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Weighing What's Practical: Proxy Means Testing for Targeting Food Subsidies in Egypt

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Egypt's current system of food subsidies has generally been effective as a social safety net. However, the cost of the system is still high relative to the benefits received by the poor because the system does not target the poor well and considerable portions of the benefits are misappropriated. As a result, only one-third of the benefits goes to the poorest 40 percent of the population. The Egyptian government is now considering whether to reform the food subsidy system in ways that reduce benefits to the nonneedy while continuing to protect the poor. There is scope for better targeting food subsidies, in particular those for rationed cooking oil and sugar, because reforms in this area are perceived to be far less politically sensitive than adjusting subsidy policies for bread and wheat flour. This paper develops and evaluates a "practical" proxy means testing method of identifying needy and nonneedy households, which the government could use to implement such reform.

The Ration Card Subsidy System

About three-fourths of the Egyptian population hold ration cards that guarantee a monthly quota of sugar and cooking oil at subsidized prices. Consumers holding ration cards buy subsidized sugar and oil from private grocers who also sell unsubsidized consumer goods. There are two categories of ration cards, green and red. The green card has a high rate of subsidy for low-income families, while the red card has a low rate of subsidy intended for people with higher incomes.

The Policy Issue

The problem is that the current ration card system is very loosely targeted in the sense of providing subsidies to the poor. A majority of wealthy Egyptians carry the high-subsidy green ration cards rather than the low-subsidy red cards, while some of the poorest Egyptians hold red cards or no cards. A policy reform might seek to transfer nonpoor consumers from the high-subsidy green card to the low-subsidy red card and poor consumers from the low-subsidy red card to the high-subsidy green card. Simultaneously, the policy would bring the poor who currently do not hold any ration card into the green card system. This demonstration of the government's desire to provide a ration-card safety net to the poor who have slipped through the system could enhance the political feasibility of the reform. Moreover, conversion of red cards to green cards for poor families would mitigate public criticism that the reform is aimed mainly at reducing overall subsidy costs.

This paper describes the process of moving from the "optimal" consumption-predicting model of identifying the needy to a "practical" model that is both administratively and politically feasible.

Identifying the Poor and Nonpoor

In any targeting effort, of course, the major challenge is identifying eligible and ineligible households accurately and cost effectively. In general, it is true that the per capita income of a household can be considered an accurate measure of its welfare. And, in the case of Egypt, the standard application form for ration cards records self-reported incomes of household members. Cardholders, however, have an incentive to understate their incomes if they wish to qualify for the subsidy benefits. In addition, verifying income is difficult in Egypt because of the difficulty of documenting level and sources of income of household members. Finally, because measurement of household income or expenditure requires expensive and time-consuming surveys, such measures of welfare are rarely used to determine eligibility or benefit levels.

An alternative method—and the one tested in this paper—measures household welfare through a "proxy means test." Instead of asking about income directly, the approach relies on indicators that are highly correlated with household income yet are easy to collect, observe, and verify.

Developing the Proxy Means Test

An IFPRI research team in Egypt, in collaboration with the Egyptian Ministry of Trade and Supply, developed a proxy means test model for targeting ration cards. The model used the data set from the IFPRI-led 1997 Egypt Integrated Household Survey (EIHS), a nationally representative survey that included 2,500 urban and rural households from 20 of the country's 26 governorates. The EIHS collected information on a wide variety of topics, including use of the food subsidy system by households.

Per capita consumption expenditure was chosen as the most reliable measure of household welfare for two reasons. First, consumption expenditures are likely to reflect permanent income and are, therefore, a better indicator of consumption behavior. Second, data on consumption expenditure are generally more reliable and stable than income data.

In selecting the proxy means test indicators, explanatory variables were selected that were statistically significant in "explaining" per capita household consumption. These variables would be easy to record and verify by field staff and are politically acceptable.

For predicting household welfare using per capita expenditure, we selected a large number of variables from the EIHS data set that we expected to be correlated with per capita household consumption. These variables can be broadly classified into seven categories: household demographic make-up, education, utility use, dwelling characteristics, ownership of assets, occupation, and location variables.

With extensive input from a stakeholder task force, the model was revised many times to drop a number of statistically significant variables that would require calculations by field staff (and hence could increase calculation errors), would require judgment of field staff to define, or would require more resources to gather, or were politically unfeasible to collect. Eventually, a model was developed that included just nine household-level variables.

Assessing the Predictive Power of the Model

For evaluating the performance of the proxy means test model, the authors considered 36.5 percent of the population as needy and 63.5 percent as nonneedy (based on the 1997 EIHS data). A comparison of the results from the model to those of the EIHS data suggests that the model correctly predicts 71.8 percent of the actual needy, while misidentifying 28.2 percent of the actual needy as nonneedy. In other words, the error of exclusion is 28.2 percent. On the other hand, the error of inclusion—nonneedy inaccurately predicted as needy—was only 16.3 percent.

The authors also assessed the situation if there were no error of exclusion (i.e., 100 percent of the actual needy are included). The results of this assessment indicate that the error of inclusion in such a situation increases from 16.3 to 33.6 percent. Moreover, 57.8 percent of total population is included as needy.

Conclusions and Discussion

Ration cards can be made more progressive by converting green ration cards of nonneedy households to red cards, converting red cards of needy households to green cards, and providing green cards to needy households without cards. This reform of the Egyptian ration card food subsidy system would require identification of both needy and nonneedy households, something that is not always easy. To effectively implement a targeted program, it would be necessary to rely on a method such as proxy means testing.

In developing a proxy means testing method, this paper describes the process of creating a model that is both administratively and politically feasible. Targeting ration cards either through the "technically optimal" model or through the selected "practical" model would have differential impacts on consumers and subsidy costs.

An effective and full implementation of targeting ration card subsidies through the selected "practical" proxy means testing model would yield the following results:

- Forty-eight percent of the high-subsidy green ration cards would be converted to low-subsidy red ration cards, saving the government about LE 98 million annually.
- Forty-three percent of the red ration cards would be converted to high-subsidy green ration cards, creating an additional cost of about LE 16 million.
- Thirty-two percent of households who currently do not hold any ration cards would receive green ration cards, costing about LE 51 million annually.

This redistribution of ration cards would increase the equity in the ration card food subsidy system and benefit the poor. At the same time, the total annual cost of rationed food subsidies would decline by about LE 31 million. The "technically optimal" model could generate even greater annual savings to the government. However, taking into consideration the administrative and political difficulties, the "practical" model might nevertheless be the better choice.

Keywords: ration cards, targeting, proxy means tests, household welfare indicators, Egypt

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