

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

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The 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 consumption patterns are sharply different across areas. This paper takes into account differences in the prices that the households face in different regions in India. As price information across regions in such an economy is not readily available, we need to estimate spatial variation in prices by taking consumers’ preferences into account. It is possible to calculate easily the unit values of the commodities consumed by the households by utilising the information on nominal expenditure and physical quantities as available in the household surveys on consumer expenditures conducted by the National Sample Survey Office (NSSO) in India. Apparently, one can use these unit values as a proxy for market prices. But the unit values may not be the direct substitutes for true market prices (Deaton 1988). 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 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).

India has been growing at a faster rate during the post-reform period, but the higher growth had not been shared equally by all the states or by all groups of people living within a particular state in India (Datt and Ravallion 1998, Das 2007, 2012). This puts the focus on the investigation of regional differences in living standard within the country. The 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 unit level data from 55th and 66th round consumer expenditure survey conducted by the NSSO in India during 1999-2000 and 2009-10 respectively. The data set covers geographical areas all over India, excepting for few regions. The cross-sectional survey is roughly representative of the national, state, and the so-called “NSS region” level. 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.

The observed unit values are used to estimate the quality effect and unobserved prices across the major states by rural-urban division. The variation in unit values within a cluster is the reflection of the influence of incomes and household characteristics on quantities and qualities. By contrast, the ‘between cluster’ variation in unit values represent at least partly the spatial variation in prices. 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 may be expressed as an increasing function of real income. What is observed in this study is that the unit value is higher for the goods more heavily consumed by the rich both in rural and urban areas supporting the Balassa-Samuelson theorem.

The use of PPP by the International Comparison Project (ICP) of the UN Statistical Office and the World Bank to compare real incomes across different countries is obviously an improvement over the use of binary price indices (Rao 1995, Diewert 1999). The computation of PPP, however, requires region-specific price and quantity data for a set of items of uniform quality, which is often difficult to obtain. The application of the Country Product Dummy (CPD) method, 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 (Kokoski et al 1999, Rao 2005). 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.

In this paper the unit value of a commodity is decomposed into price component and quality component. Quality is assumed to be linear increasing function of real income. To investigate the importance of quality effect in household purchases, we regress the log of unit values on the log of household's expenditure per capita, household size, age of the household head and dummies for social groups, religions and occupation type of household head. Adding the controls relating to household characteristics increases the robustness of the relationship between unit value and income. 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.

We have calculated unit values for eighteen major food commodities including fruits and vegetables. We observe significant difference in unit values across the major states and between rural and urban areas in each state, but the differences are not the same for all goods. A part of the difference is attributable to the variation in quality driven by differences in incomes. The regression results obtained in this study include the effects of cluster structure of the sample by taking deviations of actual unit values from cluster means of all commodities. We also calculate income elasticities of demand for major food commodities on the basis of the estimated results. The quality effects are substantial for some goods like cereals and fish and the effects 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.