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Determinants of Household Food Insecurity in Mexico

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Abstract

Food security is defined as the situation when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life (FAO 1996). According to official figures, 24.8% of Mexican population experienced moderate or severe food insecurity in 2010. This represents an increase of 3.1 percentage points with respect to 21.7% in 2008. In other words, this represents an increase of 4.1 million individuals, from 23.9 to 28 million, living under these conditions in two years, from 2008 to 2010 (CONEVAL 2011). CONEVAL validated the Mexican Food Security Scale (EMSA, for its acronym in Spanish) as a reliable instrument to measure food security using Rasch model at the national and state level in Mexico (Carrasco, Peinador, and Aparicio 2010). Despite the validity that the food security scale is proved to have, to the best of our knowledge, there is no available study that has intended to find association between demographic factors and food insecurity at a national level in Mexico. This study will bridge the gap in the literature regarding the identification of factors that determine food insecurity in Mexico. The data used in this study come from The Socioeconomic Conditions Module (MCS 2010, for its acronym in Spanish) of the National Household Income and Expenditure Survey (ENIGH, for its name in Spanish) in the third quarter of 2010. In this study we use an ordered probit model, along with nationally representative data and a newly developed food security scale for Mexico. The analysis was conducted for the general (total) population first and then for a subpopulation group of rural lower-income households. We found that households with younger, less-educated household heads were more likely to suffer food insecurity. Other groups that were found to be vulnerable in terms of food insecurity include: households headed by a single, widow or divorced mother, households with disabled family members, households with strong indigenous background, rural households, low income families, non-agricultural households and households with kids.

Overview

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

Food insecurity is one of the most important public health challenges. At a global level, the number of people suffering from hunger and poverty exceeds one billion, which represents one-seventh of the world's population.

In 2010, nearly 49.9 million individuals, which is about 44.3% of Mexican population, have reported suffering from some level of food insecurity. In particular, 10.8% of the Mexican population reported experiencing severe food insecurity, and 14.0% reported moderate food insecurity. The two most severe levels of food insecurity in Mexico have increased from 2008 to 2010 (see figure below).

Objective

Identify demographic factors that influence the level of household food insecurity in Mexico.

Model

The model used is an ordered probit model, which can briefly be described, for each household i , as:

$$y_i^* = x_i\beta + \varepsilon_i$$

where y_i^* is a latent variable that can take on four values corresponding to four levels of food security. The vector x_i represents a set of demographic covariates, and ε_i is a random error.

Results

Separate analyses were conducted for the whole sample and the subsample of rural and lower income households with income below the food poverty line.

Key Findings for the Whole Sample:

- Households with younger, less-educated household heads were more likely to suffer from food insecurity.
- Households headed by single, widow or divorced women were more likely to be food insecure.
- Households with disabled family members, households with strong indigenous background, rural and low-income households, non-agricultural households and households with kids were also more likely to be food insecure.

The results of the analysis for the subsample of 4,343 low-income and rural households are reported in Table 1.

- Other variables that were included in the model but are not statistically significant are: age of household head, gender of household head, household receiving benefits from conditional cash transfer programs, and type of household.

Table 1. Orders of Probit Marginal Effects for Low-Income Rural Households

| Variable | Food Security | Food Insecurity | | |
|-------------------------|---------------|-----------------|-----------|-----------|
| | | Very Low | Moderate | Severe |
| Elementary education | 0.101*** | 0.013*** | -0.030*** | -0.085*** |
| Secondary education | 0.117*** | 0.015*** | -0.035*** | -0.098*** |
| High School education | 0.225*** | 0.029*** | -0.066*** | -0.188*** |
| College education | 0.268* | 0.035* | -0.079* | -0.224* |
| Disabled person present | -0.089*** | -0.011*** | 0.026*** | 0.074*** |
| Indigenous background | -0.056*** | -0.007*** | 0.017*** | 0.047*** |
| Agricultural household | 0.083*** | 0.011*** | -0.025*** | -0.069*** |
| 1 child | -0.058** | -0.007** | 0.017** | 0.048** |
| 2 - 3 children | -0.087*** | -0.011*** | 0.026*** | 0.073*** |
| 4 or more children | -0.183*** | -0.024*** | 0.054*** | 0.153*** |

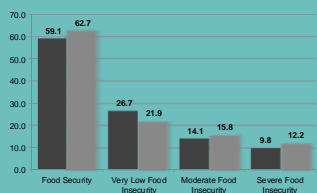
*p<.1, **p<.05, ***p<.01

Policy Implications

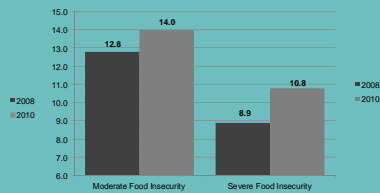
Education may be important to food security not only because it is usually correlated with income, but also because it may have a positive impact on how the resources in the household are managed. Gundersen and Garasky (2012) found that households with greater financial management abilities are less likely to be food insecure. These findings suggest that improving households' financial management skills has the potential to reduce food insecurity in the United States. It would be worth to explore if the same outcome holds for Mexican households and if that is the case, implementing training programs would help families to achieve food security.

Having a strong indigenous background (*native language*) has negative effect on food security. This holds even among lower-income, rural subpopulation. It is possible that adverse ethnic characteristics, isolation of rural communities and lack of information limit the opportunities among these groups. Therefore, it is necessary not only implementing policies that will bring the benefits of cash transfer social programs to the residents of isolated rural communities but also implementing complementary public policies to support sustainable local food production and rural development.

Millions of Individuals



Population proportion



Data

Data come from INEGI 2010 Module of Socioeconomic Conditions Module (MCS 2010) of the National Household Income and Expenditure Survey (ENIGH). This is a nationally representative dataset containing detailed information on household demographics and newly established Mexican Food Security Scale (EMSA). Households are classified into four food security levels (See figures above). The total sample consists of over 60,000 households.

