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# Income, Consumption, and Assets in India

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These results are based on India Human Development Survey, 2004-05. This survey was jointly organized by researchers at University of Maryland and the National Council of Applied Economic Research. The data collection was funded by grants R01HD041455 and R01HD046166 from the National Institutes of Health to University of Maryland. Part of the sample represents a resurvey of households initially conducted in the course of India Human Development Survey 1993-94 conducted by NCAER.

Data collection was completed in November 2005 and the data are still being validated. These results are based on preliminary data and may change once final data are available.

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## ABSTRACT

Using original data from a newly collected nationwide survey for over 40,000 households in India, we examine the use of income, consumption, and asset data for measuring inequality. While consumption and asset measures are often included in developing country surveys, these data are unusual in including estimates of household income as well. We describe the construction of these three measures and analyze their levels and variation across households and 23 Indian states. We assess the internal consistency of each measure and report their co-variation across India and each of the 23 states. We then analyze their social and regional determinants and their consequences for two outcomes: children's schooling and health.

## INTRODUCTION

Consumption-based measures have long been the conventional measure of economic standing in developing country surveys. The leading review of developing country surveys recommends that "consumption ... is the best measure of the economic component of living standards" (Deaton & Grosh, 2000). Developed country surveys, however, typically measure income; consumption based measures often have to be constructed from surveys designed for purposes other than measuring inequality. This discrepancy between surveys in the two regions not only results in comparability problems but also diminishes the ability of researchers in each area to compare the roles of income and consumption in determining household inequality.

Recently, asset based measures of living standards have enjoyed a growing popularity (Montgomery, Filmer & Pritchet, McKenzie). Counts of consumer goods and housing facilities are especially easy to collect in surveys where the primary emphasis is non-economic topics. The DHS surveys, for example, routinely collect asset measures but not income or consumption data. The asset measures have shown consistent empirical relationships with a variety of outcomes of interest such as health and children's education.

Income measures, in contrast, have been the poor cousin of asset and expenditure-based measures in developing countries. A few LSMS surveys include income, but even these are infrequently analyzed. Conceptual and methodological complaints about income measures have made them unpopular throughout much of Asia and Africa. While these prejudices are widespread, they are not often based on empirical data. Indeed, the

consensus against income measures has become a self-fulfilling prophecy since so few surveys venture to collect such data.

This analysis reports the results of a new national survey in India that collected income, expenditure, and asset data for over 40,000 households across the country. It provides, therefore, one of the few opportunities to compare these measures against each other and in causal models of the determinants and consequences of economic inequality. Moreover, the enormous regional diversity across Indian states permits a comparative perspective on macro-level causes and consequences of inequality.

## CONCEPTUAL OVERVIEW

Income, consumption, and wealth are not just alternative measures of inequality, they are distinct concepts with distinct implications for models of social and economic behavior. The consensus around consumption measures is based in part on these conceptual distinctions and in part on practical problems of survey research.

The seasonal and annual instability of income is its most frequently cited disadvantage as a measure of inequality. Households anticipate this instability and therefore engage in various consumption-smoothing strategies (i.e., savings and credit) that supposedly make expenditure data a better indicator of a household's long-term economic position. "Permanent-income" models also specify variations across the life cycle that explain why consumption inequality will be less than income inequality. While these conceptual distinctions are equally valid in developed and developing economies, the seasonal and annual variability of agriculture makes them especially cogent in Asia and Africa.

Consumption measures also better capture an intuitive sense of what most people mean by a "standard of living". Income and wealth may provide the resources to enable that standard of living, but consumption more directly measures the concept itself.

Perhaps even more persuasive arguments against income measures have been made on practical grounds. Measuring incomes becomes far more complex when a large proportion of the economically active population is self-employed. Households, especially poor households, typically conflate household and business expenditures so the concept of income as the net result of gross receipts minus business expenditures may be difficult for respondents to report. Capturing all the sources of income in poor economies can also be especially challenging since households typically engage in a wide variety of economic activities, both market and non-market, to support themselves. Some of these activities can be seasonal, raising recall problems over a 12-month period. Much agriculture in poor areas is subsistence agriculture so both prices and even production quantities may be less obvious for respondents. There is also a widespread belief that households will deliberately under-report their incomes, at least more so than expenditures, since incomes are a basis for household taxation.

Given all these problems, why should surveys include income measures in developing countries? We believe there are several persuasive reasons. Most importantly, income data are needed to understand the causal processes generating living standards. If people are getting richer or poorer, we need to understand why. These causal questions are difficult to address without an income measure. Even in a cross-section, income measures can help us to understand causes of inequality. For example, what are the sources of gender or racial and ethnic inequalities: Are differential returns to

human capital, different endowments, or "main effects" of race and gender more important? Even for macro-level comparisons, income data are needed to explain the sources of rising or declining inequalities. Consumption data, or even asset data, may help describe the differences across areas or the trends in inequality, but we are in a better position to interrogate the causes of those differences if we have income data.

Income data also provide other research opportunities not possible or more difficult with consumption or asset data. For instance, intra-household inequalities are more readily addressed with income data. In particular, analysis of gender inequalities benefits especially from the collection of income data.

We also believe that the practical difficulties of measuring income in developing countries are often over-stated, while the practical difficulties of measuring expenditures are often under-appreciated. Even in relatively poor economies such as India's, a large and growing share of the population is engaged in wage and salary work which is the easiest data to collect and likely the most valid. Our results, reviewed below, show that over two thirds of households have some wage and salary income, substantially larger than the 38% with agricultural income or 19% from non-agricultural self-employment.

Survey methods are now fairly well established for estimating agricultural incomes, perhaps the most difficult income source for households to report. Moreover, these household measures can be supplemented with abundant and detailed data on agricultural prices and yields that can increase the accuracy of the self reports.

Finally, our experience measuring consumption expenditures revealed it to be more problematic than is usually recognized. Even with a short form of the usual list of consumption categories, respondent fatigue is a serious obstacle. Many of these self-

reports are quite difficult for respondents; decreasing the number of categories to reduce respondent fatigue often increases the difficulty for each particular item. Problems of seasonality (e.g., weddings, religious festivals) also arise for expenditures as they do for income.

This paper will report four types of results based on our joint collection of income, consumption, and asset data across India. First, we report the levels and inequalities for the disaggregated (and total) income (26 categories), expenditure (47 categories), and asset (34 categories) measures. Next, we report comparisons across households and across 23 states in the levels and inequalities of the three measures. Because these are measures of different concepts, we should not expect perfect correlations, but nevertheless, consistently low associations for any one measure would raise questions about its validity. The state-level data also permit us to compare macro-level indices of inequality (i.e., variances) across the three measures. Third, we regress each measure on an array of determinants: human and physical capital, regional location, and social origins (caste and religion). Here, we expect the advantages of the income analyses to be most apparent since their effects on consumption and wealth are only indirectly felt through income. Finally, we compare the associations of income, consumption, and assets for two typical outcome measures frequently used in the demographic literature: children's enrolments and health (as measured by height and weight).

Our expectation is that the income measures will add significantly to our understanding of these economic inequalities over what can be uncovered from consumption or asset data alone. Even if our expectations are not borne out, these

analyses should provide a firmer empirical base for the conventional wisdom questioning the usefulness of income measures in developing countries.

## METHODS

The India Human Development Survey, 2004-2005. The data for these analyses come from the India Human Development Survey, a joint project of the University of Maryland and the National Council of Applied Economic Research. We emphasize that this is a *general purpose* survey, not focusing solely on questions of economic standing. This is important because the debate about household economic measures is most often engaged for such general purpose surveys where investigators must balance the time demands of including income, expenditure, and asset measures against the desire to analyze other social, health, and economic outcomes. The IHDS includes substantial modules on health, education, social capital, caste, marriage and family, gender, and fertility.

Income. Our income measure is a composite of 26 separate questions and modules that inquire about agricultural and non-agricultural self-employment income, wages and salaries, property income, pensions, and public and private transfers (see Table 1).

Expenditure. The survey adapts a standard battery of expenditure questions taken from the short form of India's National Sample Survey. Expenditures for 30 of these categories are reported over the previous month; another 17 are reported for the previous year (see Table 2).

Household assets. The IHDS inquired about 24 consumer goods and 9 aspects of housing quality (see Table 3), including many items also asked in the National Family Health Survey (India's equivalent of the DHS) some of which were also included in the 2001 Indian census.

## RESULTS

### *Construction of Measures*

Income.

Expenditures.

Assets.

### *Associations*

Across households.

Across states: levels.

Across states: inequalities.

### *Antecendents*

### *Consequences*

Childrens' enrollments.

Childrens' health.

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**Table 1: Household Income**

| Income Measure | % of Households Receiving Income | Mean of Households Receiving Income | Mean of All Households |
|---|---|---|---|
| *Earnings* | | | |
| Annual wages and salary[5] | 67.4% | 36,790 | 24,792 |
| Cash bonuses | 7.6% | 2,538 | 192 |
| Non-cash bonus: meals | 9.2% | | |
| Non-cash bonus: housing | 1.1% | | |
| Net income from crops | 37.5% | | |
| Sum of gross receipts from crops[1] | | | |
| Total expenditure on crops[2] | | | |
| Value of crop residue | | | |
| Net income from animals | | | |
| Gross receipt from animals[3] | 13.7% | 8082 | 1,110 |
| Total expenditure on animals[4] | | | |
| Net income from all non-farm business | 19.4% | | |
| Sum of gross receipts from non-farm businesses | | | |
| Sum of expenditures on non-farm businesses | | | |
| | | | |
| *Capital Income* | | | |
| Interest, dividends. | 1.7% | 13,152 | 224 |
| Cash from renting out farm land | 2.3% | 13,048 | 300 |
| Value of crop portion from renting out land | 3.5% | 6,289 | 220 |
| Cash from renting equipment | 1.6% | 11,347 | 182 |
| Cash from renting other property | 2.6% | 15,460 | 395 |
| | | | |
| *Transfers* | | | |
| Transfers from non-resident family members | 3.3% | | |
| Scholarships or gifts | 6.8% | 1,295 | 89 |
| Government housing support | 8.8% | 14,634 | 1,287 |
| Benefits from IBRD | 0.8% | 11,992 | 91 |
| Benefits from other government programs[6] | 6.4% | 1,686 | 108 |
| | | | |
| *Other income* | | | |
| Pension income (government, private) | 5.4% | 32,651 | 1,760 |
| Income from other sources | 2.0% | 13,612 | 275 |
| | | | |
| ***Total income*** | | | |

[1] Gross receipt from crops = [Total production - {Landlord's share * Total production} ] * Price of crop.

[2] Expenditure on crops = Hired labour + Seeds + Fertilizer/manure + Herbicides + Water Equipment + Loan repayment*.05(average Indian interest) + Maintenance, transportation, electricity

[3] Gross receipt from animals = Milk & eggs + Chicken & livestock.

[4] Expenditure on animals = Home grown grain + Home grown crop residue + purchased residue/grains.

[5] Annual wage/salary = monthly salary * 12 (if paid monthly);
= daily wage * days worked last year (if paid daily).

[6] National Old Age Pension Scheme + Widows' Pension Scheme + National Maternity Scheme + National Disability Pension + Annapurna + Other Government Programs

NB: These data are preliminary and should not be cited or quoted.

**Table 2: Household Consumption Expenditures**

| Expenditure Measure | % of households with this expenditure | Mean: Households with this Expenditure | Mean: All Households |
|---|---|---|---|
| *In the past 30 days* | | | |
| Rice | 93.9% | 216.1 | 202.8 |
| Wheat | 77.7% | 143.5 | 111.5 |
| Sugar | 93.8% | 62.5 | 58.6 |
| Kerosene | 75.5% | 40.9 | 30.9 |
| Other cereals | 34.3% | 64.8 | 22.2 |
| Cereal products | 63.0% | 46.8 | 29.5 |
| Pulses and pulse products | 91.8% | 80.8 | 74.2 |
| Meat, chicken and fish | 57.8% | 141.7 | 81.8 |
| Gur and other sweeteners | 56.3% | 36.2 | 20.4 |
| Edible oil and vanaspati | 95.8% | 128.5 | 123.1 |
| Eggs | 39.3% | 30.7 | 12.1 |
| Milk | 74.1% | 200.3 | 148.3 |
| Milk products | 42.3% | 98.8 | 41.8 |
| Vegetables | 96.2% | 171.7 | 165.2 |
| Salt and spices | 99.3% | 66.4 | 66.0 |
| Other food (e.g., tea, coffee, processed foods) | 93.2% | 56.4 | 52.5 |
| Paan, tobacco, intoxicants | 62.9% | 71.8 | 45.2 |
| Fruit and nuts | 64.3% | 58.0 | 37.3 |
| Food at restaurants, eating out, etc. | 28.1% | 88.6 | 24.9 |
| Fuel and light (excludes kerosene) | 76.9% | 204.6 | 157.4 |
| Entertainment | 14.0% | 85.7 | 12.0 |
| Telephone, cable, internet | 39.2% | 108.0 | 42.3 |
| Personal care (spectacles, torch, umbrella) | 20.3% | 33.6 | 6.8 |
| Toilet articles (toothpaste, hair oil, shaving blades) | 94.5% | 48.2 | 45.5 |
| Household items (electric bulb, washing soap) | 90.5% | 60.6 | 54.9 |
| Conveyance (railway, bus, taxi, rickshaw) | 70.9% | 149.1 | 105.8 |
| House rent, rent (appliances, furniture) | 9.7% | 347.0 | 33.7 |
| Consumer taxes, cesses and fees (water) | 22.3% | 44.4 | 9.9 |
| Services (domestic servants) | 22.3% | 50.7 | 11.3 |
| Medical expenses (out patient services) | 57.1% | 195.9 | 111.9 |
| *In the past 365 days* | | | |
| Medical expenses (in-patient services) | 30.0% | 2284.4 | 686.0 |
| School/private tuition fees | 54.1% | 643.7 | 348.6 |
| School books and other educational articles | 59.3% | 646.9 | 383.6 |
| Clothing and bedding | 94.8% | 1269.4 | 1203.7 |
| Footwear | 93.8% | 321.8 | 301.9 |
| Furniture and fixtures | 12.0% | 408.7 | 49.2 |
| Crockery and utensils | 33.3% | 155.3 | 51.7 |
| Cooking and household appliances | 7.4% | 420.3 | 31.2 |
| Goods for recreation | 9.4% | 422.4 | 39.6 |
| Jewelry and ornaments | 11.4% | 1040.9 | 118.7 |
| Personal transport equipment | 33.1% | 310.1 | 102.5 |
| Therapeutic appliancs | 3.1% | 242.7 | 7.6 |
| Other personal goods | 18.8% | 102.9 | 19.3 |
| Repair and maintanance | 26.2% | 661.2 | 173.1 |
| Insurance premiums | 20.6% | 2861.1 | 588.8 |
| Vacations | 17.4% | 484.7 | 84.5 |
| Social Functions | 82.1% | 720.6 | 591.4 |
| | | | |
| ***Total*** | | **16129.4** | **6721.2** |

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**Table 3: Household Assets**

| Asset Measure | | %of Households with this Asset |
|---|---|---|
| *Consumer Goods* | | |
| | Clothing all members (minimum 2 outfits) | 95.2% |
| | Shoes all members | 91.2% |
| | Cot | 85.2% |
| | Clock/Watch | 83.2% |
| | Chair/Table | 65.1% |
| | Cycle/Bicycle | 63.7% |
| | Electric fan | 58.8% |
| | Black & white television | 47.9% |
| | Pressure cooker | 38.4% |
| | LPG stove | 38.0% |
| | Colour television | 24.4% |
| | Mixer/Grinder | 22.4% |
| | Sewing machine | 21.0% |
| | Motorcycle/Scooter | 16.5% |
| | Telephone | 13.9% |
| | Fridge/Refridgerator | 13.7% |
| | Air cooler | 10.2% |
| | Cell phone | 6.7% |
| | Washing machine | 3.3% |
| | Car | 1.7% |
| | Credit card | 1.5% |
| | Generator set | 1.1% |
| | Computer | 1.0% |
| | Air conditioner | 0.5% |
| | | |
| *Housing Quality* | | |
| | No standing water outside of house | 82.2% |
| | No excrement outside of house | 74.3% |
| | Electricity | 69.9% |
| | Pucca walls | 58.4% |
| | Separate kitchen | 54.8% |
| | Pucca roof | 54.4% |
| | Pucca floor | 50.5% |
| | Indoor water tap | 24.2% |
| | Indoor flush toilet | 22.0% |

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