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Accounting for growing urban-rural welfare gaps in India

Mehtabul Azam

Department of Economics, Oklahoma State University, Stillwater, OK 74078, United States

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ABSTRACT

Using data from the large-scale consumption expenditure surveys collected by Indian National Sample Survey Organization, we examine the urban-rural welfare gap in India in 1983, 1993, 2004, and 2011 across the entire consumption distribution. Our main measure of welfare is spatially adjusted per capita consumption expenditure. Using the unconditional quantile regression decomposition, we find that the majority of the observed gap in each year is explained by the urban advantage in endowments. Difference in educational distributions across urban and rural areas explains a significant part of the gap observed in each year. Over time, there has been a gradual widening of the urban-rural gap. A decomposition of the change in the gap over 1983–2011 suggests that increasing gap between urban and rural areas in the share of tertiary educated population accounts for a significant part of the observed increase in the gap.

1. Introduction

Using data from the large-scale consumption expenditure surveys collected by National Sample Survey Organization (NSSO), we examine the urban-rural welfare gap in India in 1983, 1993–94, 2004–05, and 2011–12 across the entire distribution. Since some of the observed differences across urban and rural areas are mere reflections of price differences across urban and rural areas and across states, we account for spatial differences across states and across urban and rural areas using state wise urban/rural poverty lines.[1] We use the unconditional quantile regression decomposition technique, based on the recentered influence functions proposed in Firpo, Fortin, and Lemieux (2009), to examine how much of the observed urban-rural welfare gap at each of the four point of time is accounted for by differences in distribution of productive characteristics (e.g. education, land) across the entire distribution. We further decompose the contribution of different characteristics to the observed gap at each point of time. Moreover, we examine the factors driving the change in urban-rural gap between 1983 and 2011 by carrying out a decomposition exercise for the change in urban-rural gap.

Urban-rural welfare gap in India is important, as there is a growing concern that the urban India has benefited disproportionately from the high economic growth witnessed since the introduction of market liberalization in 1991. This is partially driven by a slow growth of urban share in total population and a sharp decline of agriculture share in total GDP. The percentage of Indian population residing in urban areas increased slowly from 23.3 percent in 1981 to 25.7 in 1991 to 27.8 in 2001 to 31.2 percent in 2011 (Census of India).[2] At the same time, the share of agriculture in GDP, which has been the main source of livelihood in rural areas, decreased from 34 percent in 1981 to 18 percent in 2011.

An increasing urban-rural welfare gap will accentuate the dichotomy between the two sectors. It may potentially lead to migration to the existing urban centers leading to pressure on the infrastructure of the existing urban centers, and growing slums in large urban centers. Moreover, it may accentuate the belief that the growth has been urban biased and may undermine popular support for further reform.[3]

E-mail address: mazam@okstate.edu

[1] Ravallion, Chen, and Sangraula (2007) report that urban poverty lines are frequently 40–50 percent higher than rural poverty lines, with the difference reaching as high as 79 percent. For India, the all India urban poverty line was 23 percent higher than the all India rural poverty line in 2011–12. In addition to urban-rural differences, there is a considerable variation across states. For example, the 2011–12 rural poverty line for the state of Punjab was 37 percent higher than the 2011–12 rural poverty line for the state of Uttar Pradesh. If the higher cost of basic needs in urban areas is ignored then it will lead to overestimation of the urban-rural welfare gap.

[2] The urban population shares of China and India were about the same (about 25 percent) in 1988, but the share exceeds 50% in 2011 for China (source: World Development Indicators).

[3] The urban-rural dichotomy also has been witnessed in the west in recent political events. For example, in 2016 London and many other cities in UK voted to remain in the EU, while Hillary Clinton won most of urban America in 2016 presidential election in the US (source: http://www.bbc.com/news/business-38642302).

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Studying the evolution of urban-rural welfare gap during the past three decades (1983–2012) is quite interesting as considerable economic growth and policy changes took place during this period. While the yearly average GDP growth was 5.8 percent during 1980–1990 and 5.6 percent during 1991–2004 (Kohli, 2006), it accelerated to 8.2 percent during 2003–2011 (Government of India, 2017). In addition to the impressive growth, this period also witnessed considerable policy changes that may have altered the nature of the urban-rural welfare gap. In 1991, India introduced significant set of reforms that completely changed the direction of economic policies.[4] India moved away from a state-led closed economy framework in favor of greater integration with the world economy, lesser controls on private business activity especially in manufacturing, and substantially lower entry barriers to prospective entrants, whether domestic or foreign (Kotwal et al., 2011). Prior to the introduction of this new economic regime in 1991, there was widespread apprehension that liberalization and increasing reliance on market forces would lead to increase in regional, rural-urban and vertical inequalities in India (Pal & Ghosh, 2007). The period 2004–05 to 2009–10 witnessed an increase in social-sector spending both by the state and central governments. The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one such example. According to the NSS 66th and 61st rounds of data, there was an 8-fold increase in public work participation in 2009–10 from 2004–05 (Himanshu & Sen, 2014).[5]

Importantly, the economic growth witnessed during the last three decades has also been associated with an increasing inequality. Using national accounts and NSS data up to 1999, Chaudhuri and Ravallion (2006) examine the patterns of economic growth in India and China and show uneven sectoral growths, with primary sector growth rates lagging behind growth rates in the secondary and tertiary sectors in both China and India, and with relatively slower growth in rural incomes than urban incomes. A number of other studies use the consumption rounds collected by NSSO to document poverty and inequality in India (Deaton & Dréze, 2002; Sen & Himanshu., 2004a; Sen & Himanshu, 2004b). Deaton and Dréze (2002) find strong evidence of divergence in per capita consumption across states during the 1990s. Their estimates of state-wise per capita expenditure reveal increasing urban-rural inequality in per capita expenditure at all-India level.

Although, a considerable amount of literature exists that document the poverty and inequality in India, comparatively less attention has been paid to the urban-rural welfare gap.[6] Using six rounds of the large-scale Employment and Unemployment Surveys collected by NSSO between 1983 and 2009–10, Hnatkovska and Lahiri (2014) analyze the patterns of educational attainments, occupational choices, and wage earnings of rural and urban full-time workers in age group 16–65.[7] They impute years of schooling of full-time workers from education levels reported in the data, and report that the average years of education of the urban worker was 164 percent higher than the typical rural worker in 1983 (5.83 years to 2.20 years). This advantage declined to 78 percent by 2009–10 (8.42 years to 4.72 years). They also use five education categories in an ordered probit model with only rural dummy as explanatory variable. They find that for secondary and above education (the top education category in their re-categorization) where rural workers are underrepresented, the rural-dummy became more negative over time suggesting some further divergence at the top end of the education distribution. They also report that the mean wage premium of the urban worker over the rural worker fell significantly from 51 percent to 27 percent while the corresponding median wage premium declined from 59 percent to 13 percent between 1983 and 2010. It is worth mentioning that the majority of employment in India is self-employment, and hence excluded from any analysis that uses wages. The NSSO employment surveys report wages for only a quarter of 16-65 aged individuals in India.[8] Hence, a comparison of the urban-rural wage distributions is inadequate for any inference about differences in welfare distributions. Munshi and Rosenzweig (2016) report that the urban-rural wage gap, corrected for cost-of-living differences has remained large for decades. At the same time, the internal migration is very low in India, both in absolute terms as well as relative to other countries of comparable size and level of economic development. They explain the low migration with the possible loss of caste based rural insurance networks and the absence of formal insurance. The closest to our study is Chamarbagwala (2010) who looks at the urban-rural welfare gap in India in 1993–94 and 2004 using the NSS consumption rounds. She uses a quantile regression based decomposition proposed by MMachado and Mata (2005) to bifurcate the total difference into aggregated composition and returns effects. She does not further disaggregate the composition and returns effect into contribution of different characteristics. She reports that the urban-rural welfare gap was fairly convex across the welfare distribution in 1993–1994; however, it became more concave in 2004, with the gap narrowing for the lowest and highest quintiles and widening for the middle three quintiles.

In addition to the above mentioned papers that directly focus on explaining the urban-rural wage or welfare gap, a strand of literature on inequality in India do examine inequality and poverty in the context of the rural and urban sectors separately. This literature either report mean consumption expenditure and/or inequality indicators for urban and rural areas separately. For example, Bhalla (2003) report that both urban and rural Gini coefficients declined between 1993–1994 and 1999–2000. The Government of India, 2001 National Human Development Report published the state-wise urban/rural Gini coefficients for the years 1983, 1993–1994 and 1999–2000. Motiram and Sarma (2014) use four rounds of NSS data to examine inequality and polarization in India. They report average and median per capita consumption expenditure and polarization indices for urban and rural areas. Using NSS data from 1983, 1993–94, and 2004–05, Cain, Hasan, Magsombol, and Tandon, (2010) examine the change in inequality in urban and rural areas separately. They focus on explaining changes in inequality over time using a regression-based decomposition. Using data from 1993–94 and 2004–05 and rural and urban areas as two groups, Vakulabharanam (2010) decompose the total Gini coefficient in 1993–94 and 2004–05 into intra and inter-group inequality. Motiram and Vakulabharanam (2012) also report state wise rural and urban Gini for 1993–94, 2004–05, and 2009–10. Using Theil

[4] For an overview of India's reform agenda since the early 1990s, see Kotwal, Ramaswami, and Wadhwa (2011).

[5] The central government launched MGNREGA in 2006 with the objective of "enhancing livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year, to every household whose adult members volunteer to do unskilled manual work."

[6] The Indian Finance Minister Arun Jaitley acknowledged a considerable gap in a written reply in 2016. According to the reply the per capita net value added for 2011–12 at current basic prices (base year 2011–12) was Rs 1,01,313 for the urban areas and Rs 40,772 for the rural areas (source: https://timesofindia.indiatimes.com/city/delhi/Big-gap-in-per-capita-income-in-urban-and-rural-areas/articleshow/52207415.cms).

[7] NSSO regularly collects two type of surveys. The Consumer Expenditure Survey (referred as Schedule 1.0) and Employment and Unemployment Survey (referred as Schedule 10). Employment and Unemployment Surveys are labor force surveys, while Consumer Expenditure Surveys capture detailed consumption expenditure. The entire poverty and inequality literature in India is based on Consumer Expenditure Surveys, while Employment and Unemployment Surveys are used to examine labor market aspects including wage inequality.

[8] For example, Hnatkovska and Lahiri (2014) sample of wage workers contains between 57,440 and 67,322 workers in different years (refer to Table 3 of Hnatkovska & Lahiri (2014)). In contrast, the number of individuals in 16-65 age group in NSS Employment and Unemployment Surveys are between 298,758 and 373,270 in different years.

index as inequality measure and urban and rural areas as two groups, they also decompose the total inequality in India into intra and inter-group inequality.

Internationally, urban-rural dichotomy has attracted attention since the seminal work of Lewis (1954) that argued that workers in rural areas, in deciding to migrate to urban areas, compared their average product in rural family output (which they shared) with their marginal product in urban output, producing a situation with excess and surplus rural labor. In addition to the studies that focus on labor market dichotomy, there also exists an empirical literature studying urban-rural welfare gaps in different countries that relate urban-rural welfare differences to individual and household characteristics. For example, Knight and Song (1999), Yang and Zhou (1999), and Sicular, Ximing, Gustafsson, and Shi (2007) study the urban-rural welfare gap in China; Nguyen, Albrecht, Vroman and Westbrook (2003) and Le and Booth (2014) study urban-rural welfare gap in Vietnam; Fang and Sakellariou (2013) examine urban-rural welfare gap in Thailand; and Agyire-Tettey, Ackah, and Asuman (2018) examine urban-rural welfare gap in Ghana. Young (2013) uses Demographic Health Survey data from 65 countries and find that the urban-rural gap in living standards is a major source of inequality, accounting for 40% of average inequality and much of the cross-country variation in levels of inequality. He also finds that countries with unusually high levels of inequality are those where the urban-rural gap is unusually large.

This paper contributes to the existing literature in the following ways. First, we document the urban-rural gap in welfare, as measured by spatially price adjusted per capita consumption expenditure, across the entire distribution at four points of time roughly separated by a decade. Therefore, we cover both pre- and post-economic reform periods of India. Thus, we provide insights into the changing nature of urban-rural welfare gap across the entire distribution and contrast the trends from pre-economic reforms India to and post-economic reforms India.[9] Second, we establish that the urban-rural gap witnessed at each point of time throughout the distribution cannot be accounted by the differences in productive characteristics. Third, through our decomposition of the observed gap at different quantiles, we answer the question what fraction of the gap in urban-rural welfare at each quantile are attributable to differences in household characteristics or differences in returns to those characteristics. We further decompose the aggregated contribution of household characteristics or returns into contribution of individual household characteristics. We also compare the results of urban-rural welfare gaps from the NSS data with the results from another data source, India Human Development Survey (IHDS) for 2004–05 and 2011–12. Unlike the NSS surveys, IHDS surveys collected data on both household consumption expenditures and incomes. Thus, we estimate urban-rural welfare gaps in 2004–05 and 2011–12 using both per capita consumption expenditure and per capita household income as the measures of welfare, to provide further insights into the robustness of our results to an alternative measure of welfare. Finally, we account for the factors that were behind the change in the urban-rural gap overtime by carrying out a decomposition exercise for the change in the urban-rural gap witnessed between 1983 and 2011.

The main findings of the paper are following. First, urban-rural welfare gap in India, as measured by the gap in the spatially adjusted monthly per capita consumption expenditure, has been increasing over time and this increase is observed across the consumption distribution except for the lower one-fourth of the consumption distribution. Importantly, the gap at each of the four points of time is heterogeneous and monotonically increases with the quantiles: the gap between urban rich and rural rich is larger compared to the gap between urban poor and rural poor. Similarly, over time the increase in the gap is larger at the higher quantiles. Second, we find that majority of the urban-rural welfare gap, in each of the four years, is explained by differences in households' endowments. Third, we find that difference in educational distributions across urban and rural areas accounts for the majority of the endowment effects in each year. Moreover, specifically difference in tertiary education achievement between urban and rural areas is responsible for the majority of the contribution of education to the urban-rural gap, and its absolute contribution to the gap increased over time. Finally, our decomposition exercise of the change in the gap confirms that increase in difference in tertiary education achievement is an important factor in widening the urban-rural gap between 1983 and 2011.

The remainder of the paper is organized as follows. The next section describes the data. Section 3 describes the empirical methodology, and Section 4 presents the results. Section 5 presents the results using an alternative measure of welfare from another source, and Section 6 concludes.

2. Data

The analysis is based on household-level data from the Household Consumer Expenditure Survey (Schedule 1.0) collected by the National Sample Survey Organization (NSSO), Government of India. We use four rounds of large-scale NSS consumption surveys roughly separated by a decade: round 38, carried out in 1983; round 50, carried out in 1993–94; round 61, carried out in 2004–2005; and round 68 type-1, carried out in 2011–12 (referred as 1983, 1993, 2004, and 2011, respectively in this paper).[10] The sample of households is drawn based on a stratified random sampling procedure and all the analysis is done using survey weights. Our urban-rural classification is based on NSS urban-rural distinction, which follows Census of India classification.[11] Panel A of Table-1 provides the sample size (number of households surveyed) in each

[9] Chamarbagwala (2010) documents the gap in per capita consumption expenditure across the entire consumption distribution but her study covers only post-reform period as she examines the gap in 1993–94 and 2004 only. The NSSO documents (e.g. NSSO, 2013) and literature on inequality do present the average consumption in urban and rural areas, that can be used to calculate urban-rural gap but only at the mean.

[10] NSSO collects large-scale surveys every five year. These large-scale surveys are also known as "quinquennial rounds." There are seven large-scale consumption surveys that are available: 1983 (38th round), 1987–88 (43rd round), 1993–94 (50th round), 1999-00 (55th round), 2004-05 (61st round), 2009-10 (66th round), and 2011-12 (68th round). The first two quinquennial surveys conducted during 1972–1973 (27th round) and 1977–1978 (32nd round) are not available for public use. The 2011-12 is the ninth survey of quinquennial series. The 2011-12 survey was collected only after two years (compared to the usual five year interval) of the last 2009–10 survey by a decision of the National Statistical Commission (NSSO (2013)). There has been a considerable debate about comparability of 1999–00 with the rest of surveys because of change in recall period (see Deaton & Kozel, 2005). Our selection of the four surveys for this analysis divides the period roughly in decades, and consumption data is collected based on same recall period. For the 2011–12, two types of schedule of inquiry were used on separate set of households: Schedule Type 1 and Schedule Type 2. The two types had the same item break-up but differed in reference periods used for collection of consumption data. Schedule Type 1, as far as reference periods were concerned, was a repeat of the schedule used in most quinquennial rounds (NSSO, 2013).

[11] We compare the monthly per capita consumption expenditure (mpce) of individuals who are at similar percentile in the urban and rural mpce distribution (e.g., individual at median in urban mpce distribution vs. individual at median in rural mpce distribution). Hence when looking the evolution of the urban-rural gap over time, we basically examine the evolution of the gap for similar ranked individuals at different point of time. It should be worth pointing out, that over time, some of the rural areas may have been re-classified as urban areas, and in survey data it is not possible to keep same areas as urban over time as NSS adopts the urban reclassification of the closest previous diccenial Census. The share of urban in total population increased by 2.4 percentage points during 1981–1991, 2.1 percentage points during 1991–2001, and 3.4 precentage points between 2001 and 2011.

of the four surveys used in the paper. The monthly per capita expenditure across these rounds are comparable and derived by dividing the total household consumption expenditure with household size.[12]

2.1. Spatial adjustment

We adjust for differences in prices across urban and rural areas and states using official state-wise urban and rural poverty lines. We bring all prices to 1993 urban Maharashtra prices. It is worth noting that two different official poverty lines were used during our study period. The Indian planning commission used poverty lines based on the methodology suggested by Lakdawala committee (Govertnment of India, 1993) as official poverty lines until 2004–05 (referred as Lakdawala poverty lines). In 2009, the Indian planning commission shifted to the poverty line calculated by Tendulkar committee (Govertnment of India, 2009) (referred as Tendulkar poverty lines). For Lakdawala poverty lines, national and state-level rural/urban poverty lines were adjusted over time by applying the national and state-level price indices for agricultural/industrial workers. While for Tendulkar poverty lines, the state-specific urban and rural poverty lines are adjusted over time using the price information from NSS consumption surveys.

The Lakdawala poverty lines are available for 1983, 1987, 1993, 1999, and 2004, while Tendulkar poverty lines are available for 1993, 2004, 2009, and 2011. Thus, we have both poverty lines available between 1993 and 2004. We calculate urban/rural state wise inflation between 1993 and 2004 using both poverty lines, and estimate the urban/rural state wise difference in inflation derived from the two lines (we call the difference as adjustment factor). Using the state wise urban/rural inflation derived from the Tendulkar poverty lines between 2004 and 2011, and the adjustment factor between 1993 and 2004, we generate state wise Lakdawala poverty line for 2011. Similarly, we use the inflation between 1983 and 1993 derived from the Lakdawala poverty lines and generate Tendulkar poverty lines for 1983 using the adjustment factor calculated from 1993 and 2004 poverty lines. Thus, we have both types of poverty lines for all four points of time. We create real monthly per capita expenditure using the spatial difference in prices derived from each type of poverty lines.

Panel B of Table 1 provides per capita monthly consumption expenditure at current prices and the urban-rural mean consumption ratio in each year. The mean consumption ratio increased from 1.47 in 1983 to 1.88 in 2004, and remained at 1.88 in 2011. Panel C of Table 1 provides spatially adjusted per capita expenditure (reported at Maharashtra urban prices in the referenced years) for each year using the Lakdawala poverty lines. Panel D of Table 1 provides similar information using Tendulkar poverty lines. Although the level of the gap is larger using the Tendulkar poverty lines, it is evident that urban-rural gap is increasing over time irrespective of method of spatial adjustment.[13] In Fig. 1, we plot evolution of the urban/rural consumption ratio using spatial adjusters derived from the two poverty lines. For ease of comparison, we fix the baseline, the 1983 ratio, at 1. As observed in Fig. 1, the evolution of urban/rural consumption ratio is very much similar using either poverty lines to adjust for spatial prices.

Table 1
Descriptive Stats.

Panel A: Sample Size (Number of households)			
	Rural	Urban	Total
1983	77,337	40,127	117,464
1993	69,206	46,148	115,354
2004	79,298	45,346	124,644
2011	59,695	41,967	101,662
Panel B: Monthly per capita at current prices			
	Rural	Urban	Urban/Rural
1983	111.20	163.07	1.47
1993	281.40	458.04	1.63
2004	558.80	1,052.35	1.88
2011	1,278.94	2,399.24	1.88
Panel C: Spatially adjusted monthly per capita at current prices (Lakdawala poverty lines)*			
	Rural	Urban	Urban/Rural
1983	159.27	178.50	1.12
1993	450.99	528.42	1.17
2004	1033.04	1297.23	1.26
2011	2385.34	3150.74	1.32
Panel D: Spatially adjusted monthly per capita at current prices (Tendulkar Poverty lines)*			
1983	136.54	180.11	1.32
1993	365.50	503.80	1.38
2004	774.95	1137.32	1.47
2011	1690.33	2625.45	1.55
Panel E: Monthly per capita at 1993-94 prices (Tendulkar Poverty lines)*			
1983	341.53	450.52	1.32
1993	365.50	503.80	1.38
2004	403.51	592.19	1.47
2011	493.89	767.12	1.55

* The prices are expressed at Maharashtra urban prices.

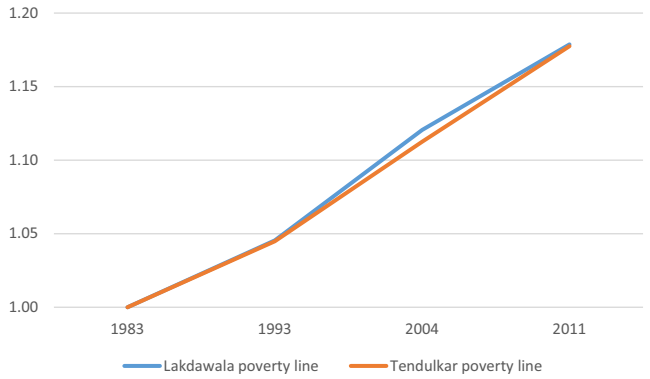

Fig. 1. Urban Rural Consumption ratio using alternative spatial adjustments. *Note*: The baseline 1983 urban/rural ratio is fixed at 1. The urban rural ratio is calculated using alternative spatial deflators generated from Lakdawala and Tendulkar poverty lines. See text for details.

In Fig. 2a and b, we plot the difference between urban and rural real per capita consumption expenditure at four points of time using the alternative spatial adjustments.[14] As evident from Fig. 2a and b, the shape of the urban-rural gap and changes over time look similar. The only difference is that the level of gap is larger in each period using Tendulkar poverty lines compared to Lakdawala poverty lines. Given that we get similar shape of the gap and change over time, we carry out the rest of our analysis using the real con-

[12] There is no official equivalent scale available for India. Moreover, the official poverty estimates and the majority of literature on poverty and inequality in India are based on per capita consumption expenditure.

[13] This is not surprising given that the consumer price indices of agricultural laborers used to adjust Lakdawala poverty lines understated the price changes in rural India creating a larger gap in poverty lines (Govertnment of India, 2009).

[14] As true with any household survey, it is possible that the NSS consumption expenditure underestimates the actual consumption at the top end of the consumption distribution. The gap at the top end of the distribution might be underestimated/overestimated depending on the extent of underestimation of consumption expenditure in urban and rural areas.

sumption expenditure derived using the Tendulkar poverty lines.[15]

As evident from Fig. 2b, the urban-rural gap is positive throughout the distribution.[16] While the gap declined between 1983 and 1993 in lower part of the distribution, it increased in upper half of the distribution. Between 1993 and 2004, the gap increased in upper half of the distribution. Moreover, the gap increased more at the higher quantiles during 1983–1993 and 1993–2004. Between 2004 and 2011, the gap increased throughout the distribution.[17]

2.2. Other variables

All four surveys collect household main industry and occupation at three digits using the National Industrial Classification (NIC) and National Classification of Occupation (NCO), respectively. The 1983 data use the 1970 NIC, the 1993 data use the 1987 NIC, the 2004 data use the 1998 NIC, and the 2011 data use the 2004 NIC classification to report household main industry. We create 15 uniform industries in each year using concordance tables, and control for 13 industries excluding construction and wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods. The 1983, 1993, and 2004 use the NCO 1968 to report occupation, while the 2011 use the NCO 2004. We re-classify the occupation in three categories: white color jobs, blue color jobs, and agriculture jobs. We control for two occupation indicators using blue color workers as excluded occupation.

Our measure of welfare and dependent variable is log of spatially adjusted monthly per capita consumption expenditure (MPCE). The independent variables (the covariate matrix X) include households' demographic characteristics, human capital, land cultivated, main occupation, main industry, and state of residence. The household demographic characteristics include household head's age, age squared, head's gender, household size, dependency ratio, number of adult (15–64) male members, number of adult female members, and indicators for household belonging to the disadvantaged social groups Scheduled Castes (SCs) or

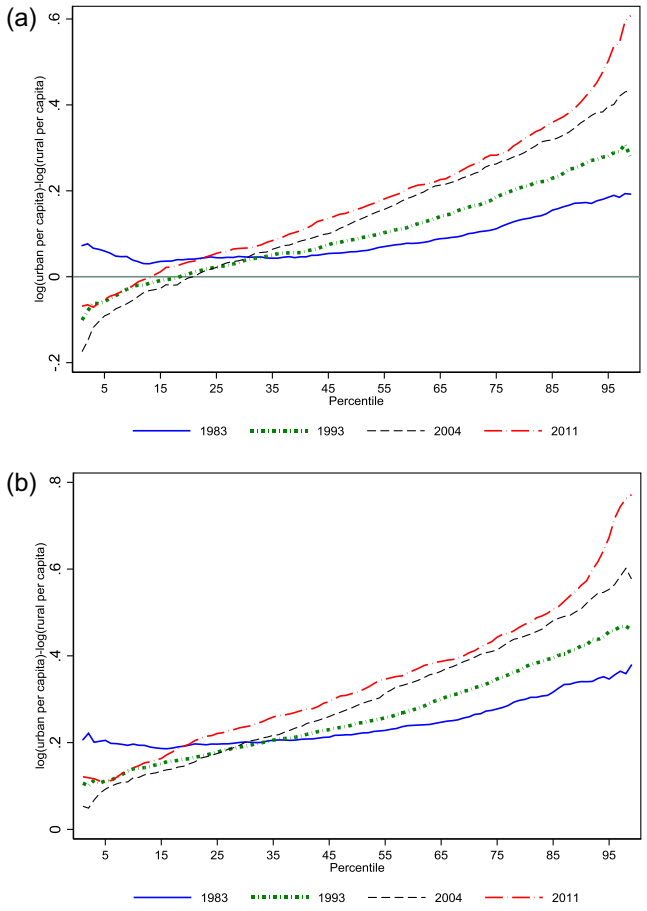

Fig. 2. (a) Difference in log of urban and rural per capita consumption expenditure using Lakdawala poverty lines. (b) Difference in log of urban and rural per capita consumption expenditure using Tendulkar poverty lines. *Note*: In (a), Lakdawala poverty lines are used for price adjustments, while in (b), Tendulakar poverty lines are used for prices adjustments. See text for more details.

Scheduled Tribes (STs), and Muslim religion.[18] Household human capital is captured by a series of indicator variables for the education levels achieved by the household head. We include indicator variables corresponding to primary, middle, secondary, higher secondary, graduate and postgraduate levels of education (reference group is households whose head is illiterate/below primary).[19] Occupation and industries are captured by a series of indicator variables mentioned in earlier paragraph. We also control for state fixed effects. Appendix Table A.1 provides the summary statistics of the main variables. Significantly much larger percentage of rural households heads are illiterate or below primary. A larger percentage of urban households' heads have secondary and above degree. Hence, the advantage of urban areas in education distribution is substantial. Urban population consists less proportion of disadvantaged group (SCs and STs) households. Similarly, dependency ratio and household

[15] We choose Tendulkar poverty lines over Lakdawala poverty lines, as prices deflators for Tendulkar poverty lines are derived from the unit level consumption records. At this point, it is worth pointing out that given the shape of the gaps are similar and our decomposition exercise control for state fixed effects, the decomposition exercise with alternative spatial adjustment i.e. using Lakdawala poverty lines should only change the intercept and contribution of state fixed effects. Contribution of the rest of the factors should be similar. We carried out decomposition at mean using alternative spatial adjustments and find similar decomposition results for rest of the variables.

[16] In appendix Fig. A.1, we present the urban-rural gap in each year using the nominal monthly per capita consumption expenditure that is not adjusted for price differences across urban/rural areas and states. Overall the pattern of the gap is similar except the gap is much larger across the entire distribution. The important departure from Fig. 2 is that, the urban-rural gap in 2011 is marginally lower than the 2004 gap when consumption expenditure is not spatially adjusted. This anomaly arises because of higher price differences between urban and rural areas in 2004 compared to 2011: the all India urban poverty line was 29.5 percent higher than all India rural poverty line in 2004, while it was only 22.5 percent higher in 2011.

[17] The welfare gap reported in Fig. 2a/2b for 2004 differs from Chamarbagwala (2010) 2004 urban-rural gap. She reports that the urban–rural welfare gap was fairly convex across the welfare distribution in 1993, it became more concave in 2004, with the gap narrowing for the lowest and highest quintiles and widening for the middle three quintiles. Although 1993 data used in Chamarbagwala (2010) is the large-scale NSS survey similar to ours, her 2004 data (NSS 60th round) is not the NSS large-scale consumption survey. Hers 2004 data consist of only 29,631 households compared to more than 100,000 households surveyed in large-scale surveys. Moreover, the NSS 60th round employed two variants of Schedule 1.0 inquiry: one variant which was asked to half of the surveyed households used 7-day recall while other variant which was used for other half of households used 30-day recall period for items of food coming under the categories of edible oil, egg, fish and meat, vegetables, fruits, spices, beverages and processed food, as well as for pan, tobacco and intoxicants (NSSO, 2004). In addition, Chamarbagwala (2010) welfare measure MPCE is not adjusted for spatial differences in the cost of living. It is also not clear from the text whether Chamarbagwala (2010) uses surveys weights.

[18] SCs and STs are historically disadvantaged castes. At the time of independence, the Indian Constitution identified the disadvantaged caste and tribes in a separate schedule of the constitution as Scheduled Castes and Scheduled Tribes (SCs/STs), and extended affirmative action protection to these groups in the form of reserved seats in higher educational institutions, in public sector jobs, and in state legislatures as well as the Indian parliament. Muslims are the largest minority religious group in India, and according to the Government of India (2006), their performance on many economic and education indicators is comparable with that for SCs/STs.

[19] The excluded group in all four years is below primary education. For 2004 and 2011, the tertiary education is further distinguished between a graduate degree and postgraduate degree (the 1983 and 1993 data do not distinguish between graduate and postgraduate degrees).

size is lower in urban areas. Not surprisingly, rural households hold more land compared to urban households.

3. Empirical framework

Our interest lies in examining the factors responsible for the differences in welfare between urban and rural areas across the entire distribution. The standard Oaxaca-Blinder (OB) decomposition technique is a popular tool for analyzing differences in average. The standard assumption in OB decomposition is that the outcome variable Y is linearly related to the covariates, X, and that the error term ε is conditionally independent of X:

$$Y_{gi} = \beta_{g0} + \sum_{k=1}^{K} \beta_{gk} X_{ki} + \varepsilon_{gi}, \; g = rural(r), urban(u) \tag{1}$$

where Y_{gi} is the log of monthly per capita consumption expenditure of household i residing in area g, X is the vector of covariates. The overall difference in average outcomes between urban and rural areas at mean can be written as:

$$\begin{aligned}\hat{\Delta}_O^{\mu} &= \overline{Y}_u - \overline{Y}_r \\ &= \left\{ \underbrace{(\beta_{u0} - \beta_{r0}) + \sum_{k=1}^{K} \overline{X}_{uk}\left(\hat{\beta}_{uk} - \hat{\beta}_{rk}\right)}_{\hat{\Delta}_S^{\mu}(Unexplained)} \right\} \\ &\quad + \left\{ \underbrace{\sum_{k=1}^{K} (\overline{X}_{uk} - \overline{X}_{rk})\hat{\beta}_{rk}}_{\hat{\Delta}_X^{\mu}(Explained)} \right\}\end{aligned} \tag{2}$$

where $\hat{\beta}_{g0}$ and $\hat{\beta}_{gk}$ are the estimated intercept and slope coefficients, respectively, of the regression models for groups $g = r, u$. In Eq. (2), it is straightforward to compute both the overall explained and unexplained effects, and the contribution of each covariate to these two effects.[20] Because regression coefficients are based on partial correlations, an OB decomposition that includes all K explanatory variables of interest satisfies the property of path independence (Fortin, Lemieux, & Sergio, 2011).

To examine the factors responsible for the differences in welfare between urban and rural areas across the entire distribution, we use Recentered Influence Function (RIF) decomposition that is path independent and is close to the original OB decomposition (Fortin et al., 2011). [21] A RIF-regression (Fortin et al., 2011) is similar to a standard regression, except that the dependent variable, Y, is replaced by the (recentered) influence function of the statistic of interest. Consider $IF(y; v)$, the influence function corresponding to an observed per capita expenditure y for the distributional statistic of interest, $v(F_Y)$. The recentered influence function is defined as $RIF(y; v) = v(F_Y) + IF(y; v)$, so that it aggregates back to the statistics of interest $(v(F_Y))$. In its simplest form, the approach assumes that the conditional expectation of the $RIF(Y; v)$ can be modeled as a linear function of the explanatory variables.

$$E[RIF(Y; v)|X] = X\gamma \tag{3}$$

where the parameters γ can be estimated by OLS. In the case of quantiles, the influence function $IF(Y; q_\tau)$ is given by $(\tau - I\{Y \leqslant q_\tau\})/f_Y(q_\tau)$, where $I\{.\}$ is an indicator function, $f_Y()$ is the density of the marginal distribution of Y, and q_τ is the population quantile of the unconditional distribution of Y. As a result, $RIF(Y; q_\tau)$ is equal to $q_\tau + IF(Y, q_\tau)$, and can be rewritten as

$$RIF(y; q_\tau) = q_\tau + \frac{\tau - I\{y \leqslant q_\tau\}}{f_Y(q_\tau)} \tag{4}$$

RIF is first estimated by computing the sample quantile $\hat{q}_\tau$ and the density $(\hat{f}(\hat{q}_\tau))$ at that point using kernel methods. Then an OLS regression is estimated using the $RIF(Y; q_\tau)$ as dependent variable on the vector of covariates. Letting the coefficients of the unconditional quantile regressions for each group be

$$\hat{\gamma}_{g,\tau} = \left(\sum_{i \in g} \left(X_i X^T \right) \right)^{-1} . \sum_{i \in g} \widehat{RIF}(Y_{gi}; q_{g,\tau}) . X_i, \; g = r, u \tag{5}$$

Once the RIF regression has been estimated, the estimated coefficients can be used to perform the detailed decomposition in the same way as in the standard OB decomposition.

$$\hat{\Delta}_O^{\tau} = \overline{X}_u(\hat{\gamma}_{u,\tau} - \hat{\gamma}_{r,\tau}) + (\overline{X}_u - \overline{X}_r)\hat{\gamma}_{r,\tau} \tag{6}$$

$$\hat{\Delta}_O^{\tau} = \hat{\Delta}_S^{\tau} + \hat{\Delta}_X^{\tau} \tag{7}$$

The second term in Eq. (6) can be written as

$$\hat{\Delta}_X^{\tau} = \sum_{k=1}^{K} (\overline{X}_{ku} - \overline{X}_{kr})\hat{\gamma}_{kr,\tau} \tag{8}$$

Similarly, the detailed elements of the unexplained effects can be computed.

There are two potential issues with any decomposition exercise. First, it is well documented in literature that the decomposition results may not be invariant to the choice of the counterfactual. In Eq. (2), one can use $\overline{X}_r\hat{\beta}_u$ as a counterfactual in place $\overline{X}_u\hat{\beta}_r$. To avoid this, we use a vector of coefficients $\left(\hat{\beta}^*\right)$ that is estimated from the pooled urban and rural sample with other explanatory variables and a urban dummy.[22] The Eq. (2) will become:

$$\begin{aligned}\hat{\Delta}_O^{\mu} &= \overline{Y}_u - \overline{Y}_r \\ &= \left\{ \underbrace{\overline{X}_u\left(\hat{\beta}_u - \hat{\beta}^*\right) + \overline{X}_r\left(\hat{\beta}^* - \hat{\beta}_r\right)}_{\hat{\Delta}_S^{\mu}(Unexplained)} \right\} + \left\{ \underbrace{(\overline{X}_u - \overline{X}_r)\hat{\beta}^*}_{\hat{\Delta}_X^{\mu}(Explained)} \right\}\end{aligned} \tag{9}$$

The second issue, which is also well known in the literature, is that in the presence of categorical variables, the results of a detailed decomposition will be sensitive to the choice of the reference group (Jones, 1983; Oaxaca & Ransom, 1999). While the detailed "explained effects" are not affected by the choice of the reference group, the detailed "unexplained effects" differ by the choice of reference group as different parts of the effects are hidden in the intercept (Fortin et al., 2011). Some solutions are proposed to solve the problem by imposing additional restrictions to transform the estimated coefficients. However, doing so will lose the simple meaningful interpretations and preclude comparisons across years (Fortin et al., 2011). To facilitate the interpretation and ensure comparability, we perform all decompositions with the same reference group across the years.

[20] In the literature, the explained effects are also referred as endowment effects, covariate effects, or composition effects. Similarly, the unexplained effects are also referred as coefficient or structural effects.

[21] Although, there exists other alternatives that can be used to bifurcate the total difference into aggregated composition and structural difference (e.g. the inverse probability weight estimator by DiNardo, Fortin, & Lemieux (1996), more parametric approaches proposed by Juhn, Murphy, & Pierce (1993), Donald, David, & Paarsch (2000), MMachado & Mata (2005)), the detailed decomposition using the alternative methods are generally path dependent, that is, the decomposition results depend on the order in which the decomposition is performed (see Fortin et al. (2011) for more details).

[22] The reason for including the urban dummy as a group indicator in estimating the reference structure is discussed in Fortin (2008) and Jann (2008). If location is related with education or some other variables, not controlling location will lead to biased estimates.

To examine what accounts for the change in the welfare gap over time, we follow Smith and Welch (1989). Denoting time as superscript, the change in the urban-rural gap between two time period, $t = 1$ and $t = 2$, is

$$(\overline{Y}_u^2 - \overline{Y}_r^2) - (\overline{Y}_u^1 - \overline{Y}_r^1) \tag{10}$$

The decomposition of Eq.(10) requires choosing the base year base area. Using the earlier year as base year ($t = 1$), and for notational simplicity rural as base area, Eq. (10) can be expressed as[23]

$$[(\overline{X}_u^2 - \overline{X}_r^2) - (\overline{X}_u^1 - \overline{X}_r^1)]\hat{\beta}_r^1 + \tag{11i}$$
$$(\overline{X}_u^2 - \overline{X}_u^1)\left(\hat{\beta}_u^1 - \hat{\beta}_r^1\right) + \tag{11ii}$$
$$(\overline{X}_u^2 - \overline{X}_r^2)\left(\hat{\beta}_r^2 - \hat{\beta}_r^1\right) + \tag{11i ii}$$
$$\overline{X}_u^2\left[\left(\hat{\beta}_u^2 - \hat{\beta}_r^2\right) - \left(\hat{\beta}_u^1 - \hat{\beta}_r^1\right)\right] \tag{11iv}$$

The first term (11i) is the pure characteristics effect that shows how the gap changed because urban and rural households became more similar or dissimilar in attributes over time. The second term (11ii) is area interactions that measures the additional change in the gap predicted by the change in urban characteristics over time: if urban area is paid more for certain characteristics, and level of that characteristics increases in urban area, the gap will expand. The third term (11iii) is year interactions and measures the effect of a change in the gap due to an increase in the return to a characteristic. If the coefficients of certain characteristics increase over time, gap will widen if urban area have more of those characteristics. The fourth term (11iv) is area-year interactions (or pure coefficient effect) and captures the effect of change in coefficient difference between urban and rural areas (negative, if coefficients became more similar; positive, if coefficients became more dissimilar).

4. Results

We first investigate how log of (spatially adjusted) monthly per capita consumption expenditure differs between urban and rural areas at the mean and at the selected quantiles in each year. Panels A, B, C, and D of Table 2 presents results for 1983, 1993, 2004, and 2011, respectively. The first row in each panel of Table 2 presents the urban-rural gap that is estimated from an equation that only includes an urban indicator. The mean gap is estimated using OLS, while the gaps at different quantiles are estimated using RIF-OLS regressions. As evident from the Table 2, the urban dummy is statistically significant at the mean and at the selected quantiles in each of the four years considered in this paper. The unadjusted gap captured by the urban dummy is larger at the higher quantiles. The unadjusted urban-rural gap at the mean has been increasing over the last three decades. The average gap was 24.3 log points in 1983 and it increased marginally to 26.1 log points in 1993. The average gap further increased to 30 log points in 2004 and to 34.1 log points in 2011. Thus the average gap increased by 1.8 log points between 1983 and 1993, 3.9 log points between 1993 and 2004, and 4.1 log points between 2004 and 2011.

In the second row of each panel of Table 2, we add education indicators as controls. The urban-rural gap shrinks considerably in all four years not only at mean but also across the entire distribution. The educationally adjusted gap is positive but much smaller in magnitude througout the consumption distribution. In row (3)–(6) of each panel of Table 2, we sequentially add demographic, state, occupation and industry controls. Thus, the last row in each panel controls for all the characteristics described in data section. Controlling for all the characteristics reduces the gap considerably. For example, the gap at the mean in 2011 is reduced from the 34.1 log points to just 6.8 log points after controlling for all characteristics. Importantly, at the lower end of the distribution, the adjusted (controlling for characteristics) gap is negative in all years except the 1983. In contrast, the adjusted gap remains positive and significant in upper half of the distribution in all four years.

In Table 2, the returns of the household characteristics that determine consumption expenditure are constrained to be same for both urban and rural areas, which may not be true. To allow for differential returns to all characteristics, we estimate the Eq. (1) for urban and rural samples separately at the mean using OLS and at quantiles = $0.05, 0.10, \ldots, 0.90, 0.95$ using RIF-OLS. We use these OLS and RIF-OLS coefficients estimated from urban and rural samples to decompose the total gap observed at the mean and at the selected quantiles using Eq. (9). The results of the OLS and the RIF-regressions at selected quantiles for year 1983, 1993, 2004, and 2011 are reported in appendix Tables A2–A5, respectively. For space considerations, we discuss these results only briefly here. What is worth noticing is that the returns to primary education was higher in rural areas in 1983 and 1993 at the mean. In contrast, the urban returns to primary education at the mean surpassed rural returns at the mean in 2004 and 2011. There exists substantial difference in returns to higher levels of education between urban and rural areas. Moreover, there exists considerable heterogeneity in returns to different levels of education in all the four years. The disadvantaged castes (SCs/STs) consumption is significantly lower than non-disadvantaged group in all four years.

Fig. 3 plots our main results that divide the total gap in consumption expenditure into the aggregated explained and unexplained effects. In Table 3, we also present aggregated decomposition results at the selected quantiles and at the mean.[24] As expected from the results presented in the earlier paragraph, the urban sector advantage in terms of endowments explains the majority of the urban-rural gap witnessed in all the four years. Importantly, the explained effects is larger at the higher quantiles, and the explained effect has become more heterogeneous over 1983–2004. The unexplained effect is positive but small in 1983. Moreover, the unexplained effect remains similar across quantiles. In 2011, the unexplained effect is more heterogeneous. At very bottom of the distribution, unexplained effect is zero or marginal negative. However, the unexplained effect is positive, and increases with the quantiles after 25th percentiles. Nevertheless, the explained effect remains the main contributor to the urban-rural gap observed at all four points of time. In appendix Figs. A.2 and A.3, we plot the aggregate decomposition results that use rural and urban prices, respectively as counterfactual. Overall, the main conclusion that differences in household characteristics across urban and rural areas explain majority of the observed gap at all four points of time holds with alternative counterfactuals too.[25]

Having decomposed the total urban-rural welfare gap into aggregated composition and coefficient effects, we now examine share of each variable or set of variables in the composition and the coefficient effects. Instead of reporting the effect of each variable, we aggregate similar variables in groups to provide the

[23] For notional simplicity, rural area is chosen as base. However, we carry out our decomposition using the pooled sample (urban and rural combined) as reference. The decompostion is performed using stata command SMITHWELCH (Jann, 2005).

[24] The number of households in decomposition exercises for 1983 and 1993 data differs from what is reported in Table 1. For the 1983 decomposition, about 4,131 households are dropped from the sample because either the household head's information is missing or reported per capita expenditure is zero. For the 1993 decomposition, the survey weight provided in the data gives zero weight for 2,223 households.

[25] Recall that when we use rural [urban] prices as weight, the explained effect is calculated as $(\overline{X}_u - \overline{X}_r)\hat{\beta}_r^\tau$ [$(\overline{X}_u - \overline{X}_r)\hat{\beta}_u^\tau$]. Similarly, the unexplained effect is calculated as $\left(\hat{\beta}_u^\tau - \hat{\beta}_r^\tau\right)\overline{X}_u$[$\left(\hat{\beta}_u^\tau - \hat{\beta}_r^\tau\right)\overline{X}_r$].

Table 2
Urban-rural gap in log of monthly per capita expenditure.

Controls	OLS	Q 10	Q 25	Q 50	Q 75	Q 90
			Year= 1983			
None	0.243***	0.170***	0.175***	0.219***	0.280***	0.381***
Add education indicators	0.094***	0.088***	0.072***	0.086***	0.098***	0.133***
Add demographic variable	0.077***	0.061***	0.049***	0.068***	0.085***	0.125***
Add state indicators	0.060***	0.071***	0.051***	0.056***	0.054***	0.069***
Add occupation indicators	0.060***	0.066***	0.048***	0.054***	0.056***	0.079***
Add industry indicators	0.045***	0.027***	0.019***	0.039***	0.052***	0.088***
			Year= 1993			
None	0.262***	0.105***	0.155***	0.223***	0.345***	0.493***
Add education indicators	0.100***	0.026***	0.055***	0.085***	0.143***	0.208***
Add demographic variable	0.083***	0.003	0.036***	0.068***	0.131***	0.191***
Add state indicators	0.050***	0.000	0.020***	0.039***	0.085***	0.124***
Add occupation indicators	0.045***	-0.006	0.011**	0.029***	0.078***	0.124***
Add industry indicators	0.011***	-0.043***	-0.021***	0.000	0.046***	0.088***
			Year= 2004			
None	0.300***	0.098***	0.147***	0.244***	0.436***	0.622***
Add education indicators	0.129***	0.021***	0.043***	0.101***	0.216***	0.312***
Add demographic variable	0.074***	-0.031***	-0.009	0.046***	0.158***	0.250***
Add state indicators	0.064***	-0.032***	-0.015**	0.037***	0.142***	0.232***
Add occupation indicators	0.057***	-0.039***	-0.022***	0.027***	0.130***	0.227***
Add industry indicators	0.027***	-0.061***	-0.043***	0.004	0.092***	0.173***
			Year= 2011			
None	0.341***	0.111***	0.177***	0.287***	0.467***	0.640***
Add education indicators	0.175***	0.034***	0.082***	0.151***	0.261***	0.340***
Add demographic variable	0.149***	-0.001	0.052***	0.127***	0.239***	0.319***
Add state indicators	0.106***	-0.033***	0.016**	0.082***	0.186***	0.262***
Add occupation indicators	0.091***	-0.041***	0.005	0.064***	0.165***	0.240***
Add industry indicators	0.068***	-0.057***	-0.014*	0.040***	0.140***	0.210***

Note: The Table contains the coefficient of an urban indicator from a regression that adds a set of controls sequentially. The dependent variable is log of spatially price adjusted per capita expenditure. Land variable is included in the demographic variables. *** p < 0.01, ** p < 0.05, * p < 0.1.

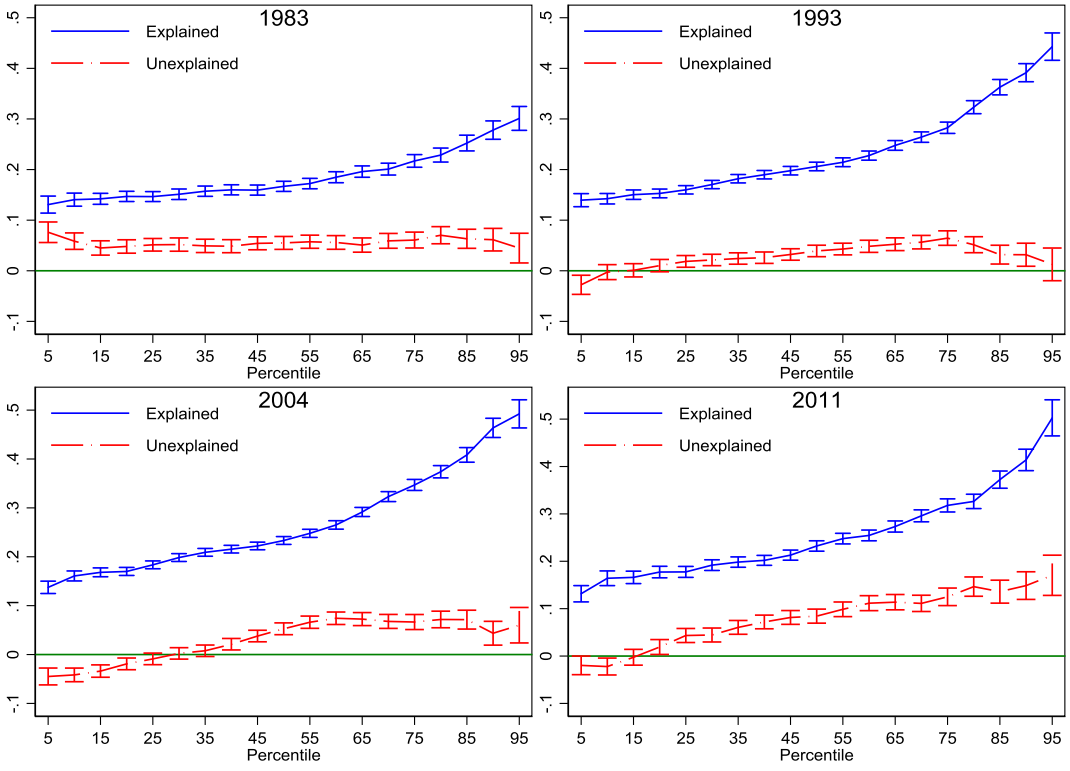

Fig. 3. Decomposition of urban-rural consumption expenditure gap, at different percentiles. *Note*: The figure plots the aggregate explained and unexplained effect. The caps are 95% confidence interval. The pooled coefficient is used as counterfactual.

differences explained by differences in education, demographics, states, occupations, industries, and land. The results for 1983, 1993, 2004, and 2011 are reported Tables 4–7, respectively. For ease of interpretation, we also plot the contribution of each set of variables in the composition and coefficient effects in Figs. 4 and 5, respectively.

Table 3
Urban-rural consumption expenditure gap, aggregate decomposition results.

	(1) OLS	(2) Q 10	(3) Q 25	(4) Q 50	(5) Q 75	(6) Q 90
			Panel A: 1983			
Difference	0.243***	0.199***	0.198***	0.222***	0.278***	0.339***
	(0.004)	(0.007)	(0.005)	(0.005)	(0.006)	(0.008)
Explained	0.189***	0.141***	0.147***	0.167***	0.217***	0.278***
	(0.005)	(0.007)	(0.005)	(0.005)	(0.006)	(0.009)
Unexplained	0.054***	0.059***	0.051***	0.055***	0.061***	0.061***
	(0.005)	(0.008)	(0.006)	(0.007)	(0.008)	(0.011)
Observations	113,333	113,333	113,333	113,333	113,333	113,333
			Panel B: 1993			
Difference	0.262***	0.140***	0.178***	0.245***	0.347***	0.423***
	(0.004)	(0.006)	(0.005)	(0.004)	(0.005)	(0.008)
Explained	0.238***	0.142***	0.160***	0.206***	0.283***	0.391***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.009)
Unexplained	0.024***	-0.003	0.019***	0.039***	0.065***	0.032***
	(0.005)	(0.008)	(0.006)	(0.006)	(0.007)	(0.012)
Observations	112,976	112,976	112,976	112,976	112,976	112,976
			Panel C: 2004			
Difference	0.300	0.119***	0.175***	0.286***	0.413***	0.507***
	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)	(0.009)
Explained	0.273***	0.161***	0.183***	0.233***	0.347***	0.464***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.010)
Unexplained	0.027***	-0.042***	-0.009	0.053***	0.067***	0.044***
	(0.005)	(0.007)	(0.006)	(0.006)	(0.008)	(0.012)
Observations	124,587	124,587	124,587	124,587	124,587	124,587
			Panel D: 2011			
Difference	0.341***	0.142***	0.221***	0.316***	0.443***	0.562***
	(0.006)	(0.009)	(0.007)	(0.007)	(0.008)	(0.012)
Explained	0.261***	0.164***	0.178***	0.232***	0.318***	0.414***
	(0.005)	(0.008)	(0.006)	(0.006)	(0.007)	(0.012)
Unexplained	0.081***	-0.022**	0.043***	0.084***	0.125***	0.149***
	(0.006)	(0.009)	(0.008)	(0.008)	(0.009)	(0.015)
Observations	101,655	101,655	101,655	101,655	101,655	101,655

***p < 0.01, **p < 0.1, *p < 0.1.

Table 4
Urban-rural per capita expenditure gap decomposition results, 1983.

	(1) OLS	(2) Q 10	(3) Q25	(4) Q 50	(5) Q 75	(6) Q 90
Difference	0.243***	0.199***	0.198***	0.222***	0.278***	0.339***
	(0.004)	(0.007)	(0.005)	(0.005)	(0.006)	(0.008)
Total explained	0.189***	0.141***	0.147***	0.167***	0.217***	0.278***
	(0.005)	(0.007)	(0.005)	(0.005)	(0.006)	(0.009)
Explained effect attributable to:						
Education	0.130***	0.065***	0.082***	0.112***	0.161***	0.223***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)	(0.006)
Demographics	0.048***	0.052***	0.049***	0.045***	0.047***	0.051***
	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
Industry	0.043***	0.059***	0.050***	0.036***	0.035***	0.029***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.008)	(0.010)
Occupation	−0.003	0.004	0.000	0.003	−0.005	−0.013**
	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.005)
State	−0.009***	−0.028***	−0.021***	−0.012***	0.001	0.017***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.003)
LAND	−0.020***	−0.012***	−0.014***	−0.017***	−0.023***	−0.030***
	(0.005)	(0.004)	(0.004)	(0.005)	(0.006)	(0.007)
Total unexplained	0.054***	0.059***	0.051***	0.055***	0.061***	0.061***
	(0.005)	(0.008)	(0.006)	(0.007)	(0.008)	(0.011)
Unexplained effect attributable to:						
Education	−0.008*	0.014*	0.020***	0.014**	−0.002	−0.095***
	(0.005)	(0.007)	(0.006)	(0.006)	(0.007)	(0.010)
Demographics	−0.161***	−0.006	−0.049	−0.217***	−0.382***	−0.235***
	(0.038)	(0.057)	(0.044)	(0.043)	(0.058)	(0.078)
Industry	−0.002	0.004	0.025	−0.006	−0.017	−0.049*
	(0.015)	(0.028)	(0.020)	(0.017)	(0.021)	(0.030)
Occupation	−0.003	0.010**	0.007*	−0.009**	−0.013***	−0.011
	(0.003)	(0.005)	(0.004)	(0.004)	(0.005)	(0.007)
State	−0.143***	−0.046**	−0.107***	−0.147***	−0.210***	−0.228***
	(0.011)	(0.020)	(0.014)	(0.012)	(0.015)	(0.021)

Table 4 (*continued*)

	(1) OLS	(2) Q 10	(3) Q25	(4) Q 50	(5) Q 75	(6) Q 90
LAND	−0.007	−0.002	−0.003	−0.004	−0.009	−0.018
	(0.006)	(0.003)	(0.004)	(0.005)	(0.008)	(0.011)
Constant	0.378***	0.084	0.158***	0.425***	0.693***	0.698***
	(0.043)	(0.069)	(0.051)	(0.049)	(0.065)	(0.089)
Observations	113,333	113,333	113,333	113,333	113,333	113,333

*** p < 0.01, ** p < 0.05, * p < 0.1.

Table 5
Urban-rural per capita expenditure gap decomposition results, 1993.

	(1) OLS	(2) Q 10	(3) Q25	(4) Q 50	(5) Q 75	(6) Q 90
Difference	0.262***	0.140***	0.178***	0.245***	0.347***	0.423***
	(0.004)	(0.006)	(0.005)	(0.004)	(0.005)	(0.008)
Total explained	0.238***	0.142***	0.160***	0.206***	0.283***	0.391***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.009)
Explained effect attributable to:						
Education	0.133***	0.057***	0.072***	0.105***	0.168***	0.251***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.006)
Demographics	0.049***	0.049***	0.046***	0.048***	0.049***	0.051***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
Industry	0.062***	0.059***	0.051***	0.053***	0.063***	0.077***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)
Occupation	0.003*	0.003	0.009***	0.013***	0.009***	−0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
State	0.011***	−0.012***	−0.002	0.007***	0.019***	0.043***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.003)
LAND	−0.021***	−0.014***	−0.017***	−0.020***	−0.025***	−0.027***
	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.004)
Total unexplained	0.024***	−0.003	0.019***	0.039***	0.065***	0.032***
	(0.005)	(0.008)	(0.006)	(0.006)	(0.007)	(0.012)
Unexplained effect attributable to:						
Education	0.034***	0.061***	0.080***	0.076***	0.042***	−0.058***
	(0.004)	(0.007)	(0.006)	(0.005)	(0.006)	(0.009)
Demographics	−0.141***	−0.106*	−0.072	−0.156***	−0.305***	−0.295***
	(0.037)	(0.060)	(0.045)	(0.043)	(0.053)	(0.080)
Industry	−0.035***	−0.006	0.002	−0.029*	−0.069***	−0.083***
	(0.012)	(0.023)	(0.017)	(0.015)	(0.019)	(0.025)
Occupation	−0.017***	0.010**	0.000	−0.016***	−0.033***	−0.065***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.007)
State	−0.161***	−0.092***	−0.124***	−0.149***	−0.207***	−0.241***
	(0.011)	(0.020)	(0.013)	(0.012)	(0.014)	(0.021)
LAND	−0.004*	0.003***	0.002**	−0.000	−0.004*	−0.018***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)	(0.005)
Constant	0.347***	0.128*	0.129**	0.313***	0.640***	0.792***
	(0.041)	(0.069)	(0.052)	(0.048)	(0.060)	(0.088)
Observations	112,976	112,976	112,976	112,976	112,976	112,976

*** p < 0.01, ** p < 0.05, * p < 0.1.

For the explained effects, as evident from Fig. 4, the difference in educational distributions between urban and rural areas is the main component of the explained effect in all four years. The absolute contribution of education difference at mean increased marginally in 2004 before declining marginally in 2011 (See Tables 4–7). Importantly, the educational advantage for urban areas is larger at the higher quantiles (Fig. 4). The contribution of demographic differences to urban advantage is positive, however, remains similar across the entire distribution. Similarly, the contribution of industrial differences to the explained effect is positive but remains more or less similar across quantiles. The contributions of occupational differences and states to explained effect is marginal and remain flat across the distribution.

In Fig. 5, we plot the contribution of different group of variables to the unexplained or coefficient effects. The contribution of intercept is not plotted as it is much larger compared to contribution of other factors. A significant part of the unexplained component lies in the intercept that captures the gap for the excluded group.[26] Moreover, the intercept term is larger at the higher quantiles (see Table 4–7). It should be worth pointing out that the differences in urban and rural intercepts for excluded group may also capture the unobserved or omitted area specific effects such as infrastructure, geographic conditions that may favor the urban sector more. As far as other variables are concerned, there is no clear pattern, and the contribution of those groups of variables remain small. The contribution of demographics and states to the coefficient effect is negative.

Given the large contribution of difference in education distributions to urban-rural welfare gap at each point of time, we further investigate the detailed contribution of different levels of educa-

[26] The excluded group consists of households residing in the state of Maharashtra whose heads have below primary education, household main occupation is blue color job, and industry is either construction or sales.

Table 6
Urban-rural per capita expenditure gap decomposition results, 2004.

	(1) OLS	(2) Q 10	(3) Q25	(4) Q 50	(5) Q 75	(6) Q 90
Difference	0.300***	0.119***	0.175***	0.286***	0.413***	0.507***
	(0.004)	(0.006)	(0.005)	(0.006)	(0.007)	(0.009)
Total explained	0.273***	0.161***	0.183***	0.233***	0.347***	0.464***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.010)
Explained effect attributable to:						
Education	0.140***	0.056***	0.075***	0.109***	0.183***	0.281***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.007)
Demographics	0.067***	0.067***	0.064***	0.066***	0.068***	0.071***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Industry	0.045***	0.030***	0.029***	0.034***	0.059***	0.084***
	(0.003)	(0.005)	(0.004)	(0.004)	(0.005)	(0.008)
Occupation	0.007***	0.006***	0.008***	0.013***	0.017***	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
State	0.013***	0.002	0.007***	0.012***	0.021***	0.027***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)
LAND	−0.000	−0.000***	0.000	0.000	−0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Total unexplained	0.027***	−0.042***	−0.009	0.053***	0.067***	0.044***
	(0.005)	(0.007)	(0.006)	(0.006)	(0.008)	(0.012)
Unexplained effect attributable to:						
Education	0.058***	0.081***	0.137***	0.133***	0.029***	−0.104***
	(0.006)	(0.010)	(0.009)	(0.008)	(0.009)	(0.012)
Demographics	−0.081*	−0.055	−0.058	−0.090	−0.009	−0.117
	(0.045)	(0.065)	(0.055)	(0.057)	(0.071)	(0.102)
Industry	−0.005	0.055***	0.033***	−0.000	−0.061***	−0.075***
	(0.008)	(0.015)	(0.012)	(0.011)	(0.013)	(0.018)
Occupation	−0.009***	0.015***	0.006*	−0.010***	−0.038***	−0.037***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)
State	−0.118***	−0.115***	−0.112***	−0.118***	−0.129***	−0.134***
	(0.011)	(0.021)	(0.015)	(0.014)	(0.016)	(0.024)
LAND	0.001**	0.001*	0.001*	0.001*	0.001*	0.002*
	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
Constant	0.181***	−0.023	−0.016	0.137**	0.273***	0.509***
	(0.048)	(0.070)	(0.059)	(0.060)	(0.074)	(0.107)
Observations	124,587	124,587	124,587	124,587	124,587	124,587

*** p < 0.01, ** p < 0.05, * p < 0.1.

tion. The contribution of different levels of education in the gap is presented in Table 8. Recall that the endowment effect contributed by each level of education is product of difference in percentage of population with that level of education between urban and rural areas and the reference return to that level of education estimated from the pooled sample. As evident from the descriptive statistics presented in appendix Table A.1, the urban-rural gap in terms of senior secondary and above education achievement is much larger, and has increased marginally over time. The urban advantages in terms of primary, middle, and secondary education achievements are declining and in 2011, rural area has higher percentage of population with primary education. This is not surprising as education distribution shifts right in both urban and rural areas.

From Table 8, it is evident that the contribution of difference in tertiary education (graduate and above) achievement between urban and rural area has contributed more to the gap over time at the mean.[27] For example, the endowment effect of graduate and above is 4.7 log points in 1983, 6.9 log points in 1993, 8.7 log points in 2004 and 9.2 log points in 2011 at the mean. The increase in the contribution of graduate and above category to urban and rural differences is driven because of two reasons. First, there has been more increase in share of urban population with graduate degree compared to increase in share of rural population with graduate degree. Second, over time, there has been an increase in returns to graduate and above degree (recall that the difference is share of population with graduate degree is multiplied by returns to get contribution of graduate degree). Not surprisingly, the contributions of difference in tertiary education achievement to the gap at higher quantiles are more in each year. The differences in returns to education for graduate degree between urban and rural areas also contribute to the gap but magnitude wise much lesser than the covariate effect of graduate effect suggesting that the educational distribution difference is much more important. Though, the increased contribution of differences in college degree between urban and rural areas to the gap in more recent time suggest that perhaps this factor also play a role in widening the gap over time, we formally look at the change in the gap over time in next section.[28]

4.1. Change in gap over 1983–2011

Table 9 presents the decomposition results for change in urban-rural gap over 1983–2011. The urban-rural gap increased by 9.9 log points between 1983 and 2011 at mean. However, the gap only increased by 2.3 log points at 25th percentile of the consumption distribution. In contrast, the gap increased by 22.3 log points at the 90th percentile. Hence, the gap increased more at the higher quantiles. As suggested by panel (i) of Table, the pure characteristics effect is positive for graduate and above while negative for lower levels of education. While the convergence at the lower

[27] Although differences in secondary and senior secondary attainments contribute significantly to the welfare gap, their absolute contribution to the welfare gap declined over time.

[28] Note that as described in the empirical framework, the intertemporal change in the gap involves interaction terms.

Table 7
Urban-rural per capita expenditure gap decomposition results, 2011.

	(1) OLS	(2) Q 10	(3) Q25	(4) Q 50	(5) Q 75	(6) Q 90
Difference	0.341***	0.142***	0.221***	0.316***	0.443***	0.562***
	(0.006)	(0.009)	(0.007)	(0.007)	(0.008)	(0.012)
Total explained	0.261***	0.164***	0.178***	0.232***	0.318***	0.414***
	(0.005)	(0.008)	(0.006)	(0.006)	(0.007)	(0.012)
			Explained effect attributable to:			
Education	0.129***	0.053***	0.064***	0.096***	0.163***	0.252***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.007)
Demographics	0.057***	0.059***	0.055***	0.054***	0.058***	0.057***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)
Industry	0.056***	0.036***	0.042***	0.055***	0.067***	0.079***
	(0.004)	(0.006)	(0.005)	(0.005)	(0.006)	(0.009)
Occupation	0.022***	0.011***	0.016***	0.026***	0.032***	0.031***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.005)
State	0.022***	0.020***	0.019***	0.025***	0.027***	0.028***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.004)
LAND	−0.024***	−0.015***	−0.018***	−0.023***	−0.030***	−0.034***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.005)
Total unexplained	0.081***	−0.022**	0.043***	0.084***	0.125***	0.149***
	(0.006)	(0.009)	(0.008)	(0.008)	(0.009)	(0.015)
			Unexplained effect attributable to:			
Education	0.048***	0.104***	0.122***	0.099***	0.021*	−0.059***
	(0.007)	(0.013)	(0.011)	(0.010)	(0.011)	(0.015)
Demographics	−0.265***	−0.032	−0.173**	−0.354***	−0.557***	−0.314**
	(0.066)	(0.094)	(0.087)	(0.079)	(0.091)	(0.153)
Industry	−0.006	−0.017	0.003	−0.015	−0.003	−0.016
	(0.008)	(0.014)	(0.011)	(0.011)	(0.012)	(0.019)
Occupation	−0.005**	0.011***	0.005*	0.004	−0.010**	−0.029***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.005)	(0.007)
State	−0.144***	−0.164***	−0.150***	−0.118***	−0.136***	−0.179***
	(0.016)	(0.025)	(0.021)	(0.019)	(0.022)	(0.034)
LAND	−0.005**	0.002	0.002*	0.002	−0.004	−0.015**
	(0.002)	(0.002)	(0.001)	(0.002)	(0.003)	(0.006)
Constant	0.457***	0.074	0.235***	0.468***	0.813***	0.760***
	(0.069)	(0.100)	(0.091)	(0.083)	(0.096)	(0.160)
Observations	101,655	101,655	101,655	101,655	101,655	101,655

*** p < 0.01, ** p < 0.05, * p < 0.1.

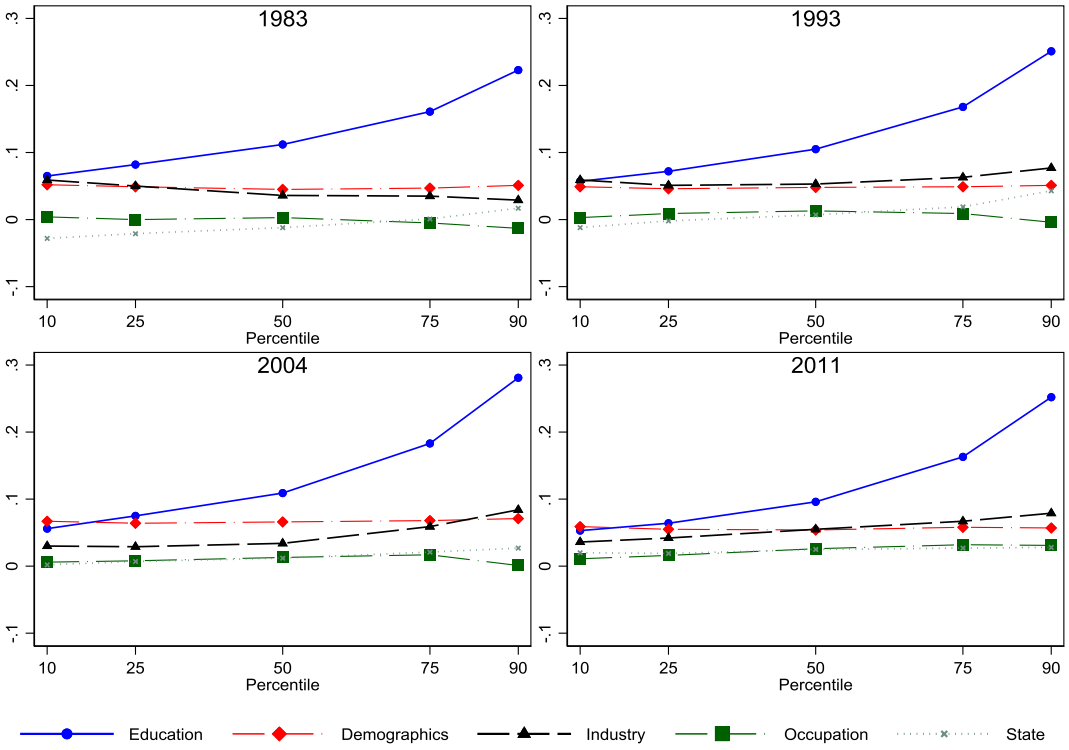

Fig. 4. Contribution to explained effect, urban-rural consumption expenditure gap. *Note*: The figure plots the contribution of factors to explained effect reported in Tables 4 to 7. Contribution of Land is not plotted as it is very small.

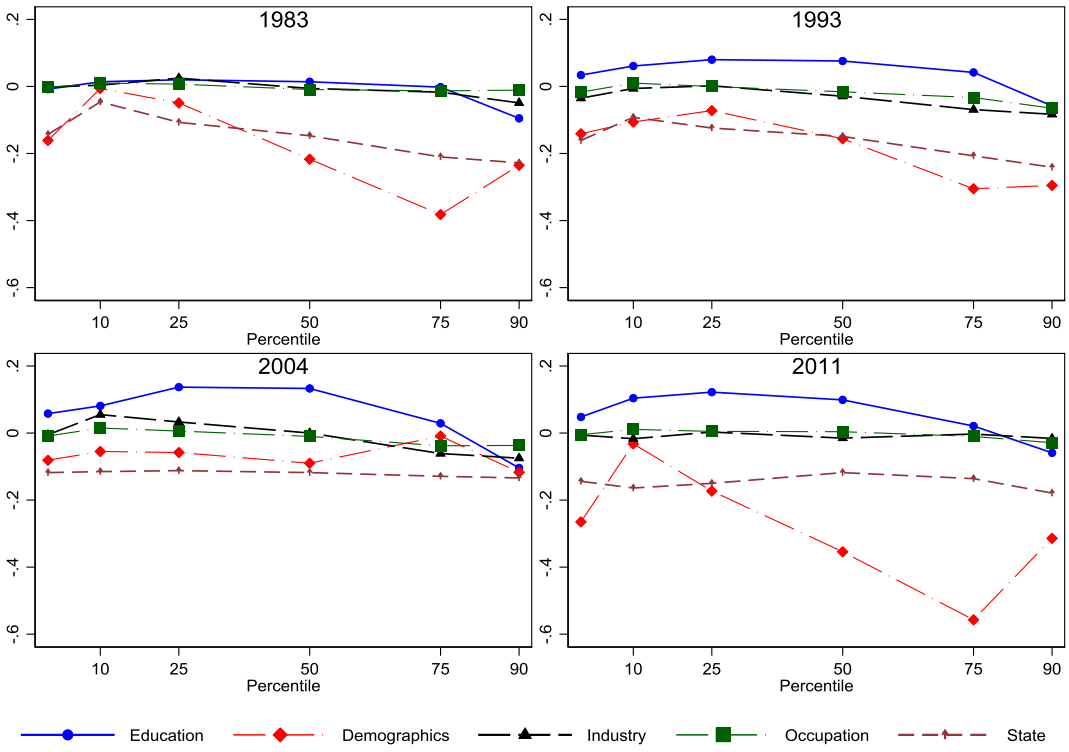

Fig. 5. Contribution to unexplained effect, urban-rural consumption expenditure gap. *Note*: The figure plots the contribution of factors to unexplained effect reported in Tables 4 to 7. Contribution of constant term (land) is not plotted as it contribution relatively much larger (smaller). See Tables 4 to 7.

end of the educational distribution reduced the urban-rural gap, the divergence at the upper end of education distribution added to the gap. Recall from Table A.2, that the urban-rural differences in share of population with graduate and above degree increased but urban-rural differences in share of population with secondary or less shrunk over time. Area interaction affect is positive for all education categories simply capturing the fact that urban area witnessed increase in individuals with education over time. The pure coefficient effect (iv) is positive for all education categories suggesting relative returns to education in urban areas increased over time. The pure characteristics effect of demographics variables is positive implying that urban area witnessed relatively more (less) increase in positively (negatively) valued characteristics. Interestingly, the pure coefficient effect of demographic characteristics is negative suggesting the coefficient differences on those variables shrunk over time.

Another interesting finding is that although industrial distribution differences did not change much, the returns to industries where urban area has advantage increased over time (panel (iii) of Table). In the last panel of Table, we aggregate all four components to derive total contribution of each variable to change in the urban-rural gap between 1983 and 2011. At mean, the intercept accounts for a large part of the change in the gap over 1983–2001. This suggests that the urban-rural difference in the base excluded category increased over time. However, it is hard to draw any policy conclusions based on increased differential among the excluded category. Tertiary education added to the urban-rural gap over time, while demographic variables contributed by reducing the gap. Importantly, tertiary education contributed more to the increased gap at higher quantiles. Since provision of education is a lever for policymakers, it is important to know that the increased differences in share of tertiary population across urban and rural areas contributed to the widening gap majorly.

5. Results from using an alternative measure of welfare

In this section, we present our findings from an alternative data source: India Human Development Survey (IHDS). The NSS data do not collect information on income. IHDS, which was collected jointly by University of Maryland and National Council of Applied Economic Research (NCAER) in New Delhi, India (Desai, Vanneman, & National Council of Applied Economic Research, 2010; Desai & Vanneman, 2015), collected both consumption and income information. We use two waves of IHDS collected in 2011–12 and 2004–05 (henceforth, 2011 and 2004, respectively). The 2011 IHDS surveyed 42,152 households, while 2004 IHDS surveyed 41,554 households.[29] A caveat here is that although these two waves are used here as independent cross sections, they are not. The 2011 IHDS resurveys the same households surveyed in 2004 IHDS. Hence, the results from IHDS are only complementary to our main results based on the NSS data.

Appendix Fig. A.4 plots the spatially adjusted urban-rural gap in per capita consumption expenditure in IHDS across the entire distribution. The consumption gap from IHDS presents similar patterns as found in NSS data. In both years, there exists substantial urban rural gap in IHDS data also. Moreover, the urban-rural consumption gap is larger at higher quantiles in both years. As far as change in the gap over time is concerned, we observe a marginal upward shift of the gap distribution in 2011 compared to 2004 except at upper quintiles. This is marginal departure from NSS, which shows an upward shift between 2004 and 2011 across the entire distribution. The average increase over 2004 and 2011 is smaller for IHDS data compared to NSS data. At this point, it is worth pointing out that IHDS surveys are panel data, while NSS are independent cross section data. In addition, while the NSS

[29] See http://ihds.info/ for more information about IHDS.

Table 8
Detailed contribution of education in urban-rural consumption expenditure gap.

	OLS		Q10		Q 25		Q 50		Q 75		Q 90	
	(1a) *explained*	(1b) *unexplained*	(2a) *explained*	(2b) *unexplained*	(3a) *explained*	(3b) *unexplained*	(4a) *explained*	(4b) *unexplained*	(5a) *explained*	(5b) *unexplained*	(6a) *explained*	(6b) *unexplained*
Pnael A: 1983												
Education	0.130***	0.054***	0.065***	0.059***	0.082***	0.051***	0.112***	0.055***	0.161***	0.061***	0.223***	0.061***
Primary	0.006***	−0.010***	0.005***	−0.003	0.006***	−0.003	0.006***	−0.008***	0.005***	−0.013***	0.005***	−0.022***
	(0.000)	(0.002)	(0.001)	(0.003)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.003)	(0.001)	(0.003)
Middle	0.020***	−0.008***	0.016***	−0.000	0.017***	0.001	0.020***	−0.004*	0.022***	−0.011***	0.023***	−0.031***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.004)
Secondary	0.057***	0.003	0.029***	0.010***	0.038***	0.012***	0.051***	0.014***	0.075***	0.007**	0.094***	−0.035***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.004)	(0.005)
Graduate & above	0.047***	0.007***	0.015***	0.008***	0.020***	0.009***	0.035***	0.012***	0.059***	0.015***	0.101***	−0.007*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.003)
Panel B: 1993												
Education	0.133***	0.034***	0.057***	0.061***	0.072***	0.080***	0.105***	0.076***	0.168***	0.042***	0.251***	−0.058***
Primary	0.001***	−0.001	0.001***	0.006**	0.001***	0.007***	0.001***	0.000	0.001***	−0.004*	0.001***	−0.011***
	(0.000)	(0.001)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.003)
Middle	0.010***	0.002	0.007***	0.011***	0.009***	0.013***	0.010***	0.006***	0.011***	−0.005**	0.011***	−0.015***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)
Secondary	0.030***	0.010***	0.017***	0.018***	0.020***	0.022***	0.027***	0.020***	0.038***	0.007***	0.046***	−0.012***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.004)
Sr. Secondary	0.024***	0.007***	0.011***	0.008***	0.014***	0.012***	0.020***	0.014***	0.030***	0.008***	0.040***	−0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)
Graduate & above	0.069***	0.016***	0.020***	0.018***	0.027***	0.025***	0.046***	0.035***	0.087***	0.036***	0.153***	−0.014***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)
Panel C: 2004												
Education	0.140***	0.058***	0.056***	0.081***	0.075***	0.137***	0.109***	0.133***	0.183***	0.029***	0.281***	−0.104***
Primary	−0.001***	0.000	−0.002***	0.008***	−0.002***	0.012***	−0.002***	−0.001	−0.001***	−0.010***	−0.001***	−0.011***
	(0.000)	(0.002)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)	(0.003)
Middle	0.006***	0.008***	0.005***	0.021***	0.006***	0.031***	0.007***	0.016***	0.008***	−0.010***	0.006***	−0.022***
	(0.000)	(0.002)	(0.000)	(0.003)	(0.000)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)
Secondary	0.024***	0.015***	0.014***	0.019***	0.018***	0.033***	0.024***	0.035***	0.032***	0.004	0.033***	−0.027***
	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.003)	(0.002)	(0.004)
Sr. Secondary	0.026***	0.013***	0.013***	0.013***	0.017***	0.023***	0.023***	0.028***	0.036***	0.009***	0.043***	−0.014***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)
Graduate	0.060***	0.016***	0.020***	0.014***	0.027***	0.028***	0.041***	0.038***	0.076***	0.026***	0.137***	−0.019***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.005)
Post Graduate	0.027***	0.005***	0.006***	0.005***	0.009***	0.011***	0.015***	0.016***	0.033***	0.010***	0.064***	−0.010***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)
Panel D: 2011												
Education	0.129***	0.048***	0.053***	0.104***	0.064***	0.122***	0.096***	0.099***	0.163***	0.021*	0.252***	−0.059***
Primary	−0.002***	0.003*	−0.003***	0.011***	−0.002***	0.014***	−0.002***	0.009***	−0.002***	−0.005**	−0.001**	−0.014***
	(0.000)	(0.002)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)
Middle	−0.000	0.000	−0.000	0.016***	−0.000	0.012***	−0.001	0.004	−0.000	−0.009***	−0.000	−0.014***
	(0.000)	(0.002)	(0.000)	(0.004)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.004)
Secondary	0.015***	0.007***	0.012***	0.026***	0.013***	0.029***	0.017***	0.015***	0.020***	−0.009**	0.016***	−0.028***
	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)	(0.002)	(0.005)
Sr. Secondary	0.024***	0.012***	0.015***	0.019***	0.017***	0.024***	0.022***	0.023***	0.033***	0.007**	0.038***	−0.009**
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.005)
Graduate	0.052***	0.017***	0.019***	0.022***	0.024***	0.030***	0.038***	0.031***	0.067***	0.020***	0.106***	−0.001
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.006)
Post Graduate	0.040***	0.009***	0.010***	0.011***	0.013***	0.014***	0.022***	0.018***	0.045***	0.018***	0.093***	0.007*
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.004)

*** p < 0.01, ** p < 0.05, * p < 0.1.

Table 9
Decomposition of change in urban-rural gap over 1983–2011.

	mean	Q 25	Q 50	Q 90
Total Difference	0.098	0.023	0.095	0.223
(i) Main Endowment effect				
Total	0.027	−0.012	0.018	0.106
Primary	−0.009	−0.010	−0.009	−0.008
Middle	−0.020	−0.018	−0.020	−0.024
Secondary & Higher Secondary	−0.001	0.000	−0.001	−0.001
Graduate and above	0.042	0.018	0.037	0.090
Demographics	0.015	0.010	0.014	0.023
Industry	−0.006	−0.014	−0.006	0.007
Occupation	0.000	0.001	0.000	0.004
State	−0.002	−0.005	−0.003	0.003
Land	0.008	0.006	0.006	0.012
(ii) Area interaction				
Total	0.051	0.045	0.065	0.029
Primary	0.003	0.001	0.002	0.005
Middle	0.000	0.000	0.000	−0.003
Secondary & Higher Secondary	0.005	0.008	0.010	−0.013
Graduate and above	0.009	0.010	0.008	0.000
Demographics	0.035	0.032	0.038	0.033
Industry	0.004	−0.002	0.005	0.010
Occupation	−0.002	−0.003	0.003	−0.007
State	−0.004	−0.003	−0.003	−0.003
Land	0.003	0.001	0.002	0.007
(iii) year interaction				
Total	0.040	0.043	0.036	0.016
Primary	0.002	0.002	0.002	0.002
Middle	0.000	0.000	0.000	0.001
Secondary & Higher Secondary	−0.020	−0.009	−0.018	−0.046
Graduate and above	−0.003	−0.002	−0.020	−0.004
Demographics	−0.006	−0.003	−0.004	−0.017
Industry	0.022	0.006	0.025	0.051
Occupation	0.024	0.015	0.025	0.037
State	0.033	0.044	0.039	0.007
Land	−0.013	−0.010	−0.014	−0.016
(iv) coefficient effect (area−year interaction)				
Total	−0.021	−0.053	−0.024	0.071
Primary	0.010	0.015	0.015	0.002
Middle	0.008	0.011	0.007	0.019
Secondary & Higher Secondary	0.013	0.033	0.018	0.015
Graduate and above	0.011	0.023	0.034	0.018
Demographics	−0.157	−0.160	−0.192	−0.154
Industry	−0.004	−0.020	−0.010	0.034
Occupation	0.000	0.001	0.008	−0.014
State	0.006	−0.039	0.035	0.062
Land	0.000	0.004	0.006	−0.003
Constant	0.091	0.077	0.055	0.093
Total (Sum of (i)–(iv))				
Primary	0.006	0.008	0.009	0.002
Middle	−0.012	−0.006	−0.013	−0.007
Secondary & Higher Secondary	−0.003	0.032	0.010	−0.045
Graduate and above	0.061	0.049	0.059	0.104
Demographics	−0.114	−0.121	−0.144	−0.114
Industry	0.017	−0.029	0.015	0.102
Occupation	0.022	0.015	0.035	0.020
State	0.033	−0.003	0.068	0.069
Land	−0.002	0.001	0.000	0.000
Constant	0.091	0.077	0.055	0.093

consumption survey collect very detailed information on consumption, the IHDS consumption questions are borrowed from the short form of the consumption module developed for NSS Employment and Unemployment Survey.

The rationale for using IHDS is to examine the gap in income. Fig. A.5 plots the spatially adjusted urban-rural gap in per capita income in IHDS across the entire distribution. There exists substantial urban rural gaps in both years using income as a measure of welfare. Moreover, the income gaps are substantially larger than the consumption gaps in both years. This should not be surprising, as inequality in income generally tend to be larger than the inequality in consumption. There is a marginal decline in the urban-rural income gap between 2004 and 2011, which is in conflict with the consumption data that shows marginal increase in the gap. Figs. A.6 and A.7 presents the decomposition of the consumption and income gap, respectively.[30] Endowment differences accounts for majority of the gap in both years and for both measures

[30] The controls in IHDS decomposition exercise differ from the controls used in NSS decomposition exercise. The controls include household demographics—household head age, age squared, gender, household size, dependency ratio, number of adult (15–64) male members, number of adult females, indicator for household belonging to the disadvantaged social group SC or ST, and Muslim religion; indicator variables for household head education; indicators for the main source of household income; and state fixed effects.

which is similar to our findings with the NSS consumption expenditure data. Thus, the IHDS data corroborate our finding from the NSS data that substantial urban-rural welfare gap exists in 2004 and 2011, and the majority of the urban-rural welfare gap in each year is explained by the urban advantage in terms of endowments.

6. Conclusion

Using data from the large-scale NSS consumption surveys and spatially price adjusted per capita consumption expenditure as a measure of welfare, we examine urban-rural welfare gap at four points of time: 1983, 1993, 2004, and 2011. We find that the urban-rural welfare gap has been gradually increasing over each decade during the past three decades. Using the unconditional quantile regression decomposition, we find that the differences in endowments explain the majority of the observed gap at each of the four points of time. Further decomposing the gap into contribution of individual factors, we find differences in educational distributions across urban and rural areas play a key role in the gap at each point of time. Decomposing the change in the urban-rural gap over 1983–2011, we find that increasing difference in share of tertiary educated individuals between urban and rural areas has contributed significantly to the widening of the gap over time.

The gradual increase in urban-rural gap in India over the past three decades is worrisome, however, not surprising. The 2009 World Development Report–Reshaping Economic Geography–argues that urban-rural living standards diverge as countries develop and become more urbanized, converging only once they reach a relatively high development threshold. Specifically, it finds that "urban-to-rural gaps in consumption levels rise until countries reach upper-middle-income levels" (World Bank, 2008). However, policymakers cannot afford to sit back and wait for their countries to pass a hypothesized development threshold before spatial inequalities begin to converge, especially when that threshold lies far in the future (Dudwick, Hull, Katayama, Shilpi, & Simler, 2011). For the Indian context, it is important that a significant part of the urban-rural welfare gap is contributed by differences in distribution of education across urban and rural areas. Moreover, while the difference in share of population with lower levels of education between urban and rural area declined over 1983–2011 reducing the urban-rural gap, the difference in share of population with tertiary education increased contributing to widening of the urban-rural gap over time. Since provision of education remains an important policy lever for policymakers, our findings suggest putting a high priority on human capital development, which is consistent with the Indian government policy of universal elementary education. The Sarva Shiksha Abhiyan (Education for All Movement) was launched by Indian government in 2000–01 that aimed at the universalization of elementary education "in a time bound manner." Obviously, these policies will take time to bear fruit in terms of reducing the gaps. As educational distributions shift in both urban and rural areas gradually as witnessed, more people in rural areas will achieve primary and middle education while more people in urban areas end up acquiring tertiary education as urban education distribution will shift towards tertiary education. This will widen the gap in the percentage of population with tertiary education more in favor of urban areas.

Given that, we find that increased gap in the share of tertiary educated in population contributed to widening of the welfare gap, to curtail the widening of the welfare gap or the reducing the welfare gap in future will require reducing the gap in share of individuals with tertiary education between urban and rural areas. Although India has achieved universalization of primary education, access to upper and higher education remains a significant issue in rural India. According to NSSO education survey conducted in 2014, there was no significant difference between rural and urban India in terms of physical access to primary schooling within less than 1 km, but for upper primary and secondary schools the gaps between rural and urban areas are quite prominent. More than 12% of rural households in India did not have any secondary schools within 5 kilometers whereas in urban areas such cases are insignificant (less than 1%) (NSSO, 2015). In Fig. 6, we plot the attendance and dropout rates for the age 16-21 (relevant age group for senior secondary and tertiary education) from NSSO education survey conducted in 2014. Within each age group, drop out is significantly higher in rural areas. In addition, there is significant difference in the proportion of age 18–21 (relevant age for tertiary education) attending education between urban and rural areas. Even with quite low rural-urban migration

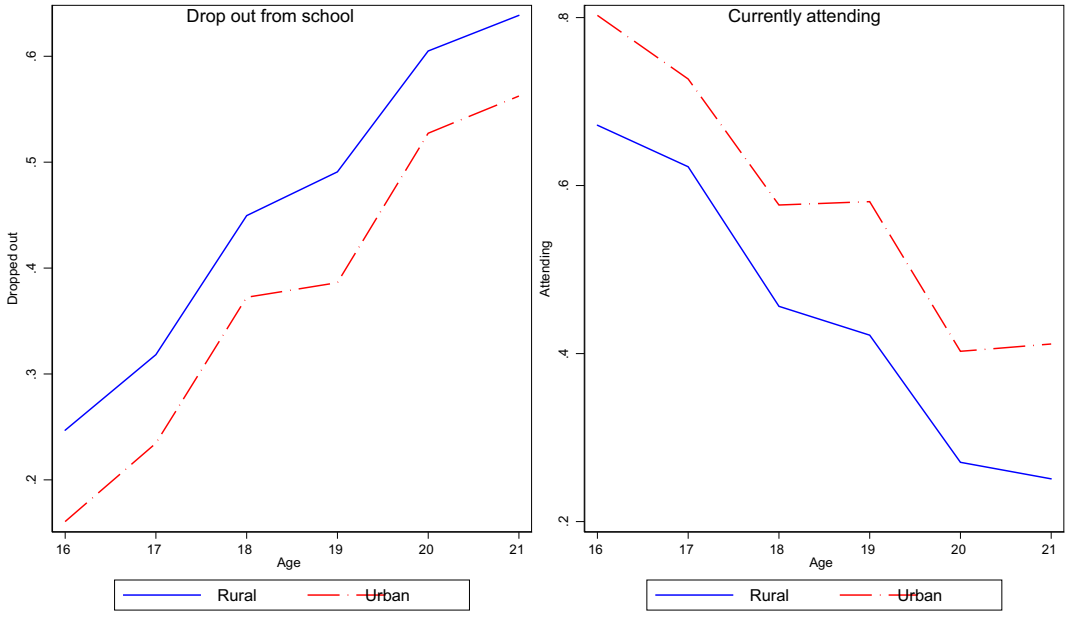

Fig. 6. Drop out and attendance rates at different ages. *Note*: Authors calculations from NSS 71st round, Social Consumption – Education Survey 2014. Drop out is individual who has ever attended school but currently not attending at the time of survey. Attending is individual who is attending at the time of survey. Attending and drop out at any age will not add to 1, as they do not account for individuals who never attended school.

(Munshi & Rosenzweig, 2016), the gaps in attendance in age 16-21 potentially will ensure that the gaps in tertiary education attainment across urban and rural areas will persist for near foreseeable future unless there is a dramatic catching up from rural areas in attendance for age 16-21. Thus, a policy that can potentially reduce the urban-rural welfare gap should address the high dropout gaps after elementary education.

Declaration of Competing Interest

None.

Acknowledgements

I am grateful for several useful ideas from World Development reviewers.

Appendix A

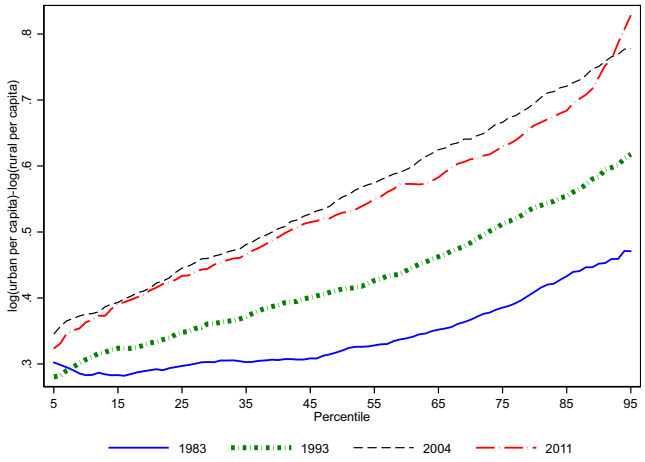

Fig. A.1. Difference in log of urban and rural nominal per capita consumption expenditure. *Note*: The per capita consumption expenditure is not adjusted for prices differences across states and rural/urban.

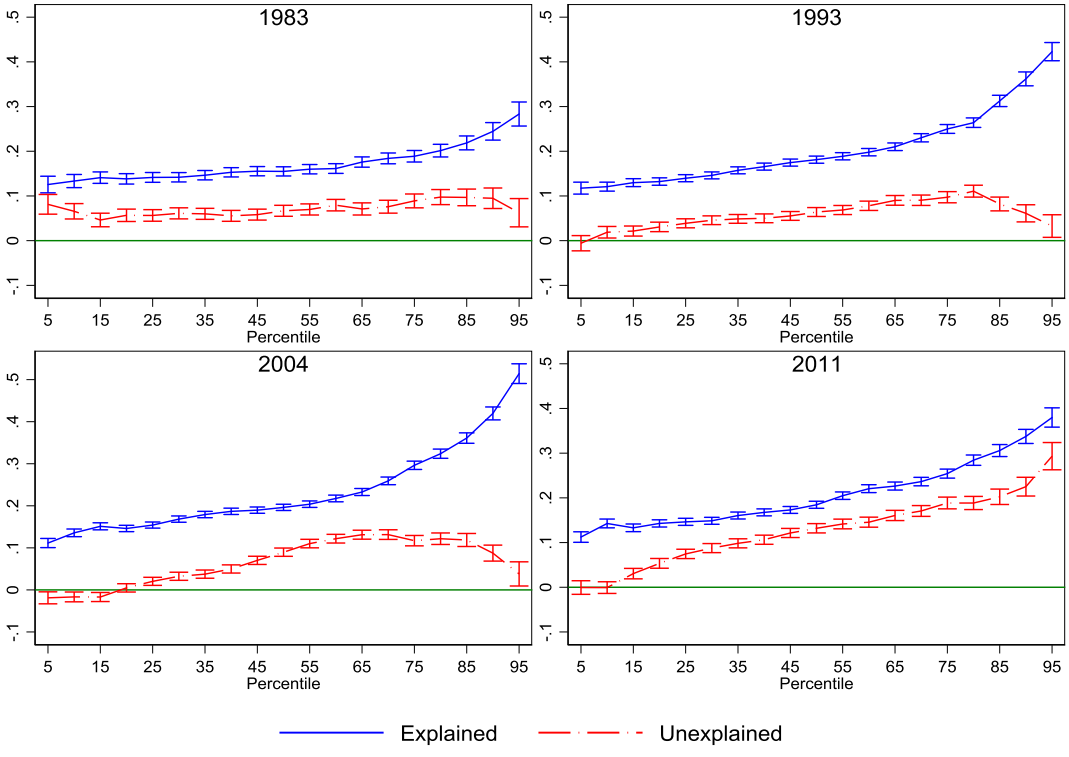

Fig. A.2. Decomposition results using rural price as counterfactual.

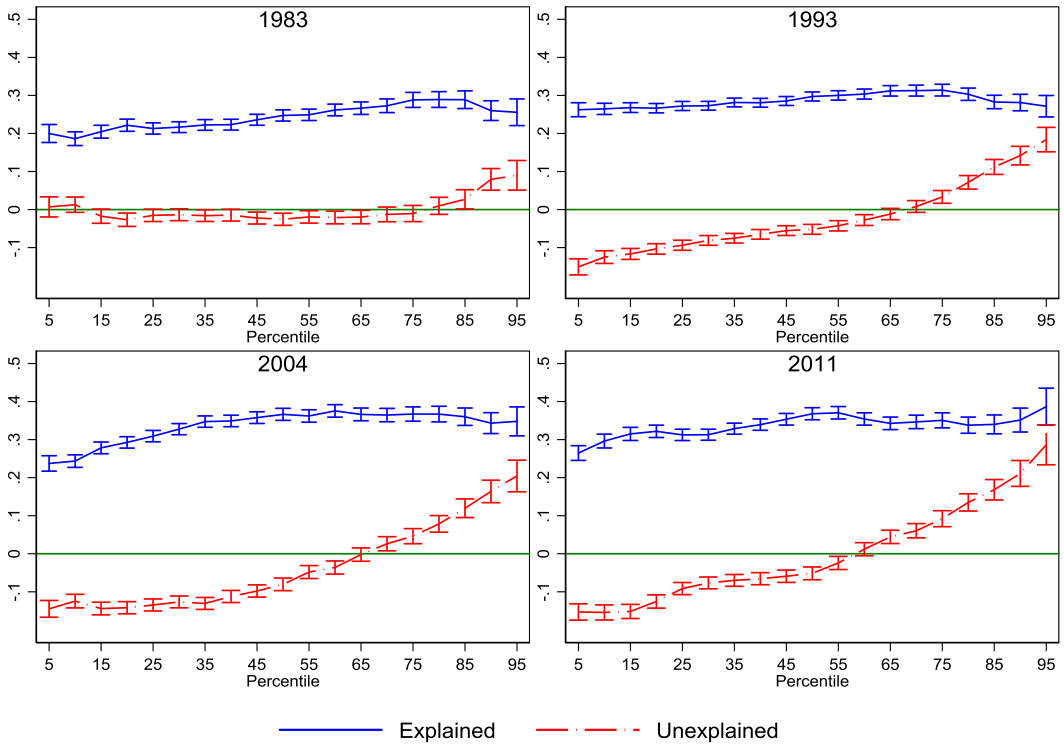

Fig. A.3. Decomposition results using urban price as counterfactual.

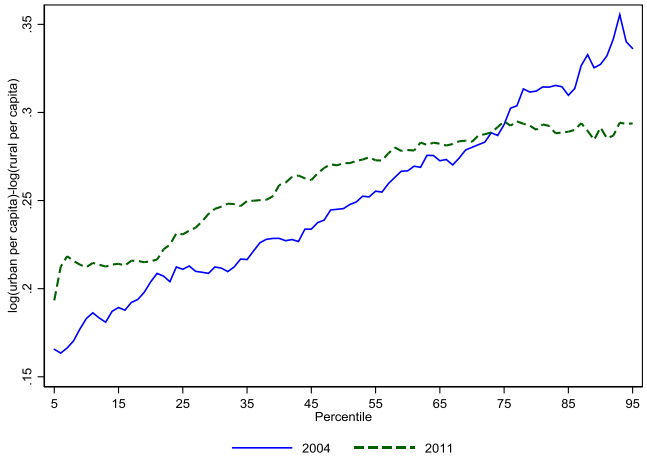

Fig. A.4. Difference in log of urban and rural per capita consumption expenditure (IHDS).

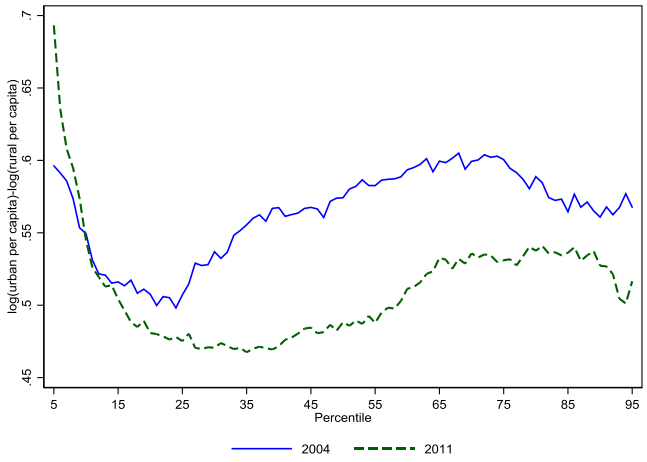

Fig. A.5. Difference in log of urban and rural log of per capita income (IHDS).

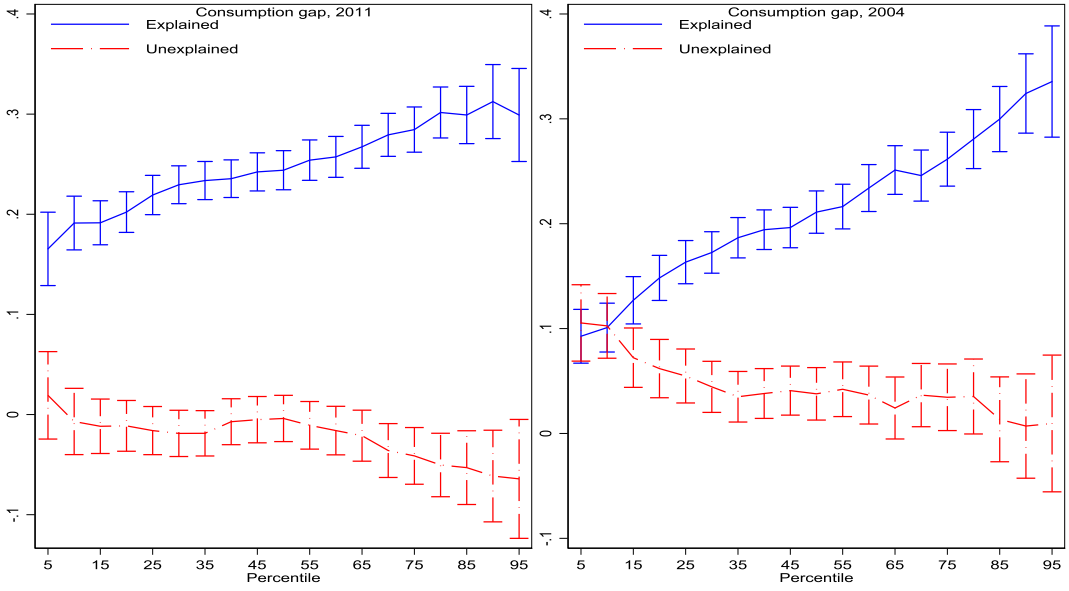

Fig. A.6. Decomposition of urban-rural differences in log of per capita consumption expenditure (IHDS).

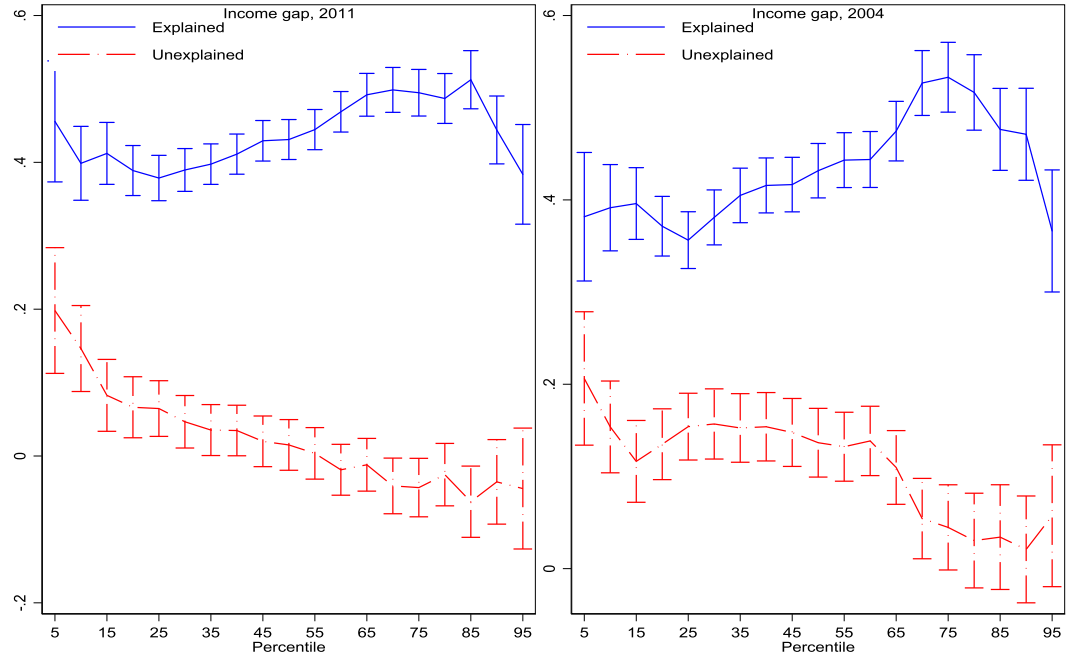

Fig. A.7. Decomposition of urban-rural differences in log of per capita income expenditure (IHDS).

Table A.1
Descriptive statistics.

	1983		1993		2004		2011	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
log(per capita) expenditure at 1993 price	5.93	5.69	6.03	5.77	6.15	5.86	6.40	6.05
Scheduled Tribes	0.03	0.10	0.03	0.11	0.03	0.11	0.03	0.11
Scheduled Castes	0.12	0.18	0.14	0.21	0.16	0.21	0.15	0.21
Others	0.85	0.72	0.83	0.68	0.81	0.68	0.82	0.68
Muslim	0.16	0.10	0.15	0.10	0.16	0.11	0.17	0.12
HH head-female	0.07	0.07	0.08	0.06	0.08	0.08	0.09	0.09
HH head-married	0.89	0.89	0.89	0.90	0.88	0.90	0.87	0.90
HH head-age	43.93	45.10	44.18	44.95	46.15	46.06	46.53	46.75
HH head age square	2099	2220	2117	2199	2302	2296	2340	2353
Dependency ratio	0.40	0.45	0.37	0.41	0.33	0.40	0.30	0.36
Number of adult males	1.89	1.76	1.78	1.74	1.86	1.77	1.80	1.77
Number of adult females	1.75	1.73	1.66	1.68	1.75	1.73	1.71	1.71
HH size	6.34	6.58	5.69	6.08	5.59	6.09	5.23	5.66
Land in acres	0.11	0.59	0.09	0.51	0.10	0.61	0.08	0.36
Education								
Below Primary	0.41	0.74	0.36	0.68	0.28	0.56	0.27	0.53
Primary	0.17	0.13	0.13	0.12	0.14	0.15	0.11	0.13
Middle	0.15	0.08	0.15	0.10	0.18	0.15	0.15	0.15
Secondary	0.18	0.04	0.15	0.05	0.15	0.07	0.17	0.10
Senior Secondary			0.08	0.02	0.10	0.04	0.12	0.05
Graduate	0.09	0.01	0.13	0.02	0.12	0.02	0.13	0.03
Post Graduate					0.04	0.01	0.06	0.01
Number of households	38,274	75066	46,074	69,120	45,321	79,268	41,964	59,691

Note: Survey weights are used. The 1983 data do not distinguish between secondary and senior secondary. The 1983 and 1993 data do not distinguish between graduate and post graduate degrees.

Table A.2
Determinants of consumption, 1983.

	OLS		Q 10		Q 50		Q 90	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Primary	0.105***	0.167***	0.138***	0.154***	0.121***	0.174***	0.036**	0.170***
	(0.007)	(0.005)	(0.020)	(0.011)	(0.014)	(0.009)	(0.017)	(0.016)
Middle	0.220***	0.275***	0.210***	0.207***	0.245***	0.277***	0.145***	0.356***
	(0.008)	(0.007)	(0.018)	(0.011)	(0.015)	(0.011)	(0.020)	(0.026)
Secondary	0.416***	0.372***	0.265***	0.214***	0.438***	0.347***	0.471***	0.564***
	(0.008)	(0.009)	(0.016)	(0.014)	(0.014)	(0.016)	(0.028)	(0.036)
Graduate and above	0.658***	0.436***	0.283***	0.177***	0.578***	0.395***	1.167***	0.735***
	(0.010)	(0.018)	(0.016)	(0.025)	(0.017)	(0.024)	(0.047)	(0.071)
Scheduled Tribes	−0.148***	−0.244***	−0.160***	−0.317***	−0.127***	−0.231***	−0.118***	−0.198***
	(0.015)	(0.006)	(0.046)	(0.017)	(0.026)	(0.009)	(0.030)	(0.012)
Scheduled Castes	−0.124***	−0.172***	−0.137***	−0.158***	−0.129***	−0.168***	−0.108***	−0.183***
	(0.008)	(0.005)	(0.022)	(0.013)	(0.015)	(0.008)	(0.018)	(0.013)
Muslim	−0.065***	−0.032***	−0.105***	−0.046**	−0.078***	−0.027***	−0.009	−0.030**
	(0.007)	(0.006)	(0.020)	(0.018)	(0.013)	(0.010)	(0.017)	(0.015)
Head-Female	0.022*	0.056***	0.036	−0.000	0.063***	0.058***	−0.054	0.106***
	(0.012)	(0.008)	(0.030)	(0.022)	(0.022)	(0.012)	(0.038)	(0.020)
Head-Married	0.047***	0.032***	0.079***	0.025*	0.061***	0.030***	−0.036	0.025
	(0.010)	(0.006)	(0.026)	(0.013)	(0.019)	(0.009)	(0.038)	(0.017)
Head Age	−0.001	−0.003***	−0.005*	−0.005***	−0.004*	−0.002**	0.007**	−0.003*
	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)
Head Age squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	−0.000	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dependency ratio	−0.565***	−0.364***	−0.063	−0.231***	−0.456***	−0.364***	−1.229***	−0.484***
	(0.021)	(0.016)	(0.049)	(0.038)	(0.042)	(0.024)	(0.083)	(0.055)
Number of adult male	0.008**	0.035***	0.080***	0.055***	0.025***	0.029***	−0.097***	0.033***
	(0.004)	(0.003)	(0.011)	(0.008)	(0.009)	(0.005)	(0.016)	(0.011)
Number of adult female	−0.035***	−0.004	0.042***	0.018**	−0.020**	−0.005	−0.144***	−0.030***
	(0.004)	(0.003)	(0.013)	(0.009)	(0.010)	(0.006)	(0.017)	(0.012)
Household Size	−0.035***	−0.025***	−0.060***	−0.031***	−0.044***	−0.019***	0.014*	−0.030***
	(0.002)	(0.002)	(0.008)	(0.005)	(0.006)	(0.003)	(0.008)	(0.006)
Constant	6.072***	5.694***	5.128***	5.045***	6.047***	5.620***	7.100***	6.393***
	(0.028)	(0.022)	(0.059)	(0.048)	(0.049)	(0.032)	(0.079)	(0.060)
Observations	38,274	75,059	38,274	75,059	38,274	75,059	38,274	75,059
R-squared	0.340	0.242	0.100	0.083	0.237	0.161	0.171	0.109

Note: All the models include controls for land, states, occupation, and industries. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3
Determinants of consumption, 1993.

	OLS		Q 10		Q 50		Q 90	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Primary	0.119***	0.124***	0.134***	0.091***	0.134***	0.134***	0.078***	0.156***
	(0.007)	(0.005)	(0.021)	(0.010)	(0.014)	(0.008)	(0.015)	(0.014)
Middle	0.209***	0.193***	0.211***	0.131***	0.242***	0.195***	0.144***	0.258***
	(0.007)	(0.005)	(0.019)	(0.010)	(0.015)	(0.009)	(0.018)	(0.017)
Secondary	0.374***	0.282***	0.289***	0.156***	0.424***	0.255***	0.387***	0.440***
	(0.007)	(0.007)	(0.016)	(0.011)	(0.015)	(0.011)	(0.023)	(0.027)
Senior Secondary	0.488***	0.355***	0.302***	0.190***	0.533***	0.308***	0.611***	0.618***
	(0.009)	(0.011)	(0.016)	(0.013)	(0.019)	(0.016)	(0.036)	(0.045)
Graduate and above	0.714***	0.442***	0.310***	0.155***	0.682***	0.336***	1.178***	0.894***
	(0.008)	(0.012)	(0.016)	(0.015)	(0.015)	(0.016)	(0.039)	(0.053)
Scheduled Tribes	−0.123***	−0.179***	−0.130***	−0.202***	−0.149***	−0.190***	−0.093**	−0.147***
	(0.012)	(0.005)	(0.036)	(0.013)	(0.021)	(0.009)	(0.037)	(0.016)
Scheduled Castes	−0.162***	−0.158***	−0.172***	−0.148***	−0.168***	−0.160***	−0.132***	−0.169***
	(0.007)	(0.004)	(0.021)	(0.010)	(0.013)	(0.007)	(0.016)	(0.010)
Muslim	−0.052***	−0.040***	−0.046**	−0.027**	−0.081***	−0.049***	−0.035**	−0.032**
	(0.006)	(0.006)	(0.021)	(0.013)	(0.014)	(0.009)	(0.016)	(0.015)
Head-Female	0.081***	0.087***	0.035	0.023	0.100***	0.077***	0.055*	0.147***
	(0.011)	(0.008)	(0.028)	(0.016)	(0.020)	(0.011)	(0.031)	(0.020)
Head-Married	0.057***	0.043***	0.049**	0.041***	0.050***	0.034***	0.000	0.056***
	(0.009)	(0.006)	(0.022)	(0.012)	(0.017)	(0.009)	(0.025)	(0.016)
Head Age	−0.003**	−0.005***	−0.008**	−0.004***	−0.005**	−0.005***	−0.002	−0.006***
	(0.001)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)
Head Age squared	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dependency ratio	−0.741***	−0.519***	0.039	−0.265***	−0.550***	−0.486***	−1.410***	−0.813***
	(0.021)	(0.017)	(0.076)	(0.034)	(0.041)	(0.024)	(0.066)	(0.044)
Number of adult male	−0.053***	−0.003	0.110***	0.041***	−0.018*	−0.001	−0.201***	−0.049***
	(0.004)	(0.003)	(0.017)	(0.008)	(0.009)	(0.005)	(0.013)	(0.009)
Number of adult female	−0.078***	−0.035***	0.085***	0.021**	−0.043***	−0.023***	−0.222***	−0.105***
	(0.004)	(0.004)	(0.018)	(0.009)	(0.010)	(0.006)	(0.013)	(0.010)
Household Size	−0.011***	−0.012***	−0.099***	−0.031***	−0.035***	−0.015***	0.064***	0.010**
	(0.003)	(0.002)	(0.013)	(0.005)	(0.006)	(0.003)	(0.007)	(0.005)
Constant	6.244***	5.897***	5.341***	5.213***	6.183***	5.869***	7.431***	6.644***
	(0.025)	(0.020)	(0.070)	(0.042)	(0.047)	(0.031)	(0.076)	(0.056)
Observations	43,856	69,120	43,856	69,120	43,856	69,120	43,856	69,120
R-squared	0.404	0.262	0.128	0.081	0.291	0.178	0.194	0.126

Note: All the models include controls for land, states, occupation, and industries. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A.4
Determinants of consumption, 2004.

	OLS		Q 10		Q 50		Q 90	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Primary	0.112***	0.110***	0.162***	0.102***	0.111***	0.122***	0.032	0.111***
	(0.007)	(0.004)	(0.025)	(0.010)	(0.020)	(0.008)	(0.019)	(0.013)
Middle	0.239***	0.194***	0.258***	0.136***	0.297***	0.208***	0.094***	0.227***
	(0.007)	(0.004)	(0.021)	(0.010)	(0.019)	(0.008)	(0.020)	(0.015)
Secondary	0.389***	0.269***	0.295***	0.151***	0.518***	0.269***	0.235***	0.395***
	(0.007)	(0.006)	(0.020)	(0.011)	(0.022)	(0.010)	(0.027)	(0.022)
Senior Secondary	0.519***	0.350***	0.332***	0.185***	0.630***	0.330***	0.522***	0.590***
	(0.009)	(0.008)	(0.019)	(0.012)	(0.022)	(0.013)	(0.039)	(0.034)
Graduate	0.740***	0.465***	0.327***	0.184***	0.750***	0.364***	1.178***	0.947***
	(0.009)	(0.011)	(0.019)	(0.014)	(0.022)	(0.016)	(0.058)	(0.052)
Post Graduate	0.900***	0.638***	0.313***	0.164***	0.842***	0.393***	1.536***	1.328***
	(0.013)	(0.018)	(0.021)	(0.026)	(0.025)	(0.027)	(0.093)	(0.106)
Scheduled Tribes	−0.133***	−0.209***	−0.202***	−0.259***	−0.064**	−0.198***	−0.086**	−0.172***
	(0.014)	(0.005)	(0.036)	(0.016)	(0.031)	(0.009)	(0.039)	(0.011)
Scheduled Castes	−0.193***	−0.161***	−0.193***	−0.126***	−0.211***	−0.168***	−0.155***	−0.189***
	(0.006)	(0.004)	(0.022)	(0.011)	(0.018)	(0.007)	(0.020)	(0.011)
Muslim	−0.075***	−0.046***	−0.099***	−0.025**	−0.109***	−0.052***	−0.029	−0.045***
	(0.006)	(0.005)	(0.021)	(0.013)	(0.019)	(0.010)	(0.023)	(0.016)
Head-Female	0.052***	0.061***	0.031	−0.007	0.065**	0.055***	0.051	0.087***
	(0.011)	(0.007)	(0.031)	(0.018)	(0.028)	(0.012)	(0.050)	(0.023)
Head-Married	0.018**	0.052***	0.033	0.043***	0.011	0.036***	0.001	0.035
	(0.009)	(0.006)	(0.026)	(0.015)	(0.025)	(0.011)	(0.041)	(0.021)
Head Age	−0.001	−0.004***	−0.004	−0.004***	−0.002	−0.007***	−0.002	−0.005*
	(0.001)	(0.001)	(0.003)	(0.002)	(0.003)	(0.001)	(0.006)	(0.002)

Table A.4 (*continued*)

	OLS		Q 10		Q 50		Q 90	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Head Age squared	0.000***	0.000***	0.000**	0.000***	0.000***	0.000***	0.000*	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dependency ratio	−0.590***	−0.510***	0.003	−0.199***	−0.587***	−0.426***	−1.134***	−0.849***
	(0.022)	(0.015)	(0.067)	(0.035)	(0.064)	(0.029)	(0.159)	(0.048)
Number of adult male	−0.036***	−0.007**	0.095***	0.041***	−0.026	0.011*	−0.165***	−0.068***
	(0.005)	(0.003)	(0.016)	(0.008)	(0.016)	(0.006)	(0.037)	(0.010)
Number of adult female	−0.055***	−0.029***	0.064***	0.025***	−0.044***	−0.012*	−0.188***	−0.089***
	(0.005)	(0.003)	(0.017)	(0.009)	(0.017)	(0.007)	(0.041)	(0.011)
Household Size	−0.023***	−0.017***	−0.085***	−0.040***	−0.033***	−0.025***	0.052***	0.009*
	(0.003)	(0.002)	(0.011)	(0.005)	(0.009)	(0.004)	(0.018)	(0.005)
Constant	6.157***	5.977***	5.289***	5.313***	6.102***	5.971***	7.240***	6.729***
	(0.027)	(0.019)	(0.069)	(0.044)	(0.066)	(0.035)	(0.107)	(0.064)
Observations	45,320	79,267	45,320	79,267	45,320	79,267	45,320	79,267
R-squared	0.446	0.292	0.143	0.107	0.331	0.206	0.211	0.141

Note: All the models include controls for land, states, occupation, and industries. *** p < 0.01, ** p < 0.05, * p < 0.1.

Table A.5
Determinants of consumption, 2011.

	OLS		Q 10		Q 50		Q 90	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Primary	0.102***	0.073***	0.216***	0.111***	0.141***	0.066***	−0.047**	0.075***
	(0.009)	(0.005)	(0.028)	(0.016)	(0.023)	(0.013)	(0.020)	(0.018)
Middle	0.157***	0.155***	0.232***	0.124***	0.181***	0.164***	0.067***	0.156***
	(0.008)	(0.005)	(0.028)	(0.016)	(0.021)	(0.013)	(0.023)	(0.019)
Secondary	0.260***	0.210***	0.319***	0.156***	0.308***	0.209***	0.118***	0.304***
	(0.008)	(0.006)	(0.023)	(0.016)	(0.021)	(0.014)	(0.026)	(0.030)
Senior Secondary	0.412***	0.285***	0.359***	0.192***	0.460***	0.233***	0.430***	0.465***
	(0.009)	(0.008)	(0.024)	(0.015)	(0.023)	(0.018)	(0.042)	(0.039)
Graduate	0.618***	0.358***	0.360***	0.163***	0.608***	0.288***	0.966***	0.678***
	(0.009)	(0.011)	(0.022)	(0.017)	(0.021)	(0.021)	(0.051)	(0.062)
Post Graduate	0.913***	0.475***	0.379***	0.156***	0.728***	0.350***	1.864***	1.031***
	(0.012)	(0.020)	(0.025)	(0.023)	(0.027)	(0.030)	(0.113)	(0.100)
Scheduled Tribes	−0.164***	−0.209***	−0.268***	−0.267***	−0.125***	−0.210***	−0.141***	−0.149***
	(0.013)	(0.006)	(0.043)	(0.023)	(0.031)	(0.013)	(0.041)	(0.017)
Scheduled Castes	−0.160***	−0.108***	−0.145***	−0.102***	−0.157***	−0.122***	−0.193***	−0.110***
	(0.007)	(0.004)	(0.023)	(0.016)	(0.017)	(0.011)	(0.025)	(0.016)
Muslim	−0.075***	0.005	−0.062**	0.032*	−0.080***	−0.007	−0.062**	0.027
	(0.007)	(0.006)	(0.024)	(0.019)	(0.018)	(0.015)	(0.026)	(0.023)
Head-Female	0.048***	0.012	0.064**	0.020	0.052*	0.012	0.001	0.026
	(0.012)	(0.008)	(0.030)	(0.025)	(0.027)	(0.020)	(0.051)	(0.030)
Head-Married	0.031***	-0.001	0.031	0.024	0.038	0.005	-0.008	0.009
	(0.010)	(0.007)	(0.026)	(0.022)	(0.024)	(0.017)	(0.046)	(0.026)
Head Age	-0.010***	-0.005***	-0.004	-0.006**	-0.008**	-0.002	-0.019***	-0.009**
	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)	(0.002)	(0.006)	(0.004)
Head Age squared	0.000***	0.000***	0.000*	0.000***	0.000***	0.000**	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Dependency ratio	-0.666***	-0.469***	0.047	-0.150**	-0.778***	-0.434***	-0.921***	-0.880***
	(0.024)	(0.017)	(0.075)	(0.064)	(0.058)	(0.064)	(0.108)	(0.070)
Number of adult male	-0.061***	-0.032***	0.074***	0.017	-0.080***	-0.023	-0.113***	-0.105***
	(0.005)	(0.003)	(0.021)	(0.016)	(0.014)	(0.015)	(0.024)	(0.012)
Number of adult female	-0.087***	-0.036***	0.064***	0.027	-0.113***	-0.032**	-0.159***	-0.120***
	(0.005)	(0.004)	(0.022)	(0.017)	(0.015)	(0.013)	(0.022)	(0.016)
Household Size	-0.006*	-0.012***	-0.091***	-0.037***	0.001	-0.015	0.027**	0.024***
	(0.003)	(0.002)	(0.015)	(0.011)	(0.010)	(0.010)	(0.013)	(0.008)
Constant	6.739***	6.282***	5.735***	5.657***	6.634***	6.173***	7.822***	7.060***
	(0.028)	(0.024)	(0.071)	(0.069)	(0.075)	(0.056)	(0.151)	(0.096)
Observations	41,964	59,691	41,964	59,691	41,964	59,691	41,964	59,691
R-squared	0.426	0.282	0.146	0.090	0.308	0.196	0.200	0.134

Note: All the models include controls for land, states, occupation, and industries. *** p < 0.01, ** p < 0.05, * p < 0.1.

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