2010		115.971	0.001	1.000	0.999	0.999	-0.063	-0.062	-0.060
2012		115.980	0.000	1.000	0.999	0.999	-0.132	-0.132	-0.132
1983	4	130.276		1.000	0.999	0.999			
1987		130.425	0.000	1.000	0.999	0.999			
1994		130.362	0.000	1.000	0.999	0.999	0.038	0.039	0.040

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Table 14 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
2005		130.401	0.000	1.000	0.999	0.999	-0.060	-0.061	-0.061
2010		130.488	0.000	1.000	0.999	0.999	-0.020	-0.020	-0.019
2012		130.642	0.001	1.000	0.999	0.999	0.005	0.006	0.006
1983	5	145.447		1.000	0.999	0.999			
1987		145.574	0.000	1.000	0.999	0.999			
1994		145.538	0.000	1.000	0.999	0.999	0.077	0.078	0.078
2005		145.695	0.000	1.000	0.999	0.999	0.034	0.035	0.039
2010		145.793	0.000	1.000	0.999	0.999	-0.004	-0.004	-0.004
2012		145.807	0.000	1.000	1.000	0.999	0.022	0.022	0.021
1983	6	162.750		1.000	0.999	0.999			
1987		162.721	0.000	1.000	0.999	0.999			
1994		162.860	0.000	1.000	0.999	0.999	0.030	0.031	0.031
2005		162.740	0.000	1.000	0.999	0.999	0.060	0.061	0.062
2010		162.774	0.000	1.000	0.999	0.999	-0.270	-0.270	-0.269
2012		163.009	0.001	1.000	0.999	0.999	-0.039	-0.038	-0.037
1983	7	184.276		1.000	0.999	0.998			
1987		184.665	0.000	1.000	0.999	0.998			
1994		184.238	0.000	1.000	0.999	0.998	-0.640	-0.613	-0.558
2005		184.353	0.000	1.000	0.999	0.998	0.042	0.042	0.041
2010		184.412	0.000	1.000	0.999	0.998	0.001	0.001	0.001
2012		184.596	0.001	1.000	0.999	0.998	-0.023	-0.023	-0.023
1983	8	214.571		0.999	0.999	0.998			

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Table 14 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1987		214.909	0.000	0.999	0.999	0.998			
1994		214.531	0.000	0.999	0.999	0.998	0.381	0.410	0.468
2005		214.362	0.000	0.999	0.999	0.998	-0.020	-0.019	-0.018
2010		214.598	0.000	0.999	0.999	0.998	-0.010	-0.009	-0.008
2012		214.933	0.001	0.999	0.999	0.998	0.026	0.027	0.028
1983	9	262.879		0.999	0.997	0.995			
1987		264.144	0.001	0.999	0.997	0.995			
1994		263.043	-0.001	0.999	0.997	0.995	0.391	0.398	0.411
2005		262.592	0.000	0.999	0.997	0.995	0.001	0.001	0.002
2010		263.992	0.001	0.999	0.997	0.995	0.141	0.143	0.146
2012		264.193	0.000	0.999	0.997	0.995	0.043	0.043	0.042
1983	10	375.461		0.994	0.988	0.977			
1987		400.439	0.013	0.989	0.979	0.960			
1994		393.093	-0.003	0.990	0.981	0.964	0.363	0.357	0.347
2005		421.496	0.006	0.983	0.968	0.942	3.003	2.920	2.754
2010		417.346	-0.002	0.982	0.967	0.939	-0.233	-0.201	-0.146
2012		441.898	0.029	0.977	0.956	0.921	0.653	0.635	0.601

Table 15: Vertical Decomposition of Inclusive Growth by Deciles: Urban sector

Year	Decile	Mean MPCE	CAGR	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1983	1	326.668		0.990	0.980	0.957			
1987		335.739	0.005	0.993	0.985	0.969			
1994		342.736	0.003	0.994	0.987	0.974	0.073	0.074	0.076
2005		342.553	0.000	0.993	0.987	0.972	-0.075	-0.080	-0.091
2010		346.470	0.002	0.994	0.988	0.976	-0.296	-0.303	-0.317
2012		361.835	0.022	0.997	0.994	0.987	-0.969	-0.980	-1.000
1983	2	474.638		0.999	0.998	0.996			
1987		474.098	0.000	0.999	0.998	0.996			
1994		474.325	0.000	0.999	0.998	0.996	0.128	0.125	0.120
2005		475.834	0.000	0.999	0.998	0.996	0.050	0.050	0.051
2010		475.357	0.000	0.999	0.998	0.996	0.539	0.542	0.546
2012		479.296	0.004	0.999	0.998	0.996	0.086	0.090	0.096
1983	3	582.388		0.999	0.999	0.997			
1987		582.081	0.000	0.999	0.999	0.997			
1994		582.611	0.000	0.999	0.999	0.997	-0.003	-0.001	0.005
2005		581.895	0.000	0.999	0.999	0.997	0.146	0.144	0.139
2010		583.374	0.001	0.999	0.999	0.997	0.055	0.056	0.057
2012		585.312	0.002	0.999	0.999	0.997	-0.079	-0.079	-0.078
1983	4	694.089		0.999	0.999	0.998			
1987		697.351	0.001	0.999	0.999	0.998			
1994		694.298	-0.001	0.999	0.999	0.998	-0.093	-0.082	-0.060

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Table 15 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
2005		696.074	0.000	0.999	0.999	0.997	-0.165	-0.167	-0.170
2010		697.279	0.000	0.999	0.999	0.998	-0.021	-0.021	-0.020
2012		696.781	0.000	0.999	0.999	0.998	-1.535	-1.595	-1.714
1983	5	824.126		0.999	0.999	0.998			
1987		823.292	0.000	0.999	0.999	0.998			
1994		822.956	0.000	0.999	0.999	0.998	-0.014	-0.014	-0.013
2005		823.859	0.000	0.999	0.999	0.998	0.015	0.016	0.019
2010		825.457	0.000	0.999	0.999	0.998	-0.032	-0.031	-0.029
2012		825.951	0.000	0.999	0.999	0.998	0.001	0.001	0.001
1983	6	975.075		0.999	0.999	0.998			
1987		972.306	-0.001	0.999	0.999	0.998			
1994		973.720	0.000	0.999	0.999	0.998	-0.070	-0.072	-0.074
2005		970.843	0.000	0.999	0.999	0.998	-0.343	-0.374	-0.435
2010		977.180	0.001	0.999	0.999	0.998	0.093	0.098	0.108
2012		978.539	0.001	0.999	0.999	0.998	-0.018	-0.018	-0.018
1983	7	1153.468		0.999	0.999	0.997			
1987		1154.295	0.000	0.999	0.999	0.997			
1994		1154.209	0.000	0.999	0.999	0.997	-0.050	-0.051	-0.051
2005*		1152.457	0.000	0.999	0.999	0.997	0.022	0.022	0.020
2010		1157.182	0.001	0.999	0.999	0.997	-0.108	-0.105	-0.099
2012		1156.143	0.000	0.999	0.999	0.997	-0.503	-0.501	-0.495
1983	8	1404.721		0.999	0.998	0.996			

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Table 15 – *Continued from previous page*

Year	Decile	Mean MPCE	Growth rate	DE (ϵ=0)	DE (ϵ=1)	DE (ϵ=2)	IE (ϵ=0)	IE (ϵ=1)	IE (ϵ=2)
1987		1404.736	0.000	0.999	0.998	0.996			
1994		1409.526	0.001	0.999	0.998	0.996	-0.022	-0.021	-0.020
2005*		1406.301	0.000	0.999	0.998	0.996	0.063	0.063	0.064
2010		1412.817	0.001	0.999	0.998	0.996	-0.032	-0.029	-0.023
2012		1409.020	-0.001	0.999	0.998	0.996	0.510	0.508	0.504
1983	9	1832.485		0.998	0.996	0.992			
1987		1833.167	0.000	0.998	0.996	0.992			
1994		1833.764	0.000	0.998	0.996	0.992	0.009	0.009	0.009
2005		1837.602	0.000	0.998	0.996	0.991	0.075	0.075	0.076
2010		1842.665	0.001	0.998	0.996	0.992	-0.051	-0.051	-0.051
2012		1826.055	-0.005	0.998	0.996	0.992	0.093	0.089	0.082
1983	10	2639.617		0.996	0.992	0.985			
1987		2819.541	0.013	0.991	0.982	0.965			
1994*		2817.375	0.000	0.991	0.983	0.968	0.150	0.146	0.137
2005*		2904.800	0.003	0.990	0.981	0.964	0.203	0.215	0.237
2010*		3014.984	0.007	0.987	0.974	0.951	0.307	0.300	0.283
2012*		3248.565	0.038	0.981	0.963	0.931	0.470	0.462	0.444