Unit Value, Quality Effect and Living Standards in India – Spatial and Temporal Estimation with Household Level Data

Panchanan Das (University of Calcutta)

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Panchanan Das
Associate Professor of Economics
Department of Economics
University of Calcutta

This paper is a preliminary attempt to look into the spatial and temporal variation in households' living standards in terms of the quality effect on unit values of major food items with pooled household level data taken from 55^{th} and 66^{th} round consumer expenditure survey in India during 1999-2000 and 2009-10 respectively. The quality effect is measured by the change in unit value with respect to income, or total household expenditure. The effect of variation of food prices on the household's welfare is based on the concept of compensating variation of income. We decompose observed unit value into quality component and quality adjusted price component. The quality effect of unit value of food items in a region concentrated with lower-income households is normally low because of lower income elasticity of demand as compared to it in regions living higher-income households. The quality effect varies across social and religious groups mainly because of earning differences due to the differences of their employment opportunities. The study incorporates the time effect of consumers' preferences that goes beyond the available studies that did not consider the temporal effects in estimating the quality effect of unit values. It is observed that the income elasticity of unit value was substantial for some food items. It was more than 40 percent for cereal consumption, over 30 percent for pulses. The increase in observed price for all food items over time is largely caused by the increase in income elasticity of unit value. The quality adjusted prices faced by the tribal people were higher than the adjusted prices reported by the upper general castes for most of the food items. There has been significant regional variations in quality effect in India during this period.

JEL Classification: D11, D12

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1. Introduction

India has been growing at a faster rate since the mid-1980s, but the higher growth is not shared equally by all the states or by all groups of people living within a particular state (Datt and Ravallion 1998, Das 2007, 2012). While absolute poverty declined during this period, the relative poverty both in terms of its incidence, depth and severity increased significantly (Das, 2012a). This puts the focus on investigation of regional differences in living standard in India. Food price inflation, along with other structural factors, has been significantly related to nutritional status and ultimately the level of wellbeing of the people living below the poverty line. In India, food prices increased at a higher rate than non-food prices and the relative increase was more rapid during the first quarter of 2008 to the end of 2009 (GOI 2012, Office of the Economic Adviser, Ministry of Commerce and Industry). Among different food commodities cereal prices, particularly rice and wheat, increased at a disproportionate rate. Normally, higher inflation hurts the vulnerable section of the society, but there is no guaranty that lower food inflation improves the welfare of the poor households[1].

This paper investigates the spatial and temporal variation of living standard in terms of the variation of unit values of food products by utilising household level information in India. The construction of purchasing power parity (PPP) in the form of spatial prices has been essential in intra national comparison of living standards in a large country like India because the country's currency unit does not have the same purchasing power in all regions and the consumption patterns are sharply different across locations[2]. As price information across regions in India is not available at the household level, we need to estimate spatial variation in prices by exploiting household level information as available in the household surveys on consumer expenditures conducted by the National Sample Survey Office (NSSO). Household expenditure surveys in India collect information on both expenditures and quantities of different food and non-food items. It is possible to calculate easily the unit values of the commodities consumed by the households by utilising the figures of nominal expenditure and physical quantities recorded in the survey.

[1] Himanshu (2007) observed that the poor households were not benefited from very low food inflation during 1993 to 2004.

[2] Different statistical agencies including the United Nations International Comparison Project (ICP) have concentrated more in calculating PPP for international comparisons rather than intra national comparison of purchasing power of the domestic currency (Coondoo et al. 2004, 2011).

Apparently, one can use the unit values as a proxy for market prices. But the unit values may not be the direct substitutes for true market prices (Deaton 1988). Moreover, the problems associated with the simultaneity of quantity and quality introduces additional complications, at least in statistical sense, in using unit value as a proxy for market price. The regression of physical quantity, for example, on unit value is actually a regression of one choice variable on another, and in estimating this kind of regression equation we have to face simultaneity bias (Deaton 1988). In many studies, unit values are used as proxies for product quality because of the absence of quality information (Hallak et al 2011). This measure is also unsatisfactory because prices may vary across individuals even within a region for reasons other than quality.

In this study we decompose observed unit value into quality component and quality adjusted price component. We define quality to be any tangible or intangible attribute of a good that increases consumers' valuation of it. Quality component of a commodity in a region relative to a numeraire region can be identified by combining data on observed unit values of the commodity in that region with information about global demand for the commodity. The intuition behind the identification is straightforward: individual consumers normally take care about price relative to quality in choosing among products. Two individuals in a region may have different unit values for a product because of different quality components which are reflected in the form of variation in living standards. Similarly, two individuals in two different regions showing the same unit value for a product but different living standard must have products with different levels of quality. Among different regions within a country with identical unit values, the region with higher standard of living is revealed to possess higher quality effect.

The estimation of quality effect, however, involves many difficulties, both conceptual and practical. One can look at the variation in unit values within a region as the reflection of the influence of incomes and household characteristics on quantities and qualities. Thus the within-region variation in unit values can be used to estimate the influence of incomes and household characteristics on quantities of food commodities. By contrast, the between-region variation in unit values represent at least partly the spatial variation in prices. Alternatively, the quality effect is measured by the change in unit value with respect to income, or total household expenditure (Houthakker and Prais 1952). The quality component of unit values

increases with the increase in real income. Richer people are assumed to buy better quality of a good with higher unit value.

If we know how the quality of a commodity changes with changes in income, we can predict the effects of changes in absolute prices on the unit value index[3]. Coondoo et al (2004, 2011) and Majumder, et al (2012) calculated spatial prices by utilising household level data in India. The methodology adopted by them is an extended form of the Country Product Dummy Method (CPD). Our analysis is closely associated with previous attempt by Majumder, at al (2012) to deal with potential variation in unit values not entirely due to variation in product price alone by incorporating social and religious characteristics of the households, and the time effect to compare the levels of living by using unit values for food products across the major states in India. We attempt to sort out how much of the differences in unit values are attributable to differences in quality driven by differences in incomes, and how much comes from differences in prices by taking regional dimensions into account. This study has been motivated by the fact that India has been growing at a faster rate with ever growing regional divergence since the early 1990s. The primary objective of this paper is to look into the spatial and temporal variation in living standards by taking variation of unit values into account with pooled household level data from 55^{th} and 66^{th} round consumer expenditure survey conducted by the NSSO in India during 1999-2000 and 2009-10 respectively.

On the basis of the estimated model as discussed below we have calculated income elasticity of unit value for major food items consumed by every household everywhere in India. Deaton (1987) estimated the price elasticities of food demand by using household budget survey in Côte d'Ivoire for 1979 by incorporating the quality effect into the relationship between prices and unit values. The methodology used here is significantly different from those used in Deaton (1987, 1990) or in Crawford et al.'s (2003). The estimation of the relation between price and quantity for different groups of households requires an assumption of weak separability of preferences. This assumption is necessary in a model with quality differences as discussed in Prais and Houthakker (1955).

[3] There will be a proportional relation between unit value and the market price of a commodity only if the quality elasticity of that commodity is zero. If the quality elasticity is positive, as would normally be the case, unit value will move less than proportionally with prices, the shortfall depending on the size of the quality elasticity as well as on the overall price elasticity of the commodity concerned.

We have calculated unit values for cereals and other major food products, and observe significant differences in them across the major states and between rural and urban areas in each state. A part of the difference is attributable to the variation in quality driven by differences in incomes. The quality effect is substantial for cereals and some other foods, but varied significantly across the states. As the budget allocations of households on food commodities differ considerably across social groups, the quality effects are also different for different social groups within a region.

The rest of the study is organised as follows. Section 2 evaluates methodological issues in estimating spatial variation in prices and living standard. Section 3 describes the structure of data and variables used in this study. Section 4 interprets the empirical results. Section 5 concludes.

2. Methodology

The effect of variation of food prices on the household's welfare can be examined in terms of the compensating variation, the amount of money needed to compensate a consumer for the change in price and restore the original utility level. The compensating variation, the difference between two values of the expenditure function at the given level of utility or the Hicksian demand function, may be viewed in the form of the True Cost of Living Index comparing price situation P_1 with price situation P_0 is given by:

$$CV = E(P_1, U_0) - E(P_0, U_0) \quad \text{.....(1)}$$

The price variation may be in the form of temporal variation or in the form of spatial variation at the reference utility level. The linear approximation of the compensating variation function is obtained by applying a second-order Taylor-series expansion:

$$CV \cong \sum_{i=1}^{n} \frac{\partial E(P_0, U_0)}{\partial P_i}(P_{1i} - P_{0i}) + \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n} \frac{\partial^2 E(P_0, U_0)}{\partial P_i \partial P_j}(P_{1i} - P_{oi})(P_{1j} - P_{oj}) \quad \text{..... (2)}$$

The Hicksian demand can be transformed into the Marshallian demand at the optimum by using Shephard's lemma:

$$CV \cong \sum_{i=1}^{n} Q_i(P_0, Y_0)\Delta P_i + \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n} e_{ij}\frac{Q_i(P_0, Y_0)}{P_{0j}}\Delta P_i \Delta P_j$$

or ..... (3)

$$\frac{CV}{Y_0} \cong \sum_{i=1}^{n} w_i \frac{\Delta P_i}{P_{0i}} + \frac{1}{2}\sum_{i=1}^{n}\sum_{j=1}^{n} e_{ij} w_i \frac{\Delta P_i}{P_{0i}}\frac{\Delta P_j}{P_{0j}}$$

Here, w_i is the share of expenditure on commodity i, e_{ij} is the price elasticity of the Hicksian demand for $i=j$, P_{0i} is the initial price of the commodity i and ΔP_i is the price variation of the commodity i. We need to compute the price elasticities from the Almost Ideal Demand System (AIDS) by Feenstra, et al (2009) based on expenditure function including social and household specific parameters to calculate the compensating variation.

Against these conceptual issues we have estimated spatial variation of food prices and by utilising the estimated prices the regional and temporal effects on households' living standard have been explored. The regional variations in consumer prices have traditionally been estimated by using price index numbers. But the indices obtained in this methodology may not follow the axiom of transitivity (Sen 1976; Coondoo and Saha 1990; Deaton and Tarozzi 2000). The use of PPP, a set of multilateral price index numbers, by the International Comparison Project (ICP) of the UN Statistical Office and the World Bank to compare real incomes across different countries is an improvement over the use of price indices (Rao 1995, Diewert 1999). The 2005 round of the ICP, however, left unresolved the question of within-country differences in price levels. The computation of regional PPP requires region-specific price and quantity data for a set of items of uniform quality. But it is difficult to obtain price and quantity information of homogeneous items at the regional level. The application of the CPD, the methodology as developed in Summers (1973), eliminates the problems that may arise from the heterogeneity of goods and services across the countries.

The CPD methodology is essentially a regression approach based on the hedonic price equation[4] (Kokoski et al 1999, Rao 2005). The basic CPD model can be specified as

[4] Household level data on commodity prices can also be used in estimating multilateral consumer price index numbers based on the CPD methodology (Aten and Menezes 2002).

$$p_{ij} = \sum_{j=1}^{m} \beta_{1j} R_j + \sum_{i=1}^{n} \beta_{2i} Q_i + \varepsilon_{ij} \quad \ldots\ldots\ldots\ldots \quad (4)$$

Here, p_{ij} is the observed price for commodity i in region j in logarithmic term; Q_i represents commodity specific dummy, i =1, 2, ….., n; R_j is the region specific dummy, j = 0, 1, 2,……., m; j=0 denotes numeraire region; ε_{ij} is the random disturbance term. The CPD model can be seen as a simple fixed effects model where country-effects provide estimates of purchasing power parities and commodity-specific effects provide estimates of international prices. The coefficients β_1s measure the region parity in logarithmic terms and β_2s measure the logarithmic values of price of individual commodities in terms of the numeraire country's currency. In this methodology a set of commodity and region specific price equations is estimated by incorporating regional dummy using the pooled data for all regions by minimising weighted residual sum of squares, the weights being the expenditure share of a commodity for the given region (Rao 1995, 2005). The multilateral consumer price index numbers are obtained by estimating the relationship between slope and intercept terms of the estimated commodity specific price equations separately for individual region.

The CPD approach, however, did not take into account consumers' preferences in calculating PPP. Later on, O'Donnell et al (2007), Coondoo et al (2004, 2011), Majumder et al (2012) improved the methodology by incorporating consumers' choice. Coondoo et al (2011) estimated Engel curve using prices constructed from unit values in the household expenditure surveys. The methodology suggested by them, however, ignores the issue of price induced substitution effect among commodities. This issue has been taken care of by Majumder et al (2012) by introducing the Quadratic Almost Ideal Demand System QAIDS developed in Banks, Blundell and Lewbel, (1997). One can figure out unit value as subjective price, the highest price willing to pay for a purchase of a commodity. Majumder et al (2012) used unit values for food items as a proxy for prices after adjusting the unit values with quality effect by incorporating the composition of household size. The present study extends Majumder et al (2012) to estimate spatial and temporal variations in living standards and prices in India by incorporating social and religious factors as additional explanatory variables in the regression equation with pooled cross section data from 55^{th} and 66^{th} rounds survey on household consumer expenditure conducted by the NSSO.

In our analysis a food item *i* consumed by household *h* in region *j* belongs to a commodity set containing *k* commodities of category *i* with different quality:

$$q_{ij}^{h} \in \left(q_{ij}^{1}, q_{ij}^{2}, ...q_{ij}^{k}\right) \quad \text{.... (5)}$$

The unobserved price of food group *i* in region *j* can be expressed as the product of a scalar measure of prices, λ, and a reference price vector p^0 , of *k* varieties of the commodity contained in that group:

$$p_{ij} = \lambda_{ij} p_{ij}^{0} \text{ ..... (6)}$$

By following Deaton (1997), we define unit value as

$$v_{ij}^{h} = \frac{E_{ij}^{h}}{q_{ij}} = \lambda_{ij} p_{ij}^{0} \quad \text{..... (7)}$$

Thus unit value is a price-index weighted average cost of the bundle of qualities of the commodity purchased in a geographical cluster. A rise in unit value at fixed relative prices of different varieties reflects consumers choosing a higher quality of the composite good. Taking log on both sides of equation (7),

$$\ln v_{ij}^{h} = \ln p_{ij}^{0} + \ln \lambda_{ij} \quad \text{..... (8)}$$

Equation (8) states that the unit value of good *j* is the sum of a price component and a quality component, all are expressed in logarithmic form. By following Prais and Houthaker (1955), quality is assumed to be linear increasing function of real income. Rich households may have a higher unit value because they have bought higher quality goods. So, we can write, in log form,

$$\ln v_{ij}^{h} = \ln p_{ij}^{0} + \alpha_i + \beta_i \left(\ln y_j^{h} - \ln p_j\right) \quad \text{..... (9)}$$

Houthakker and Prais (1952) and Prais and Houthakker (1955) analysed in detail the behaviour of the unit values obtained from expenditure and quantity information. While their prime objective was to estimate price elasticities, the basic objective of this study is to

estimate quality effect, what they call the elasticity of quality[5], in unit values to identify regional inequality of living standard. If the quality elasticity is positive, unit value moves less than proportionally with prices, the shortfall depending on the size of the quality elasticity as well as on the overall price elasticity of demand. If, on the other hand, the quality elasticity is zero, the unit value index moves proportionately with the market price of a commodity.

To increase the robustness of the relationship between unit value and income we have incorporated household characteristics, time effect in the form of year dummy and sector dummy as additional control variables. As unit values are obtained by dividing expenditure by quantity, there will be a problem of simultaneity bias in the relation between quantities and unit values. For that reason we do not include quantity as an explanatory variable in unit value equation given in (9).

$$\begin{aligned}\ln v_{ij}^h &= \ln p_i + \alpha_i + \beta_i\left(\ln y_j^h - \ln p\right) + \theta_{1i}D^s + \theta_{2i}D^T + \sum_k \eta_{ik} z_{ijk}^h + \gamma_1 \ln y_j^h D^s + \gamma_2 \ln y_j^h D^T + \delta \ln y_j^h D^s D^T + u_{ij}^h \\ &= (\alpha_i + \ln p_i - \beta_i \ln p) + \beta_i \ln y_j^h + \theta_{1i}D^s + \theta_{2i}D^T + \sum_k \eta_{ik} z_{ijk}^h + \gamma_1 \ln y_j^h D^s + \gamma_2 \ln y_j^h D^T + \delta \ln y_j^h D^s D^T + u_{ij}^h \\ &= \alpha_{0i} + \beta_i \ln y_j^h + \theta_{1i}D^s + \theta_{2i}D^T + \sum_k \eta_{ik} z_{ijk}^h + \gamma_1 \ln y_j^h D^s + \gamma_2 \ln y_j^h D^T + \delta \ln y_j^h D^s D^T + u_{ij}^h\end{aligned} \tag{10}$$

Here v_{ij}^h is the unit value paid by household *h* for food item *i* in region *j*, v_{ij} is the mean of unit values[6] for item *i* in a region *j*; D^s and D^T are dummies for sector and time respectively; y_j^h is the income per capita of household *h* in region *j*, z_{ik}^h represents household characteristics. The intercept term α_{0i} is the log of price of commodity *i* less the product of the income elasticity of the unit value and the log of the overall price index in a region. By following the CPD approach, we can interpret the region-effects as the estimates of purchasing power parities in the form of spatial variation of prices across regions in rural-urban division. Majumder et al (2012) had taken district as the unit of a region in finding out regional variation of prices within a state. But, as shown in the sample design of the NSSO survey, the number of households drawn in a sample from a particular district may not be sufficient to treat district as the representative unit of a region. Household size and its

[5] Later on, the concept was used by Cramer (1973).
[6] By following Hoang (2009) we have used the mean of unit values.

composition obviously have significant effect on unit values. Socio cultural and religious factors also affect the household's preference pattern and ultimately the unit values. For this reason, z includes household size as well as social group and religion dummies.

By estimating equation (10) we have the quality effect of unit value of commodity *i* in region *j*. Household income levels are particularly important as they introduce income effects in the demand system. The quality effect of unit value of a food item in a region concentrated with lower-income households is normally low because of lower income elasticity of demand as compared to it in regions living higher-income households. The quality effect may hopefully be affected by the household's characteristics, particularly household size and the social and religious status the household along with other parameters. The quality effect varies across social and religious groups mainly because of income differences due to employment differential among them.

3. Data

In India, substantial efforts have been made over the past decades by the National Statistical Organisation to collect information countrywide about a range of demographic and socioeconomic variables at the household level. The NSSO has been conducting household surveys on consumer expenditure regularly roughly in five years interval in the form of quinqenial rounds since the early 1970s. In this study we have utilised household level information taken from the National Sample Survey (NSS) 55^{th} and 66^{th} quinquennial rounds on household consumer expenditure[7]. Schedule 1.0 of these rounds collected consumption expenditure on different food and non-food items and some other characteristics, namely, age, sex and educational level, of every person within a household.

A stratified multi-stage sampling was adopted in both the rounds. The first stage units (FSUs) were the census villages in the rural sector and urban frame survey (UFS) blocks in the urban sector. The final stage units were households in both the sectors. Eight households

[7] Widely used quinquennial surveys on consumer expenditure and employment-unemployment surveys were conducted in the 27th, 32nd, 38th, 43rd, 50th, 55th, 61st and 66th rounds of NSS, at roughly 5-year intervals.

were allocated in a FSU in each schedule. In case of large FSUs, one intermediate stage of sampling was the selection of two hamlet-groups and sub-block from each rural and urban unit respectively. Rural stratum comprising all rural areas and urban stratum comprising all urban areas within each district of a state formed two basic strata. Each rural stratum was divided into 2 sub-strata: all villages with proportion of child workers more than twice the proportion of child workers for a state formed sub-stratum 1 and the remaining villages formed sub-stratum 2.

Sample villages were selected by probability proportional to population with replacement (PPSWR), in the urban sector, on the other hand, FSUs were selected from each stratum using simple random sampling without replacement (SRSWOR). Both rural and urban samples were drawn in the form of two independent sub-samples. Selected FSUs with approximate population 1200 or more are divided into a number of hamlet-groups in the rural sector and sub-blocks in the urban sector. Two hamlet-groups or sub-blocks are selected from a large FSU. Hamlet group 1 is always selected on the basis of maximum percentage share of population; the second one is selected from the remaining by simple random sampling. Households are listed first from the hamlet-group 1 and then from hamlet group 2. Households listed are stratified into three second stage strata (SSS) and the selected from each SSS by following SRSWOR.

We have constructed independently pooled cross section[8] from randomly sample households as in schedule 1 of NSS 55th and 66th rounds on household consumer expenditure in India. By pooling random samples drawn from the same population, but at different points in time, we can get more precise estimators and test statistics with more power (Wooldridge 2009). To capture the change in sampling distributions of a single random sample over time we allow the intercept to differ over periods by introducing year dummy variables in the estimating model. The year dummy can be interpreted as the change in the effect of control variables on the dependent variable. We can also interact a year dummy with key explanatory variables to see if the effect of those variables has changed over a certain time period.

[8] If a random sample is drawn at different time period, pooling of the random samples forms an independently pooled cross section.

The 66th round covered 58714 sample households in rural and 40147 sample households in urban areas[9]. The corresponding figures for the 55th round survey were 55092 and 62643 respectively. We keep households with no missing values in expenditure on cereals, the most important food item[10]. So, we have a very large number of sample unit values, each corresponds to specific household with distinct characteristics across regions for large number of items. We calculate differences in unit values between urban and rural areas across major states, and sort out how much of the differences is attributable to differences in quality driven by differences in incomes, and how much comes from differences in prices.

4. Empirical results

As India is a large country with substantial regional differences in socio-economic and resource conditions, regional differences in living standards and in prices may be important both in rural and urban divisions. This issue is addressed grossly with information provided in Tables 1 and 2. The data analysed in this study come from household consumers' expenditure surveys in which the unit of observation is the household. The standard hypothesis in the literature is that all households in the same region face the same market price. This price, however, is not itself observed in the household survey conducted by the NSSO. What we observe in the survey data are physical quantities and consumption expenditure in value terms for some food items, and we have calculated unit values of these food items by utilising value and quantity information. These calculations are made without adjustment for income driven quality effects in the unit values.

Table 1 presents mean monthly per capita expenditure across states in India in rural urban division in 1999-2000 and 2009-10. The ratio of urban expenditure to rural expenditure is used as a measure of rural-urban gap in living standards. The ratio nearer to unity implies no gap or insignificant gap, while the ratio more than unity indicates urban expenditure is more

[9] At all-India level, 12784 FSUs were allocated to the central sample and 15132 FSUs to the state sample. The total number of sample FSUs was allocated to the states and UTs in proportion to population as per census 2001 subject to a minimum sample allocation to each state. A minimum of 16 FSUs was allocated to each state separately for rural and urban areas.

[10] The household consumer expenditure survey included 142 food items, 15 items of energy, 28 items of clothing, bedding and footwear, 19 items of educational and medical expenses, 51 items of durable goods, and 89 other items.

than rural expenditure and the ratio less than unity means rural expenditure exceeds urban expenditure. In the major states, rural-urban difference in consumption expenditure was substantial, and it was the highest in Assam followed by West Bengal, Himachal Pradesh and Tripura. The rural-urban difference in monthly per capita expenditure increased in almost every state of the country in 2009-10. The incidence of the rural-urban disparity distributed highly unevenly across the Indian states with Himachal Pradesh showing highest incidence and Chandigarh exhibiting the lowest during this period. In Delhi, the average per capita expenditure was lower in urban than in rural areas at that time. However, in smaller states and union territories like Arunachal Pradesh, Chandigarh, and Daman and Due there was no significant rural urban difference in consumption per capita in 1999-2000, and the situation roughly remained the same in 2009-10, excepting for Daman and Due. In Daman and Due, the per capita household expenditure on monthly basis was more than double in urban as compared to rural areas in 2009-10. On the other hand, the rural households' expenditure was higher than urban expenditure in Lakshadweep in 1999-2000.

Table 1 Rural urban gap in per capita expenditure by states in India

	1999-2000			2009-2010		
States	Rural	Urban	r-u gap	Rural	Urban	r-u gap
Andhra Pradesh	170.94	262.75	1.54	466.68	878.08	1.88
Arunachal Pradesh	270.99	282.21	1.04	606.01	821.90	1.36
Assam	109.55	380.73	3.48	265.57	735.17	2.77
Bihar	113.09	247.99	2.19	232.18	516.97	2.23
Goa	330.73	471.38	1.43	671.22	973.36	1.45
Gujarat	172.59	299.56	1.74	337.83	682.88	2.02
Haryana	173.01	368.03	2.13	440.68	830.05	1.88
Himachal Pradesh	269.53	610.75	2.27	609.47	1832.29	3.01
Jammu & Kashmir	203.59	273.21	1.34	339.74	587.14	1.73
Karnataka	146.63	305.02	2.08	337.37	944.92	2.80
Kerala	249.42	300.76	1.21	682.86	954.23	1.40
Madhya Pradesh	122.25	238.60	1.95	319.28	580.40	1.82
Maharashtra	162.20	342.26	2.11	381.45	921.89	2.42
Manipur	133.74	172.72	1.29	232.79	302.46	1.30
Meghalaya	167.14	354.09	2.12	321.15	645.36	2.01
Mizoram	226.70	325.11	1.43	369.95	575.43	1.56
Nagaland	314.03	619.10	1.97	327.60	476.74	1.46
Orissa	118.27	240.81	2.04	287.51	793.15	2.76
Punjab	200.33	380.82	1.90	492.45	884.61	1.80
Rajasthan	156.95	281.99	1.80	360.84	614.95	1.70
Sikkim	185.03	356.65	1.93	659.08	1080.07	1.64
Tamil Nadu	179.73	318.04	1.77	428.84	714.27	1.67
Tripura	146.35	330.82	2.26	383.56	808.88	2.11
Uttar Pradesh	140.82	272.40	1.93	261.11	648.25	2.48
West Bengal	136.53	318.85	2.34	327.54	880.13	2.69
A & N Islands	289.83	365.75	1.26	797.99	1209.63	1.52
Chandigarh	540.99	574.40	1.06	1632.45	1682.26	1.03
Dadra & Nagar Haveli	203.66	408.65	2.01	238.79	726.52	3.04
Daman & Diu	279.73	294.28	1.05	402.21	917.38	2.28
Delhi	235.85	446.78	1.89	1271.55	987.00	0.78
Lakshadweep	483.74	403.37	0.83	627.09	755.12	1.20
Pondicherry	213.93	305.95	1.43	505.12	931.35	1.84

Note: State level mean value of monthly per capita expenditure is calculated by applying sample weight obtained on the basis of multiplier as suggested in the survey schedule of NSSO. The r-u gap is measured as the ratio of expenditure by urban households to that by rural households

Source: Author's estimation based on unit level data from 55th and 66th NSS rounds

It is normally believed that price levels are lower in rural areas than in urban blocks and official poverty ratios in rural and urban India have been calculated on the basis of that assumption. Some problems in the official poverty lines, including the poverty line constructed by the Tendulkar Committee, have been generated from this kind of belief when poverty ratios are estimated by using data from household consumer survey of different rounds with different base year conducted by the NSSO (Manna, 2012). In a large country like India, consumption patterns in rural sector have been significantly different from those in the urban sector in every state of the country, and in that case this kind of traditional belief may be misleading in assessing the level of wellbeing of the households living in those areas. People with higher income living in urban centres pay more for better quality products reporting higher unit values in the consumer expenditure survey. Thus a part of the price differential, as observed in the form of higher unit values, in the city may be because of quality differences driven by higher incomes.

Table 2 displays the distribution of mean unit values of cereals across states in India both in rural and urban areas during 1999-2000 and 2009-2010. We have reported the unit values for cereals only in Table 2 to find out the rural-urban gap simply because all households living irrespective of the sectors and regions consume foods made from cereals. The gaps in unadjusted mean unit value between urban centres and the countryside were different in different states. While in many states the average unit value was higher in urban than in rural areas following the traditional belief, rural households in some other states recorded higher unit values as compared to the urban counterparts. The rural-urban gap was low in 1999-2000, but the gap increased in 2009-2010 everywhere in the country. The urban households reported higher unit values of cereals than the unit values reported by the rural households in all states in India during 2009-10. The spatial distributions of rural-urban difference in per capita expenditure and unit value of cereal consumption may hopefully be explained by regional heterogeneity in quality effect of unit value in cereal.

Table 2 Rural urban gap in unit value of cereals by states in India

States	1999-2000			2009-2010		
	Rural	Urban	r-u gap	Rural	Urban	r-u gap
Andhra Pradesh	9.74	10.04	1.03	14.32	21.72	1.52
Arunachal Pradesh	9.28	9.85	1.06	15.38	15.50	1.01
Assam	9.95	9.76	0.98	15.96	19.28	1.21
Bihar	9.81	9.89	1.01	13.58	15.86	1.17
Goa	9.44	10.15	1.08	19.29	21.98	1.14
Gujarat	9.68	9.97	1.03	12.92	17.97	1.39
Haryana	9.30	9.96	1.07	11.37	15.56	1.37
Himachal Pradesh	9.31	10.10	1.09	12.42	17.40	1.40
Jammu & Kashmir	9.75	9.52	0.98	14.09	16.69	1.18
Karnataka	9.58	9.52	0.99	12.12	21.01	1.73
Kerala	9.65	9.26	0.96	16.74	19.01	1.14
Madhya Pradesh	9.60	9.63	1.00	10.54	13.74	1.30
Maharashtra	9.23	9.81	1.06	12.69	20.61	1.62
Manipur	9.65	10.05	1.04	20.81	20.05	0.96
Meghalaya	9.37	9.93	1.06	14.82	18.75	1.27
Mizoram	9.49	9.81	1.03	12.87	15.02	1.17
Nagaland	9.79	10.38	1.06	21.78	21.88	1.00
Orissa	9.37	9.82	1.05	10.77	15.46	1.43
Punjab	9.47	9.92	1.05	12.27	15.56	1.27
Rajasthan	9.23	10.08	1.09	11.95	14.46	1.21
Sikkim	9.02	9.70	1.08	13.76	21.24	1.54
Tamil Nadu	9.18	9.62	1.05	9.90	16.50	1.67
Tripura	9.22	9.04	0.98	13.13	17.37	1.32
Uttar Pradesh	9.61	9.31	0.97	11.45	14.92	1.30
West Bengal	9.73	9.05	0.93	15.39	19.41	1.26
A & N Islands	9.50	9.32	0.98	14.80	19.94	1.35
Chandigarh	9.35	9.69	1.04	17.74	19.66	1.11
Dadra & Nagar Haveli	9.84	9.33	0.95	15.54	22.19	1.43
Daman & Diu	9.65	9.95	1.03	18.23	18.84	1.03
Delhi	9.89	9.33	0.94	16.39	19.85	1.21
Lakshadweep	9.52	9.20	0.97	14.08	17.74	1.26
Pondicherry	9.51	9.80	1.03	14.85	21.20	1.43

Note: State level mean unit value is calculated by applying sample weight obtained on the basis of multiplier as suggested in the survey schedule of NSSO. The r-u gap is measured by the ratio of unit values in urban to rural areas.

Source: As for Table 1

We attempt to sort out how much of the rural-urban differences in unit values across different states in India is attributable to differences in quality driven by differences in incomes. Income elasticities of unit values for major food items are estimated after controlling the effects of household characteristics and time variable as shown in equation (10) by applying OLS with data from independently pooled random samples of households drawn from the same population for two different time periods, 1999-2000 and 2009-10. Tables 3a to 3d show the estimated results of household-level regression of the log of unit values of food groups on the logarithm of household per capita expenditure along with other control variables.

The coefficient on the log of per capita household expenditure can be interpreted as the expenditure or income elasticity of quality, or the quality effect. The income elasticity of the unit value was substantial for some food items. It was more than 40 percent for cereals consumption, over 30 percent for pulses, while for edible oils and sugar the quality effect was statistically insignificant in 1999-2000 (Table 3a). Among animal proteins, the quality effect was high for fishes and low for mutton (Table 3b). But there was no significant quality effect for egg, probably because of the homogeneous quality of that good. For the similar reason, the income elasticity of unit value for vegetables like potato and onion was very low (Table 3c). The unit value of mango and papaya was highly income elastic, but grapes and apples were less elastic in terms of quality (Table 3d). The negative coefficient of the square of expenditure per capita in log form suggests a diminishing effect of income on unit value for all food products. The rise in income raises unit value for all food items, but at a diminishing rate. The effect of household size on unit value was either very small or insignificant.

The intercept term provides the effect on unit value after controlling the impact of quality variation and other explanatory variables used in the regression equation in the urban economy in 1999-2000. As per the specification of the regression equation shown in (10) it is a measure of adjusted price, obtained as log of price of a commodity less the product of the income elasticity of the unit value and the log of the overall price index in a region, in the base year. Thus the coefficient on the rural dummy variable is an estimate of the extent to which rural prices differ from urban prices. Similarly, the year dummy measures the change in price over time. The price measured by the adjusted unit value was significantly lower for

fish and some fruits in the countryside compared to the urban blocks, but for rest of the food items the price in the rural economy was either higher or insignificantly different from that in the urban economy at the national level. But, this kind of rural-urban gap in quality adjusted unit value widened further in 2009-10 compared to the gap one decade before.

We have shown in Table 2 that the unadjusted mean unit value of cereals was significantly higher in 2009-10 as compared to 1999-2000 in every state in the country (Table 2). But, if we eliminate the quality effect and the effects of other control variables, the unit value became significantly lower in 2009-10 than in 1999-2000 for all food products. Thus the increase in observed price for all food items over time in our study is largely caused by the income elasticity of unit value, or the quality effect, and the significant increase in quality effect over time, measured the coefficient of the interaction between logarithm of monthly consumption expenditure and year dummy. For example, the quality effect was increased by 67 percentage point for cereals, 45 percentage point for fish; the rate of increment was even higher for fruits (Tables 3a to 3d). The income effect on unit value, as revealed in the estimated coefficient of the interaction dummy between log of per capita expenditure and rural sector, was either less in rural areas than in urban areas or the gap was statistically insignificant. The rural urban price gap, however, was magnified further for most of the food articles, but at different rates in 2009-10.

The religious character of the households had significant effect on unit value for most of the food products. This is because food habits are somehow affected by the religious culture. Moreover, the type of employment and ultimately the earning level in some cases, although not for every household, are historically determined by the religious character of the household. The social status of the households as defined by NSSO in its household survey had also significant impact on unit values of the consumable articles for similar reasons. We have taken two religious dummy, one for Muslims and other for Hindus, with other religions as a reference; and two social groups, scheduled castes and scheduled tribes, with the general upper castes as a reference. We have observed that the quality adjusted unit values for many food articles were lower for both Muslims and Hindus than those faced by the other religions, but not in a similar manner. For example, in the case of cereal consumption, the unit value after eliminating the quality effect was more for Muslims and less for Hindus as compared to

other religious group in India. The quality adjusted prices faced by the tribal people were higher than the adjusted prices reported by the upper general castes for most of the food items. As tribal people are normally treated as socially and economically excluded group, their earning level is low, and in many cases very low, compared to the upper general castes. For this reason the quality effect on unit value is very low for theses deprived part of the society almost for all goods they are purchasing for their survival. And the higher price they are paying not because of their choice due to the quality effect. For scheduled castes people, on the other hand, the adjusted unit values were lower than those faced by the general upper castes people.

Table 3a Estimated coefficients of determinants of unit value for cereals and allied food products

Variables	Cereals and cereal substitutes	t-statistic	Pulses	t-statistic	Milk and milk products	t-statistic	Edible oils	t-statistic	Sugar	t-statistic
Intercept	0.58	8.41	2.08	36.4	2.27	38.73	3.76	60.95	2.65	41.85
ln(y)	0.46	23.19	0.33	20.32	0.04	2.23	-0.02	-1.07	0.00	0.11
$[\ln(y)]^2$	-0.03	-22.34	-0.02	-20.31	0.00	-1.98	0.00	1.18	0.00	0.03
Household size	0.01	40.8	0.00	0.37	0.00	5.64	0.00	6.1	0.01	19.61
D_rural	0.21	8.38	0.13	6.4	0.03	1.43	0.04	1.62	-0.10	-4.29
D_year	-13.72	-93.9	-9.83	-80.65	-7.54	-59.29	-7.15	-54.36	-7.10	-52.42
D_Muslim	0.01	3.96	0.01	4.88	-0.02	-8.98	0.00	-1.49	-0.04	-14.97
D_st	0.01	3.42	0.02	10.84	0.01	4	0.03	13.82	-0.01	-6.08
D_sc	-0.03	-13.44	-0.01	-3.63	0.01	5.26	-0.01	-2.88	-0.01	-3.35
D_Hindu	-0.02	-6.54	0.00	2.25	-0.02	-9.44	-0.02	-9.43	-0.01	-6.45
Ln(y)*D_year	0.67	43.82	0.37	28.7	0.11	8.15	0.06	4	0.08	5.35
D_rural*D_year	0.65	13.15	-0.15	-3.52	-0.13	-3.04	0.49	10.88	0.53	11.55
Ln(y)*D_rural	-0.04	-9.23	-0.02	-6.3	-0.01	-1.67	-0.01	-1.65	0.01	4.22
Ln(y)*D_rural*D_year	-0.05	-8.9	0.02	4.02	0.01	1.16	-0.04	-8.35	-0.05	-10.86

Source: As for Table 1

Table 3b Estimated coefficients of determinants of unit value for animal proteins

Variables	Fish	t-statistic	Chicken	t-statistic	Mutton	t-statistic	Egg	t-statistic
Intercept	2.38	8.01	3.45	24.15	4.13	27.29	5.08	56.22
ln(y)	0.38	4.49	0.21	5.21	0.14	3.17	0.03	1.23
[ln(y)]2	-0.03	-4.48	-0.02	-5.13	-0.01	-3.49	0.00	-1.35
Household size	0.01	7.13	0.00	1.09	0.00	-1.92	0.00	3.34
D_rural	-0.30	-2.47	-0.04	-0.78	0.03	0.61	-0.08	-2.7
D_year	-10.84	-16.94	-8.37	-25.93	-8.74	-25.02	-4.31	-21.6
D_Muslim	-0.06	-4.75	-0.04	-6.58	-0.04	-5.98	-0.05	-12
D_st	0.12	11.92	0.05	11.12	-0.02	-4.25	0.05	16.01
D_sc	0.01	0.60	0.00	0.47	-0.02	-3.32	0.00	-1.18
D_Hindu	-0.02	-2.18	-0.03	-5.31	-0.01	-1.52	-0.03	-10.4
Ln(y)*D_year	0.45	6.64	0.20	5.83	0.24	6.78	0.03	1.56
D_rural*D_year	1.22	5.99	0.04	0.41	0.59	4.03	-0.16	-2.48
Ln(y)*D_rural	0.02	0.82	0.00	-0.2	-0.01	-0.82	0.01	1.64
Ln(y)*D_rural*D_year	-0.10	-4.37	0.00	0.05	-0.05	-3.68	0.01	2.04

Source: As for Table 1

Table 3c Estimated coefficients of determinants of unit value for vegetables

Variables	Potato	t-statistic	Onion	t-statistic
Intercept	1.41	14.46	1.59	18.17
ln(y)	0.08	2.97	0.13	5.26
[ln(y)]2	-0.01	-3.46	-0.01	-5.76
Household size	0.00	-1.9	0.00	-1.02
D_rural	0.29	8.41	0.02	0.53
D_year	-7.71	-37.05	-7.65	-40.86
D_Muslim	-0.03	-6.92	-0.09	-21.23
D_st	0.05	15.32	0.10	30.7
D_sc	-0.02	-6.78	0.00	1.37
D_Hindu	-0.03	-8.1	-0.10	-30.35
Ln(y)*D_year	0.17	7.75	0.16	8.27
D_rural*D_year	-1.01	-14.31	-0.50	-7.88
Ln(y)*D_rural	-0.03	-5.87	0.00	1.01
Ln(y)*D_rural*D_year	0.09	12.2	0.03	5.25

Source: As for Table 1

We have estimated equation (10) separately for seventeen major states in India by taking unit value for cereals only and the estimated results are shown in Table 4. There has been significant regional variations in quality effect. The income elasticity of unit value of

cereals was the highest in Kerala with its value more than unity and the lowest in Haryana. The states registering higher quality effects include Assam Orissa, Andhra Pradesh, Karnataka and Tamil Nadu. The effect was lower in Madhya Pradesh, Uttar Pradesh and Punjab. By following national trend, the quality effect was diminishing across the states. In Bihar and Gujarat the estimated value of income elasticity was not statistically significant. Surprisingly enough, the income effect of unit value was negative in Jammu and Kashmir.

Table 3d Estimated coefficients of determinants of unit value for fruits

	Grapes	Apple	Mango	Papaya	Orange	Guava	Banana
Intercept	2.89	3.01	0.68	0.41	3.98	0.98	3.56
	(9.49)	(9.91)	(1.78)	(0.76)	(9.9)	(2.86)	(25.94)
ln(y)	0.16	0.15	0.61	0.57	0.38	0.27	0.25
	(1.83)	(1.73)	(5.6)	(3.75)	(3.33)	(2.75)	(6.23)
[ln(y)]2	-0.01	-0.01	-0.04	-0.04	-0.03	-0.02	-0.02
	(-2.1)	(-2.1)	(-5.43)	(-3.97)	(-3.42)	(-2.63)	(-5.86)
Household size	0.00	0.00	0.01	0.01	0.00	0.00	0.00
	(1.68)	(-1.5)	(4.35)	(2.43)	(0.12)	(0.47)	(3.09)
D_rural	-0.37	-0.35	-0.10	-0.17	0.25	0.34	0.32
	(-3.48)	(-3.35)	(-0.76)	(-0.88)	(1.65)	(3.12)	(6.78)
D_year_2009	-9.42	-9.80	-14.09	-13.31	-9.87	-10.60	-7.24
	(-13.44)	(-13.6)	(-16.21)	(-11.02)	(-10.49)	(-13.88)	(-23.58)
D_muslim	-0.01	-0.14	-0.02	0.06	0.06	-0.06	-0.06
	(-0.97)	(-11.4)	(-1.4)	(2.64)	(3.39)	(-3.66)	(-8.57)
D_st	0.06	0.07	-0.09	-0.07	-0.02	-0.04	-0.04
	(5.35)	(6.35)	(-7.04)	(-3.63)	(-1.21)	(-2.96)	(-6.7)
D_sc	0.02	-0.02	0.00	-0.01	-0.01	0.01	0.01
	(2.6)	(-1.79)	(-0.38)	(-0.8)	(-0.42)	(0.81)	(1.38)
D_hindu	-0.01	0.01	-0.01	0.06	0.02	-0.02	-0.07
	(-0.67)	(1.03)	(-0.55)	(3.19)	(1.39)	(-2.05)	(-14.79)
Ln(y)*D_year	0.29	0.35	0.74	0.68	0.55	0.42	0.31
	(3.97)	(4.73)	(8.1)	(5.44)	(5.64)	(5.25)	(9.8)
D_rural*D_year	0.81	0.21	-0.75	0.93	-0.46	0.44	-1.21
	(3.55)	(1.00)	(-2.63)	(2.43)	(-1.56)	(1.66)	(-11.44)
Ln(y)*D_rural	0.05	0.04	-0.02	-0.01	-0.03	-0.05	-0.04
	(3.35)	(2.61)	(-0.86)	(-0.27)	(-1.4)	(-2.8)	(-5.23)
Ln(y)*D_rural*D_year	-0.09	-0.04	0.08	-0.07	0.04	-0.03	0.11
	(-3.93)	(-1.73)	(2.8)	(-1.72)	(1.42)	(-1.06)	(10.01)

Source: As for Table 1

The adjusted unit value after controlling the effects of income and household characteristics was higher in rural areas compared to the urban blocks in the major states in India, but at uneven rates. The price differential in terms of quality adjusted unit value between rural and urban areas was the highest in Orissa followed by Assam and Karnataka. The rural-urban price gap was insignificant in many other states of the country. The quality adjusted average prices for cereals were low in 2009-10 compared with the values in 1999-2000 in every state with the highest rate of decline in Tamil Nadu and the lowest rate in Jammu and Kashmir. The decline in adjusted price was highly attributable to the increase in income elasticity of unit value over the decade. Income elasticity increased at the highest rate in Tamil Nadu followed by Kerala, Andhra Pradesh and Orissa, and at lower rates in Bihar and Jammu and Kashmir. The income elasticity of unit value for cereals was lower in rural areas in some states and insignificant in other states. There had been no significant differences in price of cereals faced both by the Muslims and Hindus from the prices faced by the other religions in most of the states. But there was some differences, although negligible, in price faced between socially deprived people and upper castes people in many states in India.

Table 4 Estimated coefficients of determinants of unit value for cereals by state

	Intercept	ln(y)	$[\ln(y)]^2$	D_rural	D_year	D_Muslim	D_st	D_sc	D_Hindu	Ln(y)*D_year	D_rural*D_year	Ln(y)*D_rural	Ln(y)*D_rural_year
Andhra Pradesh	-0.29	0.76*	-0.06*	0.33*	-18.32*	0.02	0.00	0.01	0.01	1.13*	0.23	-0.06*	0.00
Assam	-0.63	0.85*	-0.06*	0.44*	-14.72*	0.04*	0.02*	0.01	0.01	0.85*	-0.34	-0.07*	0.05**
Bihar	2.07*	0.05	0.00	-0.05	-8.83*	0.06*	0.01	-0.01**	0.06*	0.22*	1.02*	0.00	-0.10*
Gujarat	1.83*	0.14	-0.01	0.07	-10.50*	-0.04**	-0.01	-0.02*	-0.04**	0.37*	-0.01	-0.01	-0.01
Haryana	1.34*	0.27**	-0.02**	0.13	-11.33*	0.11*	0.09**	-0.06*	0.04**	0.45*	-0.32	-0.03	0.03
Himachal Pradesh	0.78	0.44*	-0.03*	-0.03	-13.58*	-0.01	0.03	-0.05*	-0.01	0.65*	0.59	-0.01	-0.05
Jammu & Kashmir	3.37*	-0.27***	0.01	-0.39**	-9.49*	-0.01	-0.11*	-0.02	0.02	0.25**	0.94*	0.06**	-0.11*
Karnataka	-0.02	0.66*	-0.05*	0.40*	-16.59*	-0.02	0.00	-0.04*	-0.04***	0.97*	0.88*	-0.06*	-0.06*
Kerala	-1.44*	1.06*	-0.08*	0.10	-18.67*	0.00	-0.04	-0.10*	-0.04*	1.19*	0.71*	-0.01	-0.06*
Madhya Pradesh	1.31*	0.29*	-0.02*	0.24*	-12.39*	-0.01	-0.05*	-0.05*	-0.01	0.54*	0.38**	-0.04*	-0.02
Maharashtra	1.03*	0.36*	-0.03*	0.14**	-13.16*	-0.01	-0.05*	-0.02*	0.00	0.63*	0.19	-0.03*	-0.02
Orissa	-0.45	0.82*	-0.06*	0.47*	-17.06*	0.01	-0.04*	-0.03*	-0.03	1.03*	0.25	-0.08*	0.01
Punjab	1.15*	0.32*	-0.02*	0.22**	-10.98*	0.02	0.02	-0.03*	0.02*	0.42*	0.50*	-0.04*	-0.04**
Rajasthan	0.86*	0.41*	-0.03*	0.00	-11.92*	0.00	-0.02*	0.01*	-0.01	0.52*	0.76*	-0.01	-0.06*
Tamil Nadu	0.13	0.60*	-0.04*	0.16	-20.42*	0.07*	0.01	-0.07*	0.06*	1.25*	2.19*	-0.03	-0.17*
Uttar Pradesh	1.24*	0.29*	-0.02*	0.15*	-11.03*	-0.03**	0.01	-0.02*	-0.06*	0.43*	0.43*	-0.02**	-0.04*
West Bengal	0.74*	0.41*	-0.03*	0.28*	-11.69*	0.02	-0.05*	-0.01	0.01	0.52*	0.13	-0.03*	-0.01

Note: * significant at 1 percent level, ** significant at 5 percent level, *** significant at 10 percent level, the rest are insignificant

Source: As for Table 1

5. Conclusions

Elasticities of demand are useful for proper accounting of the welfare effects of any kind of policy measures (Friedman and Levinsohn, 2002). For poverty analysis we need price information at the micro level in regional dimension to take care of the actual change in the cost of living for poor people. This paper takes into account differences in prices that the households face in different regions in India to look into the regional variation in living standards in rural-urban division of the country. The results reported here are obtained by regressing the logarithm of unit value for major food items on the logarithm of monthly household consumption expenditure and household characteristics with different dummies. The pulses are less elastic than cereals. Among animal proteins fish is more elastic than

mutton or chicken. Mango and papaya are more income elastic than grapes and apples. The quality effect of unit value of a food items in a region concentrated with lower-income households is normally low because of lower income elasticity of demand as compared to it in regions living higher-income households. The regional variation in living standard is looked at in terms of quality effect. Among different regions within a country with identical unit values, the region with higher standard of living is revealed to possess higher quality effect.

Food price inflation, along with other structural factors, has been significantly related to nutritional status and ultimately the level of wellbeing of the people living below the poverty line. We have examined the effect of variation of food prices on the household's welfare based on the compensating variation. In a large country like India, consumption patterns in rural sector have been significantly different from those in the urban sector in every state of the country, and in that case the conventional belief that urban price is more than rural price may be misleading in assessing the level of wellbeing of the households living in those areas. People with higher income living in urban centres pay more for better quality products reporting higher unit values in the consumer expenditure survey.

The gaps in unadjusted mean unit value between urban centres and countryside were different in different states. While in many states the average unit value was higher in urban than in rural areas following the traditional belief, rural households in some other states recorded higher unit values as compared to the urban counterparts. The rural-urban gap was low in 1999-2000, but the gap increased in 2009-2010 everywhere in the country. We have sorted out how much of the rural-urban differences in unit values across different states in India is attributable to differences in quality driven by differences in incomes. Income elasticities of unit values for major food items are estimated after controlling the effects of household characteristics and time variable. The income elasticity of the unit value was substantial for some food items.

The price measured by the quality adjusted unit value was significantly lower for fish and some fruits in the countryside compared to the urban blocks, but for rest of the food items the price in the rural economy was either higher or insignificant compared to the urban

economy at the national level. This kind of rural-urban gap in quality adjusted unit value widened further in 2009-10 compared to the gap one decade before. The increase in observed price for all food items over time in our study is largely caused by the income elasticity of unit value, or the quality effect. There has been significant regional variations in quality effect.

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