# Societal Poverty in a High-growth Economy: Estimates from India During 1993-2012.

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#### <u>Abstract</u>

We estimate relative poverty in India between 1993 and 2012, a period of high economic growth, using the World Bank's Societal Poverty Line (SPL). Our estimates show that India's societal poverty headcount ratio in 2012 was 38 percent, declining during the two decades by 21 percent, less than half of the rate of reduction seen using India's official absolute poverty lines. Moreover, there is an increase in the headcount of the societal poor by about 9 percent to 468 million in 2011-12, with the rise being largely concentrated in the urban sector. We decompose the change over time in the societal poverty ratio and find that its slower pace of reduction vis-a-vis absolute poverty is largely due to an increase in the living standards. Further, we show that rate of reduction in societal poverty is spatially uneven with the poverty ratio increasing in urban (rural) areas of seven (two) out of India's twenty major states. We find that rural India has experienced unconditional poverty divergence (both absolute and societal): states that started out with higher initial poverty ratio (absolute or societal) in 1993-94, experienced proportionately slower reduction over the next two decades. Urban areas, in contrast, have witnessed poverty convergence. Using a decomposition method in the literature, we calibrate the elasticity of spatial poverty convergence at the state-sector level and find it to be positive, implying divergence. The decomposition exercise suggests that poverty divergence is primarily driven by spatial divergence in mean household per capita consumption expenditures.

<u>Keywords</u>: Societal Poverty, Absolute Poverty, Capability Deprivation, Regional Divergence, India. <u>JEL Codes</u>: I32, D63, O1.

#### 1. Introduction

Since it embarked on a series of economic reform policies starting with the 1980s, India has witnessed rapid economic growth and has been consistently ranked among the world's fastest growing large economies.<sup>1</sup> This has led to substantial reduction in monetary poverty as measured by India's official poverty line.<sup>2</sup> However, the official poverty lines have been critiqued for being too low and for not keeping up with the change in average living standards (Subramanian, 2012). Moreover, Indian policy makers have acknowledged that the official poverty lines "did not reflect the changing times and aspirations of the people of India" (Government of India, 2014, pg.1). <sup>3</sup> Consequently, a question of natural interest to academics and policymakers is how to assess poverty in a country like India where rapid economic growth impacts notions of poverty and deprivation.

In this paper we use the World Bank's Societal Poverty Line (SPL) approach to assess poverty in India during the nearly two decades between 1993 and 2012. Following the recommendations of the Commission on Global Poverty (Atkinson, 2017; pg. 144), the World Bank introduced the SPL in 2018 to measure global societal poverty. The SPL, as originally conceptualized by Jolliffe and Prydz (2021), is based on the parameterization of the cross-

<sup>&</sup>lt;sup>1</sup> As Lamba and Subramanian (2020, Table 1) have pointed out, India's GDP per capita grew at an average of 4.6 percent for 38 years (i.e., 1980-2018) with no decadal average growth that was below 3 percent, ranking India among only ten countries to have managed this feat.

<sup>&</sup>lt;sup>2</sup> As will show later, as per India's latest official poverty line (Government of India, 2009), in the two decades starting from early 1990s, the poverty headcount ratio has been halved in rural areas and more than halved in urban areas.

<sup>&</sup>lt;sup>3</sup> This is the assessment of an expert committee that was appointed by the Government of India to suggest an alternative to the existing methodology for estimating poverty. However, the committee's new methodology (i.e., Government of India, 2014) has not been officially endorsed for arriving at poverty estimates.

country empirical patterns relating how nations update their official poverty lines over time with a change in their respective average living standards. Using this, we attempt to answer the following questions that are relevant for the debate surrounding poverty measurement in India: How has India performed on poverty reduction in the post-economic reforms' era when the poverty line is updated, using the parameterization of the SPL, to reflect evolving notions of deprivation? Are there any variations across spatial and social categories in the extent of poverty reduction? If so, what might be contributing to these differences?

The controversy surrounding India's experience with measuring poverty in the context of a rapidly growing economy reflects a deeper methodological issue in assessing deprivation. It has long been recognized that the problem of poverty measurement comprises of two aspects: identification of the poor; and aggregating their poverty status into a summary statistic that captures the extent of poverty in a society (Sen, 1976). The identification exercise, which is at the heart of the debate on poverty in India, has been aided by the Capability Approach, where poverty is conceptualized as being absolute in the space of functionings while being relative in the space of commodities required to achieve those functionings (Sen, 1983). This would imply that fulfilling a functioning like "social participation" would largely involve meeting survival needs (such as clothing, food etc.) in a low-income society. Whereas, in richer societies, this would entail issues such as access to employment, durable goods consumption, etc. (Jolliffe and Prydz, 2021). While these conceptual issues have been well-settled in the literature, the practical aspect of how to parameterize the identification exercise to the changes in average living standards has received renewed attention recently. This has occurred in the context of the literature on estimation of global poverty where the related challenge is to arrive at a global headcount that is also consistent with countries' own assessments of what it means to be poor. In particular, such a cross-country identification exercise has to contend with the fact that the national poverty lines have been found to range from those that focus on the bare minimum

needed for survival in poor countries to those that are linked to average living standards in richer societies (Atkinson and Bourguignon, 2001; Jolliffe and Prydz 2021; and Ravallion, 2020). Evidently, on average, countries seem to be updating their national poverty lines in accordance with their average living standards. In other words, as countries get richer, their notion of poverty changes from 'absolute' to that of 'relative'. However, since this is not found to be true for *every* country, Jolliffe and Prydz (2021) build on earlier work to parameterize the relationship between national poverty lines and countries' average living standards as measured from household surveys of consumption or income. The resulting SPL has an intercept of \$1, (measured in 2011 Purchasing Power Parity, or PPP) and a slope of 50 percent of the median consumption in the society.<sup>4</sup> Thus, the SPL is a hybrid line in that it incorporates the 'absolute' notion of poverty through its intercept as well as the 'relative' notion of poverty through its slope parameter. Moreover, the functional form underlying the SPL is expected to result in a poverty line that "is better aligned with national assessments of poverty in low-, middle-, and high-income countries" (Jolliffe and Prydz, 2021; pg. 181).

Such an approach to the identification issue is especially relevant for assessments of poverty in a country like India where rapid economic growth has helped it transition from a "low-income" to a "lower-middle-income" country during these two decades.<sup>5</sup> While India's official methodology to estimate poverty did undergo a change during this time, that this is not sufficiently anchored to the rapid change in the average living standards is illustrated by the

<sup>&</sup>lt;sup>4</sup> In addition, they propose an alternate version of the SPL that has a lower-bound of the World Bank's extreme poverty line of \$1.90 (2011 PPP). In practice, their analysis shows that "the measured differences between these lines is relatively small" (pg. 195).

<sup>&</sup>lt;sup>5</sup> India made the transition to "lower-middle-income" category in the fiscal year 2009. These categories are based on World Bank's classification of countries based on their GNI per capita in current USD. For details refer to: <u>https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2021-2022</u> [Accessed on March 23, 2022].

following statistic: in 2011-12, the World Bank's estimate for the headcount ratio of extreme poverty (using the \$1.90 line) in India's urban and rural areas was 14.2 percent and 26.3 percent respectively.<sup>6</sup> This is almost identical to India's official poverty estimates<sup>7</sup>, of 13.7 percent in urban and 25.4 percent in rural areas. In our view, this justifies the need to go beyond official estimates of poverty and, given its empirical basis on how countries update their national poverty lines with average living standards, the SPL is a suitable candidate for assessing India's record on poverty reduction during its high-growth phase.

This exercise also has global relevance. As world's extreme poverty has been declining in recent times, and as societies update their poverty lines to reflect evolving concepts of 'basic needs', a societal poverty headcount is going to be an increasingly relevant metric at the global level (Jolliffe and Prydz, 2021). Given its large population and their substantial deprivation, understanding the drivers of India's societal poverty has important implications for reducing global societal poverty.

In addition, through its slope parameter, the headcount based on the SPL also helps us track people living below 50 percent of median income which is a key indicator in fulfilling the Sustainable Development Goal (SDG) (SDG 10.2.1, Target 10.2) on promotion of "universal social, economic and political inclusion" (SDG 10).

In accordance with the literature on global poverty where trends in the incidence of relative poverty using the SPL were contrasted with those of extreme poverty (see e.g., Decerf

<sup>&</sup>lt;sup>6</sup> Source: 'PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank'. http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx [Accessed on December 31, 2022]

<sup>&</sup>lt;sup>7</sup> Using the poverty line recommended by the 'Expert Group on Methodology for Estimation of Poverty' (Government of India, 2009) also known as the "Tendulkar Committee Report". Throughout the paper, we refer to the poverty lines estimated using this methodology as India's official line.

and Ferrando, 2022; Jolliffe and Prydz, 2021), we assess India's record on societal poverty reduction using the SPL vis-à-vis its absolute counterpart based on official poverty lines.

Before proceeding further, we provide a brief overview of our findings. First, we find that the SPL for rural India in 1993-94 was the same as the official absolute poverty line (APL). After two decades of rapid increase in average living standards, the rural SPL was 16 percent higher than the corresponding APL in 2011-12. In urban areas, the SPL was 14 percent higher than APL in 1993-94. This gap increased further, to 43 percent, by 2011-12. Based on these SPLs, we estimate India's societal poverty headcount ratio in 1993-94 to be 48.2 percent, only 2.5 percentage points greater than the corresponding ratio for absolute poverty. By 2011-12, the societal headcount ratio was 38 percent, compared to absolute headcount ratio of 22 percent. Thus, the rate of reduction in societal poverty in India (at 21 percent) was less than half of the corresponding reduction in absolute poverty (52 percent) during the high-growth phase. At the sectoral level, while absolute poverty reduction was greater in urban areas vis-àvis rural areas, we find the opposite pattern with regard to societal poverty. Between 1993-94 and 2011-12, societal poverty declined by 21 percent in rural areas and by 18 percent in urban areas. In contrast, during this period, absolute poverty declined by about 50 percent in rural areas and by 57 percent in urban areas. Moreover, in contrast to a reduction in the absolute number of poor by about 134 million using the official poverty lines (Government of India, 2014, Table 2.2), we observe an *increase* of about 39 million in the number of persons living below the societal poverty line between 1993-94 and 2011-12. This is driven largely by urban areas which witnessed an increase in the headcount of about 35 million. Using the methodology proposed by Aristondo et. al., (2023), we decompose the change in societal poverty ratio during the two decades into the changes brought about by an increase in the SPL due to growth in real median consumption expenditure and the changes brought about due to distributional effects (which combine the growth in mean and redistribution effects). Our results show that the difference between the rate of poverty reduction using SPL vis-à-vis APL is almost entirely due to the changes in the SPL.

Second, we also document spatial unevenness in the rate of reduction of the societal poverty's head count ratio. Out of India's twenty major states, we find an *increase* in the head count ratio in the urban areas of seven states and in the rural areas of two of these states. While rural areas have witnessed a faster pace of societal poverty reduction overall, the spatial pattern of this reduction was regressive. We find that rural India has experienced unconditional poverty divergence (both absolute and societal): states that started out with higher initial poverty ratio (absolute or societal) in 1993-94, experienced proportionately slower reduction over the next two decades. Urban areas, in contrast, have witnessed poverty convergence. We also show subnational divergence in average household monthly per-capita consumption expenditure during these two decades for both rural and urban areas, which is consistent with the finding of regional divergence in Gross State Domestic Per-capita (GSDP) during this time period (Lamba and Subramanian 2020, Figure 4). Using the decomposition method proposed by Ravallion (2012), we calibrate the poverty convergence elasticity at the state-sector level and find it to be positive, implying divergence. The decomposition exercise suggests that poverty divergence is primarily driven by spatial divergence in mean household per capita consumption expenditures.

The rest of the paper is organized as follows: in the next section, we briefly review the relevant literature. In Section 3, we describe the data and methodology, followed by the presentation of results of poverty headcount ratios in Section 4. In Section 5, we discuss the decomposition methodology and present the results. In Section 6, we provide the robustness analysis for our results. We conclude with a discussion in Section 7.

#### 2. Literature Review

Absolute poverty reflects the inability of an individual to meet basic needs in terms of nutritional norms or other non-food basic needs. Poverty lines in poor countries, as well as the World Bank's \$1.90 line for measuring extreme poverty, are anchored to meet such survival needs. However, as average living standards improve, social participation concerns beyond survival also play a role in determining well-being. A considerable amount of literature in the field of economics, sociology, and social psychology has established the importance of relative income while assessing one's own welfare (e.g., Runciman, 1966; Fehr and Schmidt 1999; Walker and Smith, 2002; and Alpizar, Carlsson, and Johansson-Stenman, 2005). In economics, this goes back to Adam Smith, who has emphasized the need for an individual to be able to participate in society without shame (Smith, 1776).

With economic growth that is accompanied with rising within-country income inequalities, there exists a possibility of greater exclusion of the poor as "relatively deprived individuals experience difficulties in engaging in everyday life of their society" (Decerf and Ferrando, 2022, pg. 606)).

To a certain extent, national poverty lines also seem to reflect these concerns. As Atkinson and Bourguignon (2001) have pointed out, evidence suggests that these lines, even for relatively poorer countries, tend to rise with the mean level of consumption, provided they are above a minimum threshold that captures the subsistence concerns. Building on Atkinson and Bourguignon (2001), there have been a few alternate proposals for arriving at the functional form of a poverty line that reflects these patterns. Following Ravallion and Chen (2011), the general form of these lines is given as: max( $Z^*$ ,  $\alpha$ +kM<sub>*i*,*i*</sub>), where Z\* is the lower bound or floor below which the poverty line cannot fall; and  $\alpha$  is the intercept, k is the slope and M<sub>*i*,*t*</sub> is the per capita mean or median daily income/ consumption for region *i* in year *t*. Whenever  $\alpha$ >0, these lines have been labeled as being 'weakly relative' (Ravallion and Chen, 2011), capturing the notion that when all incomes in the distribution increase by a fixed proportion, aggregate poverty should fall. Table 1 provides a summary of the various specifications of the relative poverty lines in the literature. Consider the relative poverty line parameterized by Atkinson and Bourguignon (2001) based on a sample of 33 national poverty lines. For this, the value of  $Z^* =$  (i.e., the then International Poverty Line). The \$1 line acts as a floor that prevents the poverty line from falling below the international mandate required for subsistence. The term a is zero, implying that this is a 'strongly relative' poverty line, so that when all incomes increase by an equal proportion, the aggregate poverty remains unchanged; and k=0.37. The strongly relative poverty line will be applicable for all countries with a mean per-capita daily consumption expenditure (or income) of \$2.7 or higher.<sup>8</sup> The specifications given by Ravallion and Chen (2011, 2019) and Chen and Ravallion (2013) are based on much larger sample of poverty lines (74 and 145 respectively). The specification of Jolliffe and Prydz (2021), referred to as Societal Poverty Line (SPL), with the gradient of 50 percent of median consumption per day, is based on an even larger sample than the other alternatives (699 national poverty lines), rendering its parametrization a stronger empirical basis. Also, the parameterization of poverty lines underlying the SPL is based on median rather than mean as the median is unaffected by the extreme values in the distribution, and also since the model with the median specification provides a better fit to the data (Jolliffe and Prydz, 2021). In the specification, max [\$1.90, \$1+50 percent of median consumption], \$1 indicates the subsistence needs and 50 percent of median consumption indicates the increasing cost of social participation as economies grow.

#### -----Insert Table 1 here-----

To summarize, all the expressions of the relative poverty line in Table 1 are attempts to parameterize how a poverty line changes as we move cross-sectionally from one country to the other. Except for Atkinson and Bourguignon (2001)'s proposal, all the other specifications

<sup>&</sup>lt;sup>8</sup> Where \$ 2.7 is approximately equal to \$1/0.37.

follow the weakly relative principle. Elasticity estimates from the most comprehensive crosscountry data confirm the empirical basis for the weakly relative principle (Ravallion, 2020).<sup>9</sup>

Specifications in Table 1 can equivalently be conceptualized as parameterizations for how the poverty line evolves with development even within a country – this is what we do for India. Our preferred specification would be the one given by Jolliffe and Prydz (2021) because of the empirical advantages mentioned above, but without the lower bound of \$1.90. We do not use the lower bound of \$1.90 since it is not binding for our sample for the majority of the analysis. It is worth noting that Jolliffe and Prydz (2021)'s parameterization is arrived at after excluding the poverty lines of OECD countries, 'primarily out of concern that many of these lines are by construction strongly relative', i.e., they are defined as a fraction of the mean or median consumption, without the intercept component (Jolliffe and Prydz, 2021, pg. 189).

Finally, we would also like to note that the SPL, while being firmly grounded in the Capability Approach, embodies a unidimensional, namely money-metric, approach to the identification exercise. Nevertheless, this approach can be considered to encompass the two important functionings of nutritional status and social inclusion, both of which 'have been prominent in the measurement of poverty' (Ravallion, 2020, pg. 170).

An alternative is to adopt a multidimensional view. However, as Ravallion (2011) has argued, aggregating across multiple dimensions (using e.g., a multi-dimensional poverty index) involves arbitrary choices by the analyst regarding the weights for the dimensions, influencing the implicit trade-offs among them. Moreover, these choices may not be consistent with those preferred by the poor.

<sup>&</sup>lt;sup>9</sup> Ravallion (2020) uses the same data underlying Jolliffe and Prydz (2021), and estimates, controlling for country-fixed effects, the average elasticity of poverty line to the mean income/expenditure to be 0.52.

#### 3. Data and Methodology

The National Statistical Office's (NSO), (previously National Sample Survey Office (NSSO)) Quinquennial Consumer Expenditure Surveys (CES) are the source of obtaining information about household consumer expenditure in India. The CES have also been used in the estimation of India's official poverty lines. The latest data that is available is for the 68<sup>th</sup> round conducted between July 2011 to June 2012. The surveys use a reference period to capture consumption expenditures of the household. The CES have traditionally used a Uniform Reference Period (URP) which collects data on all consumption expenditures of a household in the past 30 days from the date of the survey. Starting with the 50<sup>th</sup> CES round in 1993-94, a Mixed Reference Period (MRP) has also been used to capture household expenditure. Under the MRP, consumption of certain traditionally less-frequently consumed goods and services is assessed over a 365-day reference period, while all the other items are assessed over 30-day recall.<sup>10</sup> India's latest official poverty lines are also based on MRP data. Given this, we assess Societal Poverty in India using the MRP data in the CES. For calculating the SPL, we obtain the All-India median per day per capita consumption expenditure for the 50<sup>th</sup> (1993-94) and the 68<sup>th</sup> (2011-12) rounds, separately for rural and urban sectors.<sup>11</sup> Our motivation for calculating the SPL separately for each sector follows from the idea that the commodities required to meet the same set of functionings (e.g., being able to participate in social gatherings) differ between rural and urban settings. This is also consistent with past instances of indexing India's official poverty lines to different calories norms for rural and urban areas respectively (for a review of

<sup>&</sup>lt;sup>10</sup> More details on the different reference periods used for collection of consumption data, as well as on other aspects of the surveys such as sampling design, frame, schedule etc., can be obtained from various government reports corresponding to each of the CES. For the 2011-12 round, please refer to Government of India (2013a).

<sup>&</sup>lt;sup>11</sup> We have also analyzed poverty estimates from the 2004-05 and 2009-10 CES but discuss them very briefly in the subsequent section. Detailed tables from these years are available on request.

these approaches, see Government of India, 2014).

We then adjust for price differences between all-India and the state level using indices that are implicit in the official poverty lines (Government of India, 2009, 2013b).

As mentioned, our methodology borrows the specification of Jolliffe and Prydz (2021) for the estimation of relative poverty, using the following poverty line for rural (*respectively*, urban) India:

SPL=\$1+ 50 percent of All-India Rural (Urban) median of the per day per-capita consumption expenditure distribution (1)

The two terms that are used in the above equation (1) need to be adjusted for spatial and temporal price differentials. Based on the World Bank's spatial price adjustments between all-India rural and urban sectors, we consider the \$1 PPP exchange rate for 2011-12 to be Rs. 13.622 for rural areas and Rs. 16.694 for urban areas (see Ferreira et al. 2015 and PovcalNet<sup>12</sup>).

To reflect the state-wise price differentials, we further adjust the value of \$1 using deflators implicit in official poverty lines to convert it into local (state-sector) prices. The adjustment is made as follows:

$$\frac{R_i}{R_{AI}} * 13.622$$
 and  $\frac{U_i}{U_{AI}} * 16.694$ 

Where  $R_i$  ( $U_i$ ) stands for official poverty line for the rural (urban) sector for state *i* for 2011-12,  $R_{AI}$  ( $U_{AI}$ ) for the All-India rural (urban) official poverty line for 2011-12.

<sup>&</sup>lt;sup>12</sup> Source: 'PovcalNet: the on-line tool for poverty measurement developed by the Development Research Group of the World Bank'. http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx [Accessed on December 31, 2022]

The spatially adjusted value of \$1 is plugged into equation (1) to calculate rural and urban SPL for each state for the year 2011-12. To calculate SPL for the survey rounds prior to 2011-12, we make temporal as well spatial adjustments to the value of \$1, as follows:

For year k in Rural Areas: 
$$\frac{Rural PL of state i in year k}{Rural PL of state i in 2011-12} * \frac{R_i}{R_{AI}} * 13.622$$

For year k in Urban Areas: 
$$\frac{Urban PL of state i in year k}{Urban PL of state i in 2011-12} * \frac{U_i}{U_{AI}} * 16.694$$

Where Rural (Urban) PL refers to the official poverty lines for the year k.

We obtain societal poverty lines for all states and union territories but in this paper, we provide the results for 20 major states and for All-India, for rural and urban sectors separately. These poverty lines are used for estimating societal poverty HCR for each state and All-India level across two sectors for the survey rounds between 1993-94 and 2011-12.

For measuring poverty convergence, we use mean consumption obtained from the 1993-94 and 2011-12 CES.

#### 4. Estimates of Societal Poverty

#### 4.1 Societal Poverty in India

Based on the specification in equation (1), the SPL for rural India in 1993-94 is estimated to be Rs 8.35 per person per day. Strikingly, as shown in Table 2, this coincides with India's official poverty line. Thus, the identification exercise resulting from the official line is consistent with achieving the normative functionings deemed relevant to avoid societal poverty in the rural India of 1993-94. However, this does not hold for urban India for that year where the SPL is estimated to be Rs 11.22 per person per day compared to the official line of Rs. 9.87. After two decades of rapid economic growth, and reflecting the debate on the identification of poor in India, the discord between the two lines increased in rural areas and even more so in urban areas. In 2011-12, the SPL for rural (urban) India was Rs. 31.5 (Rs. 47.79), considerably higher than the corresponding official poverty lines of Rs. 27.2 (Rs. 33.33).

#### -----Insert Table 2 here-----

In what follows, we discuss the levels and trends in societal poverty in India over the two decades and compare them with the absolute poverty trends over the same period. We use the Head Count Ratio (HCR) and absolute headcount of poor as the measures of poverty for our main analysis, but we also present poverty trends using the alternative measures of Poverty Gap Index and the Squared Poverty Gap in the robustness section. Consider figures 1(a) and 1(b). About 50 percent of the population in rural areas was poor based on absolute as well as the societal poverty line. Over two decades, from 1993 to 2012, absolute poverty declined from 50 percent to 25 percent, whereas the decline in societal poverty was only 11 percentage points (from 50 percent to 39 percent) (figure 1(a)). Beginning with similar HCR in rural areas, the gap between absolute and societal poverty increased to 55 percent in 2012. In urban areas in 1993-94, 42 percent of the population was experiencing societal poverty, which was higher than absolute poverty of 32 percent. Absolute poverty declined by eighteen percentage points to 14 percent over the two decades while societal poverty experienced a decline of only eight percentage points (to 34 percent) (figure 1(b)). Consequently, we observe that societal poverty in India was greater than absolute poverty by 2.5 percentage points in 1993-94. Over the two decades, absolute poverty declined from 46 percent to 22 percent. In comparison, societal poverty declined by only 10 percentage points, from 48 percent to 38 percent (figure 1(c)). Thus, the decline in societal poverty is less than half (41 percent) of the decline in absolute poverty. The decline in India's societal HCR vis-a-vis the reduction seen using the World Bank's \$1.90 line is also at around 40 percent. To put this in perspective, between 1990 and

2015, at the global level, the ratio of the rate of societal poverty reduction to extreme poverty reduction was slightly better at 48 percent (Jolliffe and Prydz, 2021).

When we consider the headcount of poor persons, as per official poverty line, this has reduced from 403.7 million in 1993-94 to 269.8 million in 2011-12 and the reduction was experienced in rural and urban areas (Government of India, 2014, Table 2.2). However, the number of societally poor persons has increased by 9 percent from 429 million in 1993-94 to 468 million in 2011-12. The analysis at the sectoral level reveals that in rural areas, the number of societally poor persons observed a marginal increase of 1 percent (329 million in 1993-94 to 333 million in 2011-12). In the urban sector, beginning with 98 million people below SPL in 1993-94, the population of societally poor increased to 133 million, a substantial increase of 35 percent.

#### -----Insert Figure 1 here------

#### 4.1.1 What drives the differential trends between societal and absolute poverty?

In this section, we will use the decomposition method proposed by Aristondo et. al., (2023) to understand the drivers of the trend in societal poverty between 1993-94 and 2011-12. Change in relative poverty over time could come about either due to changes in the relative poverty line – called as the Poverty Line Effect – (which is in turn determined by the inflation-adjusted change in average living standards), or poverty changes could occur due to changes in the distribution of the poor – the Distribution Effect (which could result from growth in their real consumption expenditures or from redistribution effects). On the other hand, changes in absolute poverty could only occur due to the Distribution Effect, since there is no real change in the poverty line.

Following the notation used in Aristondo et al (2023), let the real per-day per-capita consumption expenditure, its distribution function, and the real societal poverty line, and the

societal headcount ratio of poverty at time 't' be denoted by  $x_t$ ,  $f(x_t)$ ,  $Z_t$  and  $P_t$  respectively. Let the change in societal poverty be denoted by  $\Delta P_{1993-2012}$ 

Then, the change in societal poverty between 1993-94 and 2011-12 can be decomposed into the Poverty Line Effect and the Distributional Effect, where the Poverty Line Effect is given by:

$$\begin{split} \Delta P^{PL}_{1993-2012} &= 1/2 \\ & * \left[ (P(f((x_{2011-12}), z_{2011-12}) - P(f((x_{2011-12}), z_{1993-94}))) \\ & + (P(f((x_{1993-94}), z_{2011-12}) - P(f((x_{1993-94}), z_{1993-94}))) \right] \end{split}$$

and the Distributional Effect is given by:

$$\begin{split} \Delta P^{DI}_{1993-2012} &= 1/2 \\ & * \left[ (P(f((x_{2011-12}), z_{2011-12}) - P(f((x_{1993-94}), z_{2011-12})) \\ & + (P(f((x_{2011-12}), z_{1993-94}) - P(f((x_{1993-94}), z_{1993-94})) \right] \end{split}$$

In order to calculate these two terms, we inflate the 1993-94 consumer expenditure distribution as well as the corresponding societal poverty line to 2011-12 prices, using the price indices implicit in the official poverty lines.

Since there has been an increase in real median consumption expenditures during this time period, the Poverty Line Effect will be positive, leading to an increase in societal poverty. We find that the while the total change in the headcount ratio in rural (urban) India was -10.8 (-7.5) percentage points, the Poverty Line Effect was 13.95 (16.36) percentage points whereas the Distributional Effect was -24.74 (-23.86) percentage points, implying that distributional changes aided poverty reduction. In Table 3, we provide the decomposition of the rate of reduction of Societal Poverty for rural and urban areas separately. Column (A) of the table provides the total percentage change in the societal poverty headcount ratio during the two decades. Columns (B) and (C) provide the decomposition of this change into the Poverty Line and Distributional Effects respectively. Column (D) provides the corresponding percentage

change in absolute poverty.<sup>13</sup> As we can see, the reduction of societal poverty in rural (urban) India by 21.48 percent (17.96 percent) can decomposed into a *rise* in poverty by 27.73 percent (39.18 percent) due to the impact of higher median on the SPL and a fall in poverty by 49.2 percent (57.13 percent) due to the distributional changes. Strikingly, as can be seen from Column (D), the impact of distributional changes on the rate of poverty reduction for the societally poor is same as that for the absolutely poor. Thus, the difference in the rate of poverty reduction between societal and absolute notions of deprivation is almost entirely explained by the Poverty Line Effect component.

#### -----Insert Table 3 here-----

#### 4.2 Trends in poverty over two decades by regions and social groups

Among the two decades, the period between 1993-94 and 2004-05 witnessed relatively slower pace of poverty reduction. As per the official poverty lines, the rate of poverty reduction during this period was less than half of the rate of reduction during 2004-05 and 2011-12. This pattern is also reflected in societal poverty, where the rate of poverty reduction in the latter period was about twice of the reduction in the earlier period. Moreover, while the pace of poverty reduction in societal poverty was always slower than that as per official poverty lines, the gap between the two increased during 2004 to 2012.

Tables 4 and 5 show sector-specific as well as combined estimates of absolute and societal poverty HCR respectively for the years 1993-94 and 2011-12 for all-India as well as for twenty of its major states. All states experienced a decline in the absolute poverty headcount ratio. This can be seen even when disaggregated by sector, where except for a marginal increase in urban Jammu and Kashmir, all states witnessed a reduction in absolute poverty in rural and

<sup>&</sup>lt;sup>13</sup> Note that since, by definition, there is no change over time in the APL, the change in absolute poverty will entirely be due to distributional changes.

urban areas. However, the rate of reduction is not uniform. It varies from an impressive 79 percent in Andhra Pradesh to a modest decline of 22 percent in Chhattisgarh.

In the case of societal poverty, the overall decline is not as impressive. In rural areas, Chhattisgarh and Madhya Pradesh register a *rise* in societal poverty over the two decades. In the urban sector, seven of the twenty states, namely Assam, Bihar, Chhattisgarh, Jammu and Kashmir, Madhya Pradesh, Uttarakhand, and Uttar Pradesh, show an *increase* in the societal HCR (Table 5). The uneven pace of societal poverty reduction is also seen when we consider social groups. The Scheduled Tribes (STs), which had an HCR of 65 percent in 1993-94, the highest among all groups, witnessed the slowest rate of reduction of 9 percent over the two decades. For Scheduled Castes (SCs), Societal HCR reduced from 62.5 percent to 48 percent over the two decades (a 23 percent fall). Among 'Others', we observe a decline from 42 percent to 33 percent (a 22 percent fall). The decline in societal poverty is less than half of the decline in absolute poverty across all social groups in rural as well as urban areas.

-----Insert Table 4 here-----------Insert Table 5 here------

#### 4.3 Spatial Variations in Poverty Reduction

As we have noted, poverty reduction is not uniform in India. The trends on poverty reduction vary drastically across states and sectors, with some regions experiencing rapid fall while others observing even an increase in poverty over the two decades (refer to figures 1A (a), (b), and 2A (a), (b) in the Appendix). To understand how the pace of poverty reduction varies across poorer vis-à-vis richer states and sectors, we undertake the unconditional poverty convergence test. Following Ravallion (2012), we enquire if the initial level of poverty has an impact on how much poverty reduction we see today in these state-sectors. Ravallion (2012) discusses the concept of "poverty convergence" and provides evidence against it at cross-

country level. Just like economies experience "advantage of backwardness" where countries starting with low mean income tend to grow faster (i.e., mean convergence), poverty convergence implies that countries/regions starting out with higher incidence of poverty should experience higher growth rate in average incomes, then to the extent that poverty reduction is accelerated by economic growth, it follows that poverty in the poorer regions should be expected to reduce at a faster rate than that in the richer regions.

Using the specification in equation (2) below, we undertake an unconditional test for spatial poverty convergence, separately for absolute and societal poverty, by regressing the annualized change in the log of absolute/ societal poverty headcount ratio between 1993 and 2012 for each state-sector (for India's twenty major states), on the log of its headcount ratio in 1993. We control for sector-specific intercept and slope effects using a sector dummy and its interaction with initial poverty.

$$g_i(hcr_{it}) = \beta_0 + \beta_1 \ln hcr_{i,93-94} + \beta_2 sector + \beta_3 \ln hcr_{i,93-94} sector + \varepsilon_i$$
(2)

where 
$$g_i(hcr_{it}) = (ln hcr_{i2011-12} - ln hcr_{i1993-94})/18$$

A negative sign for the coefficient of the initial poverty rate will indicate poverty convergence whereas a positive sign will indicate the opposite.

Table 6 gives the relevant results, with regression of change in absolute poverty (column 1) and societal poverty (column 2) on initial absolute (societal) poverty, along with a sector dummy, which takes the value 1 for urban areas. We have 40 observations, with 2 observations for each state corresponding to rural and urban sector. As is evident from the table, for rural areas, there is a positive relation between initial poverty and poverty change for both absolute and societal poverty, although the evidence is statistically weaker for the latter. Thus,

we find evidence for poverty divergence in rural areas for both absolute and societal poverty, that is to say, that poorer regions of rural India experienced proportionately slower reduction in poverty. On interacting initial poverty with sector dummy to capture differential slope across sectors, we find that there is poverty convergence in urban areas using both the official as well as societal poverty lines.

#### -----Insert Table 6 here------

Ravallion (2012)'s premise of the 'advantage of backwardness' is based on the finding of cross-country convergence in consumption expenditures (Ravallion 2012, Table 1). However, our finding of poverty divergence in rural areas raises the question of whether there is unconditional convergence in mean consumption expenditures across India's 40 statesectors. To analyze this, we conduct an unconditional test for convergence in mean per-capita consumption expenditure across India's state-sectors using equation (3). We regress each statesector's annualized change in mean per-capita consumption between 1993 and 2012, on the log of its mean per-capita consumption expenditure in 1993-94, while controlling for sectorspecific effect intercept and slope effects. A positive sign for the coefficient of the initial period's mean consumption expenditure should indicate mean divergence whereas a negative sign would indicate the opposite.

$$g_i(mean_{it}) = \beta_0 + \beta_1 ln mean_{i,93-94} + \beta_2 sector + \beta_3 ln mean_{i,93-94} * sector + \varepsilon_i$$
(3)

where 
$$g_i(mean_{it}) = (ln mean_{i,2011-12} - ln mean_{i,1993-94})/18$$

Table 7 shows the result of this regression exercise. We find evidence for divergence of mean consumption. The sector dummy as well as the interaction term are insignificant suggesting that there are no sector specific differences in the intercept or slope parameters. Figures 2(a) and 2(b) below, where we plot the initial (1993-94) per-capita mean consumption of each state against the growth rate of mean consumption over the two decades, separately for rural and urban areas, provide the graphical evidence for spatial divergence. The result on consumption expenditure divergence is in tandem with the findings on divergence in per-capita GDP across Indian states, as shown by Lamba and Subramanian (2020, Figure 4). We will now use the decomposition framework of Ravallion (2012) to understand the implications of spatial divergence in average living standards for divergence in the rate of poverty reduction.

> ------Insert Figure 2 here-----------Insert Table 7 here------

#### 5. Calibrating Elasticity of Poverty Convergence

To understand how the rate of poverty reduction is expected to be influenced by initial poverty, we use the methodology of Ravallion (2012) to calibrate the poverty convergence elasticity which captures the percentage change in poverty reduction vis-à-vis percentage change in initial poverty. We calculate the elasticity separately for absolute and societal poverty, at the state-sector level. Based on various encompassing tests, Ravallion (2012)'s preferred econometric specification takes the following form: the rate of poverty reduction is modeled to be dependent on the growth in mean consumption after adjusting it for initial poverty ratio; and the growth in mean consumption is in turn modeled to be influenced by initial poverty ratio as well as initial mean consumption expenditure (equations 10.1 and 10.2 in Ravallion, 2012).

Using these expressions, Ravallion (2012) decomposes the poverty convergence elasticity into a sum of three factors: "Mean Convergence Effect"; "Direct Effect of Poverty"; and a "Poverty Elasticity Effect" (Ravallion 2012, equation 11). Whether the pace of poverty reduction in poorer regions is faster than other regions could be influenced by whether the growth of average living standards in these regions is faster relative to other regions. The 'mean converge effect' aims to capture how convergence/divergence in average incomes across

regions influences the speed of poverty convergence. In a cross-country context, Ravallion (2012) finds that high initial poverty levels could itself lower the rate of economic growth of poorer countries and adversely impact the pace of poverty reduction. The 'direct effect of poverty' aims to capture this effect. In addition, for a given rate of economic growth, higher initial poverty could lead lower the poverty-reducing impact of that growth. The 'poverty elasticity effect' aims to account for this by capturing the impact of poverty adjusted growth in mean expenditure on the pace of poverty reduction.

In what follows, we will estimate each of these factors and sum them up to arrive at the elasticity of poverty convergence. We will thus be able to understand the contributions of the three factors in determining the elasticity.

In equation (4) below, we regress poverty change (separately for absolute and societal poverty respectively), on "poverty adjusted growth rate" [i.e.,  $(1 - hcr_{i,93-94}) * g_i(mean_i)$ ]. We also control for sector-specific variations in the slope as well as the intercept.

$$g_{i}(hcr_{it}) = \theta + \eta \left( \left( 1 - hcr_{i,93-94} \right) * g_{i}(mean_{it}) \right) + \delta sector + \mu \left( \left( 1 - hcr_{i,93-94} \right) * g_{i}(mean_{it}) \right) * sector + \varepsilon_{i}$$

$$(4)$$

As outlined above, the growth rate in equation (4) itself could be influenced by the initial levels of mean consumption expenditure and poverty rate. To capture this, in equation (5) below, we regress growth of mean consumption expenditure of a state-sector between 1993 and 2012 on its mean consumption in 1993-94, while controlling for the sector dummy, and the corresponding headcount ratio in 1993-94, along with interaction terms to capture sectoral differences in the impact of initial mean consumption and poverty rate on the growth rate. We

undertake separate regressions with the headcount ratios of absolute and societal poverty respectively as control variables.

$$g_i(mean_{it}) = \alpha + \beta \ln mean_{i,93-94} + \delta sector + \phi \ln mean_{i,93-94} \cdot sector + \gamma \ln hcr_{i,93-94} + \phi \ln hcr_{i,93-94} \cdot sector + \varepsilon_i$$
(5)

Tables 8 and 9 provide the results corresponding to regressions in equations (4) and (5) respectively. The parameter estimates from Table 8 indicate that growth is good for poverty reduction with the proportionate impact of a given growth rate being slightly higher on absolute poverty reduction than on societal poverty reduction. It is to be noted that the elasticity of poverty reduction is lower when the growth rate in mean is not adjusted to the initial headcount ratio, suggesting that growth elasticity of poverty reduction is a decreasing function of initial poverty.<sup>14</sup> We do not find any sector-specific differences in the impact of growth on poverty reduction.

Estimates from Table 9 reiterate our earlier finding of mean divergence across India's 40 state-sectors, that is, higher initial mean is associated with higher mean growth. Besides, we find that higher initial poverty (absolute or societal) is associated with higher mean growth, given initial mean consumption. Thus, conditional on initial mean, poorer regions seem to grow faster for both measures of poverty. This is contrary to Ravallion (2012)'s finding of an adverse direct effect of initial poverty on growth for the cross-country sample. We do not observe any sector-specific differences in the intercept or slope parameters.

As can be seen from the tables, the sector-specific intercept and slope dummies are not statistically significant in both specifications.

<sup>&</sup>lt;sup>14</sup> The corresponding poverty elasticity to (unadjusted) growth in mean consumption is -3.33 for absolute poverty and -2.53 for societal poverty.

#### -----Insert Tables 8 and 9 here-----

Using equations (4) and (5) (after dropping sector-specific dummies since they are insignificant) and assuming (as in Ravallion, 2012), that ln hcr i,93-94 varies linearly with *ln mean* <sub>*i*,93–94</sub>, we can derive the following expression for the poverty convergence elasticity,  $\frac{\partial g_i(hcr_{it})}{\partial lnhcr_{i93-94}}.$ 

The elasticity is given by the following equation (6) (same as equation 11 in Ravallion 2012):

$$\frac{\partial g_{i}(hcr_{it})}{\partial lnhcr_{i,93-94}} = \eta \beta \left(1 - hcr_{i,93-94}\right) \left(\frac{\partial lnhcr_{i,93-94}}{\partial lnmean_{i,93-94}}\right)^{-1} + \eta \gamma \left(1 - hcr_{i,93-94}\right) - \eta g_{i}(mean_{it})hcr_{i,93-94}$$
(6)

As defined earlier, the first term on the right-hand side of equation (6) is the "mean convergence effect", the second term is the "direct poverty effect", and the third term is the "poverty elasticity effect".

From (6), using the parameter estimates derived in Tables (8) and (9) and evaluating all the variables at the sample means, we calibrate the elasticity of poverty convergence, separately for the absolute and societal notions of poverty.

As per the calibration exercise, the Mean convergence effect turns out to be 0.068 (0.043) for absolute (societal) poverty. The direct effect of poverty is -0.037 (-0.024) for absolute (societal) poverty measure. Poverty elasticity effect turns out to be 0.035 (0.028) for absolute (societal) poverty. Putting these values, in equation (6), we obtain poverty convergence elasticity to be 0.066 (0.047) for absolute (societal) poverty, implying that statesectors with greater initial poverty (societal or absolute) are witnessing slower reduction in the rate of poverty. Moreover, the elasticity of convergence is found to be around 1.4 times greater for absolute poverty compared to societal poverty implying that poverty divergence is greater for the former. Among the three factors, divergence in mean consumption expenditures across state-sectors has the greatest magnitude and is primarily responsible for poverty divergence at the state-sector level. On the other hand, the adverse impact of initial poverty on poverty convergence through the 'poverty elasticity effect' is largely offset by a favorable impact of initial poverty through the 'direct effect of poverty'.

#### 6. Robustness analysis

We have checked for the robustness of our poverty estimates to changes in the recall period in the consumption surveys by estimating societal poverty using a uniform recall period (URP) of 30-days. We find that the headcount ratio of societal poverty for all-India fell from 51 percent in 1993-94 to 40 percent in 2011-12. Thus, the poverty levels are only marginally higher as compared to our main analysis, and the rate of reduction is also similar. Moreover, we find that the headcount of societally poor has also increased by a similar magnitude of about 36 million during the two decades. The sectoral pattern of poverty statistics is similar to that using the MRP data.

In addition, we also check for the robustness of our results to changes in the way SPL is calculated. In particular, instead of using the all-India sector-specific median for estimating the SPL (equation 1), we use state-sector specific median. Using these 'state-specific' standards to assess societal poverty, we find that the headcount ratios at the all-India level for 1993-94 are virtually the same as that of our main analysis. The HCR for 2011-12 is slightly lower using the state-specific standards, implying a marginally faster rate of reduction in the ratio (at 24.5 percent) during the two decades. A relatively faster pace of HCR reduction implied that there was a smaller increase in the headcount of the societally poor by around 19 million at the all-India level. However, this was entirely concentrated in the urban areas (which witnessed a rise

in 28 million) while the rural sector witnessed a reduction in the headcount of societally poor by about 11 million using the state-specific standards.

Moreover, we also check for the robustness of our findings to changes in the poverty measure. We find that at the all-India level, the rate of reduction in societal poverty using the Poverty Gap Index (i.e., FGT (1) of the Foster et. al (1984) family of indices) is 29 percent, less than half of the corresponding reduction using official poverty lines (64 percent). We get similar results when we use the Squared Poverty Gap index (i.e., FGT (2)) as the poverty measure, where societal poverty reduction is 35 percent vis-à-vis a 71 percent reduction using official poverty lines.

While the extent of reduction in societal poverty ratio has been underwhelming, it is not to be denied that India has pulled millions of people out of extreme poverty in the two decades we analyse. Recognizing this, we also use the hierarchical poverty measure of Decerf (2017) that assesses overall poverty (i.e., combining absolute and societal notions of poverty) under the normative assumption that those who are absolutely poor are more deprived than those who are only societally poor. Using a rule given by Decerf and Ferrando (2022) that provides lower and upper bounds of overall poverty reduction, we find that overall poverty in India declined between 36 percent and 64 percent during the period we analyse.<sup>15</sup> At sectoral level, lower and upper bounds for reduction in overall poverty are 36 (36) percent and 63 (66) percent in rural (urban) areas. Providing robustness to our result on uneven spatial reduction in the head count ratio of absolute and societal poverty, we find that there is large sub-national variation in the trends in overall poverty reduction using the hierarchical poverty index as well. In some cases, the upper bound of overall poverty reduction in poorer states is lower than the corresponding lower bound for richer states.<sup>16</sup>

<sup>&</sup>lt;sup>15</sup> We use India's official poverty lines to capture extreme poverty.

<sup>&</sup>lt;sup>16</sup> State-wise estimates for the results discussed in this section are available on request.

#### 7. Discussion and Conclusion

In this paper we assess India's record on poverty reduction in the two decades following economic reforms, using poverty lines that aim to reflect evolving notions of deprivation in the context of rapid economic growth. Our analysis suggests that at the beginning of the growth phase, India's official poverty lines were not too different from those implied by the broader notions of societal deprivation. However, over the subsequent two decades, the gap between the official poverty lines and the societal lines widened substantially, especially in urban areas which witnessed a relatively faster pace of improvement in average living standards. Consequently, the pace of reduction in societal poverty ratio has been less than half of the corresponding reduction as per official poverty lines. The underwhelming rate of reduction in the societal poverty ratio has also meant, with rising population, an increase in the headcount of the poor over the two decades, led largely by urban areas. Since there is no normative reason to prefer the headcount ratio over a headcount of the poor as an appropriate measure of poverty (Hassoun and Subramanian, 2012), our findings imply ambiguity about whether societal poverty has indeed reduced during India's phase of rapid economic growth.

We also see that the pace of poverty reduction, both as per the official lines as well as a societal poverty line, has been uneven across India's major states. We confirm Lamba and Subramanian (2020)'s finding of spatial divergence in per-capita state gross domestic product using mean household per-capita consumption expenditure for India's major states and show that this has had adverse implications for the pace of poverty reduction. The decomposition analysis suggests that the poverty divergence among state-sectors is primarily driven by divergence in their mean consumption expenditure over the two decades. While it is beyond the scope of our paper, future research is needed to understand deeper determinants of mean divergence across India's states.

As growth and poverty reduction has been biased towards high-income states, and poorer states are lagging behind, the task of "universal social, economic and political inclusion" that SDG 10 envisages, receives a setback. Our study shows that pro-poor policies are needed to address the issue of not just alleviating poverty in general but also to ensure that there is regional convergence in the rate of poverty reduction.

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### **Tables and Figures**

References	Specification		
Atkinson and Bourguignon	Max [\$1, 0.37*Mean consumption per capita]		
(2001)			
Ravallion and Chen (2011)	Max [\$1.25, \$0.60+1/3 *Mean consumption per		
	capita]		
Chen and Ravallion (2013)	Max [\$1.25, \$0.625+0.5*Mean consumption per		
	capita]		
Ravallion and Chen (2019)	Max [\$1.90, \$0.90+0.7(1-Gj) *Mean consumption]		
Jolliffe and Prydz (2021)	Max [\$1.90, \$1+0.5*Median consumption per capita]		
Jolliffe and Prydz (2021)	\$1.90, \$1+0.5*Median consumption per capita		

 Table 1: Parameterization of Global relative poverty lines

Table 2: Absolute and Societal Poverty Lines

	Absolute Pov	verty Line	Societal Pov	verty Line	Ratio	Ratio
	(API	L) (SP		L)	SPL/APL	SPL/APL
	1993-94	2011-12	1993-94	2011-12	1993-94	2011-12
Rural	8.35	27.2	8.35	31.5	1.00	1.16
Urban	9.87	33.33	11.22	47.79	1.14	1.43

Source: Authors' calculations.

Table 3: Percentage Change in Absolute (AP) and Societal Poverty Headcount Ratio(SP) and Decomposing Change in SP into Poverty Line and Distribution Effects basedon Aristondo et al (2023).

	Percentage	Percentage	Percentage Change	Percentage Change in
	Change in SP-	Change in SP -	in	AP - 1993-2012
	1993-2012 -	1993-2012 due to	SP - 1993-2012 due	(D)
	Total	Poverty Line	to Distributional	
	(A)	Effect	Effect	
	$(\mathbf{A} = \mathbf{B} + \mathbf{C})$	(B)	(C)	
Rural	-21.48	27.73	-49.20	-49.51
Urban	-17.96	39.18	-57.13	-57.04

Source: Authors' calculations.

		Rural		Urban		Total	
					1993-	2011-	
States	1993-94	2011-12	1993-94	2011-12	94	12	
Jammu &					26.70	10.57	
Kashmir	32.57	11.54	6.93	7.20	20.70	10.57	
Himachal					34 96	8.03	
Pradesh	36.93	8.48	13.62	4.33	51.90	0.05	
Punjab	20.36	7.66	27.43	9.24	22.40	8.23	
Uttarakhand	36.73	11.70	20.02	10.48	33.57	11.39	
Haryana	40.27	11.64	24.17	10.28	36.12	11.23	
Rajasthan	40.94	16.05	30.02	10.69	38.43	14.78	
Uttar Pradesh	51.04	30.40	38.39	26.17	48.59	29.50	
Bihar	62.54	34.36	44.83	31.23	60.84	34.06	
Assam	55.32	33.89	27.84	20.58	52.52	32.50	
West Bengal	42.67	22.52	31.33	14.66	40.03	20.43	
Jharkhand	65.86	40.77	41.82	24.83	61.23	37.48	
Odisha	63.17	35.69	34.77	17.29	59.55	32.91	
Chhattisgarh	56.10	44.61	28.38	23.95	51.29	40.20	
Madhya					11 77	21.08	
Pradesh	49.11	35.74	32.18	21.00	44.//	51.90	
Gujarat	43.29	21.54	28.15	10.22	38.37	16.96	
Maharashtra	59.36	24.22	30.49	9.12	48.60	17.31	
Andhra					11 88	0 27	
Pradesh	48.25	10.96	35.32	5.81	44.00	9.21	
Karnataka	56.76	24.53	34.32	15.29	50.33	21.18	
Kerala	34.02	9.19	24.31	4.98	31.64	8.08	
Tamil Nadu	51.18	15.83	33.76	6.59	45.04	11.71	
All India	50.26	25.38	31.89	13.70	45.70	22.04	

 Table 4: Head Count Ratio (in percent) of Absolute Poverty for 1993-94 and 2011-12

Source: Authors' calculations using India's official poverty lines from Government of India (2009, 2013b).

		Rural		Urban		Total	
	1993-	2011-	1993-	2011-	1993-	2011-	
States	94	12	94	12	94	12	
Jammu &					28 52	21.01	
Kashmir	32.57	18.79	14.88	28.69	20.32	21.01	
Himachal					36.05	18 15	
Pradesh	37.00	17.81	25.72	20.94	50.05	10.15	
Punjab	20.36	14.69	36.41	27.43	25.00	19.30	
Uttarakhand	36.73	24.29	27.94	37.79	35.07	27.70	
Haryana	40.27	18.81	33.50	23.89	38.52	20.35	
Rajasthan	40.99	26.25	41.27	31.57	41.06	27.51	
Uttar Pradesh	51.08	45.72	49.12	53.73	50.70	47.43	
Bihar	62.59	52.73	55.28	58.25	61.89	53.26	
Assam	55.32	52.19	38.95	40.43	53.66	50.96	
West Bengal	42.73	37.30	40.55	35.45	42.22	36.81	
Jharkhand	65.86	55.64	51.77	45.14	63.14	53.47	
Odisha	63.27	51.61	44.07	43.60	60.82	50.40	
Chhattisgarh	56.10	60.87	41.21	49.84	53.51	58.52	
Madhya					17 58	50 32	
Pradesh	49.11	52.24	43.15	44.70	47.50	50.52	
Gujarat	43.29	39.61	38.13	31.19	41.61	36.20	
Maharashtra	59.36	37.37	39.32	26.90	51.89	32.58	
Andhra					17 55	20.76	
Pradesh	48.26	19.85	45.57	22.65	47.55	20.70	
Karnataka	56.79	39.26	42.71	36.23	52.75	38.16	
Kerala	34.02	17.88	36.13	23.45	34.53	19.34	
Tamil Nadu	51.18	27.66	44.54	23.25	48.84	25.70	
All India	50.29	39.49	41.77	34.27	48.2	38.00	

**Table 5**: Head Count Ratio (in percent) of Societal Poverty for 1993-94 and 2011-12

Source: Authors' calculations using the Societal Poverty Line specification from Jolliffe and Prydz (2021).

	(1)	(2)
	Absolute poverty rate	Societal poverty rate
	change	change
Sector (Rural=0, Urban=1)	0.185**	0.191***
	(2.31)	(2.86)
Log absolute HCR 93-94	0.0370**	
	(2.49)	
Urban# Log absolute HCR 93-94	-0.0497**	
	(-2.22)	
Log societal HCR 93-94		0.0194*
		(1.74)
Urban# Log societal HCR 93-94		-0.0480**
		(-2.68)
Intercept	-0.189***	-0.0937**
	(-3.28)	(-2.17)
N	40	40

**Table 6**: Regression of poverty change on initial poverty: Absolute and Societal Poverty

<u>Notes:</u> *t* statistics in parentheses are derived from robust standard errors. p < 0.10, p < 0.05, p < 0.01

Table 7:	Consum	ption co	nvergence	test
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(1) Mean consumption growth Sector (Rural=0, Urban=1) 0.0210 (0.48) $0.0142^{**}$ Log mean consumption 93-94 (2.44)Urban# Log mean consumption 93-94 -0.00495 (-0.44) Intercept -0.0348 (-1.65) Ν 40

<u>Notes:</u> *t* statistics in parentheses are derived from robust standard errors. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

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	(1)	(2)
	Absolute poverty rate change	Societal poverty rate change
Sector (Rural=0, Urban=1)	0.0250	0.0193
	(1.59)	(1.60)
(1-absolute HCR)*mean growth	-4.582***	
	(-6.02)	
Urban#(1-absolute HCR)*mean growth	0.487	
	(0.39)	
(1-societal HCR)*mean growth		-3.176***
		(-5.13)
Urban#(1-societal HCR)*mean growth		0.527
		(0.55)
Intercept	-0.00479	$0.0101^{**}$
	(-0.79)	(2.03)
N	40	40

**Table 8**: Regressing poverty change on (1-poverty rate) times growth rate with sector
 dummy: Absolute and Societal Poverty

Notes: *t* statistics in parentheses are derived from robust standard errors. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

	(1)	(2)
	Mean consumption	Mean consumption
	growth 93-12	growth 93-12
Sector (Rural=0, Urban=1)	0.00095	-0.0098
	(0.02)	(-0.22)
Log mean consumption 93-94	0.0318***	0.0318***
	(4.16)	(4.16)
Urban#Log mean consumption 93-94	0.000433	0.00393
	(0.03)	(0.31)
Log absolute HCR 93-94	0.0132**	
	(2.22)	
Urban#Log absolute HCR 93-94	-0.000256	
	(-0.04)	
Log societal HCR 93-94		0.0132**
		(2.22)
Urban#Log societal HCR 93-94		0.00729
		(1.05)
Intercept	-0.089***	-0.089***
	(-3.62)	(-3.62)
N	40	40

**Table 9**: Regression of growth rate on initial mean consumption and initial Headcount ratio:Absolute and Societal Poverty

Notes: *t* statistics in parentheses are derived from robust standard errors. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Figure 1(a), 1(b) and 1(c): Comparison of Absolute and Societal HCR for 1993-94 and 2011-12.





Figures 2(a) and 2(b): Divergence of mean consumption in the rural and urban sector.

## Appendix

Figure 1A (a) State-Wise Variation in the Percentage Change in Absolute Poverty - Rural India



Percentage change in Absolute Poverty HCR 1993-2012 (Rural)



Figure 1A (b): State-Wise Variation in the Percentage Change in Societal Poverty - Rural India

Percentage Change in Societal Poverty HCR 1993-2012 (Rural)



Figures within the state boundaries show state's Societal Poverty HCR in 2011-12

Figure 2A (a) State-Wise Variation in the Percentage Change in Absolute Poverty – Urban India Percentage change in Absolute Poverty HCR 1993-2012 (Urban)



Figures with the state boundaries show state's Absolute HCR in 2011-12

Figure 2A (b) State-Wise Variation in the Percentage Change in Societal Poverty - Urban India



Percentage change in Societal Poverty HCR 1993-2012 (Urban)

Figures with the state boundaries show state's Societal HCR in 2011-12