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Growth, Openness and the Socially Disadvantaged

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Abstract

We offer a comprehensive analysis of the evolution of poverty by social groups in India since 1983 and study the impact of growth and openness on the headcount ratio. We show that at the national level poverty has declined with every successive quinquennial survey in both rural and urban areas for the Scheduled Castes (SC), Scheduled Tribes (ST) and the non-Scheduled (NS) population. We conclude that there is no statistically significant evidence whatsoever that rising per-capita incomes and increased openness have hurt any of the three broad social groups. Beyond this bottom line, we find that per-capita income has a negative and statistically significant effect on poverty levels for the SC, non-Scheduled groups and all groups taken together. The effect on poverty levels for the SC is negative but statistically insignificant. We also find the effect of one or more measures of openness on poverty reduction to be positive and statistically significant in rural and urban areas and in both regions taken together for the SC and non-Scheduled groups, although for the ST the effect is statistically significant in urban areas only.

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1. Introduction

There is now broad agreement that declining levels of poverty have accompanied sustained rapid growth in India during the last three decades. Recent econometric work by Hasan, Mitra and Ural (2007) and Cain, Hasan and Mitra (2010) has also shown that openness and labor-market flexibility have contributed positively to poverty alleviation. Contrary to the prior findings of Topolova (2007), these authors find no evidence that states and regions within states that were more exposed to trade liberalization on account of greater employment in import-competing sectors experienced a slower reduction or an increase in poverty. On the contrary, to the extent that a statistically significant relationship between poverty and trade liberalization can be found, the evidence points to greater exposure to trade leading to larger reductions in poverty.

There remains deep skepticism on the part of many intellectuals and policy analysts, however, about growth and openness having done much to alleviate poverty among the socially disadvantaged groups referred to as the Scheduled Castes (SC), Scheduled Tribes (ST) and Other Backward Castes (OBC).[1] Unfortunately, the literature analyzing the impact of reforms and accelerated growth on poverty among these groups is rather sparse. The focus of the literature devoted to studying the changes in the fortunes of the socially disadvantaged groups during the post-reform era has been on inter-group *inequality* rather than poverty. For example, Kijima (2006) studies how the gap between the average consumption levels of the SC and ST households on the one hand and non-Scheduled (NS) households on the other has declined between 1983 and 1999-2000 and whether this decline can be attributed to reduced

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[1] The terms SC and ST have their origin in the Indian constitution, which lists in separate schedules castes and tribes that are officially recognized as having suffered discrimination for centuries and therefore requiring special affirmative action. A program of reservation in public sector jobs and public schools, colleges and universities for the SC and ST in India has existed since the early 1950s. Reservation in government jobs was extended to the OBC in 1990 and in central government educational institutions in 2006.

discrimination. The author answers the former question in the positive but the latter in the negative. Hnatkovska, Lahiri and Paul (2010) offer a much more comprehensive analysis of convergence asking whether the wages, education levels and occupational structure between the SC and ST as a group and the NS have converged. They answer forcefully in the affirmative on each count and attribute it to 'the rapid structural changes in the Indian economy over the past 25 years' (p. 42).[2]

To our knowledge, the only paper that comes close to addressing the evolution of *poverty* as opposed to *inequality* in the post-reform era is Sundaram and Tendulkar (2003). These authors study the change in poverty levels of the SC, ST and NS households, distinguished according to the means of livelihood, in rural and urban India between 1993-94 and 1999-2000.[3] They find that during these years, the ST in rural areas experienced the least decline in poverty while those in urban areas saw it rise. In contrast, the SC households, whether in rural or in urban areas and whether agricultural laborers or in other occupations, experienced poverty reduction matching that experienced by the rural population on average. They conclude (p. 5275), "This fact holds the important message that the benefits of growth have indeed been accessed by the socially and economically disadvantaged groups of India. It highlights the fact that a growth-centered strategy for poverty reduction in India can and must be followed."

In this paper, we undertake a comprehensive analysis of poverty among various social groups and its relationship to growth and openness. Our main results may be summarized as follows. First, whereas the distribution of the SC between rural and urban areas and across

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[2] Additional references to earlier studies on inequalities between Scheduled and non-Scheduled groups can be found in the reference lists in Kijima (2006) and Hnatkovska, Lahiri and Paul (2010).
[3] An earlier paper by Meenakshi, Ray and Gupta (2000) provided state-wise poverty estimates for the SC and ST for a single year, 1993-94, but did not deal with the issue of the evolution of poverty among these groups over time and how it may have been impacted by growth and reforms. These authors also refer to Dubey and Gangopadhyay (1998) as having provided the estimates of poverty by social groups in 1993-94 and perhaps earlier years.

states is broadly similar to that of the general population, ST individuals are distributed differently. Based on the 61st National Sample Survey (NSS) round, conducted in 2004-05, only 8 percent of ST individuals compared with 20 percent of SC individuals live in urban areas. Likewise, the top five states ranked by their proportion of SC population mirror the five most populous states. But only one state among the top five ranked by their proportion of ST population is among the five most populous states. In other words, the distribution of the SC follows that of the general population, whilst that of the ST is very different from it.

Second and more importantly, nationally, every successive sample survey we analyze—i.e. the 38th, 43rd, 50th and 61st round conducted in 1983, 1987-88, 1993-94 and 2004-05, respectively, shows a declining rate of poverty for every social group in every region (rural, urban and overall). In aggregate, the poverty rate fell by 20 percentage points for the SC and by 18 percentage points for each of the ST and the NS between 1983 and 2004-05. Therefore, data forcefully refute any claims that higher growth in recent decades has not been associated with any benefits for disadvantaged social groups. What can be justifiably argued is that since the overall poverty rates were much higher for the ST and SC than for the NS in 1983 and that since the percentage point reductions have been broadly equal across the groups, the proportionate differences in the poverty rates for the SC and ST on the one hand and the NS on the other have risen.

Third, our econometric analysis offers strong evidence of rising incomes leading to declining rates of poverty for the ST, NS and all groups taken together. Our results for the SC are weaker: while the coefficient of per-capita income has the correct sign, it is not statistically significant. These results are based on regressions of poverty on per-capita income with appropriate control variables based on pooled data for the 18 largest states that account for 98 percent of the national population over our four survey years.

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Finally, we test for the effect of openness on poverty among various social groups. Our results show that for no social group did poverty fall less in states that were exposed to greater openness following trade liberalization. To the extent we find statistically significant effects, they show greater reductions in poverty in the states that were more exposed to openness. Specifically, one or more measures of protection shows a negative and statistically significant effect of openness on poverty for the SC and NS in urban, rural and urban and rural areas combined. For the ST, we find statistically significant effect in urban areas only.

The paper is organized as follows. In Section 2, we describe the size and the location of the socially disadvantaged groups. In Section 3, we report the estimates of poverty at the national level for the three major groups in various regions (rural, urban and combined) for the four surveys that we analyze. In Section 4, we describe poverty trends based on estimates for the top ten states by SC and ST populations. At this stage we also estimate the relationship between poverty and per-capita incomes. In Section 5, we test the relationship between openness and poverty alleviation. In Section 6 we conclude and discuss the implications of our findings.

2. The Socially Disadvantaged: How Many and Where?

Demographic data on the SC and ST come from two sources: the Census Commission and the National Sample Survey Office (NSSO). The counts from these sources do not match and they also relate to different years. Because virtually all of our quantitative analysis relies on unit-level data from the NSSO, we report the indicators based predominantly on this source. But where relevant, we do point out the differences with the census data.

Though the NSSO conducts a smaller, "thin" expenditure survey each year, it conducts a larger, "thick" survey approximately every five years only. Our analysis is based on these

quinquennial thick surveys beginning with the one conducted in 1983. We consider five NSSO surveys in all relating to the years 1983, 1987-88, 1993-94, 1999-2000 and 2004-05 and labeled rounds 38, 43, 50, 55 and 61, respectively.[4] Of these, the expenditure data generated by the 55th round, relating to the year 1999-2000, are not directly comparable to those in other rounds due to the application of a different sample design (see Panagariya 2008, pp. 136-41 for details). Therefore, we do not consider the 55th round except for the purpose of reporting the population shares of various social groups, which are not influenced by the difference in the sample design. The bulk of our analysis is focused on rounds 38, 43, 50 and 61.

2.1. How Many?

The first three of the latest five thick rounds identify only the SC and ST households as separate social groups. The last two rounds identify additionally "Other Backward Castes" or the OBC. Accordingly, in Table 1, we report the proportions of the SC and ST in the total population in all five rounds and those of the OBC in the last two rounds. The residual group is labeled "Forward Castes" (FC) with the Non-Scheduled (NS) category defining the total population minus the SC and ST or, equivalently, the OBC and the FC. Unless otherwise stated, all our indicators drawn from the NSSO expenditure surveys are based on the 18 largest states (counting Delhi as a state) for the first three surveys and on the 21 largest states for the last two. The latter include the states of Chhattisgarh, Jharkhand and Uttarakhand, carved out of Madhya Pradesh, Bihar and Uttar Pradesh, respectively, in 2000. We exclude

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[4]Thick surveys are typically in the field from 1st July of the beginning calendar year to 30th June of the ending calendar year. For example, the 2004-05 survey was in the field from 1st July 2004 to 30th June 2005. The 38th round followed a different schedule staying in the field from 1st January to 31st December 1983. India has had a long tradition of conducting sample surveys with the first expenditure survey having taken place as early as between 1st October 1950 to 31st March 1951.

the 6 smallest northeastern states, Sikkim and all union territories (UTs) except Delhi.[5]   For

comparison, we also report the data from the 2001 Census, which are based on all states and

UTs.

Table 1: Shares of Various Social Groups in the Population

Survey/Census Year	SC	ST	OBC	FC	NS	Total Population (Million)
1983	16.7	8.3			74.9	660.4
1987-88	16.6	9.2			74.1	648.7
1993-94	19.4	8.5			72.0	767.3
1999-2000	19.0	8.3	36.1	36.6	72.7	904.5
2004-05	19.7	8.1	41.2	30.9	72.1	968.0
Census 2001	16.2	8.2			75.6	1029

Source: Authors' calculations using the unit-level data of the relevant NSS expenditure
surveys and Table T00-005 from the Census of India website at
http://www.censusindia.gov.in/Tables_Published/A-Series/A-Series_links/t_00_005.aspx
(accessed on February 9, 2011).

    Table 1 gives rise to four observations. First, the share of the SC in the population

could be anywhere between 16 and 20 percent. If we go by the census and the two earlier

NSS rounds, the proportion is closer to 16 percent but if we rely on the three latest NSS

rounds, it is closer to 20 percent. We do not take a position between these two numbers,

letting the reader make his or her own choice. Second, the share of the ST is between 8 and 9

percent. Thankfully, there is strong agreement among the five surveys and between them and

the census in this regard. Third, the OBC are likely to be somewhere between 36 and 41

percent of the total population. This is a wide range and we must await the results of the 66th

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[5] The poverty rate for each of these entities is calculated by recourse to one or another special assumption. For
the six northeastern states and Sikkim, the poverty ratio is assumed to be the same as for Assam. In the case of
Goa, its expenditures are combined with the poverty line of Maharashtra to calculate the poverty ratio. Similar
assumptions are made for the UTs.

NSS round and the 2011Caste Census for some resolution of whether the true share is nearer the lower or upper limit or some figure outside this range. Finally, as a word of caution, we note that there is wide discrepancy in the total population figures generated by the NSSO and the Census. It is generally recognized that while the NSSO generates good estimates of various proportions, the census produces more accurate absolute figures. Therefore, for example, when the Planning Commission calculates the absolute number of poor, it multiplies the estimates generated from the NSSO surveys by a factor reflecting the difference between the census based and NSSO based estimates of the total population.

2.2. Where: The Rural-Urban Split

Next, we turn to the rural-urban split of shares of various social groups. For this purpose, we rely exclusively on the 2004-05 NSSO survey, which is the latest available survey that explicitly identifies the share of the OBC. Table 2 summarizes the information.

Table 2: Rural-Urban Categorization Across Social Groups, 2004-05

Region	SC	ST	OBC	FC	NS	Total
Shares in the Total Population						
Rural	15.7	7.5	32.2	19.3	51.5	74.7
Urban	4.0	0.7	9.0	11.6	20.6	25.3
Rural + Urban	19.7	8.1	41.2	30.9	72.1	100
Rural-Urban Split within each Caste Category						
Rural	79.8	91.9	78.1	62.4	71.4	74.7
Urban	20.2	8.1	21.9	37.6	28.6	25.3
Rural + Urban	100	100	100	100	100	100.0

Source: Authors' calculations from the 61st round of the NSSO expenditure survey

Four features of this table are worthy of note. First, at 0.7 percent, the share of the ST residing in the urban areas in the total population of the 21 largest states is tiny. Seen another way, as much as 92 percent of the total ST population in the country lives in the rural areas.

In this sense, any targeted programs to improve the fortunes of the ST require focus on rural areas though care must be taken to ensure that these programs do not impede migration to urban or other rural areas.[6] Second, though the OBC are more numerous than the SC, their rural-urban composition is almost the same as that of the latter. Third, together, the SC, ST and OBC account for as much as 74 percent of the rural population. This means that any policy that lowers rural poverty is almost sure to help one or more of these groups. Finally, the FC as a group is significantly more urbanized than the remaining social groups. It accounts for almost 46 percent of the urban population even though its share in the total population is just 30.5 percent.

2.3. Where: The State-wise Distribution of Various Groups

Turning to the geographical distribution of various social groups, we rely once again on the 61st round conducted in 2004-05 since it is the latest survey providing data on the OBC. There are two sets of shares we consider: the share of each state in any given social group and the share of each group in any given state. These are shown in Tables 3 and 4 respectively. For reasons outlined above, we limit ourselves to the 21 largest states (counting Delhi as a state) in each table. These states account for more than 98 percent of the total population of the country. The excluded entities include six northeastern states other than Assam, Sikkim and Goa and the six Union Territories (UTs). We arrange the states in Tables 3 and 4 in the descending order of their total population shares within the 21 included states. Thus, Uttar Pradesh, the most populous state, appears at the top of the list and Himachal Pradesh, the least populous state, appears at the bottom.

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[6] Targeted assistance is often provided based on the location of individuals. Rural employment guarantee schemes or subsidized food prices available to the rural poor, for instance, have this attribute. Such policies inadvertently impede migration, which may be detrimental to development in the long run.

Several observations follow from Table 3. First, the 5 largest states also have the highest shares of the SC population, although the individual rankings differ somewhat. These states—Uttar Pradesh, Maharashtra, West Bengal, Bihar and Andhra Pradesh—account for 50 percent of the total population and 54 percent of the SC population within the 21 largest states. Going further down the list, we see that the 9 largest states continue to account for the top nine shares in the SC population. The shares of these nine states in the total and SC populations are 73 and 77 percent, respectively. It is only when we get to the 10th state that the pattern is broken since Punjab, which is the 15th largest state, happens to have the 10th largest SC population. As we will see below, the SC account for an unusually large proportion of the total population in Punjab.

Second, the distribution of the ST differs significantly across states. The 5 largest states, accounting for 50 percent of the total population, account for only 25.5 percent of the ST population in the 21 states. The state with the highest share in the ST population of the 21 states, Madhya Pradesh, is not among the 5 largest states by total population. Nevertheless, the degree of concentration of the ST is almost as high across states as of the SC population. The top five and top nine ST states account for 56 and 86 percent of the ST population in the 21 states, respectively. The top five ST states are Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Gujarat in that order with Chhattisgarh a close sixth. Only Maharashtra appears on both the top five SC and ST lists. Remarkably, none of the seven northeastern states, traditionally identified as those with high concentrations of the ST populations, appear on this list. These states do have very high proportions of the ST in their overall populations but being small in size, they house only a small proportion of the country's total ST population. Assam, the largest northeastern state accounts for only 6 percent of the ST population in the largest 21 states.

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Table 3: Shares of states in social groups*

State	SC	ST	OBC	FC	NS	All
Uttar Pradesh	20.0	1.0	21.8	13.0	18.1	17.0
Maharashtra	7.6	11.0	7.2	13.6	9.9	9.5
West Bengal	11.1	6.5	1.3	15.9	7.5	8.2
Bihar	8.4	0.5	11.0	4.4	8.2	7.6
Andhra Pradesh	7.0	6.5	8.6	6.8	7.8	7.5
Madhya Pradesh	5.5	16.2	5.9	4.4	5.3	6.2
Tamil Nadu	6.5	0.4	10.1	0.9	6.2	5.8
Rajasthan	6.1	9.2	6.2	4.0	5.2	5.7
Karnataka	4.6	4.1	4.8	6.0	5.3	5.1
Gujarat	2.6	8.8	4.6	5.6	5.1	4.9
Orissa	3.3	11.0	3.6	2.7	3.2	3.8
Kerala	1.7	0.6	4.6	2.9	3.9	3.2
Assam	1.3	5.7	1.1	4.6	2.6	2.6
Jharkhand	1.6	8.2	2.7	1.3	2.1	2.5
Punjab	4.4	0.1	1.2	3.3	2.1	2.4
Haryana	2.9	0.1	1.6	3.2	2.3	2.2
Chhattisgarh	1.6	8.8	2.4	0.7	1.6	2.2
Delhi	1.6	0.2	0.4	2.6	1.3	1.3
Uttarakhand	0.9	0.5	0.4	1.6	0.9	0.9
Jammu and Kashmir	0.5	0.1	0.2	1.7	0.8	0.7
Himachal Pradesh	0.8	0.4	0.2	1.1	0.6	0.6
All 21 States						
(Population in Million)	190.9	78.9	398.9	299.3	698.2	968.0

*States are listed in the descending order of size according to total population
Source: Authors' calculations from the 61st round of the NSSO expenditure survey

Third, the distribution of the OBC across states follows more closely the distribution

of the SC. Nine states on the top 10 SC and OBC lists are common. The top five and top

nine OBC states account for 59 and 80 percent of the total OBC population in the 21 states,

respectively. This close correspondence between distributions of the SC and OBC perhaps has a bearing on the political-economy of reservations in jobs and education: living side-by-side with the SC populations, which enjoyed the benefits of reservations since the adoption of the Constitution in 1950, the OBC populations may have become sensitized to these advantages and perhaps actively sought similar reservations for themselves.

Finally, the distribution of the FC resembles to some degree that of the SC and OBC though with greater concentration at the top and more even distribution over the remaining states. The top three FC states, which are also the three most populous states (Uttar Pradesh, Maharashtra and West Bengal), account for 43 percent of the FC population in the 21 states in comparison to 39 percent for the SC, 40 percent for the OBC and 28 per cent for the ST. There is a steep decline as we move from the third largest FC state (Uttar Pradesh) to the fourth largest (Andhra Pradesh): from 13 to 7 percent.

Some insight into the dispersion of various social groups across states can be gained with the help of the Theil Index of inequality. This index belongs to the family of generalized entropy inequality measures. The value varies between 0 and ∞, with zero representing an equal distribution and higher values representing higher levels of inequality.

Using the demographic data from the 61st NSS round conducted in 2004-05, the value of the index for the total population is 3.63, which provides a benchmark for the distribution of the population across different states in India. The values of the index for the SC and NS turn out to be close to this value: 4.46 and 3.85, respectively. But consistent with the observations above, the value of the index for the ST turns out to be much higher at 6.3.
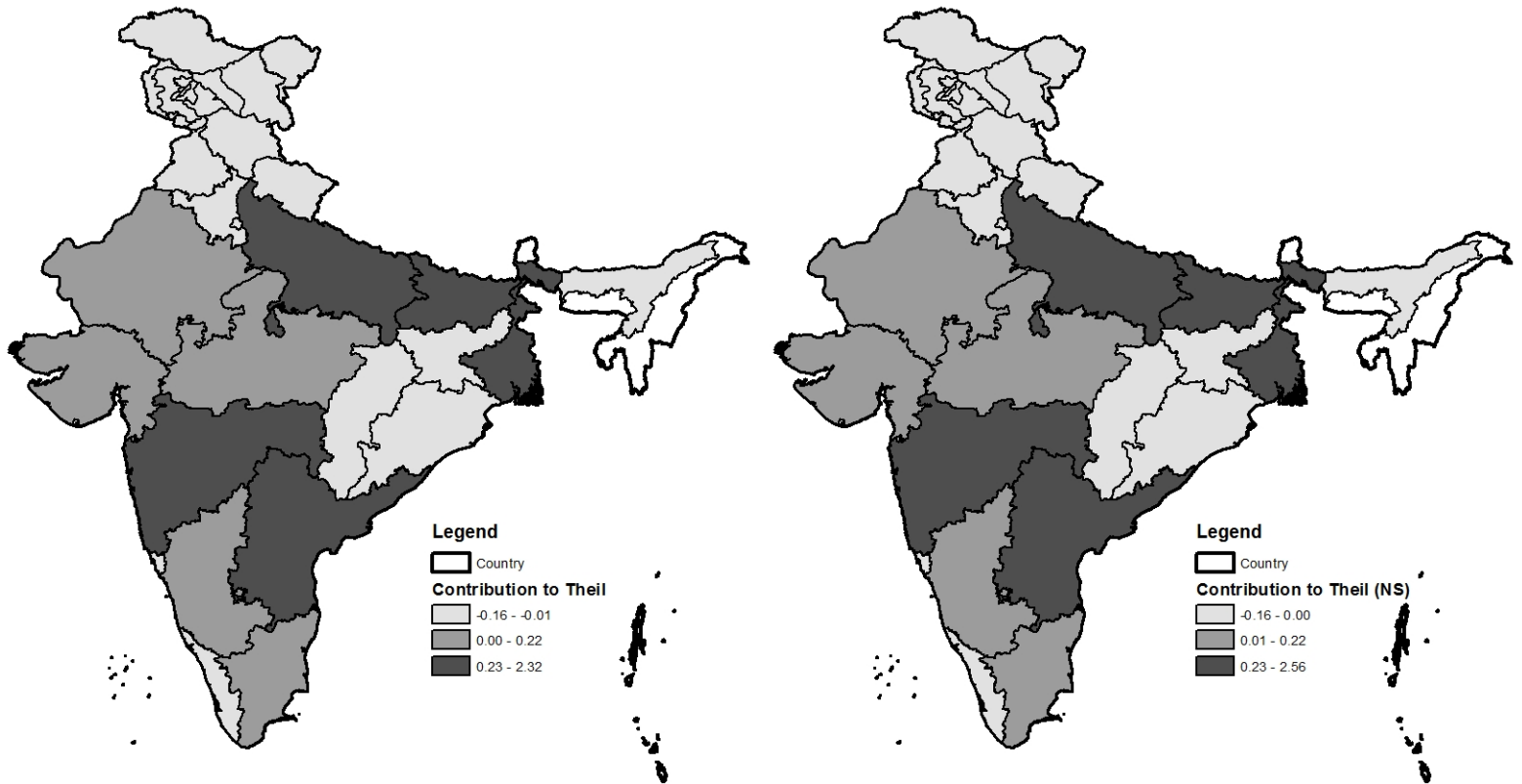
Figure 1: State contributions to the Theil Index (All and NS)

It is possible to calculate the contributions of individual states to the final value of the
index. States that host a large proportion of the population of any given social group make a
larger contribution to the index. The maps provided in Figure 1 provide a visual depiction of
each state's contribution to the Theil Index by social group, While the contribution of states
to the index for the NS is very similar to that of the general population ('All'), it is equally
clear that those of the SC and the ST diverge. The ST are more heavily concentrated in states
such as Madhya Pradesh, Maharashtra and Orissa, while the SC are more concentrated in
Uttar Pradesh, West Bengal and Bihar. In other words, even after controlling for the average

dispersion across states, the ST individuals are strongly and the SC individuals moderately concentrated across states.

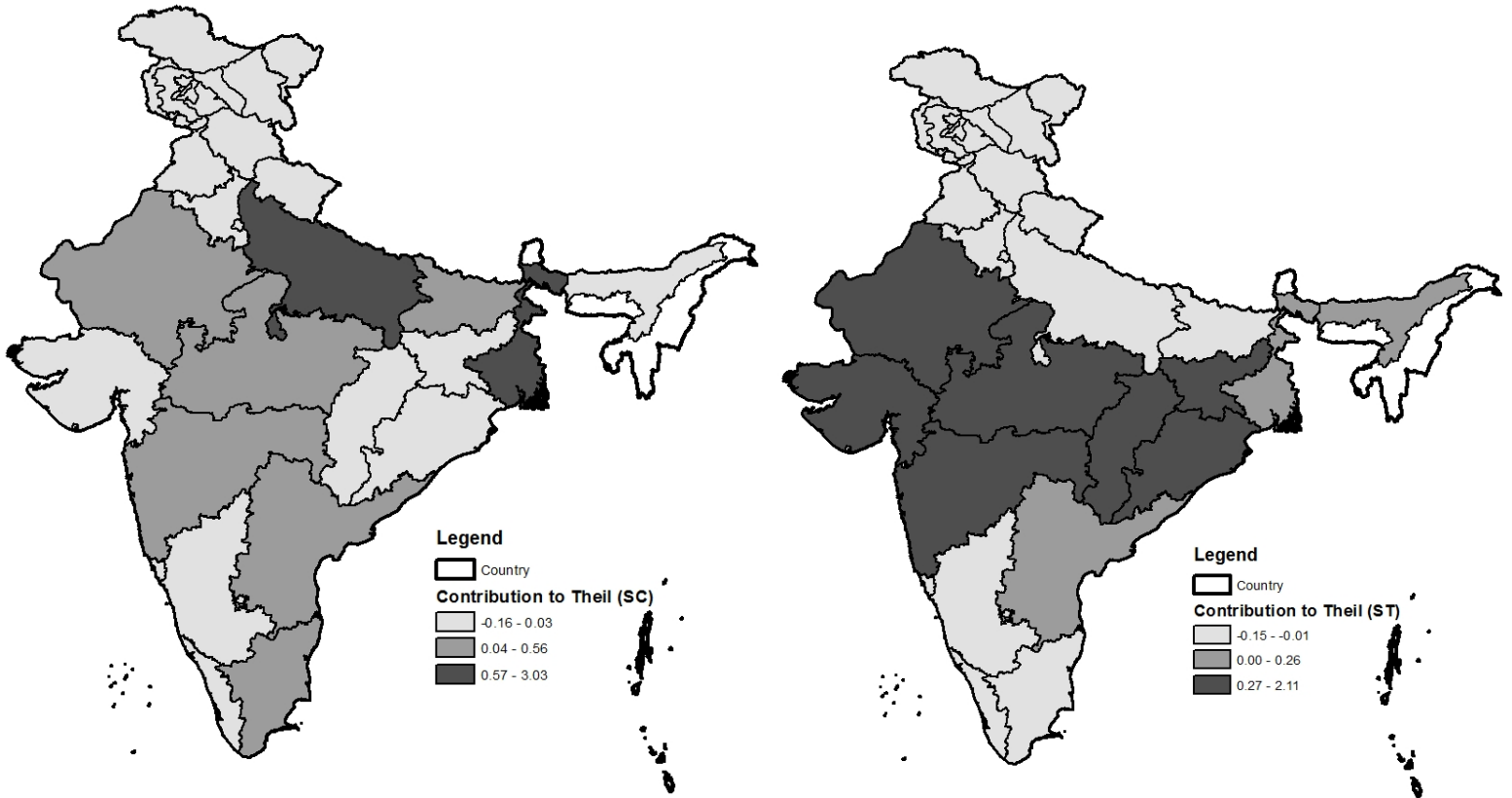
Figure 1 (continued): State contributions to the Theil Index (SC and ST)

2.4. Where: The Group-wise Distribution of Population within States

Table 4 shows the shares of various social groups in the population of each of the 21 largest states. Several observations follow.

Table 4: Shares of groups within each state*

State	SC	ST	OBC	FC	NS	Population (Millions)
Uttar Pradesh	23.1	0.5	52.8	23.6	76.4	165.0
Maharashtra	15.8	9.4	30.9	43.9	74.8	92.3
West Bengal	26.8	6.5	6.5	60.3	66.7	78.9
Bihar	21.9	0.6	59.7	17.8	77.5	73.6
Andhra Pradesh	18.3	7.0	46.9	27.8	74.7	72.9
Madhya Pradesh	17.4	21.2	39.4	22.0	61.4	60.1
Tamil Nadu	22.2	0.6	72.2	5.0	77.2	56.1
Rajasthan	20.9	13.1	44.6	21.4	66.0	55.3
Karnataka	17.9	6.6	39.0	36.4	75.4	49.3
Gujarat	10.5	14.8	39.2	35.5	74.8	47.2
Orissa	17.0	23.4	38.2	21.4	59.6	37.2
Kerala	10.5	1.6	60.2	27.7	87.9	30.8
Assam	9.9	17.8	17.6	54.6	72.2	25.2
Jharkhand	12.9	26.6	45.0	15.5	60.5	24.3
Punjab	35.9	0.4	20.4	43.3	63.6	23.2
Haryana	25.5	0.3	30.3	44.0	74.2	21.6
Chhattisgarh	14.2	32.4	44.1	9.3	53.4	21.5
Delhi	24.6	1.6	11.4	62.5	73.9	12.4
Uttarakhand	21.4	4.8	18.0	55.8	73.8	8.3
Jammu and Kashmir	12.7	0.6	12.5	74.2	86.7	6.8
Himachal Pradesh	26.2	4.9	14.9	54.1	68.9	6.1
All 21 states	19.7	8.1	41.2	30.9	72.1	968.0

*States are listed in the descending order of size according to total population
Source: Authors' calculations from the 61st round of the NSSO expenditure survey

First, Chhattisgarh, Orissa, Jharkhand and Madhya Pradesh, in that order, stand out in

terms of having large presence of both the SC and ST in their populations. The SC and ST

also account for a significant proportion of the population in Rajasthan. Second, in the

remaining states, it is either the SC or the ST that has a major presence, but not both. The SC

account for 20 percent or more of the population in as many as 10 states. Finally and

somewhat surprisingly, the OBC constitute the largest single social group in 11 out of the 14

most populous states. The FC constitute the largest single group in 9 out of the 21 states but

only two among them, Maharashtra and West Bengal, make to the list of the twelve largest

states.

3. Counting the Poor by Social Groups

We now turn to counting the poor by social group. As previously noted, Meenakshi, Ray

and Gupta (2000) have calculated the poverty rates for the SC and ST for 1993-94.

Sundaram and Tendulkar (2003) have done the same, on a comparable basis, for 1993-94 and

1999-2000, showing declining poverty levels across the surveys. In this paper, we offer

estimates for the SC, ST and NS [non-Scheduled consisting of the OBC, wherever available,

and the FC] for 1983, 1987-88, 1993-94 and 2004-05 and for the OBC and FC separately for

the year 2004-05. We choose to skip the year 1999-2000 because of non-comparability of

the survey design that year to the surveys in other years. For comparability with the overall

official poverty estimates published by the Planning Commission, we base all our estimates

on the official poverty lines.

3.1. Poverty Rates Across Groups Nationally and State-wise

We first present the poverty rates in 2004-05 across various social groups in rural and

urban regions aggregated over the 21 largest states (counting Delhi as a state). Several

observations follow from Table 5 with respect to the latest poverty picture. First, the poverty

rates are the highest among the ST followed by the SC, OBC and then the FC in that order.

The only exception is the urban poverty rate for the ST, which is a hair's breadth below the

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corresponding rate for the SC. But even this exception has limited relevance since only 8

percent of the ST population lives in the urban areas. Second, the SC and ST poverty rates

are an order of magnitude higher than either the average for all groups or the OBC and FC.

Finally, for both the SC and OBC, the urban poverty rates are higher than the corresponding

rural poverty rates and these are both substantially higher than the corresponding rates for the

FC. It is possible that with the existence of anti-poverty programs that concentrate mainly in

rural areas and with rural-to-urban migration predicted to accelerate in coming years, urban

poverty rates for the SC and OBC would remain higher than the corresponding rural poverty

rates in the short to medium run.

Table 5: Poverty rates by social groups in the 21 largest states, 2004-05

Region	SC	ST	OBC	FC	NS	All Groups
Rural	37.2	47.0	25.9	17.5	22.8	28.2
Urban	41.1	39.0	31.3	16.2	22.8	26.1
All (Rural + Urban)	38.0	46.3	27.1	17.0	22.8	27.7

Source: Authors' calculations using the unit-level expenditure data from the 61st round.

We also find it useful to present the demographic and poverty picture by state in

2004-05 using maps. In Figure 2, we show the poverty rates for the general population and

for the NS, SC and ST social groups across states. There are two points worthy of note: first,

the range of poverty rates are higher for the SC and ST groups compared to that for the

general population and the NS, and second, the overall (i.e. rural and urban combined) rate of

poverty is highest in central and northeastern states with a few exceptions. The results for the

general population and the NS are similar – poverty rates range between 5 and 47 percent for

the general population and 5 and 36 percent for the NS, with states such as Orissa, Bihar,

Jharkhand, Chhattisgarh, Uttarakhand and Madhya Pradesh exhibiting the highest rates of

poverty. On the other hand, the upper limit on poverty is 64 percent for the SC and 75 percent

for the ST. However, the highest rates of poverty for the SC and ST are associated with the same states as the overall and NS rates. For the SC, states like Bihar, Uttarakhand, Jharkhand and Orissa, and for the ST, states like Orissa, Madhya Pradesh, Bihar and Maharashtra suffer from the highest rates of poverty. Thus, although the rates of poverty are higher for the SC and ST, there is substantial geographical overlap when considering high poverty rates among these groups and the NS.
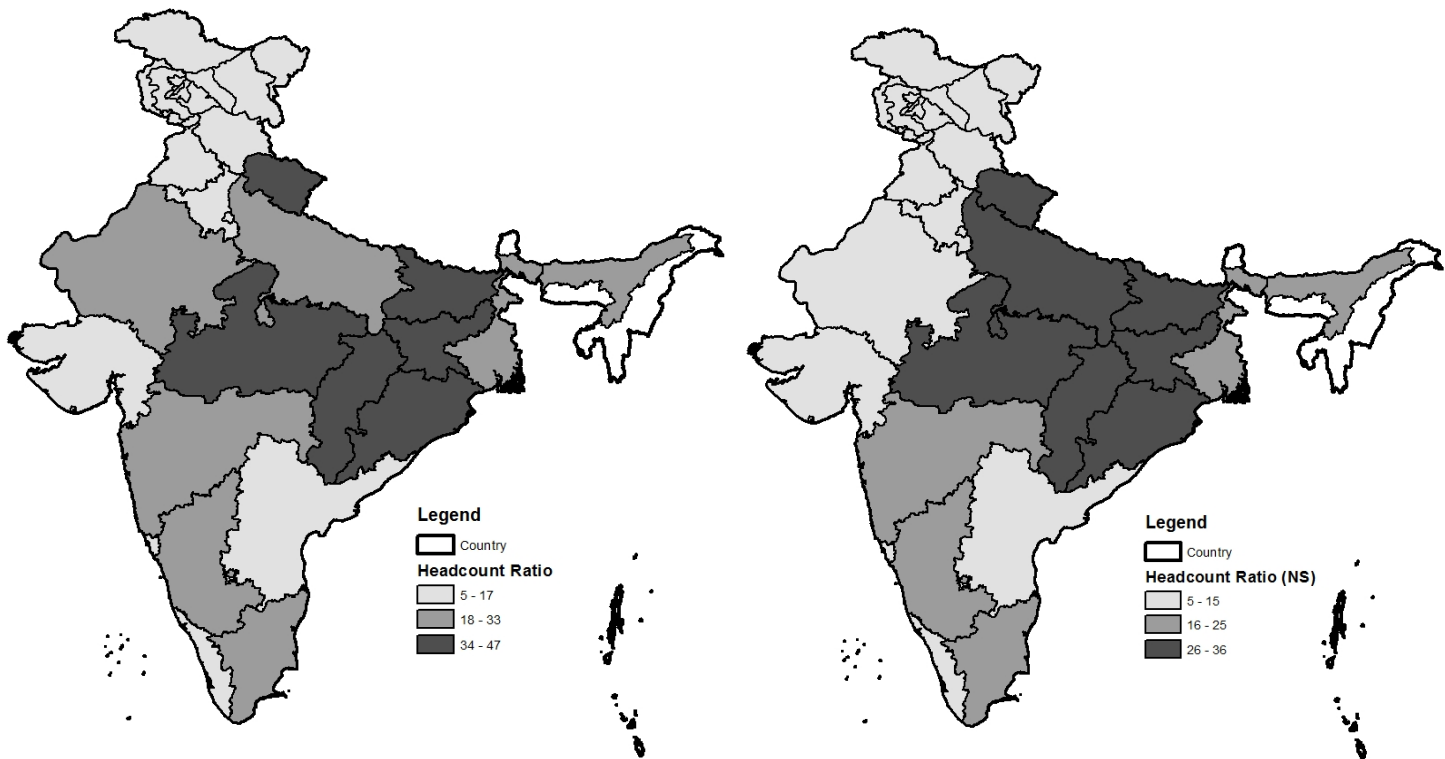

Figure 2: Poverty Rates by State in 2004-05 (All and NS)
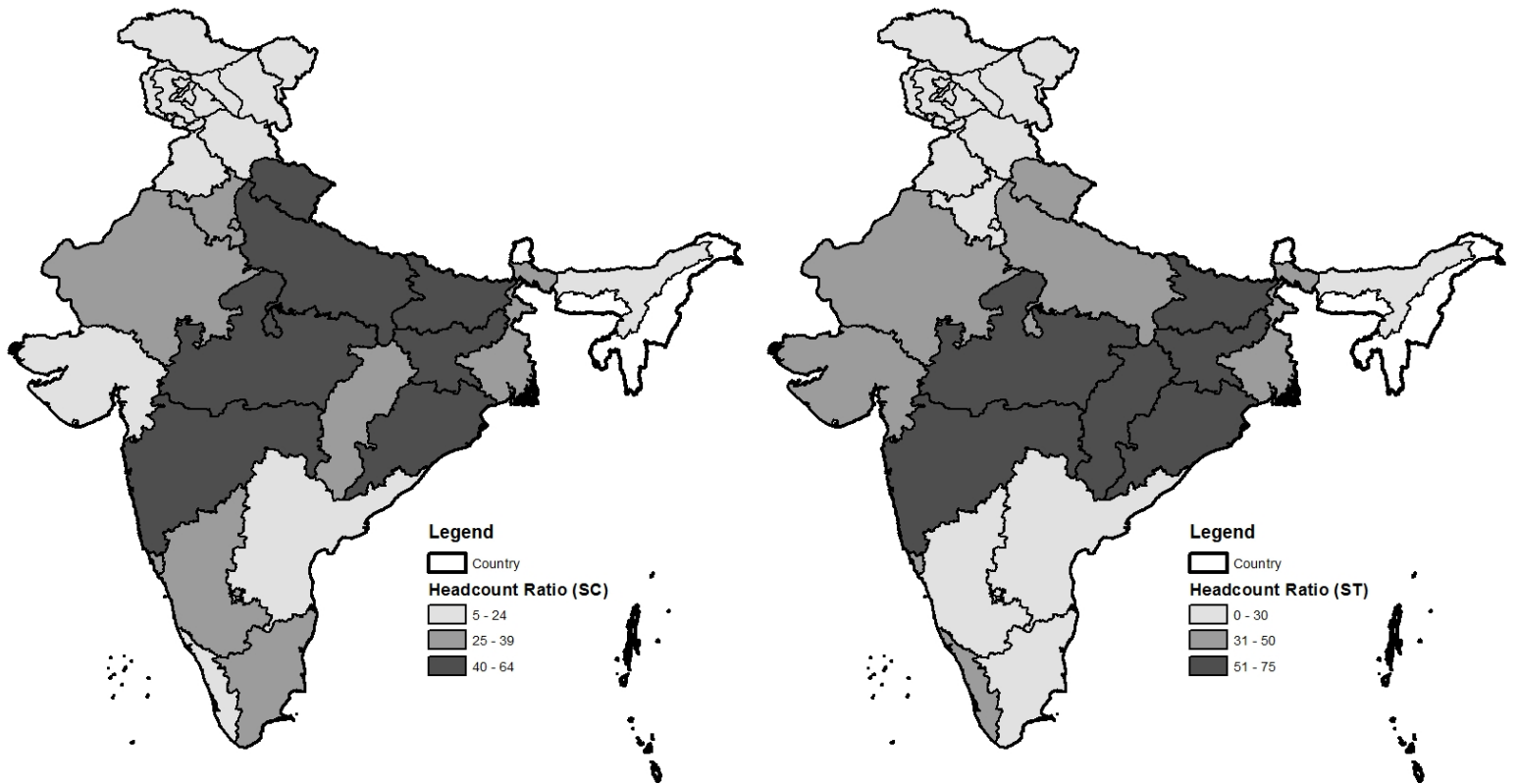
Figure 2 (continued): Poverty Rates by State in 2004-05 (SC and ST)

3.2. *Evolution of National Poverty Rates by Social Groups over Time*

In the previous section, we provided snapshots of relative poverty rates across various groups at the national and state levels. Next, we turn to the evolution of poverty rates for various social groups over time at the national level. Since the OBC are identified only in 2004-05, the social groups are limited to the SC, ST and NS for this comparison. Table 6 reports the relevant rate of poverty in rural, urban and rural plus urban regions for various social groups for the years 1983, 1987-88, 1993-94 and 2004-05.

Table 6: Evolution of poverty rates by social groups

Survey year	SC	ST	OBC	FC	NS	All groups
			Rural			
1983	59.0	64.9			41.0	46.6
1987-88	50.1	57.8			32.8	38.7
1993-94	48.4	51.6			31.3	37.0
2004-05	37.2	47.0	25.9	17.5	22.8	28.2
			Urban			
1983	56.2	58.3			40.1	42.5
1987-88	54.6	56.2			36.6	39.4
1993-94	51.2	46.6			29.6	33.1
2004-05	41.1	39.0	31.3	16.2	22.8	26.1
			Rural + Urban			
1983	58.5	64.4			40.7	45.7
1987-88	50.8	57.6			33.8	38.8
1993-94	48.9	51.2			30.8	36.0
2004-05	38.0	46.3	27.1	17.0	22.8	27.7

Source: Authors' calculations using the unit-level data the NSSO expenditure surveys

Perhaps the most remarkable feature of Table 6 is the declining rates of poverty over time for every single group in every region (rural, urban and overall) between every pair of surveys. The results thoroughly counter any claims that the accelerated growth occurring since the early 1980s has failed to help disadvantaged groups. Most pointedly, poverty rates have declined significantly even for the ST who are often said to be outside the mainstream of the economy. During the twenty years covered by the surveys, poverty has declined by 20 percentage points for the SC and 18 percentage points for both the ST and NS. While critics would no doubt like to argue that given the higher initial rates of poverty for the SC and ST, these reductions imply that the ratio of poverty rates for the SC and ST to that for the NS has

gone up, the estimates in Table 6 refute the claim that growth has bypassed socially disadvantaged groups.

4. Cross-state Analysis: Poverty and Per-capita Income

We now move on to a more disaggregated analysis over time, focusing on individual states. We focus on two main issues: (i) How have SC and ST poverty rates evolved between 1983 and 2004-05 in states where they are highly concentrated; and (ii) Are increases in average per-capita income associated with declining rates of poverty at the level of the state?
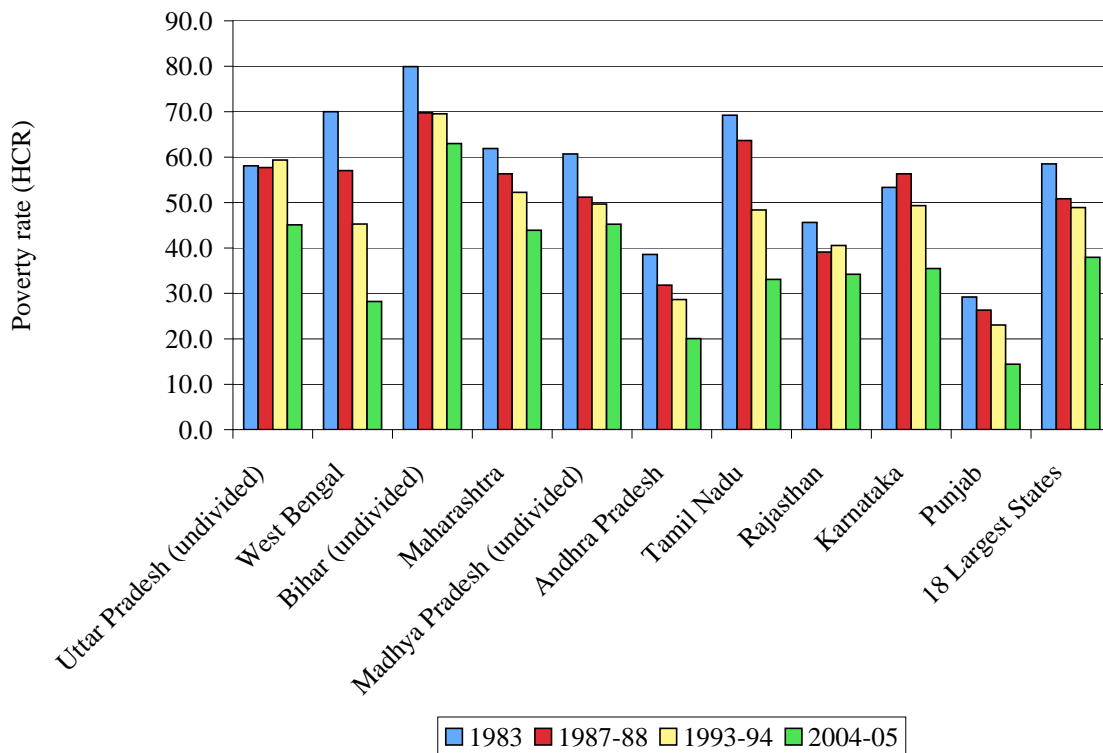
Figure 3: SC poverty rate from 1983 to 2004-05 in the top 10 states by the SC population

Turning to the first question, we show that the trend of declining poverty rates for each group observed at the national level is broadly reproduced at the level of the states. Figure 3 shows the poverty rates for the SC for the 10 largest states based on the state-wise SC populations in 2004-05. States are arranged in declining order of SC population from left to right using data from the 61st round conducted in 2004-05. Therefore, Uttar Pradesh has the

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largest SC population, West Bengal the second largest and so on. For comparison, we also include the overall SC poverty rate in the 18 largest states taken together. Note that we aggregate the three new states (Chhattisgarh, Jharkhand and Uttarakhand) with their respective mother states (Madhya Pradesh, Bihar and Uttar Pradesh).

Three observations follow from Figure 3. First, some of the states with large SC populations and above average SC poverty rates are among some of the poorest states in India. Uttar Pradesh, Bihar and Madhya Pradesh were the bottom three states by per-capita income in 2004-05 and are also among the top five states by the SC population. They also have poverty rates well in excess of the average poverty rate of the 18 largest states by population. These three states have also experienced growth rates well below the national average between 1983 and 2004-05.

Second, comparing the rates between 1983 and 2004-05, poverty has declined in every one of the ten states by at least ten percentage points. In some states, the decline has been impressive. For instance, it fell from 70 to below 30 percent in West Bengal and from almost 70 to a little above 30 percent in Tamil Nadu between 1983 and 2004-05. By the same token, poverty reduction in some states has been extremely slow. In Bihar, the poverty rate fell from 70 percent in 1987 to just 63 percent in 2004-05.

Finally, going by the sample surveys, the reduction in poverty has been monotonic in most but not all states. While progress between 1987-88 and 1993-94 was limited, with even reversals in some states, visibly reductions in poverty took place in each of these ten states between 1993-94 and 2004-05. This is especially interesting considering that 1991 was the year of the balance of payments' crisis and it took some years for the country to return to the 6 percent growth rate experienced between 1993-94 and 2004-05.
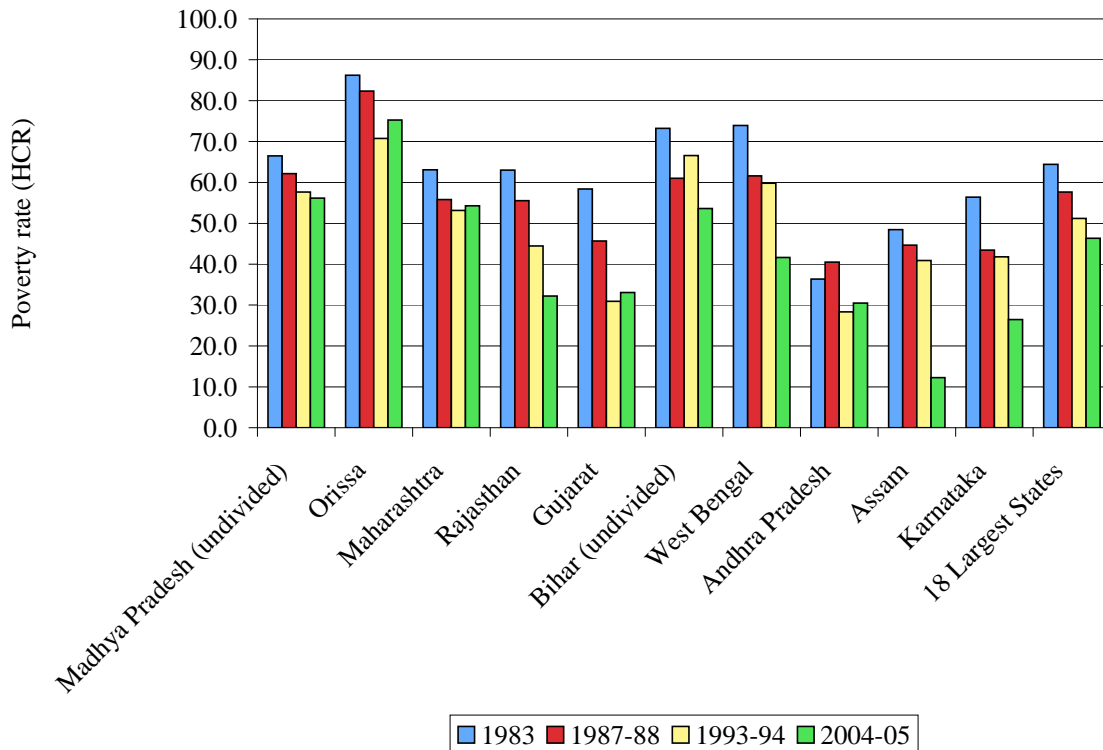
Figure 4: ST Poverty rates in the top 10 states by the ST population: 1983 to 2004-05

Next, we turn to the evolution of poverty rates for the ST by state. As in the case of the SC, we show the poverty rates associated with the four surveys in the top ten states according to the ST population in 2004-05 in Figure 4. The states are arranged in declining order of the ST population from left to right. The pattern is similar to that for the SC with one important difference. As in the case of the SC, there is a significant decline in poverty rates for all states between 1983 and 2004-05. But in contrast to the SC, there are several states in which ST poverty rates have seen a marginal increase between 1993-94 and 2004-05. This particular fact is contrary to the hypothesis of declining poverty rates with increasing per-capita incomes.

Using poverty rates and per-capita-income data, we can study more directly the relationship between poverty and growth for various social groups. For this purpose, we first present a set of graphs showing declining poverty rates for each group statewide with rising

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per-capita incomes using cross-state data for 2004-05. We obtain similar graphs when we disaggregate the data by social group for rural and urban areas in 2004-05 and for 1983, 1987-88 and 1993-94 in rural, urban and rural plus urban areas. We do not include these graphs here to economize on space, but they are available on request. Following the graphs, we present some econometric results relating poverty rates to per-capita incomes for each social group.

Figures 5-8 show the group-wise scatter plots of poverty rates against per-capita incomes and the associated best-fit lines for the 21 largest states in 2004-05. In each graph, we compare the relationship between poverty level and per-capita income for an individual group such as the SC or ST to that for the entire population. It turns out that the best-fit relationship between poverty rates and per-capita incomes is uniformly negative in every single case. That is to say, poverty rates decline as per-capita incomes rise for every group in every one of the four surveys. As we have already noted, poverty levels for the disadvantaged groups are generally higher than that for the general population.
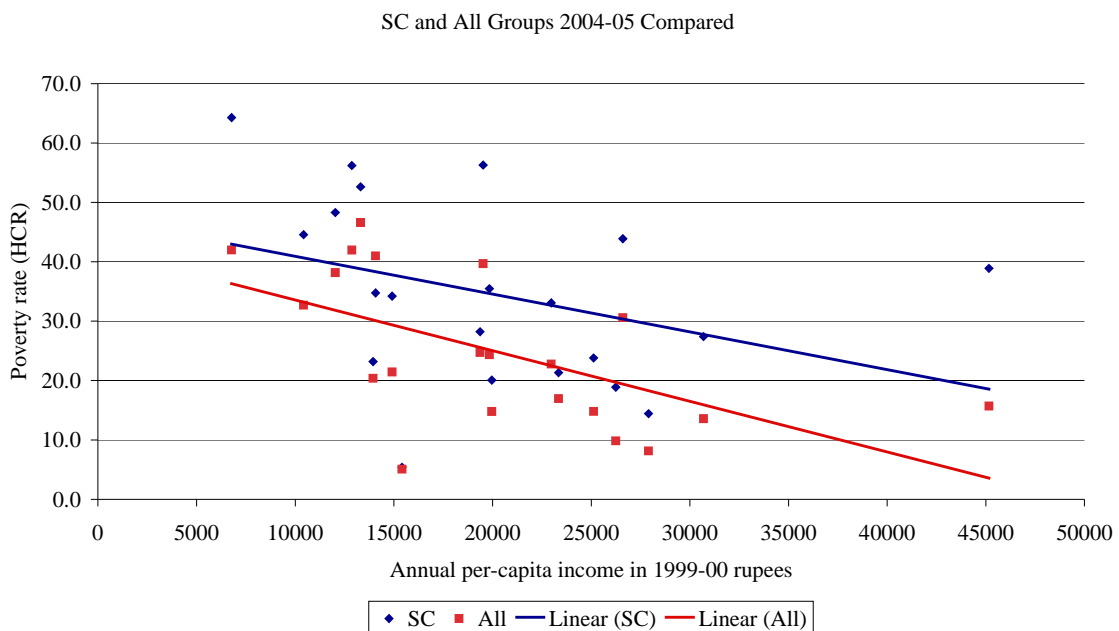
Figure 5: Poverty rate and per-capita income: SC and all groups, 2004-05

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ST and All Groups 2004-05 Compared

Figure 6: Poverty rates and per-capita income: ST and all groups, 2004-05

OBC and All Groups 2004-05 Compared
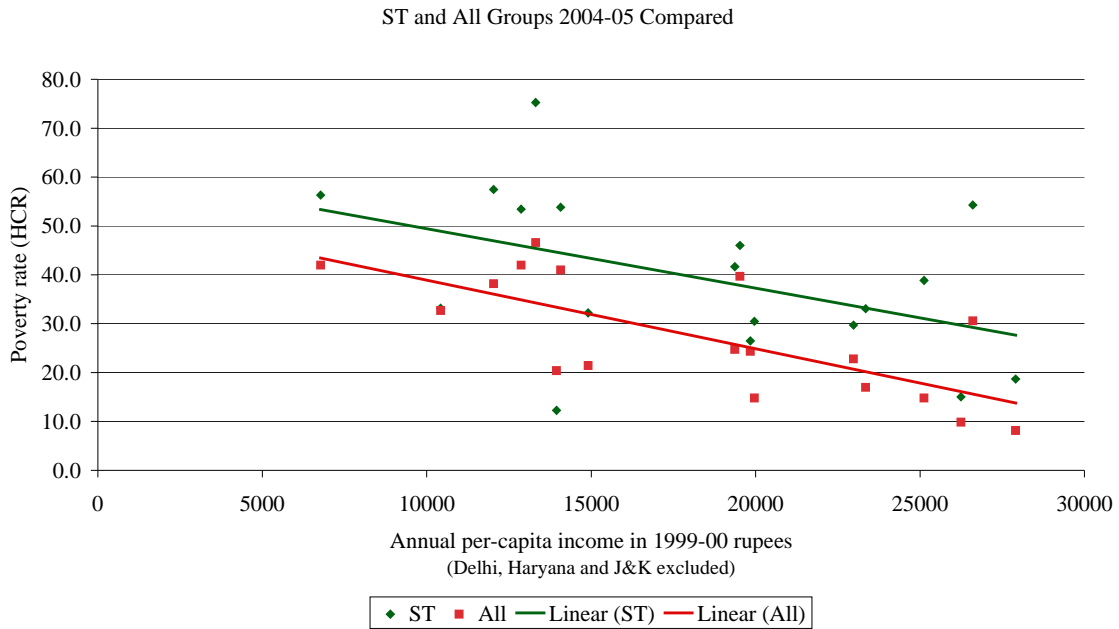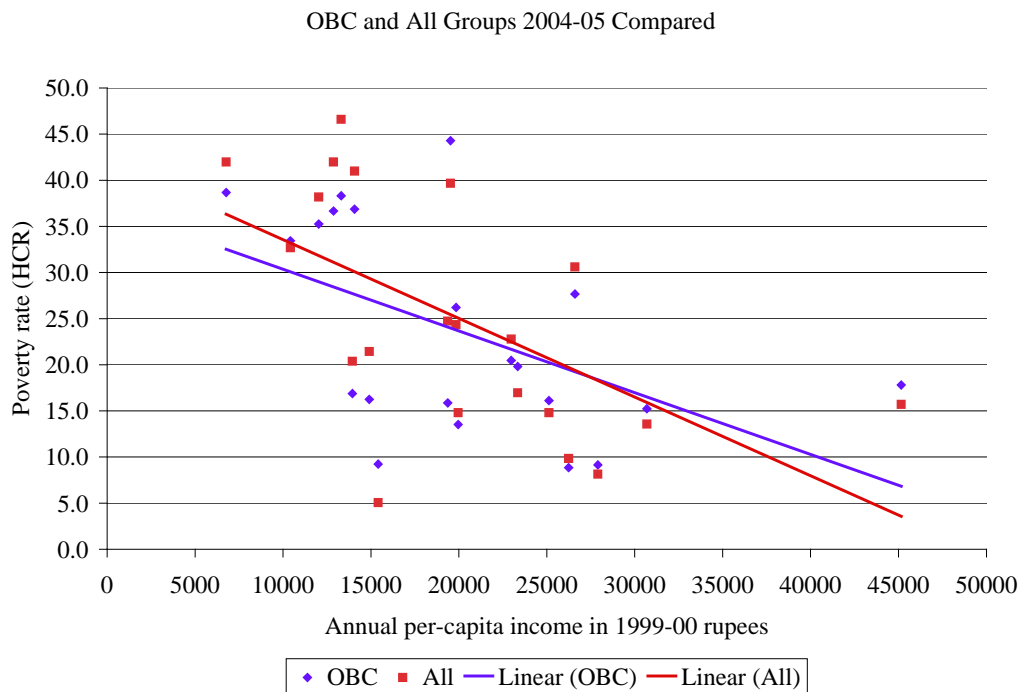

Figure 7: Poverty rates and per-capita income: OBC and all groups, 2004-05

NS and ALL Groups 2004-05 Compared
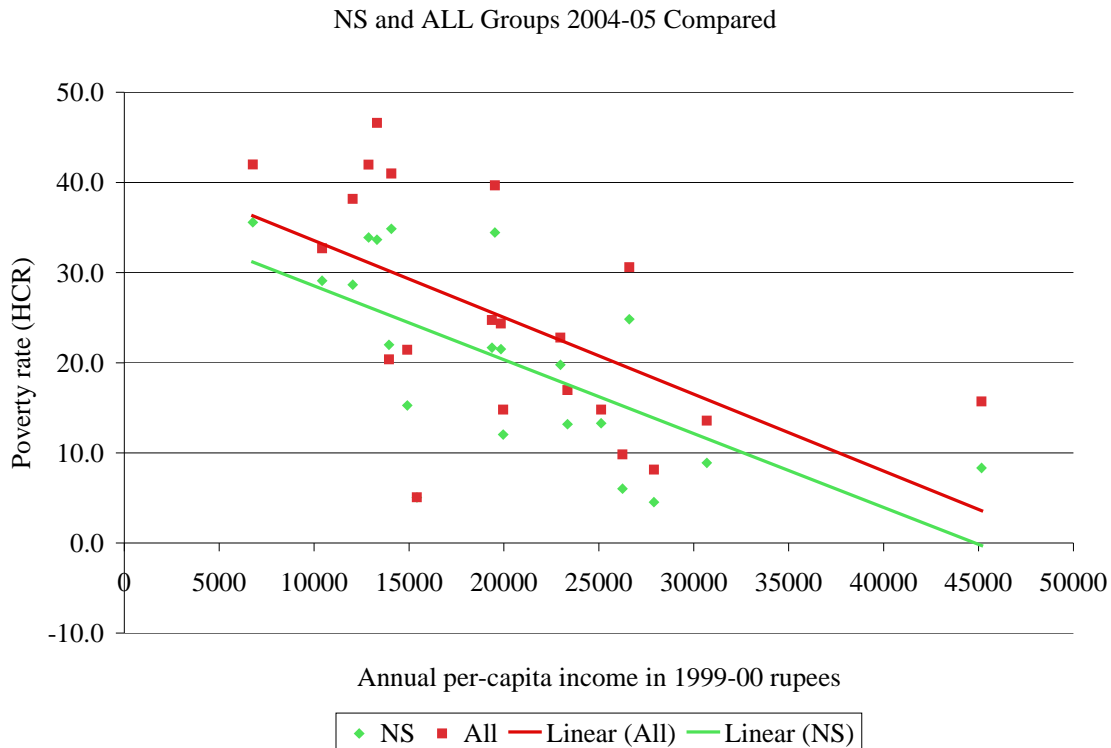
Figure 8: Poverty rates and per-capita income: NS and all groups, 2004-05

Looking at the scatter plots and the lines of fit, there is a negative relationship between poverty by social groups and average per capita incomes, suggesting that an increase in the per-capita income of the general population translates into lower poverty for disadvantaged groups. Proper verification requires estimating the relevant poverty rate as a function of per-capita income to test if the estimated coefficients differ significantly from zero, however. Therefore, this is the next exercise that we undertake.

We carry out the regressions by pooling the data on poverty rates and per-capita incomes for the four years for which we have survey data. For consistency, we aggregate the three states that were created in 2000 and for which data is reported separately in the 61st round conducted in 2004-05 (Chhattisgarh, Jharkhand and Uttarakhand) with their respective mother states (Madhya Pradesh, Bihar and Uttar Pradesh). This aggregation turns the largest 21 states in the 61st round into the original 18 states.

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Table 7a: Per-capita income and poverty with and without year- and state-fixed effects

Form of regression and Item	SC	ST	NS
(1) No fixed effects			
Coefficient	-16.0321**	-25.0258***	-19.6469***
Standard Error	6	5.919	3.129
R-squared	0.239	0.308	0.505
(2) State-fixed effects only			
Coefficient	-23.2982***	-17.8310***	-19.2071***
Standard Error	3.703	4.889	2.366
R-squared	0.849	0.778	0.897
(3) Year-fixed effects only			
Coefficient	-11.1800	-27.0780***	-18.9509***
Standard Error	8.459	8.707	4.565
R-squared	0.304	0.322	0.527
(4) State- and year-fixed effects			
Coefficient	-1.6745	4.7244	-4.7063
Standard Error	10.142	15.345	6.01
R-squared	0.890	0.799	0.931

Robust standard errors in brackets
*** $p<0.01$, ** $p<0.05$ and * $p<0.1$

Using the data for 18 states for four years (1983, 1987-88, 1993-94 and 2004-05), we estimate the poverty rate for the SC, ST and NS as a function of the natural log of per-capita income where the latter is measured by per-capita Net State Domestic Product (NSDP). We report the results in Table 7a. Results from four sets of regressions are reported: without any fixed effects, with year-fixed effects, with state-fixed effects and with both year- and state-fixed effects. In the first three sets of regressions eight of the nine coefficients are statistically significant at the 99 percent level and show that poverty is indeed negatively related to per-capita income. Even in the remaining case, the sign of the coefficient supports

a negative relationship, but owing to a high standard error, it is no longer significant. The magnitudes of the coefficients are all within the plausible range: a 100 percent increase in income leads to an 11 to 27 percentage point reduction in poverty.

But in the last case, where we allow for both state- and year-fixed effects, the results change dramatically. The coefficient for none of the social groups is significant any longer, the coefficient for the ST changes sign and the remaining two coefficients see a drastic fall in magnitude. At first blush, this might appear to be a devastating blow to the hypothesis of a causal effect running from per-capita income to poverty. For example, there may be something specific to each state or something specific to each year other than the change in per-capita income that may be accounting for the observed patterns in poverty as well as per-capita income.

There remains the possibility, however, that with four years and 18 states, we simply lack enough observations to allow for both state- and year-fixed effects. We investigate this further by regressing per-capita income on state and year dummies. The reported R^2 is 0.958, implying that state and year dummies account for 95.8 percent of the variation in per-capita income. It is small wonder then, that the inclusion of both sets of fixed effects leaves little extra variation in per-capita income. By regressing per-capita income separately on each set of state and year dummies, we find that the former by themselves account for 63.3 percent of the variation in per-capita income and the latter for 32.5 percent.

Based on these findings, we proceed to control for state-specific characteristics directly rather than through the introduction of dummy variables. We continue to use year fixed-effects to control for time-varying unobserved characteristics. We identify five stat-level characteristics: lagging versus leading states, landlocked versus coastal states, the proportion of the SC and the ST in the state population in the first year of observation (1983)

and the proportion of all poor in the state population in 1973-74.[7] Each of these variables

varies across states and may impact poverty independent of per-capita income.

Table 7b: Per-capita income and poverty with controls for state-level characteristics

Variable	SC	ST	NS	ALL
Ln pc	-4.4891	-13.7771**	-11.2362***	-9.5038***
	[3.841]	[5.791]	[2.784]	[2.894]
Year 1987-88	-6.9921**	-3.5048	-5.6521***	-5.9004***
	[2.910]	[4.387]	[2.109]	[2.192]
Year 1993-94	-8.5048***	0.5993	-5.5528**	-5.8985**
	[3.072]	[4.631]	[2.227]	[2.315]
Year 2004-05	-17.7032***	-6.4253	-9.1933***	-10.7609***
	[3.921]	[5.911]	[2.842]	[2.954]
Lagging State	-7.2551*	10.1631*	0.2533	0.2881
	[3.977]	[5.996]	[2.883]	[2.997]
Landlocked	8.0156**	-18.2783***	-0.7586	-0.3629
	[3.333]	[5.025]	[2.416]	[2.511]
SC Initial	0.5007**	0.6518**	0.1463	0.4101***
	[0.204]	[0.308]	[0.148]	[0.154]
ST Initial	0.0219	0.8768***	0.0839	0.3233***
	[0.159]	[0.239]	[0.115]	[0.120]
Poverty 1973-74	1.2598***	0.2818	0.6518***	0.7325***
	[0.152]	[0.229]	[0.110]	[0.114]
Constant	13.0183	123.4963***	83.4670***	64.6426***
	[29.625]	[44.663]	[21.472]	[22.321]

[7] For lagging and leading regions, we use the definition by the World Bank, which classifies the states into
these regions according to per-capita income. With respect to the 1973-74 poverty levels, ideally, we
would like to have the proportion of the poor within SC population for SC regression, within ST population
for ST regression, and so forth. Unfortunately, we do not have unit-level data for the quinquennial survey
conducted in 1973-74 to carry out these calculations. The aggregate poverty rates are available from the
Planning Commission website, however.

Observations	72	72	72	72
R-squared	0.735	0.681	0.804	0.813

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Our results are shown in table 7b, where we also include a specification for poverty for all groups (i.e. the general population) in the last column. In all four cases, the coefficient of per-capita income is negative. In the case of ST, NS and all groups taken together, it is also statistically significant at the 95 percent or higher level.[8] It is only in the case of the SC that the coefficient remains insignificant at the 90 percent or higher level. The three statistically significant estimates are within the plausible range—a 100 percent increase in per-capita income is associated with a poverty reduction of 13.8 percent for the ST, 11.2 percent for the NS and 9.5 percent for the general population. These results offer robust evidence to support the hypothesis that an increase in overall state-level per-capita incomes leads to a reduction in the rates of poverty for the ST and NS. In the case of SC poverty there is no evidence that an increase per-capita income leads to any harm, however we would require additional data to claim with statistical confidence that an increase in per-capita income has a positive impact.

5. Poverty and Openness

Recent work by Hasan, Mitra and Ural (2007) and Cain, Hasan and Mitra (2010) has shown that there is a negative relationship between openness and poverty rates for all groups taken together in rural, urban and rural plus urban regions. Their results reverse those

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[8] These coefficients remain significant if we replace the 1973-74 poverty levels by those in 1977-78 but the level of significance declines: upon replacement, the coefficients of SC and all groups pass the 90 percent threshold but not 95 percent or higher threshold while that of NS continues to pass the 99 percent threshold.

obtained earlier by Topolova (2007) and reiterated in Topolova (2010). Both sets of papers exploit the variation in the degree of openness generated by India's trade liberalization in the 1990s across different administrative units of the country. A key difference between the approaches taken by them is with regards to the measurement of openness. Topolova treats non-traded sectors as the same as freely traded import-competing sectors while Hasan et al treat them (correctly, in our view) as non-traded. Naturally, the differences in the assumptions lead to differences in the numerical measures of openness employed in the two sets of papers. Hasan et al. and Topolova also differ with respect to the unit of analysis: whereas the former carry out their analysis at the level of the state and region as defined by the NSSO, the latter does so at the level of the district. While district level analysis has the advantage of higher degrees of freedom in regressions, it also has the disadvantage that it reduces the number of observations on which the poverty estimate itself is based. Hasan et al discuss other problems with district-level analysis.

A common concern expressed truculently in Indian policy circles is that even if openness helps the population overall, it is detrimental to the interests of socially disadvantaged groups. We have already shown in the previous section that as far as growth is concerned, its impact on poverty among the socially disadvantaged groups is hardly different from that on remaining groups. While openness may work partially through growth, in the present section, we consider its impact on poverty more directly.

Given that the sample size of the survey becomes much smaller when we restrict the counts to socially disadvantaged groups, we run a serious risk of large measurement errors in the estimation of poverty ratios at the level of the district. For this and other reasons discussed in Hasan et al. (2007) and Cain et al. (2010), we choose to carry out our analysis at the level of the state. This has the added advantage that it allows us to use their measures of protection. They construct state-level measures of trade protection for three regions—rural,

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urban and rural plus urban. They weight industry-level tariff rates and non-tariff barrier (NTB) coverage rates for 2-digit agricultural, mining, and manufacturing industries by sector specific employment shares in each state using the following formulae:[9]

(2)
$$Tariff_{it}^j = \sum_k \gamma_{ik,1993}^j * Ind\_Tariff_{kt}$$

(3)
$$NTB_{it}^j = \sum_k \gamma_{ik,1993}^j * Ind\_NTB_{kt}$$

Here $\gamma_{ik,1993}^j$ is the employment share of industry k in region j (j = rural, urban and rural plus urban) of state i derived from the 1993 employment-unemployment survey.[10] Ind_Tariff_{kt} and Ind_NTB_{kt} represent tariff rates and non-tariff coverage rates in industry k in year t where industries are measured at a 2-digit classification. The employment share weights are defined such that they sum to unity. Stated simply, $\sum_k \gamma_{ik,1993}^j = 1$ where k

represents tradable 2-digit industries (comprising agricultural, mining, and manufacturing industries). Non-tradable industries are excluded from the calculations.

Because tariff rates and non-tariff barriers are highly correlated, they cannot be used simultaneously in the regressions. Therefore, we use the two measures separately and in succession. In addition, following Cain et al. (2010), we use a third measure, which combines these tariff and non-tariff measures into a single measure using principal component analysis. Principal component analysis is commonly deployed to collapse the

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[9] Cain et al. take the industry-level tariff rates and NTB coverage rates between 1988 and 1998 from Pandey (1999) and those for the subsequent years until 2003 from Das (2008). The latter constructs the rates using the same methodology as the former. Because these sources do not provide the protection rates for every single year between 1988 and 2003, Cain et al. use simple linear interpolation to obtain the relevant rates. The rates for 1986, necessary to include the data from the 1987-88 survey, are estimated by assuming that tariff and NTB coverage rates grew at the same annual rate from 1986 to 1988 as they did from 1988 to 1989. The NTB coverage rates are of course bounded at 100%.

[10] Cain et al. choose employment weights from the year 1993-94 because it is one of the middle years in the data and is therefore a good candidate to serve as the base (reference) year in the construction of state-level openness index. As with any good index, the weights are not held fixed over time.

vector of correlated variables into a smaller set of variables containing much of the variation in the data. In the present case, the first principal component contains approximately 90% of the variation in the protection data for all industry groups.

The basic regression equation we estimate is

(3) $$y_{it}^j = \alpha + \beta_1 protection_{it-1}^j + \beta_2 * Z_{it} + \delta_i + \mu_t + \varepsilon_{it}$$

In this equation, the dependent variable, $y^j{}_{it}$, is the logarithm of poverty in sector j (urban, rural and rural plus urban) in state i. The principal variable of interest, $protection^j{}_{it-1}$ is one of the three measures of trade protection lagged once: nominal rate of protection (NRP), non-tariff barriers (NTB) and the first principal component (FPC) of NRP and NTB.[11] Variable Z_{it} denotes a time-varying state-level control variable, which we choose to be per capita development expenditures. Vectors δ_i and μ_t represent state-fixed and year-fixed effects, respectively. Finally, ε_{it} is an error term and is assumed to satisfy the usual properties.

We note that all regression results we report in this section control for year- and state-fixed effects. Our first step is to reproduce the basic results of Cain et al. (2010), which relate to all groups taken together in rural, urban and rural plus urban regions. Because the date on protection at the level of the states are available only from 1986 and for 15 states, our analysis is based on 45 observations relating to the 43rd, 50th and 61st NSSO rounds conducted in 1987-88, 1993-94 and 2003-04, respectively. While we have data on poverty rates for the 38th round conducted in 1983, the protection series does not go that far back. Likewise, while we have protection data to include the 55th round conducted in 1999-2000, we do not have the poverty levels by social groups on a comparable basis for this year.

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[11] Hasan et al. (2007) experimented with contemporaneous protection but it did not affect the results in any substantive manner. As such, we work exclusively with lagged protection measures here.

Table 8: Poverty and Trade Openness (All Social Groups)

VARIABLES	Combined			Urban			Rural		
	NRP (1)	NTB (2)	FPC (3)	NRP (4)	NTB (5)	FPC (6)	NRP (7)	NTB (8)	FPC (9)
Protection	.0067**	.0268**	.3324**	.0191**	.0188	.9627**	.0056	.0368**	.3013**
	[.003]	[.012]	[.120]	[.007]	[.019]	[.361]	[.004]	[.014]	[.143]
Dev. Exp. pc	.1361	.1988	.1311	.78807*	.7499*	.7209*	.2416	.3032	.2223
	[.235]	[.230]	[.223]	[.395]	[.437]	[.393]	[.299]	[.274]	[.286]
Constant	1.6364	-.8472	1.7225	-3.9125	-3.1273	-2.8423	.7718	-2.8258	.8849
	[1.568]	[1.959]	[1.487]	[2.798]	[3.295]	[2.668]	[1.983]	[2.316]	[1.901]
#	45	45	45	45	45	45	45	45	45
R^2	0.954	0.956	0.959	0.933	0.919	0.934	0.936	0.946	0.941

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Standard errors in square brackets

Our results for all social groups combined closely correspond to those of Cain et al (2010) although we do not include data from the 55th NSS Round (1999-2000). For instance, they find that poverty declines by 0.57 percent for every percentage point reduction in the weighted tariff rate (NRP). As shown in table 8, the corresponding figure in our analysis is 0.67 percent. Our other results are similar, which we describe briefly without comparing them to those in Cain et al. (2010). Thus, according to our results, a one percent reduction in the NTB coverage ratio is associated with a 2.6 percent fall in the headcount ratio. The analysis for urban and rural regions shows that trade liberalization has affected them differentially. A one percent reduction in weighted tariff measures lowers poverty in the urban areas by 1.96 percent but its effect on rural poverty, which having the hypothesized sign, is statistically insignificant. On the other hand, a fall in non-tariff barriers in rural areas is associated with a whopping 3.7 percent reduction in poverty but their effect on urban areas is small and statistically insignificant.

An interesting point that emerges from our analysis of openness and poverty reduction for individual social groups, worthy of note at the outset, is that while the results

for the SC closely track those for the NS groups, those for the ST turn out to be much weaker.

Tables 9-11 report our results for the SC, ST and NS, respectively. Table 9 shows that a one

percent reduction in non-tariff barriers is associated with a 2.6 percent reduction in poverty in

rural and urban regions combined and a 3.1 percent reduction when we consider only rural

areas. Consistent with the results for all social groups, the effect of weighted tariff reductions

is positive and significant (2.4 percent) for urban areas and we find a similar result for non-

tariff barriers in rural areas. These results are in line with the high correlation (0.7126)

between the share of the general population and that of the SC across states.

Table 9: Poverty and Trade Openness (Scheduled Castes)

	Combined			Urban			Rural		
	NRP	NTB	FPC	NRP	NTB	FPC	NRP	NTB	FPC
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protection	.0041	.0258**	.2359*	.0242**	.0237	1.213**	.0026	.0300**	.1769
	[.004]	[.012]	[.135]	[.007]	[.019]	[.347]	[.004]	[.013]	[.132]
Dev. Exp. Pc	-.0930	-.0518	-.1018	1.0103*	.9625**	.9257**	-.230	-.2013	-.2488
	[.251]	[.236]	[.243]	[.374]	[.441]	[.370]	[.267]	[.242]	[.261]
Constant	3.6533*	1.1735	3.690**	-5.88**	-4.8834	-4.528*	4.5747*	1.6073	4.6309*
	[1.676]	[2.012]	[1.621]	[2.654]	[3.326]	[2.517]	[1.775]	[2.048]	[1.731]
#	45	45	45	45	45	45	45	45	45
R^2	0.919	0.928	0.924	0.908	0.875	0.911	0.918	0.931	0.922

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in square brackets

The correlation of the distribution of the ST with that of the general population across

states is much lower than of the SC and therefore one might expect the effect of trade

liberalization and openness to be different for the former. Indeed, this is very much in

keeping with what we find. In general, the statistical significance of the openness variables is

much lower for the ST. In particular, reductions in non-tariff barriers seem to have no

significant effect on poverty. Reductions in tariffs in urban areas are associated with a large

reduction in poverty (4.1 per cent) and are also statistically significant at a high threshold but

recall that the ST population in urban areas is tiny. In rural areas, where the ST population is concentrated, openness measures do not have statistically significant effect.

Table 10: Poverty and Trade Openness (Scheduled Tribes)

	Combined			Urban			Rural		
	NRP	NTB	FPC	NRP	NTB	FPC	NRP	NTB	FPC
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protection	-.0016	-.0147	-.1079	.040***	.0193	1.497**	.0006	.0004	.0220
	[.008]	[.031]	[.328]	[.013]	[.046]	[.631]	[.010]	[.040]	[.391]
Dev. Exp. Pc	.7469	.7272	.7528	-.2311	-.2837	-.3683	.8532	.8596	.8539
	[.607]	[.600]	[.605]	[.627]	[.769]	[.676]	[.790]	[.783]	[.789]
Constant	-2.1361	-1.7726	-2.4722	4.5649	5.6192	9.7702*	-3.0206	-3.0598	-2.9596
	[4.449]	[4.467]	[4.590]	[4.621]	[5.581]	[5.304]	[5.792]	[5.823]	[5.992]
#	44	44	44	41	41	41	44	44	44
R^2	0.724	0.726	0.725	0.912	0.873	0.898	0.641	0.641	0.641

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in square brackets

Table 11: Poverty and Trade Openness (Non-Scheduled Individuals)

	Combined			Urban			Rural		
	NRP	NTB	FPC	NRP	NTB	FPC	NRP	NTB	FPC
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Protection	.0066*	.0262*	.326**	.0223**	.0210	1.1041*	.0053	.0375**	.2944
	[.004]	[.013]	[.134]	[.009]	[.023]	[.454]	[.005]	[.018]	[.175]
Dev. Exp. Pc	.0625	.1239	.0576	.7175	.6767	.6408	.2735	.3323	.2532
	[.262]	[.257]	[.251]	[.496]	[.543]	[.495]	[.363]	[.339]	[.353]
Constant	2.0277	-.4045	2.1123	-3.8494	-2.8325	-2.5853	0.3112	-3.3672	0.4197
	[1.747]	[2.191]	[1.677]	[3.514]	[4.095]	[3.365]	[2.409]	[2.871]	[2.342]
#	45	45	45	45	45	45	45	45	45
R^2	0.963	0.963	0.965	0.918	0.904	0.919	0.941	0.947	0.944

*** p<0.01, ** p<0.05, * p<0.1. Standard errors in square brackets

Finally, for completeness, we also carry out the analysis for the NS as a group. The results indicate that the relationship between poverty reduction and trade liberalization for those in the non-scheduled group closely mirrors those for the population as a whole. A percentage reduction in tariffs is associated with a 0.65 percent fall in poverty. Similarly, a one percent reduction in non-tariff barriers leads to a 2.5 percent fall in poverty. In rural

areas, the effect of non-trade barriers rises to 3.8 percent while it is insignificant in urban areas. On the other hand, a fall in tariffs is associated with a 2.2 percent fall in poverty in urban areas and has little effect on rural poverty.

In summary, our results find strong support for the positive relationship between trade liberalization and overall poverty reduction in India between 1983 and 2004. These results vary substantially across urban and rural areas. Most importantly, from the viewpoint of our focus on social groups, we find that poverty reduction for the NS and SC tracks that for the population as a whole reasonably closely but the effect is weaker for the ST. In no case, rural or urban and SC, ST or NS, do we find the effect of increased openness on poverty to be positive and statistically significant. In this sense our results strongly support those of Hasan et al. (2007) and Cain et al. (2010) and refute those of Topolova (2007, 1010) for the population as a whole. On balance, the rising tide seems to have lifted all boats even if some more than others. Most importantly, it has lowered, let alone sunk, none.

6. Concluding Remarks

We begin the concluding remarks with an emphatic statement on the bottom line of what we have shown: There is absolutely no statistically significant evidence that rising incomes and increased openness have negatively impacted any of the three broad social groups. This does not preclude the possibility that specific individuals within these groups, including those belonging to the non-scheduled group, may fail to enjoy any benefits. But we find no evidence of any harmful impacts at the average level for each social group.

Beyond this bottom line, our paper has offered the most up-to-date and comprehensive analysis of poverty among the socially disadvantaged groups in comparison to those without social handicaps. We offer compelling evidence of steadily declining poverty among all groups in rural as well as urban areas at the national level. We also

provide the trends in poverty ratios in the top 10 states by the SC and ST populations. The top 10 SC states account for 85 percent of the total countrywide SC population and the top 10 ST states for more than 90 percent of the countrywide ST population. In the case of the SC, every one of the top 10 states has seen the poverty ratio decline between 1993-94 and 2004-05. This is not true of the ST states, however, where reversals are observed in some states.

We demonstrate that declining poverty rates are uniformly associated with rising per-capita incomes. In the case of the ST, non-Scheduled and all groups taken together, we show that rising per-capita incomes have a statistically significant and negative effect on poverty at the 95 percent or higher level. We also find that rising per-capita incomes are accompanied by declining poverty rates within the SC but the estimated coefficient is statistically insignificant at 90 percent or higher level.

Finally, we also conduct an econometric test of the effect of openness on poverty for various social groups. In the case of the SC and NS, we find that one or more measures of openness have a statistically significant and negative effect on poverty in rural and urban areas as well as the two areas combined. In the case of the ST, the coefficient is statistically significant in urban areas only.

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