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Improvement in Socioeconomic Conditions and Poverty Decline in India, 1983-2004

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Improvement in Socioeconomic Conditions and Poverty Decline in India, 1983-2004[†]

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I. Introduction

Poverty is one of the most urgent political issues of our time, especially since poverty alleviation was set as one of the Millennium Development Goals (MDGs) at the Millennium Summit in September 2000. Since then, India has continued to be one of the poorest countries in the world. Despite two decades of significant economic growth, about 35% of the population (360 million people), accounting for approximately one-third of the world's poor, still lives on less than one Purchasing Power Parity (PPP) dollar a day (UNDP, 2007). Thus, understanding how poverty can be alleviated remains an issue of considerable concern to policy makers.

Meanwhile, it is well known that India has steadily succeeded in poverty reduction. A number of studies have tried to explain how poverty can be alleviated significantly. Traditionally, poverty is strongly associated with casual agricultural wage labor, and therefore it has been thought that productivity growth in the agricultural sector is very important in reducing poverty (Sundaram, 2001; Deaton and Drèze, 2002; Kijima and Lanjouw, 2005). Some quantitative studies have found a statistically significant correlation between poverty and agricultural wage (Datt and Ravallion, 1998, 2002; Ravallion and Datt, 2002; Lanjouw and Murgai, 2008). On the other hand, the non-agricultural sector also have played the role of an engine for poverty reduction. In addition to the direct effect as an income source, it has often been noted that expansion of the non-farm sector also influences agricultural wage growth (Lanjouw and Shariff, 2004).

Taking these findings as the point of departure, this paper also examines how living standards in India have improved over decades, paying special attention to changes in the distribution of consumption expenditures. The analysis is conducted using the DiNardo-Fortin-Lemieux (DFL) semi-parametric decomposition method proposed by DiNardo, Fortin, and Lemiuex (1996).

This method offers two desirable features. First, the DFL decomposition can depict distributional (heterogeneous) impacts of factors that seem to be associated with poverty reduction. This enables us to investigate to what extent each factor can improve living standards at each income (consumption) level, and consequently enables us to gain a better understanding of how poverty can be alleviated. The second advantage has to do with the study of poverty. Typically, poverty analysis requires us to calculate poverty measures, such as head count poverty ratios and poverty gaps, at some (semi-) macro level. In the calculation of these aggregate poverty measures, for example, information on individuals living above a poverty line is not used, even if their living standards are very close to the line or they happen to be above the line at the time they were surveyed. This also suggests that these poverty measures and the results obtained using them are very sensitive to a shift of the poverty line. However, the DFL decomposition that focuses on distributional changes does not require such aggregation and has no information loss associated with aggregation.

The remainder of this paper is structured as follows. Section II briefly discusses the trend of poverty over the past two decades in India. In developing counties like India, a large population is living around the poverty line. This also indicates the DFL decomposition method has an advantage over conventional approaches. The procedure for using the DFL method with nationwide Indian data is presented in Section III, and the estimation results are shown in Section IV. The results suggest that the key to poverty reduction in rural and urban areas is improvement in education at the region (sub-state) level. Among the labor market related factors, changes in employment structure do not have any impact on the poverty alleviation, while productivity growth has contributed to declines in poverty in urban areas to a large extent. Section V concludes the paper.

II. Poverty decline over the past two decades

Figure 1 shows changes in the distribution of monthly per-capita expenditures between 1983, 1993/94, and 2004/05. Data used in this paper are from National Sample Surveys (NSS) conducted approximately every five years ("thick" rounds).[1] Expenditures are adjusted by the sector-state wide official poverty line to the 2004 urban price level. The vertical line is the all-India level official poverty line in 2004 (≈ log of Rs. 538.6).

[1] As the "thick" NSS rounds, the 38th, 43rd, 50th, and 61st rounds are available, but the 55th round has a problem of comparability with other rounds due to the changes in questionnaire design. Therefore, this paper uses three rounds of the 38th (1983), 50th (1999/2000), and 61st (2004/05).

[Figure 1]

As can be seen from the figure, the mode of the expenditure distribution has been steadily rising and the shape of the distribution has sharpened. In other words, poverty and inequality in India has improved consistently between 1983 and 2004. At the same time, this period also saw drastic changes in several social and economic factors (Table 1). In particular, education showed great improvement: illiteracy rates dropped as much as 50 percent and the population with formal education steadily increased in both rural and urban areas. Wage rates also increased except for a dip in the non-agricultural wage in rural areas in 1993/4. The employment structure in both rural and urban areas shifted as a large part of the population moved from the agricultural sector to the non-agricultural sector.

[Figure 2]

Thus, education level and labor market conditions have changed dramatically. In the empirical analysis, we analyze whether and to what extent these factors contribute to recent poverty reductions in rural India.

[Table 1]

III. Estimation procedure

DFL decomposition

This paper adopts the DiNardo-Fortin-Lemieux (DFL) semi-parametric decomposition method (DiNardo et al. 1996) to investigate the determinants of the poverty decline in India. In this section, the basic procedure of the method is briefly explained.

First, the density of log consumption expenditures, $f(c)$, can be expressed as the integral of the density of log expenditures conditional on a set of attributes, $f(c \mid x)$, over the distribution of the attributes, $F(x)$:

$$f(c \mid t_c = t) = \int_{x \in \Omega_x} dF(c, x \mid t_c = t_x = t) \tag{1}$$

$$= \int_{x \in \Omega_x} f(c \mid x, t_c = t)\, d\, F(x \mid t_x = t) \equiv f(c;\, t_c = t,\, t_x = t),$$

where Ω_x is the domain of definition of attributes, and t_c and t_x indicate the period of expenditures and attributes, respectively. Then, based on the relationship expressed in the last line, we can calculate counter factual densities of consumption expenditures by introducing combinations of different periods, e.g., $t_c = t$, $t_x = s$.

Now we suppose that there are two attributes affecting consumption expenditures, that is, $x = (g, h)$, and $t_x = (t_g, t_h)$. Under the assumption that the expenditure distribution does not depend on the distribution of attributes, the density that would prevail at time s if an attribute g has the same distribution as at time t is expressed as

$$f(c;\, t_c = s,\, \boldsymbol{t_g = t},\, t_h = s) \tag{2}$$

$$= \iint f(c \mid g, h, t_c = s)\, dF(g \mid h, t_{g|h} = t)\, dF(h \mid t_h = s)$$

$$= \iint f(c \mid x, t_c = s)\, \psi_{g|h}\, dF(g \mid h, t_{g|h} = s)\, dF(h \mid t_h = s)$$

$$= \int f(c \mid x, t_c = s)\, \psi_{g|h}\, dF(x \mid t_x = s),$$

where $\psi_{g|h} = dF(g \mid h, t_{g|h} = t) \,/\, dF(g \mid h, t_{g|h} = s)$. Thus, the counter factual densities can be calculated using actual densities with the help of "reweighting" functions. For the calculation of the reweighting function, see Appendix A. Once the reweighting function is obtained, counter factual densities are estimated using weighted kernel methods as

$$f(c;\, t_c = t,\, t_g = s,\, t_h = t) = \sum_{i \in S_t} \frac{w_i}{b} \psi_{g|h} K\left(\frac{c - c_i}{b}\right), \tag{3}$$

where S_t is the set of indices of the sample at time t, b is the bandwidth, and $K(\cdot)$ is the kernel function.

In addition to the effects of distributional changes in the attributes described above, we can account for another counter factual situation where the effect of attributes on consumption expenditures changes from that at time t to that at time s. Letting γ_t and δ_t be the effects of g and h at time t, the density that would prevail at time t if g has the same impacts as at time s is calculated as

$$f(c;\, t_c = t, t_g = s, t_h = t, \boldsymbol{\gamma_s}, \delta_t) \tag{4}$$

$$= \sum_{i \in S_t} \frac{w_i}{b} \psi_{g|h} K\left(\frac{c - \{c_i - (x_i \beta_t - g_i \gamma_s - h_i \delta_t)\}}{b}\right)$$

$$= \sum_{i \in S_t} \frac{w_i}{b} \psi_{g|h} K\left(\frac{c - \{c_i - (g_i \gamma_t - g_i \gamma_s)\}}{b}\right)$$

where $x_i \beta_\tau = (g_i, h_i)(\gamma_\tau, \delta_\tau)^T$ is the linear projection of c_i at time τ (= t, s) onto attributes x_i (this will be discussed in the next sub-section). Counterfactual changes due to changes in the distribution and impact of attribute h can be calculated similarly.

Thus, changes in the density of consumption expenditures from time s to time t can be decomposed as

$$f_t(c) - f_s(c) = - \{f_s(c) - f_t(c)\} \tag{5}$$

$$= - [f(c; t_c = s, t_x = s, \beta_s) - f(c; t_c = s, \boldsymbol{t_g = t}, t_h = s, \boldsymbol{\gamma_t}, \delta_s)]$$

$$- [f(c; t_c = s, t_g = t, t_h = s, \gamma_t, \delta_s) - f(c; t_c = s, t_g = t, \boldsymbol{t_h = t}, \gamma_t, \boldsymbol{\delta_t})]$$

$$- [f(c; t_c = s, t_g = t, t_h = t, \gamma_t, \delta_t) - f(c; \boldsymbol{t_c = t}, t_g = t, t_h = t, \gamma_t, \delta_t)],$$

where the first component in the right hand side represents the effect of the attribute g due to changes in its distribution and impact, the second component represents the effect of the attribute h, and the last term denotes the effect of residual factors.

Estimation of consumption expenditures

As mentioned above, the DFL decomposition requires the estimation of the linear projection of consumption expenditures to obtain parameter vectors β_t. Suppose that the expenditure function is expressed as follows:

$$\ln C_{ijt} = x_{ijt} \beta_t + \eta_{jt} + v_{ijt}, \tag{6}$$

where x_{ijt}, is the household-level characteristics affecting household consumption level, β_t is the coefficient vector to be estimated, η_{jt} denotes the region specific (time-variant) component, and v_{ijt} is the random error. Further, it is assumed that the region specific effects follow the Barro-type growth process, that is,

$$\Delta\eta_{jt} = z_{jt-1}\,\theta + \Delta z_{jt}\,\zeta + \lambda_j + \lambda_t + \mu_{jt}, \tag{7}$$

where Δ denotes the first difference of the variable (i.e., $\Delta y_t = y_t - y_{t-1}$), z_{jt} is the region-level characteristics, θ and ζ are the coefficient vectors to be estimated, λ_j and λ_t are region- and time-fixed effects, and μ_{jt} is the random error component including Δv_{ijt}. Thus, the expenditure function is estimated by two steps: i) estimating Equation (6) with household-level variables and region-time dummies and obtaining regional time-variant effects, and ii) estimating the Equation (7) using the first difference of the region effects as the dependent variable.

IV. Estimation Results

Results of the OLS estimation of the expenditure function

The empirical variables used in the estimation of Equation (6) are shown in Panels A and B of Table 2. Household characteristics x_{ijt} include education level of adult members (aged 15 and older), age and gender composition, social class, and religion. Education level is classified into seven categories: illiteracy, literacy but below primary, primary completed, middle completed, secondary completed, and university completed. These variables are calculated as ratios to the total adult members in the households ("illiteracy" is the reference category excluded from the estimation). For the social category, a dummy variable for households belonging to the scheduled castes/tribes (SCs/STs) is employed. Note that SCs/STs are the lowest classes in the social hierarchy. Since other caste categories are not available in the 38th (1983) round, the analysis in this paper also uses this classification: SCs/STs or non-SCs/STs.

Table 3 shows the OLS estimation results of Equation (6) for rural households (Panel A) and urban households (Panel B). A detailed discussion of the results will be conducted later together with the results of the DFL decomposition.

[Table 3]

In the estimation of Equation (7), the regional growth in consumption expenditures estimated in Equation (6) is used as a dependent variable. The region-specific attributes z_{jt} include variables for education level, employment situation, and productivity. Education level in a region is controlled by the fraction of the adult population whose level is in one of the following five categories: illiteracy (reference category), literacy but below primary, primary completed, middle completed, and secondary and above completed. Employment situation in a region is divided into four categories based on employment status and sector: self-employed in the agricultural sector (reference category), self-employed in the non-agricultural sector, wage workers in the agricultural sector, and wage workers in the non-agricultural sector. To measure labor productivity in a region, wage rates in both the agricultural and the non-agricultural sectors are used. Other controls, including land inequality (ratio of the 10th percentile to the 50th percentile of land size and ratio of the 50th percentile to the 90th percentile of land size), price level, and population are used. Summary statistics of empirical variables and the OLS estimation results of Equation (7) are shown in Tables 4 and 5, respectively.

[Table 4]

[Table 5]

DFL decomposition results of changes in the expenditure distribution

The DFL decomposition results are shown in Figure 3 (from 1983 to 1993/94) and Figure 4 (from 1993/94 to 2004/05), where the observed changes and hypothetical changes in the expenditure distribution are depicted.

As shown in Figure 3-A, the results for rural areas, household-level variables do not serve to explain the increase in consumption expenditures (graphs 2 to 4). On the contrary, demographic variables other than education and caste membership bring deterioration of living standards (graph 4). Although the OLS estimation result in Panel A of Table 3 indicates that household-level education explains the cross-sectional variation of expenditure very well, the coefficients of the education dummies decrease over years, and consequently the increase in the number of educated members does not contribute to the secular improvement in living standards. As for caste membership, the result in graph 3, which indicates no effect of caste membership, is somewhat strange because the result in Panel A of Table 3 shows the coefficient estimate of 'scheduled castes/tribes' changes from −0.148 in 1983 to −0.118 in 2004/05, implying a reduction of the gap between castes. This is presumably because the number of households belonging to SCs/STs has been steadily increasing over the same period (Table 2) and this increase offsets the decrease in the gap between castes. In regard to the negative impact of other demographic variables (graph 4), the result in Panel A of Table 3 suggests that a decline in disparities among religious groups explains the left shift of the expenditure distribution. This might be due to a standardization of dietary habits or to weakening of traditional socio-economic relationships based on religion.

[Figure 3]

Graphs 5 to 8 in Figure 3-A show the results of the DFL decomposition based on the region-level estimation reported in Table 5. These four graphs depict the counterfactual situation if a variable unchanged between 1983 and 1993/94. For instance, graph 5 shows the hypothetical changes in the expenditure distribution if no improvement in education has been made during this period. The graph indicates region-level education drastically shifts the distribution rightward. While regional changes in employment situation have no effect on the distribution, wage growth contributes to the reduction of poverty to some extent. The contrast between the effects of *household*-level education and those of *region*-level education gives an interesting perspective on the role of education. While region-level education explains the secular improvement in living standards, household-level education does not. This implies that education has a positive externality and that the so-called *social* returns of education dominate the *individual* returns of education. More specifically, people living in a region with a more educated working population are more productive than people living in a region with less educated population, regardless of their own education.

In urban areas (Figure 3-B), a similar tendency can be seen. There are two main differences from the results in rural areas. First, the effect of household-level education is as large as that of region-level education and second, the negative effect of other demographics (household level) is not so large. Regional changes in employment situation have no effect on poverty reduction in urban areas, just as in rural areas. From the results in Figures 3-A and 3-B, we see that region-level education and wage rates are the key to the poverty reduction between 1983 and 1993/94 in both rural and urban areas.

[Figure 4]

The results for changes in the expenditure distribution between 1993/94 and 2004/05 are depicted in Figure 4-A for rural households and Figure 4-B for urban households. During this period, too, region-level education has a profound effect on poverty alleviation in rural areas (graph 5 in Figure 4-A). Unlike the results in Figure 3-A, labor productivity seems to have little effect on poverty alleviation. In urban areas (Figure 4-B), region-level education seems to have no influence on the expenditure distribution. This is different from the situation in both rural areas and urban areas from 1983 to 1993/94, and is presumably due to the fact that the externality of education is larger for middle or low level education and the population with middle or low level education has not increased so much during the same period. Graph 7 indicates that wage growth contributes to the right shift of the expenditure distribution so much during this period.

The results from Figures 3 and 4 can be summarized as follows. In rural areas education has extensive spillover effects, and the regional growth of education has been a sole driving force for poverty alleviation. In urban areas, poverty reduction is closely associated with labor productivity growth, and improvement in education at both the household level and the region level also contributes to poverty reduction to some extent.

VI. Conclusion

This paper addressed the long-standing issue of poverty in India using nationwide survey data covering the period from 1983 to 2004. The data suggest that in the reference period, the Indian economy has displayed consistent poverty reduction. At the same time, this period also witnessed modest growth in the size of non-agricultural employment and productivity growth in both the agricultural and non-agricultural sectors. In addition, educational standards have also steadily improved.

The analysis in this paper examined which factors contribute to poverty alleviation in India focusing on the distributional changes in consumption expenditures. The main findings from the analysis are as follows. First, regional heterogeneity in poverty decline is very large and in line with some previous studies (see, for example, Datt and Ravallion 1998). While household characteristics explain the cross-sectional variation of living standards across households, they do not explain the time-series improvement in living standards. Second, a large fraction of the regional disparities is explained by region-level improvement in education. Especially in rural areas, the externality of education is the key factor of the poverty decline. Finally, among labor market factors, productivity increase has more impact on poverty alleviation than changes in the employment structure. In particular, the main cause of poverty decline is wage growth in both the agricultural and non-agricultural sectors. Although expansion of non-farm employment opportunities is the consistent trend in both rural and urban areas during the period, this does not necessarily contribute to the decline in poverty. This might be because employment in the agricultural sector may still play an important role as a last resort for the poor. The results in this paper suggest that there is no uniform pathway for poverty alleviation, but a universal prescription, if it exists, might be dissemination of education and productivity growth.

Appendix A. Estimation of the reweighting function for the DFL decomposition

In case that there are two attributes $x = (g, h)$, two reweighting functions are to be calculated since we have two counterfactual situations as:

$f(c; t_c = s, \boldsymbol{t_g = t}, t_h = s) = \int f(c \mid x, t_c = s)\, \psi_{g|h}(x)\, dF(h \mid t_h = s)$,

$f(c; t_c = s, t_g = t, \boldsymbol{t_h = t}) = \int f(c \mid x, t_c = t)\, \psi_x(x)\, dF(x \mid t_x = t)$.

Applying Bayes' rule, $\psi_{g|h}(x)$ and $\psi_x(x)$ can be calculated as follows:

$$\psi_{g|h}(x) = \frac{dF(g \mid h, t_{g|h} = s)}{dF(g \mid h, t_{g|h} = t)} = \frac{\Pr(g \mid h, t_{g|h} = s)}{\Pr(g \mid h, t_{g|h} = t)} = \frac{\dfrac{\Pr(g, h \mid t_{g|h} = s)}{\Pr(h \mid t_{g|h} = s)}}{\dfrac{\Pr(g, h \mid t_{g|h} = t)}{\Pr(h \mid t_{g|h} = t)}} \tag{A1}$$

$$= \frac{\dfrac{\Pr(t_{g|h} = s \mid g, h)\Pr(g, h)}{\Pr(t_{g|h} = s)} \Big/ \dfrac{\Pr(t_{g|h} = s \mid h)\Pr(h)}{\Pr(t_{g|h} = s)}}{\dfrac{\Pr(t_{g|h} = t \mid g, h)\Pr(g, h)}{\Pr(t_{g|h} = t)} \Big/ \dfrac{\Pr(t_{g|h} = t \mid h)\Pr(h)}{\Pr(t_{g|h} = t)}}$$

$$= \frac{\dfrac{\Pr(t_{g|h} = s \mid g, h)\Pr(g, h)}{\Pr(t_{g|h} = s \mid h)\Pr(h)}}{\dfrac{\Pr(t_{g|h} = t \mid g, h)\Pr(g, h)}{\Pr(t_{g|h} = t \mid h)\Pr(h)}} = \frac{\Pr(t_{g|h} = s \mid g, h)}{\Pr(t_{g|h} = t \mid g, h)} \frac{\Pr(t_{g|h} = t \mid h)}{\Pr(t_{g|h} = s \mid h)},$$

$$\psi_x(x) = \psi_{g,h}(x) = \frac{dF(g, h \mid t_{g,h} = s)}{dF(g, h \mid t_{g,h} = t)} = \frac{\Pr(g, h \mid t_{g,h} = s)}{\Pr(g, h \mid t_{g,h} = t)} \tag{A2}$$

$$= \frac{\dfrac{\Pr(t_{g,h} = s \mid g, h)\Pr(g, h)}{\Pr(t_{g,h} = s)}}{\dfrac{\Pr(t_{g,h} = t \mid g, h)\Pr(g, h)}{\Pr(t_{g,h} = t)}} = \frac{\Pr(t_{g,h} = s \mid g, h)}{\Pr(t_{g,h} = t \mid g, h)} \frac{\Pr(t_{g,h} = t)}{\Pr(t_{g,h} = s)}$$

$$= \frac{\Pr(t_{g|h} = s \mid g, h)}{\Pr(t_{g|h} = t \mid g, h)} \frac{\Pr(t_{g|h} = t \mid h)}{\Pr(t_{g|h} = s \mid h)} \times \frac{\Pr(t_{g,h} = s \mid h)}{\Pr(t_{g,h} = t \mid h)} \frac{\Pr(t_{g,h} = t)}{\Pr(t_{g,h} = s)}$$

$$= \psi_{g|h}(x)\, \psi_h(x).$$

Conditional and unconditional probabilities in Equations (A1) and (A2) are estimated by a probit model.

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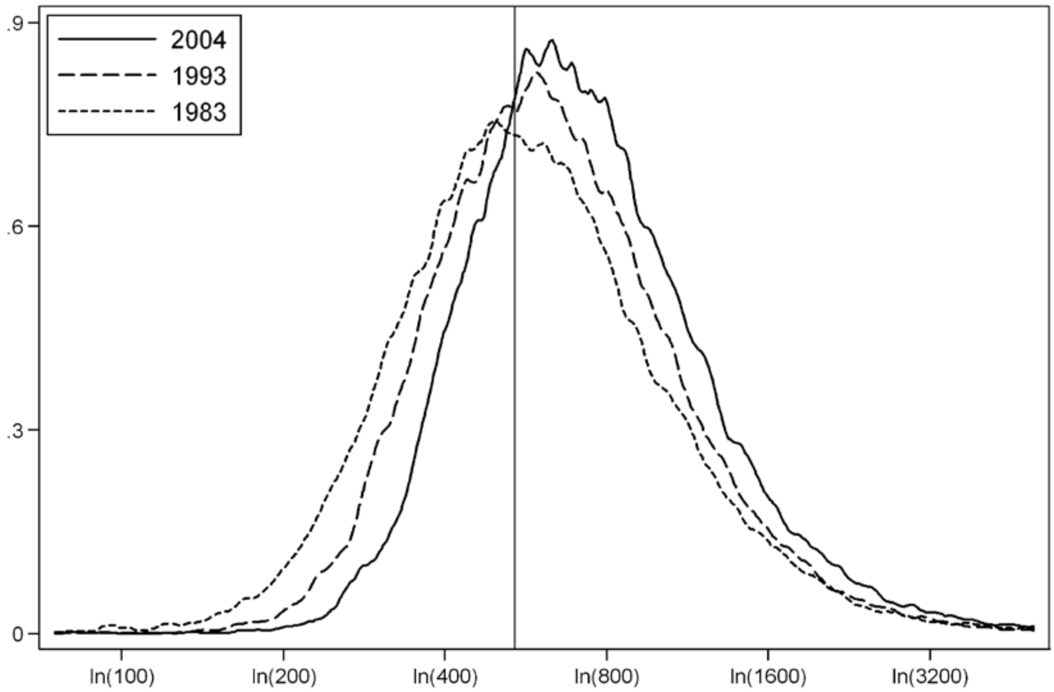
Figure 1: Changes in the expenditure distribution

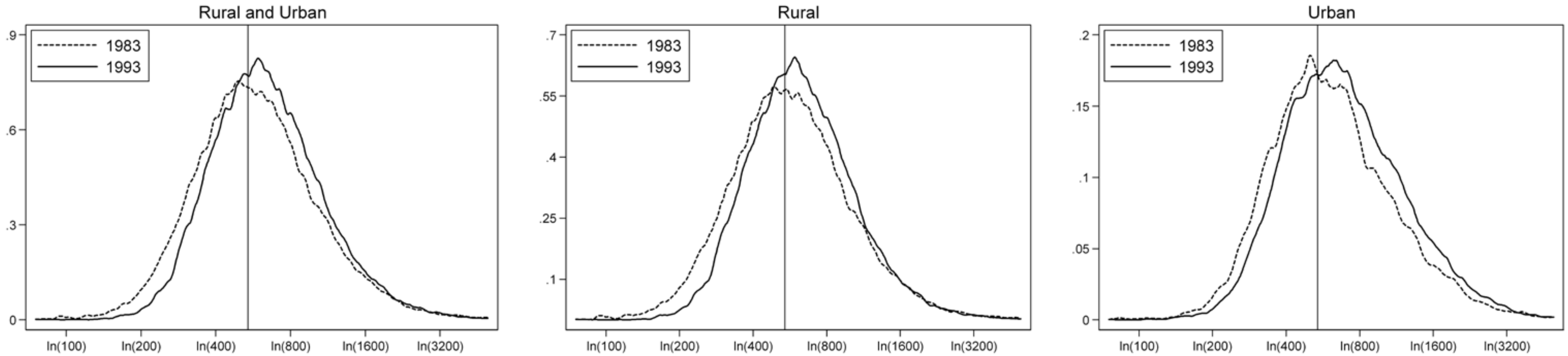


Source: Author's calculation and drawing from National Sample Surveys (NSS) 1983/84, 1993/94, and 2004/05.

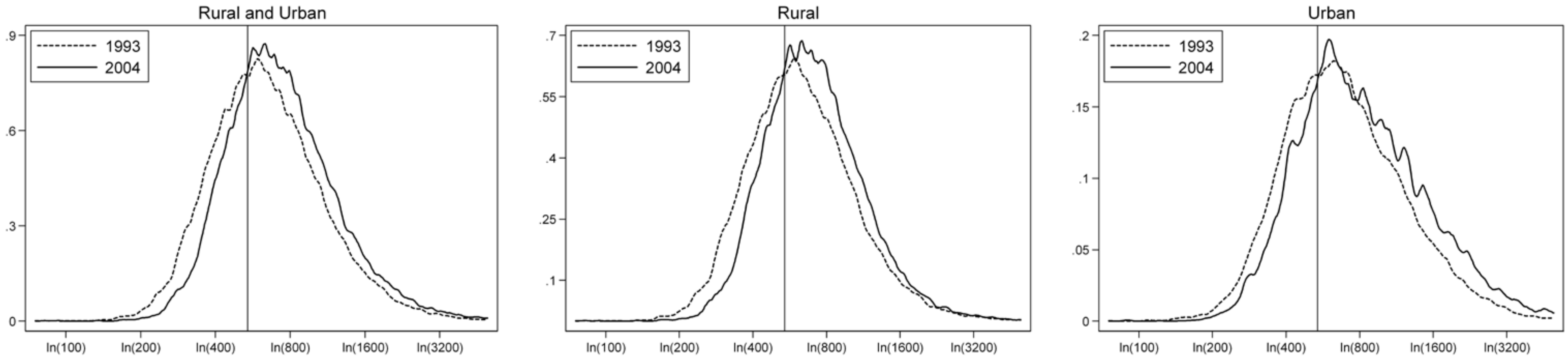
Note: Expenditures are adjusted by the state-wise official poverty line to the 2004 price level in urban areas. The vertical line is the all-India level poverty line in urban areas in 2004.

Figure 2: Observed Changes in the Expenditure Distribution

A: From 1983/84 to 1993/94



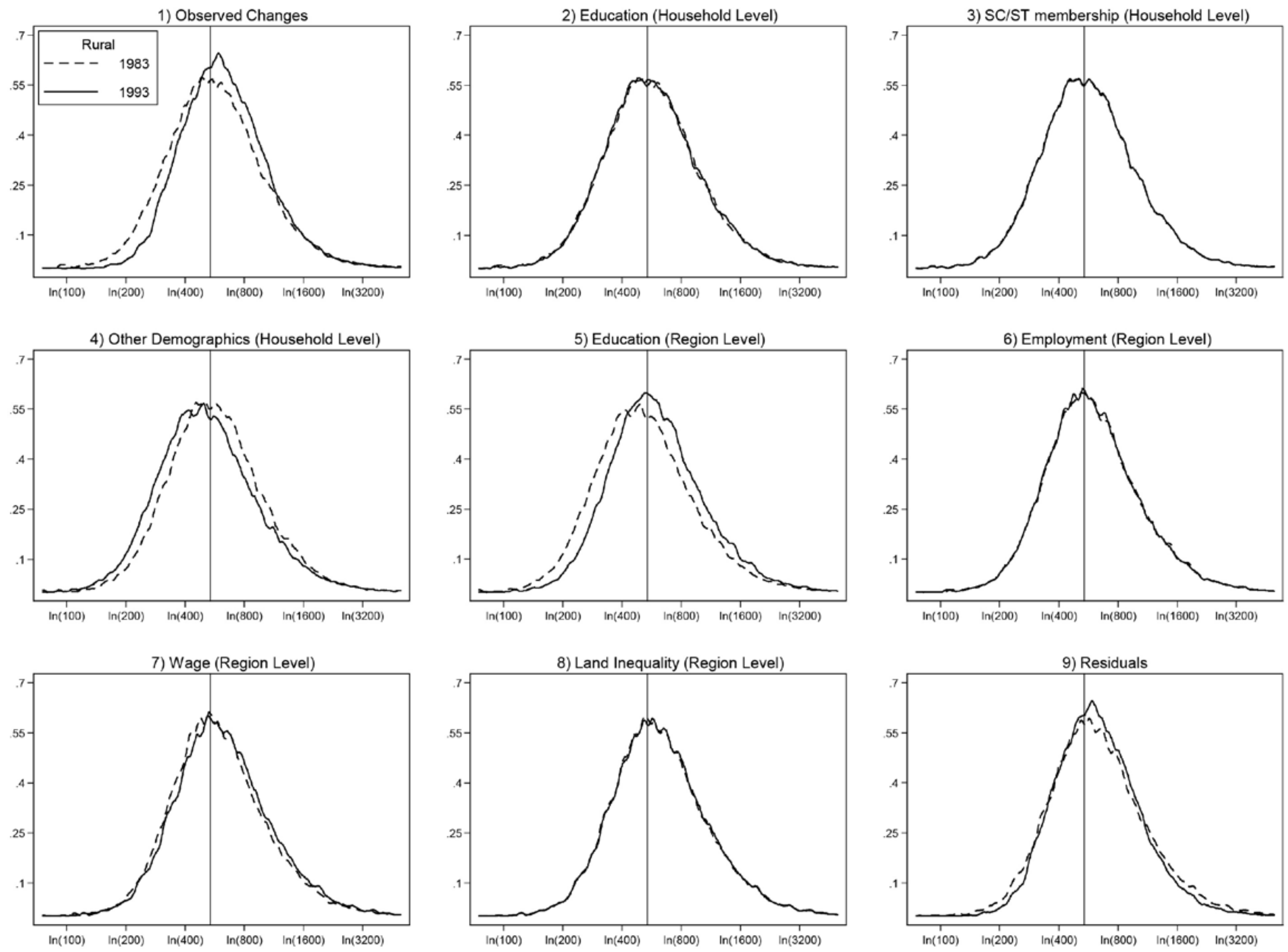
B: From 1993/94 to 2004/05



Note: See the note in Figure 1.

Figure 3: Decomposition of Changes in the Expenditure Distribution from 1983 to 1993

A: Rural Areas



B: Urban Areas

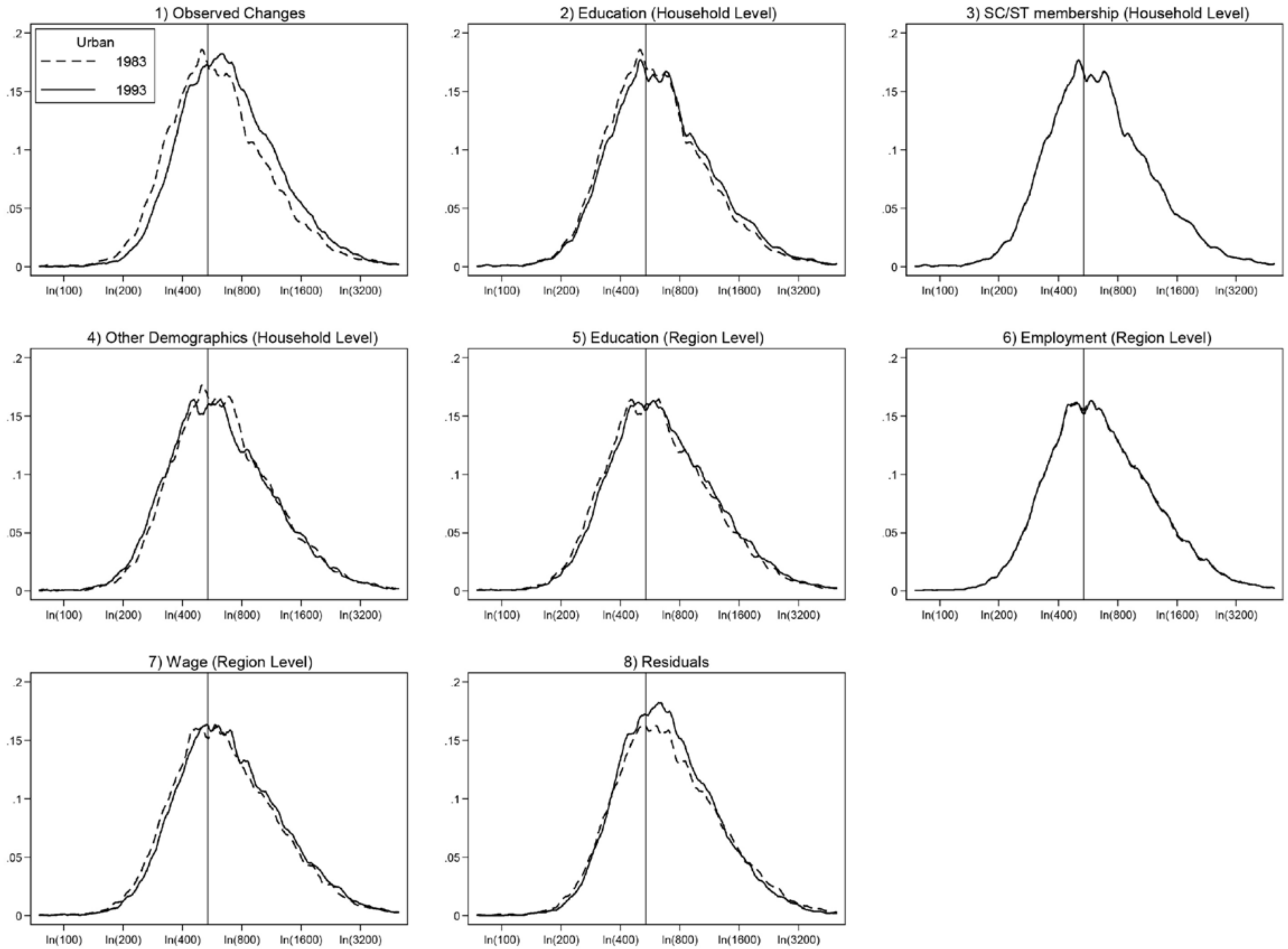
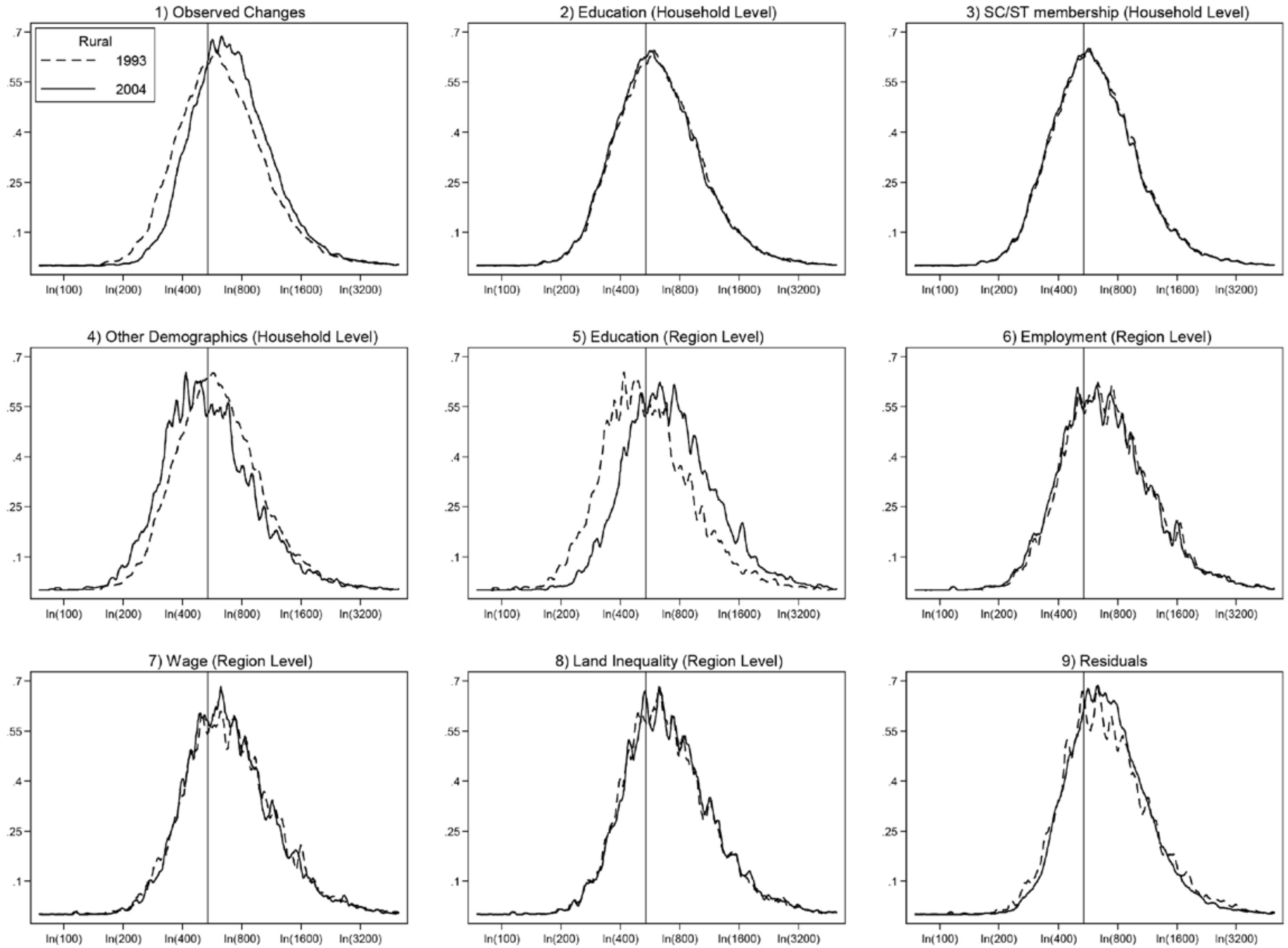


Figure 4: Decomposition of Changes in the Expenditure Distribution from 1993 to 2004

A: Rural Areas



B: Urban Areas

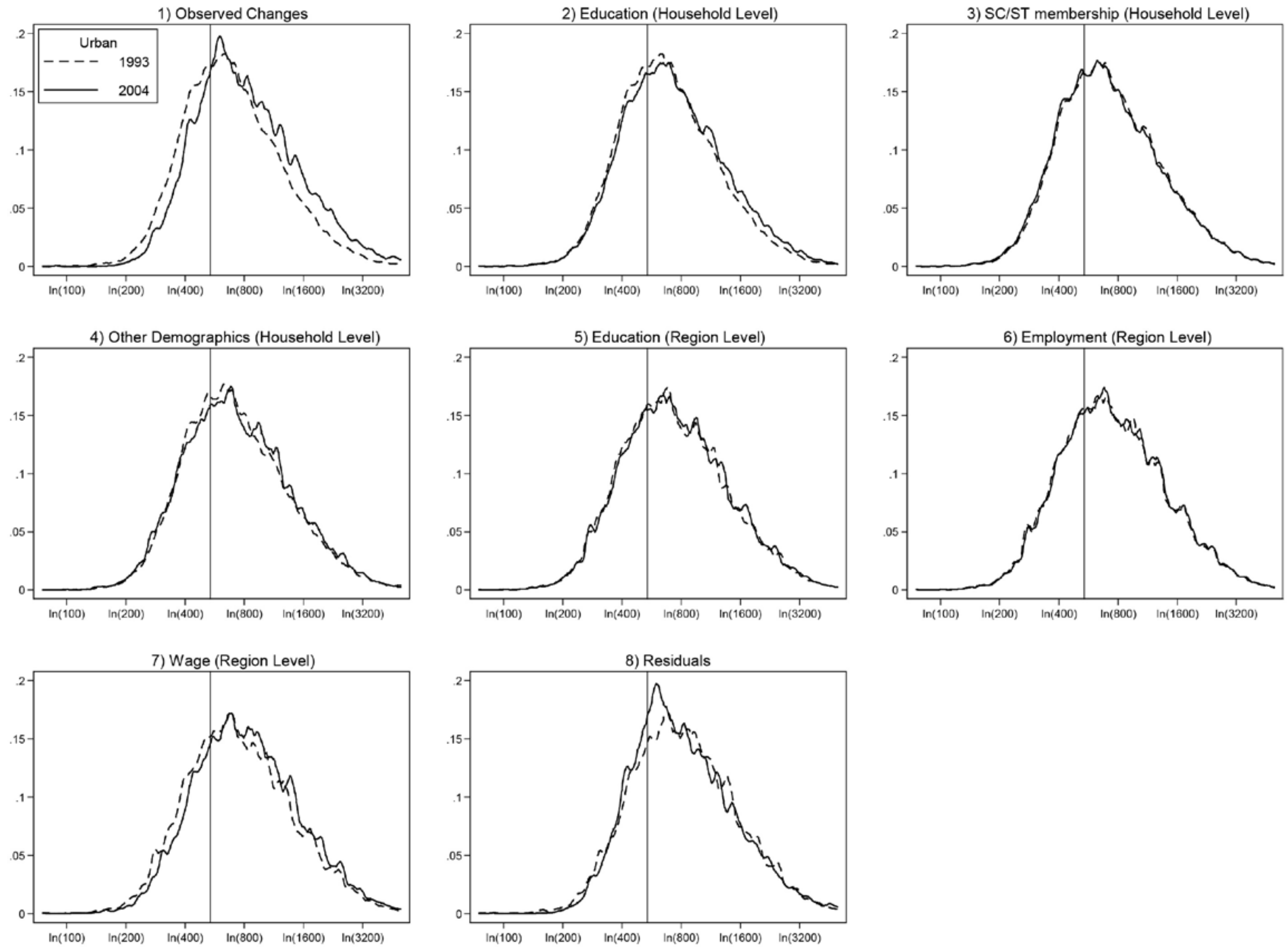


Table 1: Changes in socio-economic factors in India

	Rural			Urban		
	1983/1984	1993/1994	2004/2005	1983/1984	1993/1994	2004/2005
Monthly per capita expenditure	553.1	610.1	687.9	581.6	659.5	760.0
Education level (%)						
Illiterate	50.6	39.5	27.6	15.1	8.7	6.1
Literacy but below primary	24.1	27.9	28.8	28.0	27.6	21.8
Primary completed	11.3	10.8	12.8	15.9	12.8	12.5
Middle completed	8.4	11.2	15.0	16.6	16.6	18.3
Secondary completed	4.8	8.9	12.5	17.8	24.1	25.3
University completed	0.9	1.6	3.4	6.7	10.1	16.1
Wage rates (2004 Rs.)						
Agricultural sector	39.9	53.1	68.1	45.3	48.5	55.6
Non-agricultural sector	87.9	74.2	152.2	97.9	116.9	164.8
Empolyment (%)						
Agricultural sector	77.8	75.0	68.9	12.1	10.5	7.4
Self employment	*45.6*	*41.9*	*40.8*	*6.8*	*5.5*	*4.7*
Regular employment	*2.1*	*0.9*	*0.7*	*0.5*	*0.4*	*0.3*
Casual employment	*30.2*	*32.2*	*27.3*	*4.7*	*4.6*	*2.4*
Non-agricultural sector	20.2	23.3	28.7	81.8	84.3	87.4
Self employment	*10.3*	*11.5*	*14.1*	*30.4*	*32.7*	*37.5*
Regular employment	*5.4*	*6.0*	*6.9*	*38.7*	*38.6*	*37.5*
Casual employment	*4.5*	*5.9*	*7.7*	*12.7*	*13.0*	*12.4*
Unemployed	2.0	1.7	2.4	6.1	5.2	5.2

Table 2: Summary statistics of empirical variables

Panel A: Rural Areas

	1983/84		1993/94		2004/05	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of monthly per capita expenditure	6.348	0.587	6.448	0.521	6.571	0.482
Education						
Literacy but below primary	0.098	0.192	0.111	0.203	0.104	0.199
Primary completed	0.112	0.198	0.106	0.194	0.126	0.206
Middle completed	0.080	0.167	0.106	0.190	0.143	0.216
Secondary completed	0.044	0.128	0.081	0.174	0.113	0.205
University completed	0.008	0.055	0.014	0.074	0.030	0.113
Household size	6.616	3.151	6.088	2.829	6.052	2.883
Household size squared	53.704	61.739	45.065	52.868	44.936	52.370
Age						
15 to 29	0.249	0.205	0.261	0.214	0.255	0.212
30 to 44	0.164	0.157	0.183	0.169	0.198	0.176
45 to 59	0.110	0.151	0.115	0.166	0.118	0.171
60 over	0.068	0.132	0.070	0.142	0.075	0.153
Male ratio	0.493	0.167	0.487	0.167	0.491	0.165
Land owned per head	0.255	1.781	0.198	0.421	1.558	3.280
SC/ST	0.273	0.445	0.295	0.456	0.305	0.460
Religion						
Hindu	0.861	0.346	0.858	0.350	0.848	0.359
Islam	0.089	0.285	0.096	0.294	0.107	0.309
Christianity	0.019	0.137	0.016	0.124	0.015	0.122
Sikhism	0.022	0.146	0.021	0.142	0.022	0.147
No. of observations	61,099		53,846		57,757	

Panel B: Urban Areas

	1983/84		1993/94		2004/05	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of monthly per capita expenditure	6.424	0.600	6.544	0.582	6.709	0.610
Education						
Literacy but below primary	0.111	0.202	0.104	0.202	0.080	0.178
Primary completed	0.162	0.233	0.131	0.220	0.129	0.216
Middle completed	0.161	0.231	0.163	0.237	0.181	0.244
Secondary completed	0.165	0.255	0.222	0.288	0.238	0.285
University completed	0.061	0.172	0.094	0.218	0.149	0.267
Household size	6.398	2.993	5.703	2.554	5.628	2.801
Household size squared	49.891	53.328	39.049	41.403	39.517	51.420
Age						
15 to 29	0.292	0.230	0.291	0.237	0.290	0.238
30 to 44	0.176	0.167	0.206	0.182	0.222	0.192
45 to 59	0.104	0.148	0.112	0.163	0.129	0.177
60 over	0.059	0.121	0.061	0.130	0.070	0.145
Male ratio	0.479	0.180	0.477	0.182	0.483	0.179
Land owned per head	0.069	1.149	0.048	0.260	0.403	2.517
SC/ST	0.149	0.356	0.151	0.358	0.172	0.377
Religion						
Hindu	0.770	0.421	0.777	0.417	0.771	0.420
Islam	0.164	0.371	0.164	0.370	0.169	0.375
Christianity	0.029	0.168	0.025	0.155	0.023	0.149
Sikhism	0.012	0.109	0.014	0.117	0.015	0.120
No. of observations	33,567		36,571		33,763	

Note: All statistics are adjusted using sampling weights.

Table 3: The effects of demographic characteristics on monthly per-capita expenditures

Panel A: Rural Areas

	1983/84		1993/94		2004/05	
Education						
Literacy but below primary	0.247	(0.016)	0.187	(0.010)	0.127	(0.010)
Primary completed	0.370	(0.013)	0.271	(0.011)	0.171	(0.009)
Middle completed	0.556	(0.017)	0.380	(0.012)	0.288	(0.010)
Secondary completed	0.792	(0.020)	0.628	(0.014)	0.488	(0.011)
University completed	1.016	(0.044)	0.949	(0.035)	0.921	(0.030)
Household size	−0.042	(0.004)	−0.061	(0.006)	−0.081	(0.003)
Household size squared	0.002	(0.000)	0.002	(0.000)	0.003	(0.000)
Age						
15 to 29	0.393	(0.016)	0.304	(0.014)	0.296	(0.012)
30 to 44	0.585	(0.023)	0.456	(0.020)	0.489	(0.016)
45 to 59	0.617	(0.019)	0.428	(0.016)	0.486	(0.014)
60 over	0.471	(0.019)	0.337	(0.017)	0.395	(0.014)
Male ratio	−0.056	(0.015)	−0.042	(0.012)	−0.036	(0.012)
Land owned per head	0.008	(0.003)	0.141	(0.010)	0.019	(0.001)
Scheduled castes / tribes	−0.148	(0.007)	−0.126	(0.005)	−0.118	(0.005)
Religion						
Hindu	0.068	(0.021)	0.072	(0.022)	−0.033	(0.023)
Islam	0.048	(0.023)	0.073	(0.023)	−0.008	(0.024)
Christianity	0.027	(0.027)	−0.011	(0.028)	−0.012	(0.029)
Sikhism	0.232	(0.031)	0.149	(0.031)	0.059	(0.031)
Intercept	6.240	(0.040)	6.707	(0.049)	6.653	(0.050)
No. of Observations	61,099		53,846		57,757	
Adjusted R-squared	0.369		0.419		0.525	

Panel B: Urban Areas

	1983/84		1993/94		2004/05	
Education						
Literacy but below primary	0.132	(0.018)	0.180	(0.015)	0.111	(0.019)
Primary completed	0.257	(0.016)	0.238	(0.015)	0.213	(0.018)
Middle completed	0.367	(0.017)	0.363	(0.015)	0.357	(0.016)
Secondary completed	0.680	(0.016)	0.671	(0.012)	0.686	(0.015)
University completed	1.048	(0.024)	1.085	(0.016)	1.172	(0.019)
Household size	−0.084	(0.007)	−0.103	(0.004)	−0.110	(0.006)
Household size squared	0.003	(0.000)	0.004	(0.000)	0.004	(0.000)
Age						
15 to 29	0.329	(0.022)	0.192	(0.017)	0.235	(0.023)
30 to 44	0.554	(0.033)	0.430	(0.024)	0.483	(0.034)
45 to 59	0.544	(0.027)	0.439	(0.021)	0.562	(0.025)
60 over	0.358	(0.029)	0.313	(0.022)	0.474	(0.028)
Male ratio	−0.099	(0.019)	−0.090	(0.016)	−0.018	(0.021)
Land owned per head	0.007	(0.003)	0.087	(0.010)	0.010	(0.001)
Scheduled castes / tribes	−0.071	(0.011)	−0.066	(0.009)	−0.109	(0.010)
Religion						
Hindu	−0.069	(0.033)	−0.021	(0.021)	−0.116	(0.029)
Islam	−0.098	(0.034)	−0.032	(0.022)	−0.115	(0.030)
Christianity	−0.028	(0.046)	−0.018	(0.031)	−0.107	(0.035)
Sikhism	0.020	(0.043)	0.028	(0.030)	−0.058	(0.038)
Intercept	6.317	(0.062)	6.615	(0.038)	6.747	(0.055)
No. of Observations	33,567		36,571		33,763	
Adjusted R-squared	0.406		0.491		0.596	

Note: All estimates are adjusted using sampling weights. Huber-White heteroskedasticity-robust standard errors are in parentheses. Region dummies are also included.

Table 4: Summary Statistics for the Region-level Analysis

	Rural		Urban	
Variable	Mean	Std. Dev.	Mean	Std. Dev.
First Difference of Region fixed effects ($\Delta\eta$)	0.232	0.121	0.099	0.095
***Initial condition* (z_{it-1})**				
Education: Literacy but below primary	0.104	0.041	0.105	0.031
Primary completed	0.113	0.052	0.142	0.042
Middle completed	0.098	0.050	0.167	0.043
Secondary completed or more	0.081	0.044	0.298	0.079
Employment: Self employed, non-agric.	0.066	0.021	0.162	0.034
Wage worker: agric.	0.198	0.100	0.026	0.022
Wage worker: non-agric.	0.067	0.035	0.265	0.053
Productivity: Log agricultural wage	3.840	0.320	3.883	0.492
Log non-agricultural wage	4.358	0.272	4.643	0.225
Others: Land inequality: 10/50 percentile	0.017	0.031	0.000	0.000
Land inequality: 50/90 percentile	0.140	0.079	0.000	0.000
Price level (the price level in urban areas in 2004 is unity)	0.278	0.125	0.383	0.160
Log population	16.221	0.700	15.177	0.754
***Growth* (Δz_{it})**				
Education: Literacy but below primary	0.005	0.028	-0.014	0.025
Primary completed	0.007	0.029	-0.016	0.031
Middle completed	0.033	0.025	0.007	0.028
Secondary completed or more	0.053	0.028	0.084	0.048
Employment: Self employed, non-agric.	0.011	0.019	0.017	0.024
Wage worker: agric.	−0.014	0.041	−0.006	0.015
Wage worker: non-agric.	0.015	0.027	−0.008	0.031
Productivity: Log agricultural wage	0.090	0.300	0.079	0.481
Log non-agricultural wage	0.072	0.355	0.265	0.189
Others: Land inequality: 10/50 percentile	0.012	0.057	0.000	0.000
Land inequality: 50/90 percentile	−0.017	0.035	0.000	0.000
Price level (inflation rates)	0.704	0.160	0.757	0.143
Log population	0.154	0.114	0.208	0.171
No. of observations	114,945		70,138	

Table 5: The effects of regional characteristics on the regional growth of consumption expenditure

	Rural		Urban	
Initial condition				
Education: Literacy but below primary	1.757	(0.052)	0.817	(0.102)
Primary completed	1.891	(0.042)	0.468	(0.070)
Middle completed	3.587	(0.047)	2.067	(0.070)
Secondary completed or more	1.858	(0.035)	2.118	(0.058)
Employment: Self employed, non-agric.	−2.249	(0.085)	2.477	(0.067)
Wage worker: agric.	2.020	(0.030)	3.523	(0.109)
Wage worker: non-agric.	2.506	(0.035)	1.742	(0.054)
Productivity: Log agricultural wage	0.065	(0.005)	−0.004	(0.003)
Log non-agricultural wage	0.029	(0.005)	0.161	(0.013)
Others: Land inequality: 10/50 percentile	2.027	(0.017)		
Land inequality: 50/90 percentile	0.295	(0.020)		
Price level	−1.534	(0.020)	−10.587	(0.528)
Population	-0.265	(0.008)	0.082	(0.013)
Growth				
Education: Literacy but below primary	1.754	(0.028)	1.546	(0.045)
Primary completed	1.409	(0.041)	1.202	(0.053)
Middle completed	1.691	(0.025)	2.228	(0.039)
Secondary completed or more	0.811	(0.022)	1.241	(0.040)
Employment: Self employed, non-agric.	−1.656	(0.058)	0.554	(0.057)
Wage worker: agric.	0.249	(0.015)	−0.194	(0.081)
Wage worker: non-agric.	0.461	(0.024)	0.470	(0.046)
Productivity: Log agricultural wage	0.223	(0.004)	0.039	(0.002)
Log non-agricultural wage	0.072	(0.003)	0.255	(0.009)
Others: Land inequality: 10/50 percentile	0.395	(0.006)		
Land inequality: 50/90 percentile	−0.495	(0.016)		
Price level (inflation)	−1.080	(0.010)	−3.575	(0.147)
Population	−0.061	(0.006)	0.250	(0.009)
Intercept	2.931	(0.130)	1.743	(0.343)
Adjusted R-squared	0.827		0.700	
No. of observations	114,945		70,138	