GCOE Discussion Paper Series

Global COE Program

Human Behavior and Socioeconomic Dynamics

Discussion Paper No. 184

Improvement of Socio-economic Conditions and Distribution of Consumption Expenditures: Case Study of India's Poverty Decline over Two Decades

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March 2011; revised June 2012

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Improvement of Socio-economic Conditions and Distribution of Consumption Expenditures: Case Study of India's Poverty Decline over Two Decades†

(Previous title: Improvement in Socioeconomic Conditions and Poverty Decline in India, 1983-2004)

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June 2012

(First version: January 2010)

Abstract

This paper examines how the standard of living in India has improved over two decades, focusing on the distribution of household-level consumption expenditures. The analysis is conducted using the DiNardo-Fortin-Lemieux (DFL) semi-parametric decomposition method, which offers two desirable features that enable us to avoid the traditional pitfalls of (semi-)macro-level poverty analysis. The estimation results indicate that regional heterogeneity in poverty decline is very large, and different regional factors contribute to the decline at different stages of development. From 1983 to 1993/94, regional education (measured by literacy rate) was the main engine of the decline, accounting for 85% of the total poverty decline in the period. However, in the decade that followed, labor market conditions had a significant role in reducing poverty. In particular, wage and employment growth in the non-agricultural sector was key in the improvement of living standards. In addition, agricultural wage employment remains important in reducing poverty in rural areas.

† I sincerely thank Sayako Kanda, Ayako Kondo, Kohei Kubota, Fumio Ohtake, Masaru Sasaki, Yasuyuki Sawada, and the participants at various seminars for their helpful comments and suggestions. I also acknowledge the financial support from the Resona Foundation for Asia and Oceania, and a Grant-in-Aid for young scientists (start-up program) from the Japan Society for the Promotion of Science (JSPS).

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I. Introduction

Poverty is one of the most urgent political issues of our time. Poverty alleviation was set as one of the Millennium Development Goals (MDGs) at the Millennium Summit of the United Nation's Millennium Project in September 2000. However, even today, India continues 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).

Meanwhile, India has steadily succeeded in poverty reduction. Providing a prescription for poverty alleviation, a number of studies have investigated factors contributing to poverty reduction in India.[1] Poverty is strongly associated with agricultural wage employment in rural areas. Moreover, such jobs are the last resort for low-skilled, non-educated workers, thereby rendering them underpaid. In addition, agricultural laborers have accounted for the greatest proportion of the working population through the 1980s, 1990s, which remain firmly unchanged in rural areas even today. Thus, it has been believed that productivity growth in the agricultural sector is very important in reducing poverty (Deaton and Drèze 2002; and Sundaram 2001, 2007).

In addition, several quantitative studies have found a statistically significant

[1] For the literature review on this topic, see Datt and Ravallion (2002).

correlation between poverty and agricultural wage. For example, Datt and Ravallion (1998b) find that the agricultural productivity has a positive effect on reducing poverty using time series data. Moreover, in their series of works (Datt and Ravallion 1998a and Ravallion and Datt 2002), they investigate the determinants of poverty decline at the state level, and reveal that the key factor contributing the most to poverty decline between the 1960s and 1980s is the growth of productivity in the agricultural sector. Their results also indicate that non-agricultural employments have a positive impact on reducing poverty and producing better educational indicators such as high literacy rates, which contributes to poverty alleviation.

Other studies using regional data produced similar results. For instance, Kijima and Lanjouw (2005) reveal that poverty reduction during the 1990s is closely associated with agricultural wages and employment levels. Lanjouw and Murgai (2010) also explain regional heterogeneity in poverty alleviation. Their analysis shows that poverty ratios correlate well with region-level agricultural wage rates from the 1980s to the early 2000s. On the other hand, in the recent decade, the non-agricultural sector has also played the role of an engine for poverty reduction, accounting for a considerable part of rural household income as well as the recent stagnation of the agricultural sector.

Taking these findings as the point of departure, this paper also examines how living standards in India have improved over the last two decades, focusing on the distribution of

household-level consumption expenditures. The analysis is conducted using the DiNardo-Fortin-Lemieux (DFL) semi-parametric decomposition method proposed by DiNardo et al. (1996). This method offers two desirable features that enable us to avoid the traditional pitfalls of (semi-)macro-level poverty analysis.

First, the DFL decomposition can depict distributional (heterogeneous) impacts of factors that seem to be associated with poverty reduction. This enables us to investigate the extent to which each factor improves living standards at each income (consumption) level, and consequently, gain a better understanding of how poverty can be alleviated. The second advantage concerns the study of poverty. Poverty analysis typically requires us to calculate poverty measures, such as headcount poverty ratios and poverty gaps, at a certain (semi-)macro level. In the calculation of these aggregate poverty measures, for example, information on individuals living above the 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 corresponding results obtained are very sensitive to a shift of the poverty line. This is a critical issue especially for developing countries such as India, where a large portion of the population lives around the poverty line, making the determination of the poverty line and the measurement of poverty problematic. However, the DFL decomposition, which focuses on distributional changes, does not require such aggregation and has no information loss associated with the

aggregation. In this regard, the DFL decomposition method has an advantage over conventional approaches.

The remainder of this paper is structured as follows. Section II briefly discusses the trend of poverty over the past two decades in India. 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 indicate that regional heterogeneity in poverty decline is very large, and different regional factors contribute to poverty decline at different stages of development. From 1983 to 1993/94, regional education (measured by literacy rate) was the main engine of the poverty decline, accounting for 85% of the total poverty decline in this period. In the decade that followed, the labor market condition had a significant role in reducing poverty. In particular, wage and employment growth in the non-agricultural sector was key in improving living standards. In addition, agricultural wage employment remains important in reducing poverty in rural areas. Section V concludes the paper.

II. Poverty decline over the past two decades

Figure 1 shows the changes in the distribution of monthly per-capita expenditures between 1983, 1993/94, and 2004/05. Data are from the National Sample Surveys (NSS) conducted approximately every five years ("thick" rounds). 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 (1993/94), and 61st (2004/05). The sample used in the analysis consists of data from all states other than the seven union territories and eight northeastern states. The distribution of expenditures shown in Figure 1 is adjusted by the sector-state wide official poverty line to the 2004 urban price level. The vertical line is the nationwide-level official poverty line in 2004 (= Rs538.60).

[Figure 1]

As can be seen from the figure, the mode of expenditure distribution has been steadily rising and the shape of the distribution has widened slightly. This implies that while poverty has improved consistently between 1983 and 2004, inequality has not necessarily been eradicated.

At the same time, this period also witnessed drastic changes in several social and economic factors (Table 1). The educational aspect showed great improvement: illiteracy rates dropped as much as 50% and the population with formal education steadily increased in both rural and urban areas.

[Table 1]

Regarding employment in rural areas, the fraction of male adult population engaging in the agricultural sector was stable during the 1980s and accounted for nearly 70% in 2004/05. Since the agricultural sector is the principal source of income for the poor, it has been believed that poverty is closely associated with agricultural wage employment. As a result, the productivity growth in the agricultural sector is expected to have a significant impact on poverty reduction in rural areas. In fact, Table 1 shows that wage rates in the agricultural sector in rural areas have increased steadily during this period, which implies that poverty decline has contributed to productivity growth in the agricultural sector to a certain extent. Regarding employment in the non-agricultural sector, the fraction of urban male workers engaged in this sector is considerably high: 82% in 1983, 84% in 1993/94, and 87% in 2004/05. Even in rural areas, the fraction of non-agricultural workers has risen moderately. In addition, another representative data set indicates that the share of non-farm incomes in total rural income increased from almost one-third in 1982 to 48% in 1999 (Foster and Rosenzweig, 2004). We can therefore conclude that the expansion of this sector has contributed to poverty reduction to a certain extent in both rural and urban areas.

Thus, in this period, education level and labor market conditions have changed dramatically both in rural and urban areas. In the empirical analysis, we analyze whether and to what extent these factors contribute to poverty reduction in rural and urban areas (as can be

seen in Figure 2) during the past two decades.

[Figure 2]

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 poverty decline in India. Thus, to estimate the contribution of each covariate to the poverty reduction, the extended method is applied and briefly explained here.

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, $f(c|x)$, over the distribution of the attributes, $F(x)$:

$$f(c|t_c = s) = \int_{x\in\Omega_x} \mathrm{d}F(c, x|t_c = t_x = s) \quad (1)$$

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

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

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 that at time t is expressed as

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

$$= \iint f(c|g, h, t_c = s)\mathrm{d}F(g|h, t_{g|h} = t)\mathrm{d}F(h|t_h = s)$$

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

$$= \int f(c|x, t_c = s)\psi_{g|h}\mathrm{d}F(x|t_x = s)$$

where $\psi_{g|h} = \mathrm{d}F(g|h, t_{g|h} = t)/\mathrm{d}F(g|h, t_{g|h} = s)$. Thus, the counter factual densities can be calculated using actual densities with the help of "reweighting" functions.[2] Once the reweighting function is obtained, counter factual densities are estimated using the weighted kernel method:

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

where S_t is the set of indices of the sample at time t, w_i is the sampling weight of individual i, 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 wherein the effect of attributes on consumption expenditures changes from that at time s to that at time t. Letting γ_s and δ_s

[2] For the calculation of the reweighting function, see Appendix A

be the effects of g and h at time s, the density that would prevail at time s if g has the same impacts as at time t is calculated as

$$f\left(c;\ t_c = s, t_g = t, t_h = s, \gamma_t, \delta_s\right) \tag{4}$$

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

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

where $x_i\beta_s = (g_i, h_i)(\gamma_s, \delta_s)^T$ is the linear projection of c_i onto attributes x_i (discussed in the next sub-section). Similarly, counterfactual changes due to changes in the distribution and impact of attribute h can be calculated.

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

$$f(c; t_c = t, t_x = t) - f(c; t_c = s, t_x = s) \tag{5}$$

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

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

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

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

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

where the first and third components on the right hand side represent the distributional effect of the attributes g and h, respectively, and the second and fourth components represent the effect of the attributes g and h, respectively, due to changes in their impacts; the last term

denotes the effect of residual factors.

Estimation of consumption expenditures and empirical variables

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:

$$\ln c_{ijt} = x_{ijt}\beta_t + z_{jt}\gamma_t + \eta_j + \eta_t + v_{ijt} \quad (6)$$

where x_{ijt} and z_{jt} are the household- and region-level characteristics affecting household consumption level, β_t and γ_t are the coefficient vectors to be estimated, η_j and η_t denote the region and time fixed effects, and v_{ijt} is the random error.

Regarding the empirical variables used in the analysis, household characteristics, x_{ijt}, include the education level of adult members (aged 15 years and older), age and gender compositions, social class, and religion. Education variables are the average schooling years for members aged 15–29, 30–44, and 45–59 years. Age and gender compositions are calculated as ratios to the total adult members in the households. For social class, a dummy variable for households belonging to the scheduled castes/tribes (SCs/STs), which are the lowest classes in the social hierarchy, is employed. Because caste categories other than SCs/STs are not available in the 38th (1983) round, the analysis in this paper also uses this classification: SCs/STs or non-SCs/STs.

The region-specific attributes, z_{jt}, include variables such as literacy rates, composition of the male labor force, and other region-level characteristics. These variables are calculated at the district level. The labor force is divided into five categories on the basis of employment status and sector: self-employed workers in the agricultural sector, self-employed workers in the non-agricultural sector, wage workers in the agricultural sector,[3] casual wage workers in the non-agricultural sector, and regular wage workers in the non-agricultural sector. On the basis of this category, the fraction of male workers engaged in each category to the entire male working population (aged between 20 and 60 years) is calculated. Other district-level controls are the fraction of landless households, price level, and population. The summary statistics of these variables are shown in Table 2.

[Table 2]

IV. Estimation Results

Hypothetical changes in the expenditure distribution

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 estimation results is then conducted together with the results of the DFL decomposition.

[3] Agricultural wage works can be further divided into casual and regular employment. However, the fraction of regular workers in this sector is very low, and it is combined with casual workers.

[Table 3]

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

As shown in Figures 3 and 4, the household-level variables do not serve to explain the increase in consumption expenditures significantly (Graphs 2 to 5). The only exception is the household composition, which has a negative effect on living standards from 1983 to 1993/94 and a positive effect from 1993/94 to 2004/05. Regarding the education level in households, the OLS estimation results in Table 3 indicate that household-level education appears to explain adequately the cross-sectional variation of expenditure, although its influence seems to decrease over the years. Consequently, the increase in the number of educated members does not contribute to the secular improvement in living standards. As for caste membership, Graph 4 of Figures 3 and 4 indicate that caste membership has no effect. This might be explained from the results in Table 3: while the disadvantage of SCs/STs membership seems slightly improved in rural areas (positive coefficients in the second and third columns in Panel A), the gaps between SCs/STs and other castes increased in urban areas (negative coefficients in the second and third columns in Panel B).

[Figure 3]

The results for district/region level variables are depicted in Graphs 6 to 11 of Figures 3 and 4. From 1983 to 1993/94 (Figure 3), the literacy rate has a significant positive impact on poverty decline during this period, while the district-level employment situation does not. In addition, Graph 11 indicates that other district/state variables such as price level and population also have significant impacts on the improvement of living standards. Regarding the results for the poverty reduction from 1994/95 to 2004/05 (Figure 4), unlike the results for the previous decade, the literacy rate does not have any impact, while the employment situation does. In particular, agricultural wage employment (Graph 8), non-agricultural casual employment (Graph 9), and non-agricultural regular employment (Graph 10) contributed to a great extent to the poverty reduction during this period.

[Figure 4]

Further decompositions of regional heterogeneity

To investigate the poverty alleviation impact of the regional characteristics in-detail, further decompositions are implemented. Figures 5 to 6 show the decomposition results for

the impact of the region-level variables, wherein decompositions are made on the basis of *rural* or *urban*, and *distributional effect* or *price effect*. From 1983 to 1993, the impact of literacy rate (district level) accounted for 85% of the total poverty decline during the period (Graph 1 of Figure 5A). The figure shows that while the rising rates of literacy dominate the impact in rural areas (Graph 2-R), an increase in the positive externality of literacy dominated that in urban areas (Graph 3-U). On the other hand, in this period, the employment situation does not contribute to poverty decline significantly (Figures 5B to 5C). In rural areas, however, the productivity/wage growth in the non-agricultural sector (Graph 3-R of Figure 5B and Graph 3-R of Figure 5E) and that of the non-agricultural casual employment (Graph 2-R of Figure 5D) have an influence on the poverty reduction to a certain extent.

[Figure 5]

For 1994/95 to 2004/05, the results contrast starkly with those for the previous decade: while literacy rate does not contribute to the poverty decline, the employment situation does. The positive effect from the rise in literacy rate is offset by the decrease in social returns to literacy (Figure 5A). In contrast, the labor market situation makes a huge contribution to poverty decline during this period. In rural areas, the increases in the wages of casual workers both in the agricultural (Graph 3-R of Figure 6C) and non-agricultural sectors

(Graph 3-R of Figure 6D), and employment growth in the non-agricultural sector (Graph 2-R of Figure 6D and Graph 2-R of Figure 6E) serve as engines for poverty reduction. In urban areas, the productivity/wage growth in the non-agricultural sector dominates the impacts of poverty reduction (Graph 3-U of Figure 6B and Graph 3-U of Figure 6E). The non-agricultural employment, in total, accounts for 61.5% of poverty decline during this period.

[Figure 6]

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 during the reference period, while the Indian economy displayed consistent poverty reduction, it also witnessed modest growth in the size of non-agricultural employment and productivity growth in both agricultural and non-agricultural sectors. In addition, educational standards have also steadily improved.

The analysis in this paper examined factors contributing 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,

as certain previous studies have pointed out (see, for example, Datt and Ravallion 1998a). However, although household characteristics explain the cross-sectional variation of living standards across households, they do not explain the time-series improvement in living standards. In contrast, regional characteristics explain a large fraction of poverty decline.

Second, different factors contribute to poverty decline at different stages of development. Our results indicate that from 1983 to 1993/94 regional education (measured by literacy rate) is very important, and in the decade that followed, labor market conditions had a significant role in reducing poverty. In particular, wage and employment growth in the non-agricultural sector was key in the improvement of living standards. It should also be mentioned that agricultural wage employment is still important in reducing poverty in rural areas. In fact, our results imply that the total poverty alleviation impact of agricultural employment is larger than that of non-agricultural regular employment in rural areas. This might reflect the fact that a large fraction of the rural poor is engaged in agricultural-related jobs. Moreover, it is also striking that our results indicate no tradeoff between agricultural growth and nonfarm growth in reducing rural poverty. Each sector affects poverty reduction through a difference channel: while the poverty alleviation effect of the nonfarm sector is mainly attributed to employment growth, that of the agricultural sector mostly results mostly from the productivity growth. The role of the nonfarm sector development in reducing poverty is somewhat ambiguous empirically (Ravallion and Datt 1996, 2002), the results in

this paper imply that the growth of the nonfarm sector complements the agricultural sector. In addition, the results also suggest that the dissemination of basic education is an essential step prior to labor market development. It is very interesting to know what factors contribute to reducing poverty at what stage of development, and further studies are needed to clarify this issue.

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

In the case that there are two attributes $x = (g, h)$, two reweighting functions are calculated because we have two counterfactual situations, described as follows:

$$f\left(c;\ t_c = s, \boldsymbol{t_g} = \boldsymbol{t}, t_h = s\right) = \int f(c|x, t_c = s)\psi_{g|h}\mathrm{d}F(x|t_x = s)$$

$$f\left(c;\ t_c = s, t_g = t, \boldsymbol{t_h} = \boldsymbol{t}\right) = \int f(c|x, t_c = s)\psi_{x}\mathrm{d}F(x|t_x = s)$$

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

$$\psi_{g|h}(x) = \frac{\mathrm{d}F(g|h,t_{g|h}=t)}{\mathrm{d}F(g|h,t_{g|h}=s)} = \frac{\Pr(g|h,t_{g|h}=t)}{\Pr(g|h,t_{g|h}=s)} = \frac{\Pr(g,h|t_{g|h}=t)/\Pr(h|t_{g|h}=t)}{\Pr(g,h|t_{g|h}=s)/\Pr(h|t_{g|h}=s)} \tag{A1}$$

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

$$\psi_x(x) = \frac{\mathrm{d}F(g,h|t_{g|h}=t)}{\mathrm{d}F(g,h|t_{g|h}=s)} = \frac{\Pr(g,h|t_{g|h}=t)}{\Pr(g,h|t_{g|h}=s)} = \frac{\Pr(t_{g|h}=t|g,h)\Pr(g,h)/\Pr(t_{g|h}=t)}{\Pr(t_{g|h}=s|g,h)\Pr(g,h)/\Pr(t_{g|h}=s)} \tag{A2}$$

$$= \frac{\Pr(t_{g|h}=t|g,h)\Pr(t_{g|h}=s|h)}{\Pr(t_{g|h}=s|g,h)\Pr(t_{g|h}=t|h)} \times \frac{\Pr(t_{g|h}=t|h)\Pr(t_{g|h}=s)}{\Pr(t_{g|h}=s|h)\Pr(t_{g|h}=t)} = \psi_{g|h}(x)\psi_h(x).$$

Conditional and unconditional probabilities in Equations (A1) and (A2) can be estimated by the probit/logit model. In our analysis, the trinomial logit model is used because we use three-year data.

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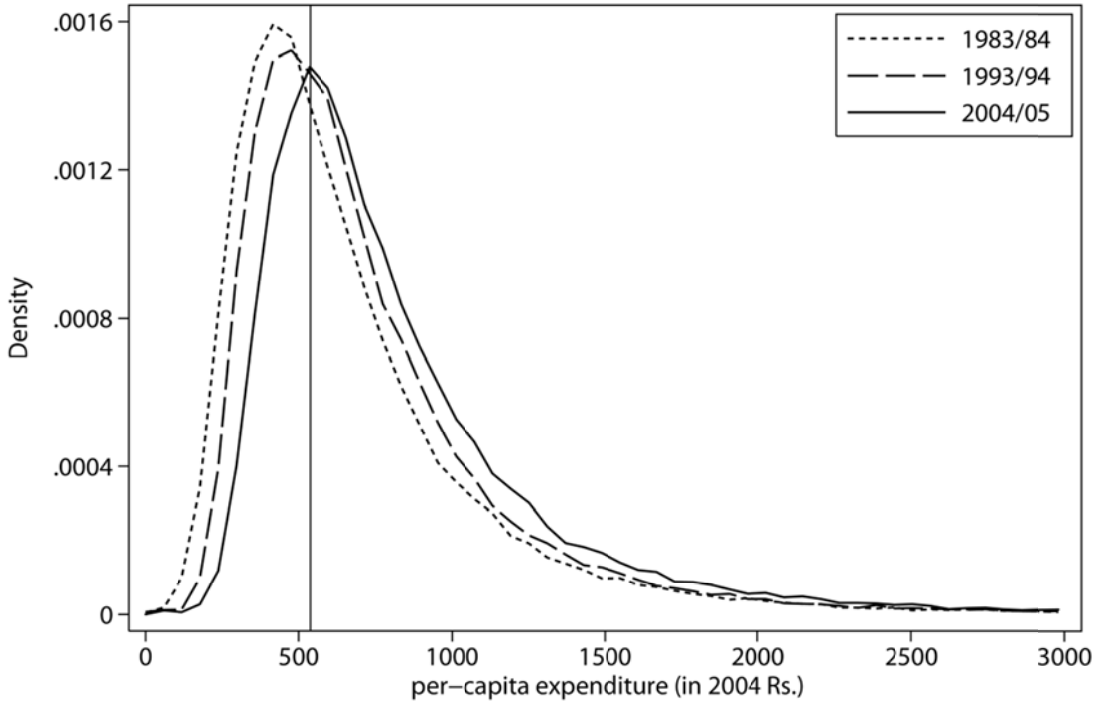
Figure 1: Changes in the expenditure distribution

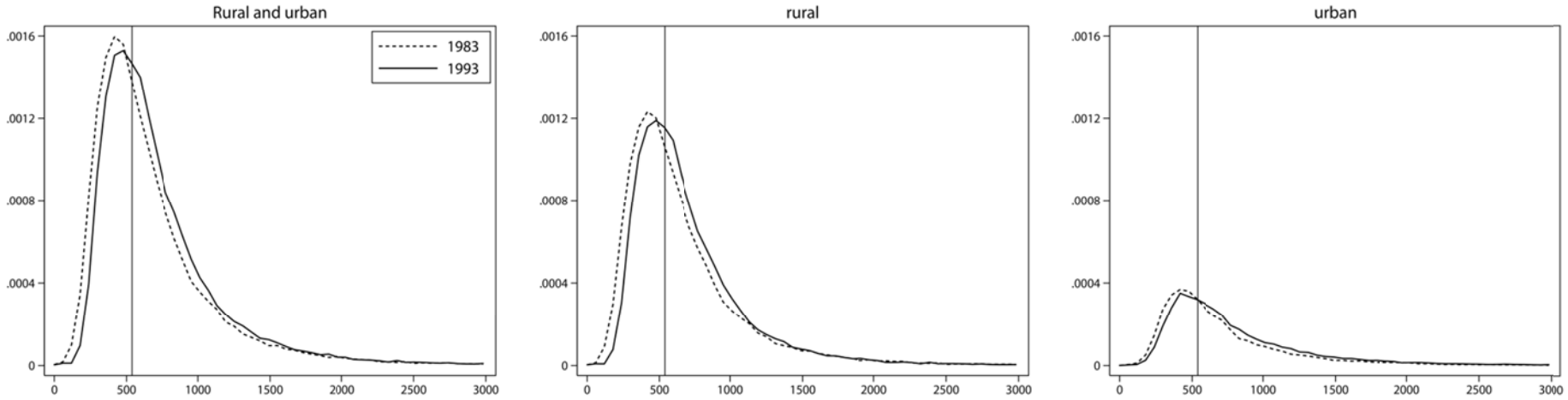


Source: Author's calculation and drawing from National Sample Surveys (NSS) 1983, 1993/94, and 2004/05.

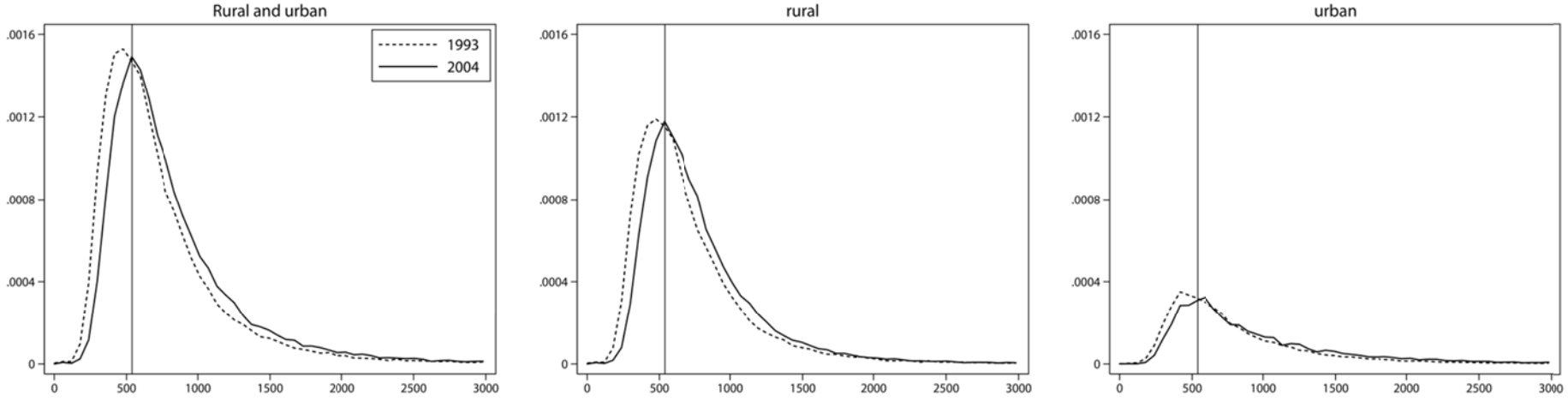
Note: Expenditures are adjusted by the state-wise official poverty line to the 2004 price level in urban areas. The vertical line is the all-India level poverty line in urban areas in 2004.

Figure 2: Observed Changes in the Expenditure Distribution

A: From 1983 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 (1983-1993/94)

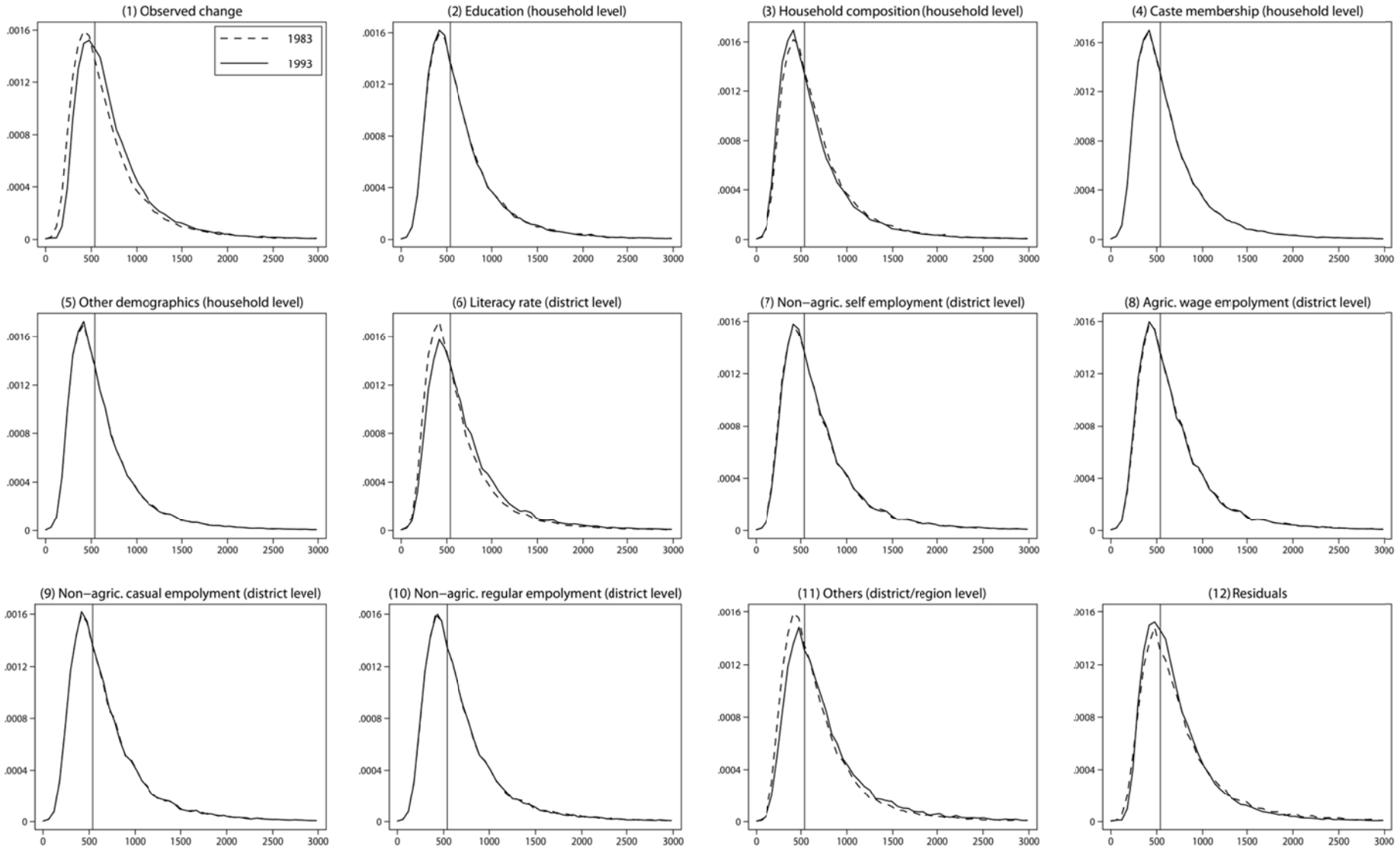


Figure 4: Decomposition of Changes in the Expenditure Distribution (1993/94-2004/05)

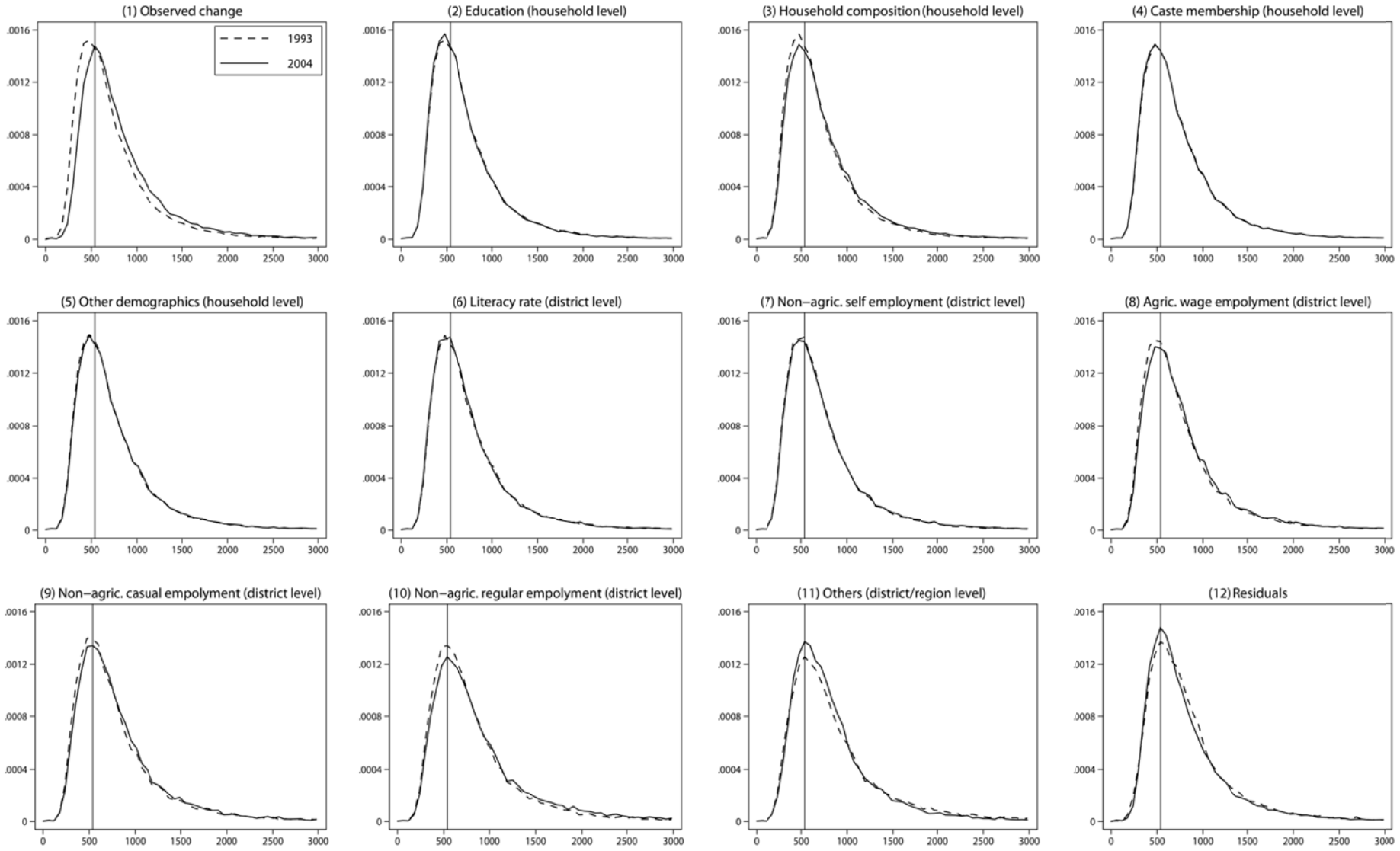
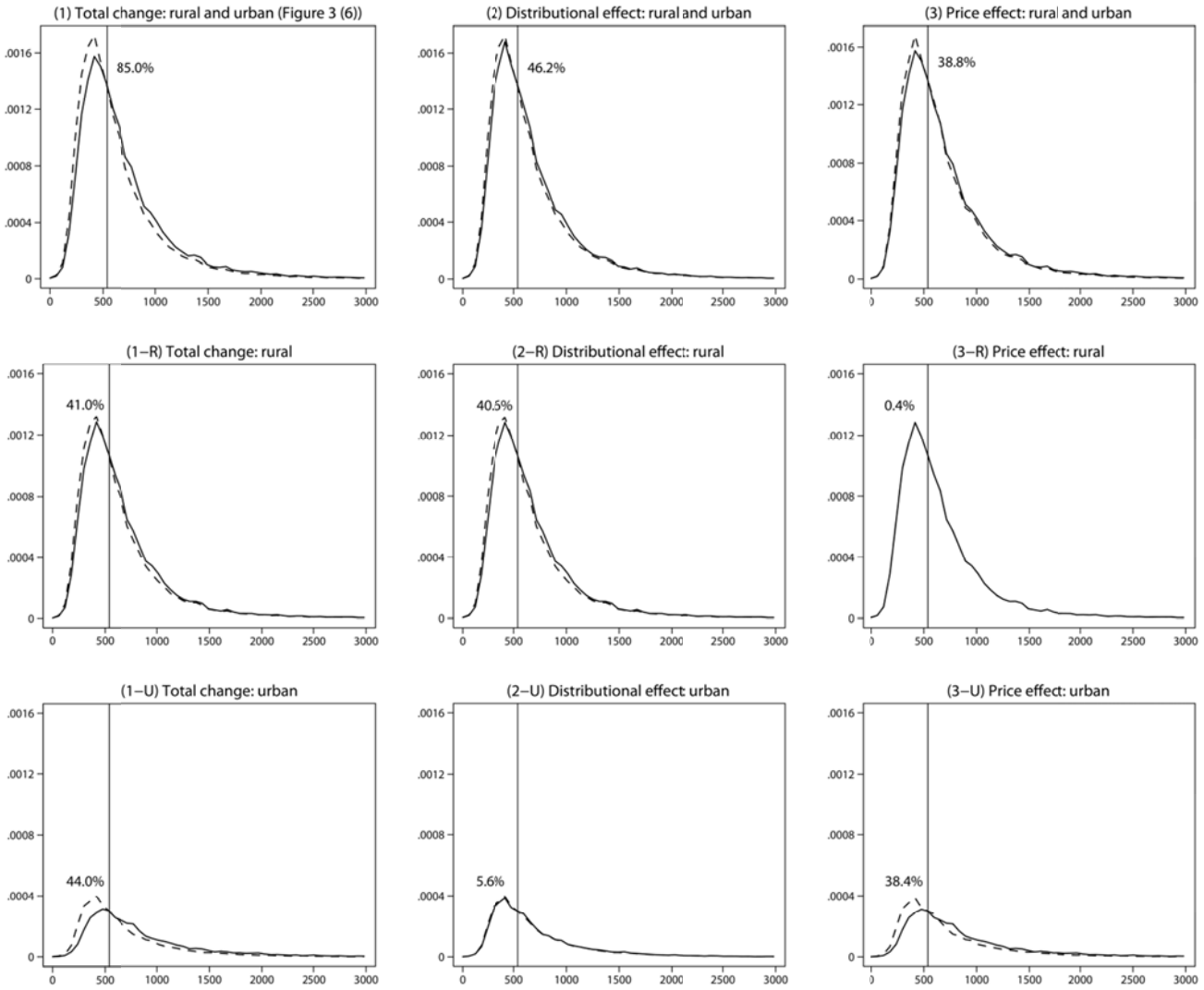
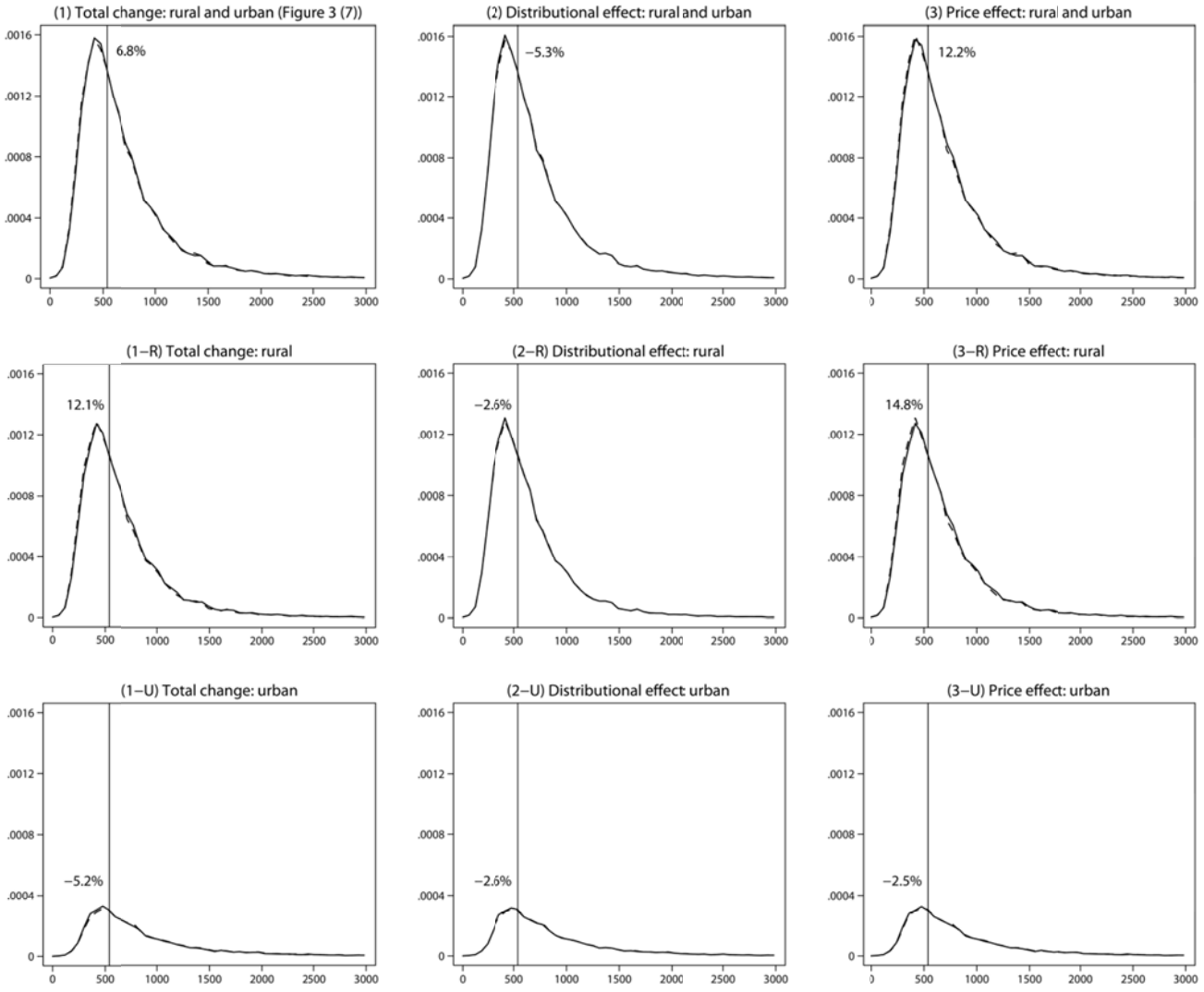


Figure 5: Decomposition by sectors and channels of impact (1983-1993/94)

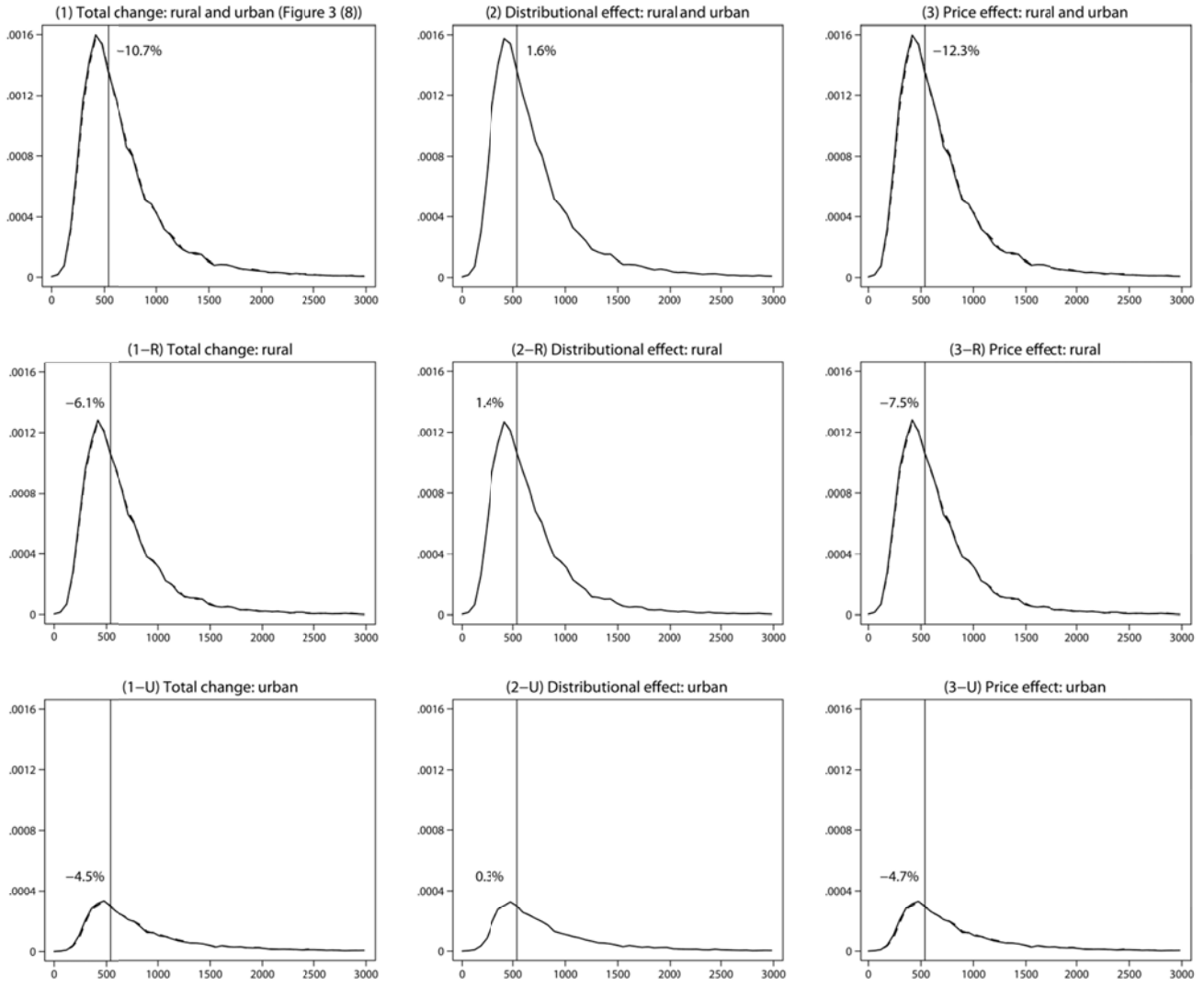
A: Impact of Literacy Rate (1983-1993/94)



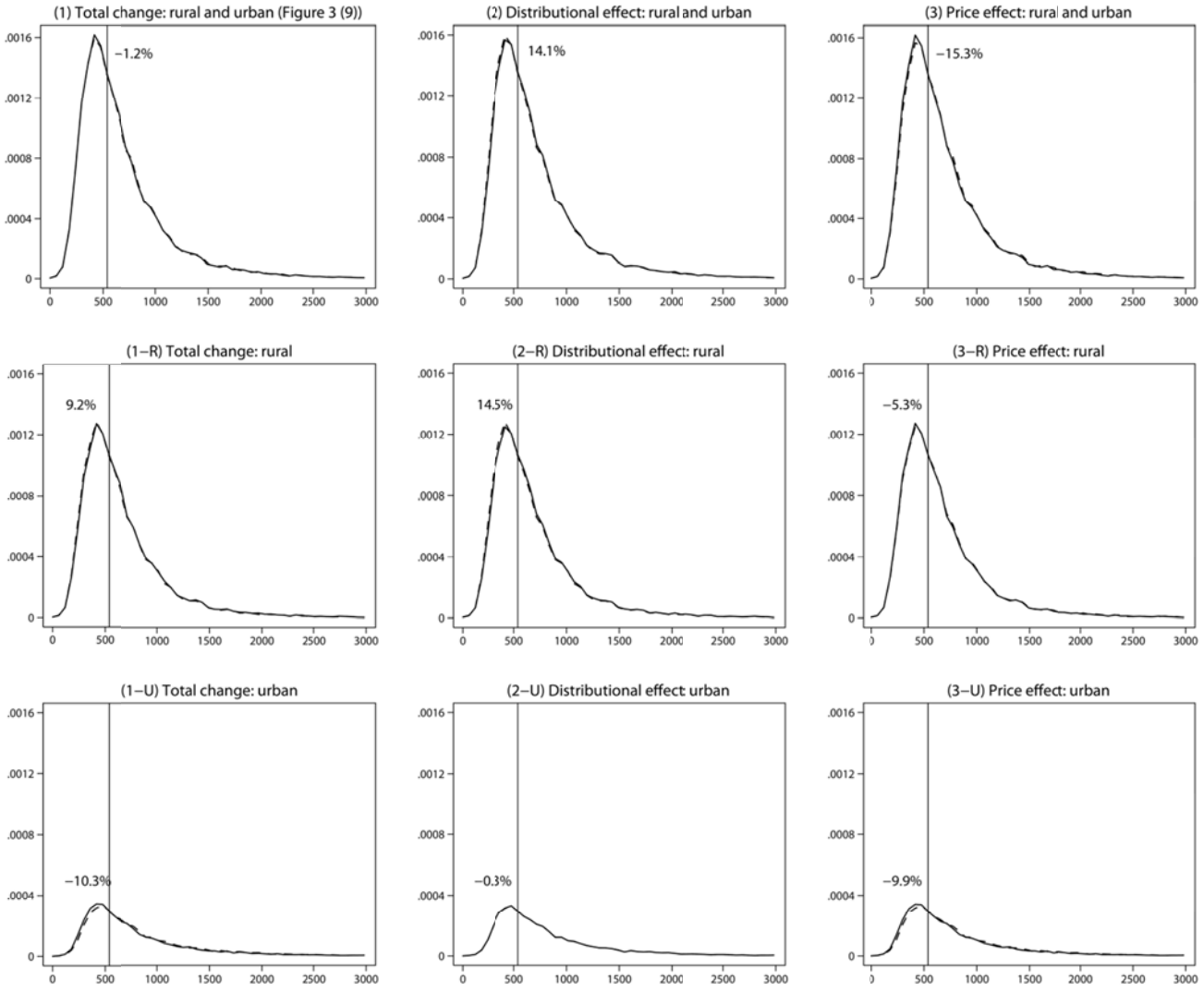
B: Impact of Non-Agric. Self-Employment (1983-1993/94)



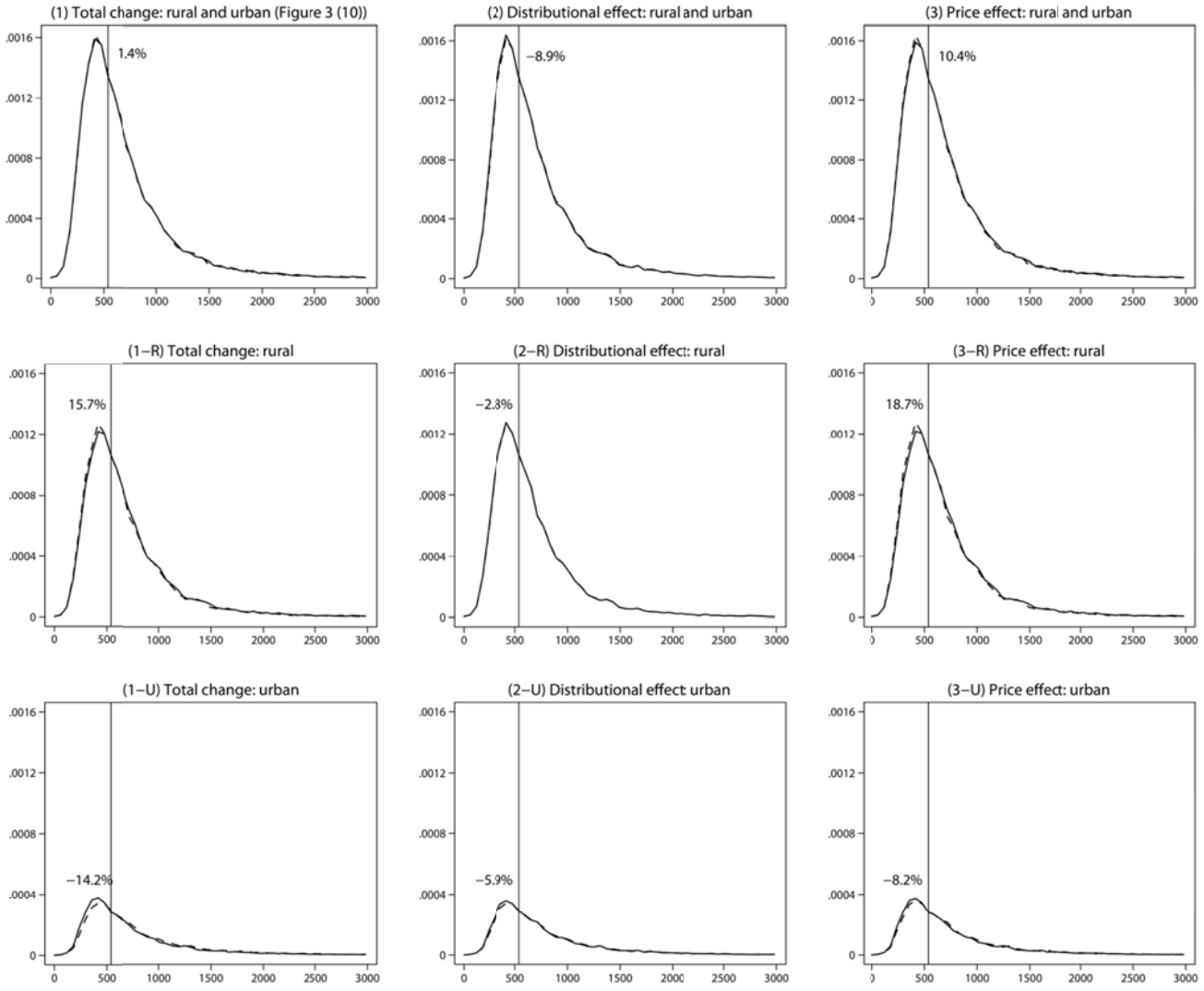
C: Impact of Agric. Wage Employment (1983-1993/94)



D: Impact of Non-Agric. Casual Employment (1983-1993/94)



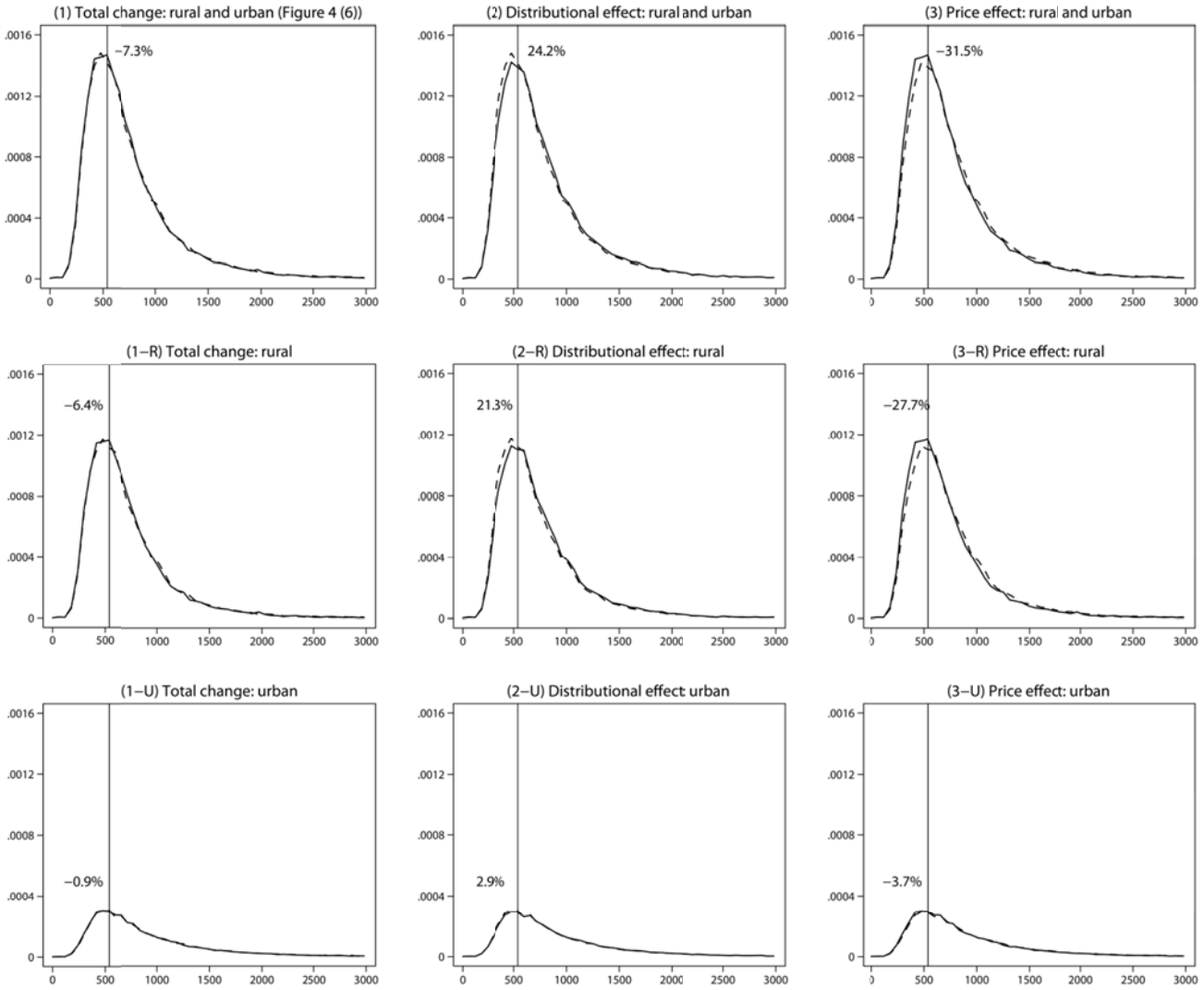
E: Impact of Non-Agric. Regular Employment (1983-1993/94)



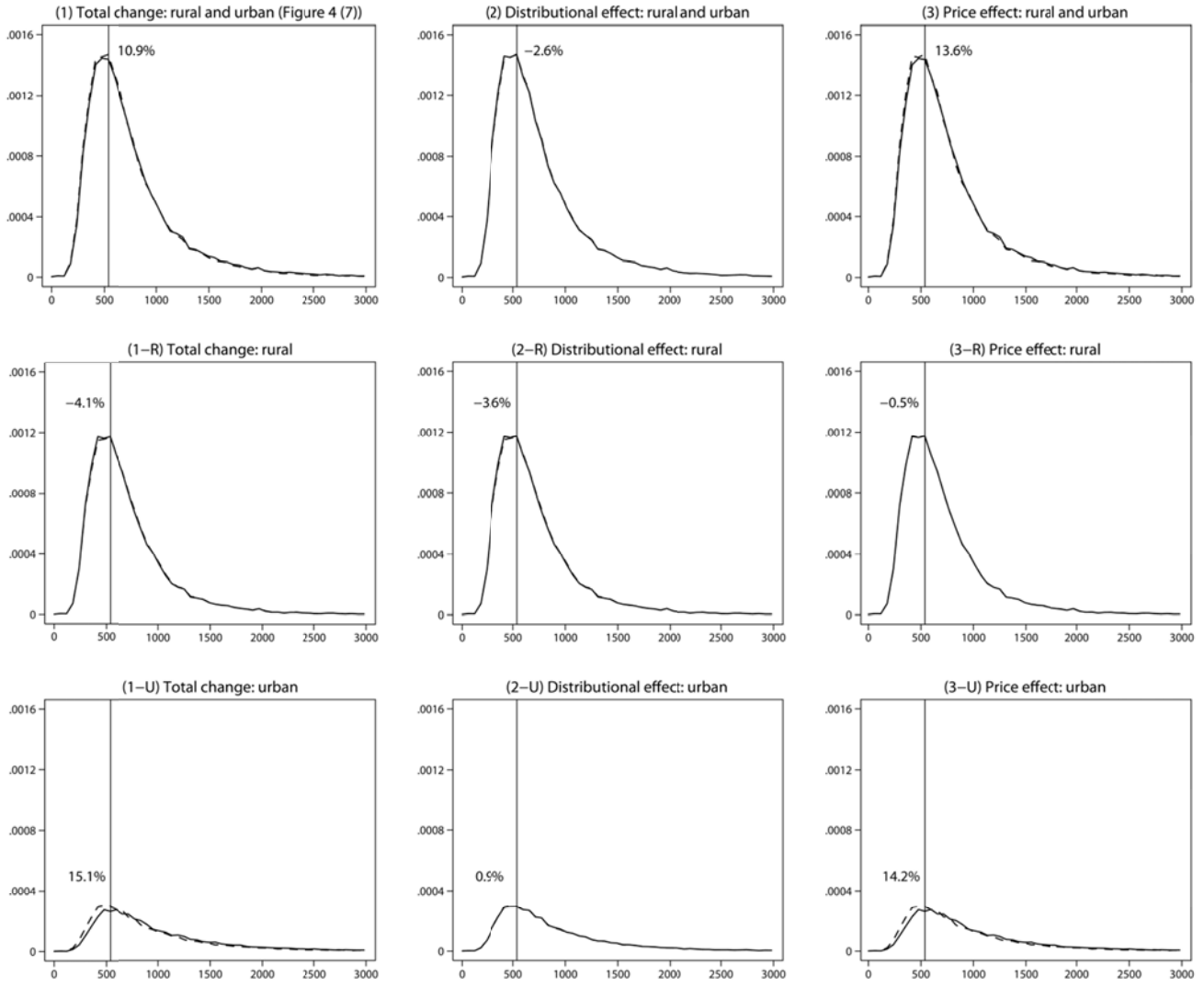
Note: Figures in graphs are the percentage of the total poverty decline during the period.

Figure 6: Decomposition by sectors and channels of impact (1993/94-2004/05)

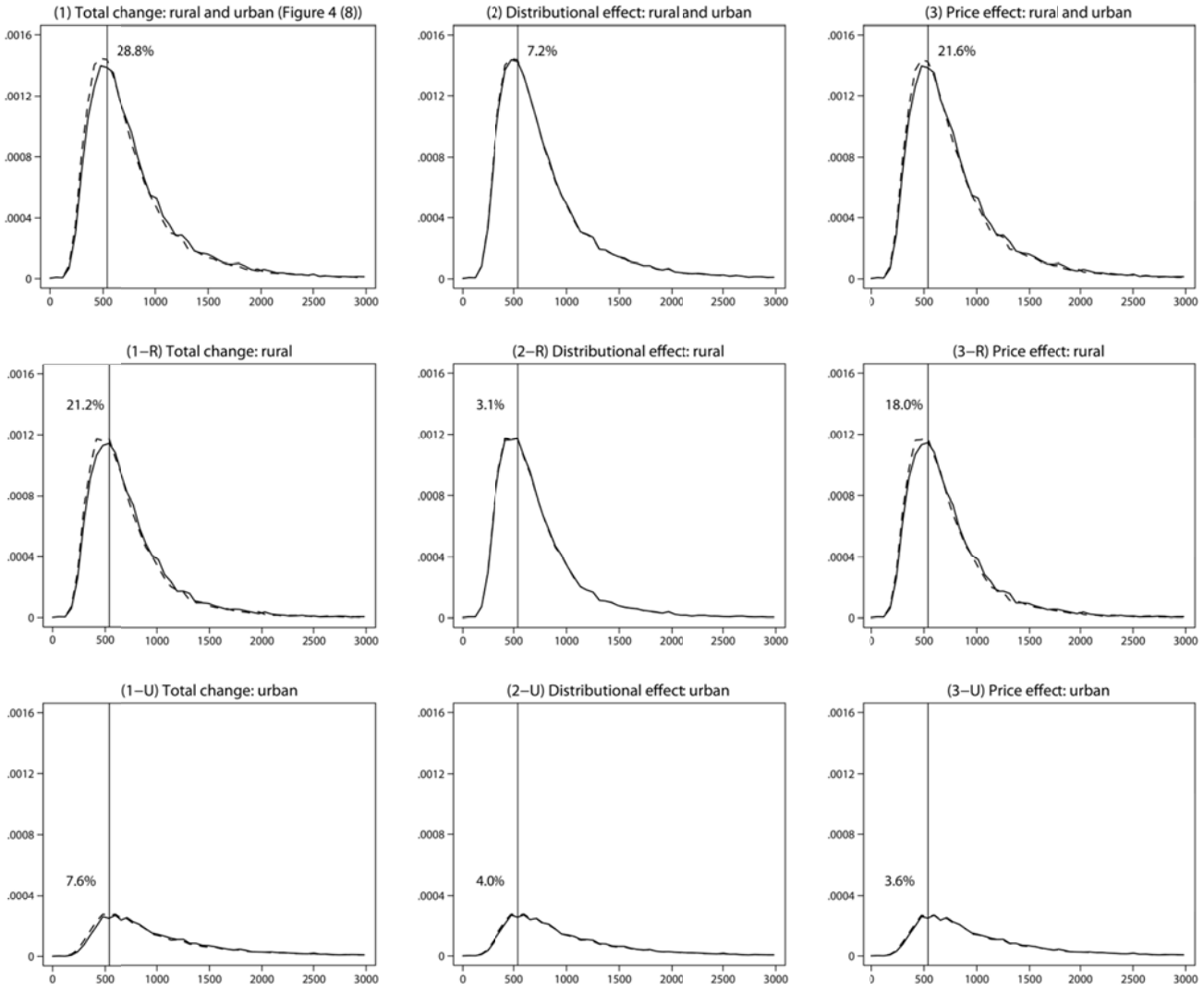
A: Impact of Literacy Rate (1993/94-2004/05)



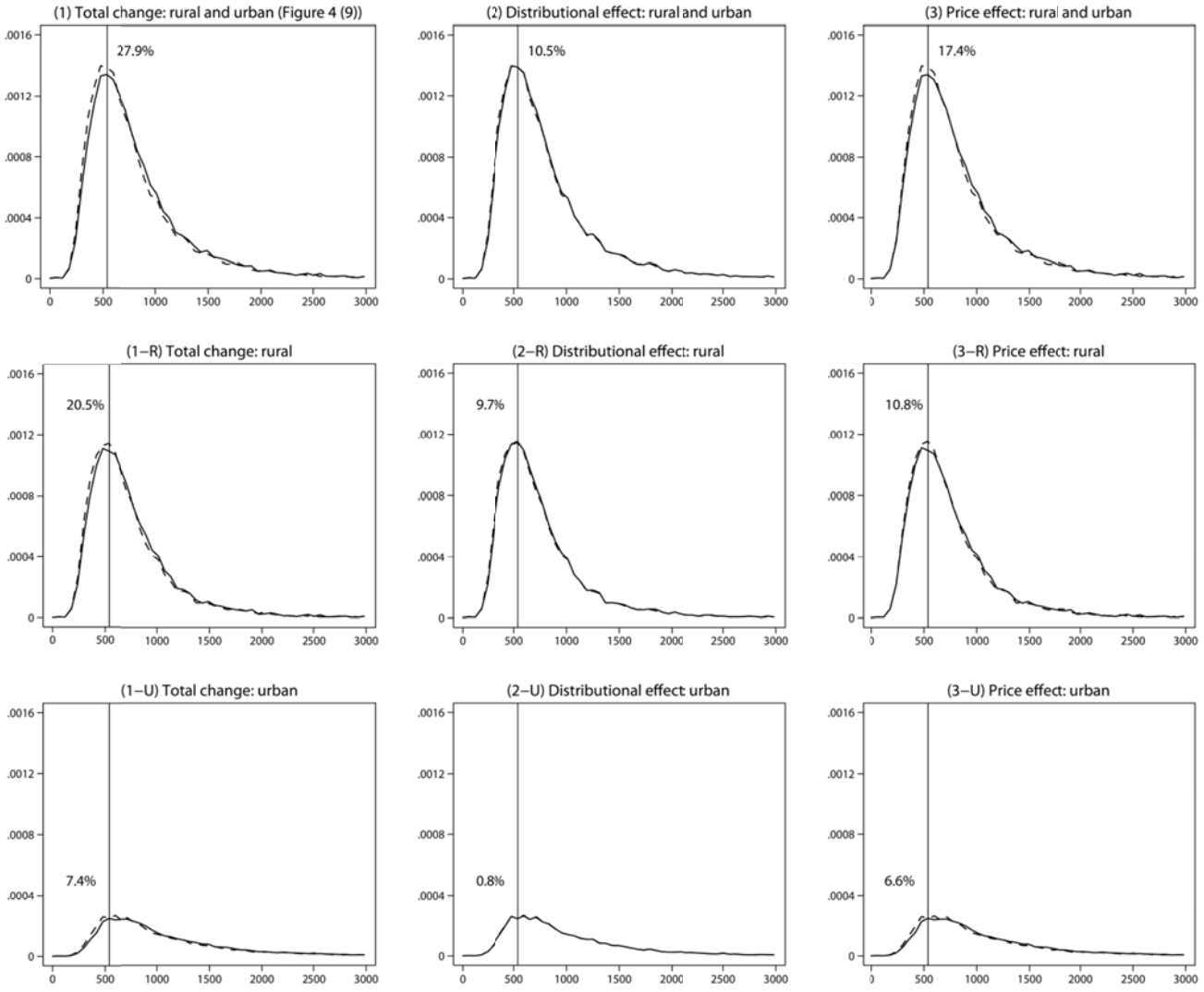
B: Impact of Non-Agric. Self-Employment (1993/94-2004/05)



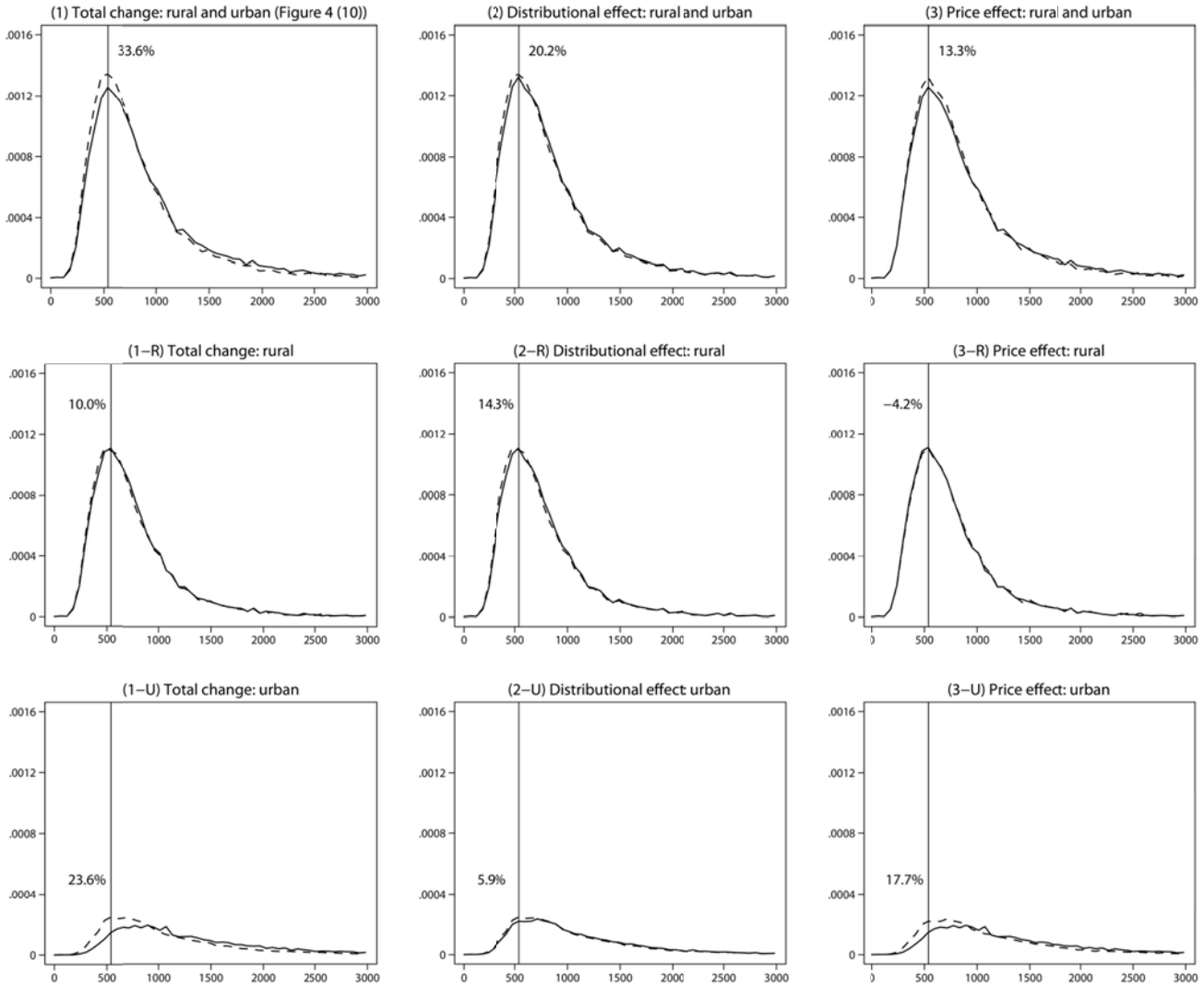
C: Impact of Agric. Wage Employment (1993/94-2004/05)



D: Impact of Non-Agric. Casual Employment (1993/94-2004/05)



E: Impact of Non-Agric. Regular Employment (1993/94-2004/05)



Note: See the note in Figure 5.

Table 1: Changes in economic conditions in India

	Rural			Urban		
	1983	1993/94	2004/05	1983	1993/94	2004/05
Monthly per capita expenditure (in 2004 Rs.)	549.0	604.9	680.7	581.3	658.2	757.6
Education level (%)						
Primary completed	11.1	10.7	12.8	15.7	12.6	12.4
Middle completed	8.3	11.1	15.0	16.6	16.6	18.2
Secondary completed	4.7	8.8	12.3	17.7	24.2	25.3
University completed	0.8	1.6	3.3	6.7	10.3	16.2
Wage rates (2004 Rs.)						
Agricultural sector	40.6	52.3	67.2	34.9	48.2	54.5
Non-agricultural sector	90.8	74.5	150.1	102.6	117.3	165.2
Empolyment (%)						
Agricultural sector	78.2	75.5	69.4	11.9	10.4	7.5
Self employment	*46.1*	*42.7*	*41.6*	*6.7*	*5.5*	*4.7*
Regular employment	*2.1*	*0.9*	*0.7*	*0.5*	*0.4*	*0.3*
Casual employment	*30.0*	*31.9*	*27.1*	*4.6*	*4.5*	*2.5*
Non-agricultural sector	19.9	22.9	28.3	82.0	84.3	87.3
Self employment	*10.0*	*11.2*	*13.8*	*30.4*	*32.6*	*37.4*
Regular employment	*5.3*	*5.9*	*6.7*	*38.9*	*38.7*	*37.6*
Casual employment	*4.5*	*5.8*	*7.8*	*12.7*	*13.0*	*12.4*

Note: All figures are adjusted using sampling weights.

Table 2: Summary statistics of empirical variables

Panel A: Rural Areas

	1983		1993/94		2004/05	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of monthly per capita expenditure	6.340	0.589	6.439	0.521	6.560	0.481
Average schooling years						
Members aged 15 to 29	2.100	3.544	2.647	4.079	3.304	4.440
Members aged 30 to 44	1.473	3.223	1.976	3.763	2.724	4.335
Members aged 45 to 59	0.545	1.982	0.821	2.577	1.204	3.126
Household size	6.607	3.165	6.094	2.824	6.049	2.875
Age composition						
15 to 29	0.248	0.205	0.260	0.214	0.254	0.212
30 to 44	0.165	0.158	0.183	0.169	0.198	0.176
45 to 59	0.110	0.152	0.115	0.166	0.118	0.171
60 over	0.068	0.131	0.069	0.141	0.074	0.152
Female ratio	0.493	0.168	0.487	0.167	0.492	0.166
Scheduled castes / tribes	0.286	0.452	0.305	0.461	0.314	0.464
Religion						
Muslim	0.087	0.282	0.094	0.292	0.105	0.306
Christian	0.020	0.139	0.016	0.127	0.016	0.125
Sikh	0.021	0.142	0.020	0.139	0.021	0.143
Buddhist	0.006	0.074	0.006	0.078	0.006	0.076
Jaina	0.001	0.033	0.001	0.029	0.001	0.027
Other religions	0.002	0.048	0.003	0.054	0.003	0.057
Landless dummy	0.083	0.275	0.129	0.335	0.043	0.204
Region-level characteristics						
Literacy rate	0.320	0.151	0.412	0.158	0.509	0.162
Ratio of the non-agric. self-employed	0.113	0.054	0.127	0.063	0.160	0.071
Ratio of the agric. wage workers	0.294	0.132	0.294	0.135	0.245	0.147
Ratio of the non-agric. casual workers	0.050	0.046	0.069	0.074	0.103	0.084
Ratio of the non-agric. regular workers	0.072	0.053	0.077	0.057	0.084	0.066
Price index*	1.016	0.109	1.016	0.091	1.003	0.092
Ratio of landless	0.085	0.082	0.129	0.111	0.043	0.051
Log of population	14.051	0.474	14.006	0.349	14.323	0.579
No. of observations	65,646		57,381		63,720	

Panel B: Urban Areas

	1983		1993/94		2004/05	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Log of monthly per capita expenditure	6.423	0.600	6.540	0.588	6.705	0.610
Average schooling years						
Members aged 15 to 29	4.074	4.808	4.182	5.135	4.803	5.442
Members aged 30 to 44	3.806	4.962	4.654	5.423	5.290	5.667
Members aged 45 to 59	1.729	3.703	2.267	4.380	3.028	5.013
Household size	6.387	3.013	5.706	2.567	5.632	2.805
Age composition						
15 to 29	0.291	0.230	0.290	0.237	0.290	0.238
30 to 44	0.176	0.168	0.205	0.182	0.221	0.192
45 to 59	0.103	0.148	0.112	0.163	0.128	0.177
60 over	0.058	0.120	0.060	0.129	0.070	0.145
Female ratio	0.478	0.182	0.477	0.183	0.482	0.179
Scheduled castes / tribes	0.152	0.359	0.154	0.361	0.175	0.380
Religion						
Muslim	0.164	0.370	0.160	0.367	0.165	0.371
Christian	0.030	0.170	0.025	0.155	0.023	0.149
Sikh	0.012	0.111	0.014	0.117	0.014	0.119
Budhist	0.007	0.086	0.010	0.099	0.009	0.096
Jaina	0.010	0.101	0.007	0.086	0.011	0.103
Other religions	0.007	0.081	0.003	0.055	0.002	0.048
Landless dummy	0.481	0.500	0.527	0.499	0.259	0.438
Region-level characteristics						
Literacy rate	0.640	0.144	0.712	0.116	0.774	0.126
Ratio of the non-agric. self-employed	0.311	0.115	0.335	0.089	0.386	0.118
Ratio of the agric. wage workers	0.037	0.057	0.036	0.045	0.019	0.037
Ratio of the non-agric. casual workers	0.121	0.074	0.126	0.066	0.133	0.085
Ratio of the non-agric. regular workers	0.418	0.138	0.409	0.122	0.381	0.135
Price index	1.028	0.070	1.031	0.095	1.013	0.128
Ratio of landless	0.483	0.213	0.528	0.203	0.260	0.160
Log of population	13.285	0.902	13.913	0.822	13.636	1.141
No. of observations	35,473		38,508		36,509	

Note: All statistics are adjusted using sampling weights. Except that the price index is the state-level variable, all the region-level characteristics are aggregated at the district level.

Table 3: Estimation results for monthly per-capita expenditures (OLS)

Panel A: Rural Areas

	1983		1993/94		2004/05	
			Difference from the coefs. in 1983			
Household-level Variables						
Ave. sch. years: aged 15 to 29	0.019	(0.001)**	-0.007	(0.001)**	-0.011	(0.001)**
Ave. sch. years: aged 30 to 44	0.028	(0.001)**	-0.006	(0.001)**	-0.008	(0.001)**
Ave. sch. years: aged 45 to 59	0.025	(0.001)**	-0.002	(0.002)	-0.005	(0.002)**
Household size	-0.020	(0.001)**	-0.009	(0.002)**	-0.014	(0.002)**
Aged 15 to 29	0.440	(0.015)**	0.001	(0.020)	0.033	(0.020)
Aged 30 to 44	0.544	(0.021)**	0.014	(0.027)	0.104	(0.027)**
Aged 45 to 59	0.572	(0.018)**	-0.096	(0.023)**	0.022	(0.022)
Aged over 60	0.430	(0.017)**	-0.030	(0.023)	0.106	(0.022)**
Female ratio	-0.090	(0.015)**	0.018	(0.019)	0.043	(0.019)*
Scheduled castes / tribes	-0.185	(0.006)**	0.030	(0.007)**	0.027	(0.007)**
Muslim	-0.031	(0.010)**	0.025	(0.013)*	0.023	(0.012)
Christian	-0.014	(0.016)	-0.052	(0.023)*	0.093	(0.023)**
Sikh	0.220	(0.019)**	-0.115	(0.021)**	-0.170	(0.020)**
Budhist	-0.092	(0.025)**	-0.097	(0.035)**	0.112	(0.039)**
Jaina	0.073	(0.050)	0.146	(0.077)	0.105	(0.075)
Other religions	0.073	(0.047)	-0.157	(0.063)*	-0.028	(0.054)
Landless dummy	-0.035	(0.008)**	0.000	(0.011)	0.084	(0.015)**
District-level Variables						
Literacy rate	0.273	(0.030)**	0.002	(0.029)	-0.104	(0.031)**
Self-employed in non-agric.	-0.063	(0.050)	0.173	(0.062)**	0.164	(0.060)**
Wage workers in agric.	-0.001	(0.029)	-0.040	(0.034)	0.072	(0.034)*
Casual workers in non-agric.	0.221	(0.067)**	-0.101	(0.072)	0.007	(0.071)
Regular workers in non-agric.	0.021	(0.069)	0.330	(0.084)**	0.254	(0.082)**
Price index	-0.671	(0.033)**	0.136	(0.053)**	0.492	(0.053)**
Landless	0.214	(0.035)**	-0.063	(0.041)	-0.095	(0.062)
Log of population	-0.042	(0.009)**	0.067	(0.011)**	0.080	(0.011)**
Intercept	7.349	(0.136)**	-1.003	(0.191)**	-1.505	(0.187)**
No. of observations	186,684					
Adjusted R-squared	0.396					

Panel B: Urban Areas

	1983		1993/94		2004/05	
			Difference from the coefs. in 1983			
Household-level Variables						
Ave. sch. years: aged 15 to 29	0.011	(0.001)**	-0.003	(0.001)**	-0.010	(0.001)**
Ave. sch. years: aged 30 to 44	0.029	(0.001)**	0.001	(0.001)	0.003	(0.001)*
Ave. sch. years: aged 45 to 59	0.025	(0.001)**	-0.002	(0.001)	0.002	(0.002)
Household size	-0.048	(0.002)**	-0.013	(0.003)**	-0.014	(0.005)**
Aged 15 to 29	0.494	(0.022)**	-0.079	(0.032)*	0.006	(0.037)
Aged 30 to 44	0.524	(0.030)**	-0.019	(0.043)	-0.048	(0.049)
Aged 45 to 59	0.437	(0.029)**	0.009	(0.041)	0.129	(0.048)**
Aged over 60	0.324	(0.028)**	0.054	(0.038)	0.301	(0.044)**
Female ratio	-0.161	(0.019)**	0.025	(0.027)	0.082	(0.030)**
Scheduled castes / tribes	-0.124	(0.010)**	-0.012	(0.014)	-0.063	(0.016)**
Muslim	-0.063	(0.011)**	0.020	(0.014)	0.004	(0.017)
Christian	0.064	(0.031)*	-0.031	(0.040)	-0.002	(0.039)
Sikh	0.129	(0.029)**	-0.087	(0.035)*	-0.033	(0.040)
Budhist	-0.031	(0.046)	-0.104	(0.054)	0.057	(0.056)
Jaina	0.194	(0.046)**	0.001	(0.060)	0.098	(0.061)
Other religions	0.055	(0.046)	-0.101	(0.103)	0.074	(0.076)
Landless dummy	-0.008	(0.008)	-0.014	(0.011)	0.022	(0.013)
District-level Variables						
Literacy rate	0.027	(0.039)	0.267	(0.050)**	0.230	(0.053)**
Self-employed in non-agric.	0.059	(0.068)	-0.039	(0.112)	0.250	(0.102)*
Wage workers in agric.	0.010	(0.115)	-0.613	(0.182)**	0.339	(0.167)*
Casual workers in non-agric.	0.197	(0.082)*	-0.410	(0.124)**	-0.051	(0.114)
Regular workers in non-agric.	0.279	(0.081)**	-0.116	(0.122)	0.281	(0.113)*
Price index	-0.716	(0.105)**	-0.193	(0.078)*	-0.204	(0.083)*
Landless	0.075	(0.031)*	0.031	(0.038)	-0.043	(0.045)
Log of population	0.023	(0.005)**	-0.028	(0.006)**	0.030	(0.006)**
Intercept	6.570	(0.137)**	0.632	(0.156)**	-0.411	(0.143)**
No. of observations	110,490					
Adjusted R-squared	0.427					

Note: All estimates are adjusted using sampling weights. Huber-White heteroskedasticity-robust standard errors are in parentheses. The coefficient estimates in the second and third columns are those on the interaction terms with the year dummy. Region fixed effects are controlled, but not reported here. Single asterisk (∗) and double asterisks (∗∗) denote that the coefficient is statistically significant at the 10%, 5%, and 1% levels, respectively.