

# Short Abstract

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## **India's Public Distribution System: A Panel Data Analysis of Targeting, Access and Performance**

By

Prabir Kumar Ghosh, Sonalde Desai & Reeve Vanneman

*The paper addresses the targeting efficiency of Public Distribution System (PDS) and the role of income change in shaping usage of PDS at the household level using two rounds of data from India Human Development Survey (IHDS). Expansion of PDS through the National Food Security Act may be less than effective if it is plagued by elite capture. While our preliminary results show that the poor have increased access to PDS cards and grains but we also find that upper income households have also increased their access to PDS grains. However, not all poor households have equal access to PDS grains; only about half the households with income of Rs. 25000 or less have access to BPL card. It has also been found that the program provides only half of cereal requirements to BPL households. Whether this exclusion is evenly distributed or whether it is located within most disadvantaged sections of the society – the least connected households – will be examined using IHDS panel data.*

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## Background

Public Distribution System (PDS) is the primary social welfare and one of India's largest antipoverty programs of the Government of India with a total financial outlay of Rs 929 billion in 2013-14. The PDS is expected to play an important role in the implementation of the National Food Security Act (NFSA) in India passed in 2013. The program has changed both qualitatively and quantitatively since the 1970s. The PDS was widely criticized for its' failure to reach those living below the poverty line for whom the program was intended (Kirit Parikh, 1994; Dutta & Ramaswami, 2001; Planning Commission, 2005; Khera, 2011; Ray & Ray, 2011; Hinanshu & Sen, 2013). PDS is plagued with the leakages particularly after targeting below poverty line households was introduced in 1997. It is also argued that poor supply chains and leakages of subsidized grains because of non-transparent operation and unethical practices in the implementation of TPDS suffers, and these problems continue to plague it even after several states in the country have made attempts at reforming PDS (Himanshu & Sen 2013).

A variety of methodological challenges as well as lack of data availability plagues this analysis using conventional data sources. While the National Sample Survey (NSS) provides information on food consumption, food choices are endogenous and without controlling for household income, it is difficult to understand how households at different levels of income behave. Hence, it would make sense to look at the issues like targeting, access and reliance of PDS in longitudinal data for the same households over time. India Human Development Surveys (IHDS I and II) of 2004-5 and 2011-12 can provide an alternative strategy for exploring the following two important research questions: (1) What is the targeting efficiency of PDS? (2) How does access and usage of PDS change with the change in income of the household?

## **The Indian Public Distribution System**

PDS is the primary social welfare and antipoverty program of the Government of India. The system serves dual objectives namely protecting the poor and enhancing the nutritional status. The PDS provides basic food items such as rice, wheat, sugar, and non-food items such as kerosene in rationed amounts at below-market prices.

The programmes originated in the early period after Independence, when food shortages required large imports of food under the PL-480 grants from the United States. A large network of PDS shops, also known as Fair Price Shops (FPS), was established: local traders were enrolled as owners, and households were issued a PDS card with monthly per capita entitlements of food staples. The programme continued with indigenous public resources even after the PL-480 programme ceased to exist when India's food production improved. The network of 5.1 lakh FPS now distributes commodities worth Rs. 929 billion annually to about 200 million families across all parts of India. This scale is likely to expand over the coming years, as the current government has passed the NFSA that entitles around two-thirds of the population to 5 kg of subsidized grain per person.

Although rural areas were covered in many states in the 1980s, the PDS had an urban bias and large regional inequalities in its operation. Over time, it was expanded to rural areas. An effort was made, therefore, to streamline the PDS by introducing the Targeted Public Distribution System (TPDS) in June 1997. The new system follows a two-tier subsidised pricing structure: one for below poverty line (BPL) families, and another for above poverty line (APL) families. The Union Budget 2000/1 announced a monthly allocation of 25 kg of food grains to about 60 million BPL families under the TPDS. The issue price of food grains for BPL families is fixed at 50% of the economic cost that the APL families pay, and all prices are revised by the Food Corporation of India (FCI) from time to time. The total food subsidy (including programmes other than PDS) has significantly increased in real terms over the years.

In order to target the TPDS more towards the poor, the Antyodaya Anna Yojana (AAY) was launched in December 2000. This scheme sought to identify the 10 million poorest

of the BPL families and provide them each with 25 kg of food grains per month at a fixed price of Rs. 2 per kg for wheat, and Rs. 3 per kg for rice.

Food Security Bill passed in August 2013 further builds on PDS. As per the bill, priority households are entitled to 5 kgs of foodgrains per person per month, and Antyodaya households to 35 kgs per household per month. The combined coverage of Priority and Antyodaya households (called “eligible households”) shall extend “up to 75% of the rural population and up to 50% of the urban population”. The PDS issue prices are given as Rs 3/2/1 per kg for rice/wheat/millet. These may be revised after three years.

In the program, entitled households have the right to purchase grain, kerosene, and potentially other goods at below market rates from their local FPS. While this is a centrally sponsored scheme, it is administered by state governments, which are free to add other items to the list and to reduce prices or to increase quantities.

### **The Data**

We will use two rounds of dataset from India Human Development Survey (IHDS I and II) carried out by National Council of Applied Economic Research, New Delhi in collaboration with University of Maryland. These surveys were carried out in 2004-5 and 2011-12 and include interviews of the same households in 2004-5 and 2011-12. In 2004-5, the sample consists of 41,554 households located in both urban and rural parts of India and covers 33 states and union territories. Only Andaman Nicobar and Lakshadweep are excluded from the sample. The IHDS has a unique niche even as a cross-sectional survey. However, its longitudinal dimension makes it especially important for studying a society undergoing a rapid transition. With another survey of the same IHDS-I households in 2011-12, this is the first panel study of urban as well as rural households in India. Substantial field efforts were made in IHDS-I to secure contact information (telephones, neighbors’ names, family contacts) so that the IHDS-I households could be easily relocated, even in the event of a move. As a result, the IHDS-II was able to interview about 83% of the original households with recontact rate in rural areas being nearly 90%. The urban IHDS-II sample has been augmented to replace sample losses. IHDS contains a wealth of information on demography; income,

consumption expenditure including purchased from PDS, ownership of land, livestock and other durable assets, access to ration card and type of ration card etc.

### **Methods:**

#### **(i) Descriptive Analyses of PDS Usage and Changes over Time**

- Change in access to BPL/Antyodaya/APL cards by household income
- Change in usage of PDS by household income and type of PDS card.
- Estimate of food expenditure and quantity purchased at PDS shop for various income groups by type of PDS card and estimate of proportion of food expenditure that is incurred at PDS shop.

#### **(ii) Panel Data Regression**

- Using a panel data analysis we shall examine which households are taking advantage of PDS access in round II (2011-12) conditional on their social networks and other background characteristics (such as caste, religion, income) in round I (2004-05).

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## Descriptive Statistics

**Table 1: Distribution of PDS cards across income groups (% household)**

| Income Group<br>(2011-12 prices) | BPL/Antodaya/<br>Annapurna |           | APL       |           | No card   |           |
|----------------------------------|----------------------------|-----------|-----------|-----------|-----------|-----------|
|                                  | 2004-05                    | 2011-12   | 2004-05   | 2011-12   | 2004-05   | 2011-12   |
| Below 25000                      | 46                         | 52        | 35        | 31        | 19        | 17        |
| 25001-50000                      | 46                         | 51        | 37        | 33        | 17        | 16        |
| 50001-75000                      | 39                         | 48        | 45        | 38        | 16        | 14        |
| 75001-100000                     | 32                         | 45        | 53        | 43        | 15        | 12        |
| 100001-150000                    | 23                         | 36        | 62        | 53        | 15        | 11        |
| 150001-200000                    | 15                         | 26        | 69        | 62        | 16        | 12        |
| 200001-300000                    | 11                         | 20        | 73        | 68        | 16        | 12        |
| 300001-500000                    | 8                          | 13        | 76        | 74        | 16        | 13        |
| Above 500000                     | 10                         | 10        | 74        | 79        | 17        | 11        |
| <b>Total</b>                     | <b>36</b>                  | <b>42</b> | <b>47</b> | <b>44</b> | <b>17</b> | <b>14</b> |

Sources: India Human Development Survey (IHDS) I & II

**Table 2: Usage of PDS - Percentage of households purchased grains from PDS**

| Income Group<br>(2011-12 prices) | BPL/Antodaya/<br>Annapurna |           | APL       |           | All PDS card holders |           |
|----------------------------------|----------------------------|-----------|-----------|-----------|----------------------|-----------|
|                                  | 2004-05                    | 2011-12   | 2004-05   | 2011-12   | 2004-05              | 2011-12   |
| Below 25000                      | 60                         | 91        | 16        | 33        | 34                   | 59        |
| 25001-50000                      | 57                         | 91        | 18        | 31        | 34                   | 57        |
| 50001-75000                      | 59                         | 92        | 12        | 34        | 29                   | 58        |
| 75001-100000                     | 58                         | 91        | 11        | 36        | 25                   | 57        |
| 100001-150000                    | 54                         | 90        | 11        | 35        | 20                   | 52        |
| 150001-200000                    | 32                         | 88        | 7         | 33        | 10                   | 44        |
| 200001-300000                    | 39                         | 81        | 8         | 30        | 10                   | 37        |
| 300001-500000                    | 28                         | 71        | 5         | 24        | 6                    | 27        |
| Above 500000                     | 16                         | 59        | 5         | 19        | 5                    | 21        |
| <b>Total</b>                     | <b>57</b>                  | <b>90</b> | <b>13</b> | <b>32</b> | <b>27</b>            | <b>52</b> |

Sources: India Human Development Survey (IHDS) I & II

**Table 3: Average per capita consumption of cereals (Kgs/month)**

| Income Group<br>(2011-12 prices) | BPL/Antodaya/<br>Annapurna |           | APL       |           | All PDS card holders |           | No card holders |           |
|----------------------------------|----------------------------|-----------|-----------|-----------|----------------------|-----------|-----------------|-----------|
|                                  | 2004-05                    | 2011-12   | 2004-05   | 2011-12   | 2004-05              | 2011-12   | 2004-05         | 2011-12   |
| Below 25000                      | 12                         | 12        | 13        | 12        | 12                   | 12        | 13              | 12        |
| 25001-50000                      | 12                         | 12        | 12        | 12        | 12                   | 12        | 12              | 11        |
| 50001-75000                      | 11                         | 11        | 11        | 11        | 11                   | 11        | 11              | 11        |
| 75001-100000                     | 11                         | 11        | 11        | 10        | 11                   | 10        | 11              | 10        |
| 100001-150000                    | 10                         | 10        | 10        | 10        | 10                   | 10        | 11              | 10        |
| 150001-200000                    | 10                         | 10        | 11        | 10        | 11                   | 10        | 11              | 10        |
| 200001-300000                    | 10                         | 9         | 10        | 10        | 10                   | 10        | 10              | 10        |
| 300001-500000                    | 10                         | 9         | 10        | 9         | 10                   | 9         | 10              | 10        |
| Above 500000                     | 11                         | 10        | 10        | 9         | 10                   | 9         | 11              | 9         |
| <b>Total</b>                     | <b>11</b>                  | <b>11</b> | <b>11</b> | <b>10</b> | <b>11</b>            | <b>11</b> | <b>12</b>       | <b>11</b> |

Sources: India Human Development Survey (IHDS) I &amp; II

**Table 4: Share of PDS cereals to total cereal consumption (%)**

| Income Group<br>(2011-12 prices) | BPL/Antodaya/<br>Annapurna |           | APL       |           | All PDS card<br>holders |           |
|----------------------------------|----------------------------|-----------|-----------|-----------|-------------------------|-----------|
|                                  | 2004-05                    | 2011-12   | 2004-05   | 2011-12   | 2004-05                 | 2011-12   |
| Below 25000                      | 42                         | 50        | 41        | 38        | 42                      | 49        |
| 25001-50000                      | 38                         | 45        | 37        | 32        | 38                      | 44        |
| 50001-75000                      | 39                         | 44        | 37        | 34        | 39                      | 42        |
| 75001-100000                     | 38                         | 44        | 38        | 37        | 39                      | 43        |
| 100001-150000                    | 38                         | 44        | 43        | 37        | 40                      | 41        |
| 150001-200000                    | 37                         | 43        | 45        | 34        | 40                      | 39        |
| 200001-300000                    | 33                         | 41        | 46        | 35        | 40                      | 38        |
| 300001-500000                    | 28                         | 39        | 47        | 37        | 39                      | 38        |
| Above 500000                     | 26                         | 36        | 44        | 37        | 40                      | 37        |
| <b>Total</b>                     | <b>39</b>                  | <b>45</b> | <b>40</b> | <b>35</b> | <b>40</b>               | <b>43</b> |

Sources: India Human Development Survey (IHDS) I &amp; II