Available online at www.sciencedirect.com
SCIENCE DIRECT®
Food Policy 30 (2005) 510–531
FOOD POLICY
www.elsevier.com/locate/foodpol

Exploring the spatial variation of food poverty in Ecuador

Andrew Farrow [a,*], Carlos Larrea [b], Glenn Hyman [a], German Lema [a]

[a] *Centro Internacional de Agricultura Tropical (CIAT), AA6713, Cali, Colombia*
[b] *Facultad Latinoamericana de Ciencias Sociales (FLACSO) Ecuador, Av de las Palmeras N45-159, Dpto. 101-C, Quito, Ecuador*

Abstract

We examine the geographic dimensions of food consumption in Ecuador, which has one of the highest rates of chronic infant undernutrition in Latin America. We use statistical and spatial analyses to examine the distribution of food consumption and food poverty and to test and generate hypotheses of food poverty estimates at the district level. Results show that the food poor are concentrated in certain locations with a significant cluster identified in the central Andean region. Geographically weighted regression shows that the processes underlying food poverty in Ecuador are also spatially variable. While our results lend support for nationwide land tenure reforms, in the central Andes these must take into account productivity constraints and communal ownership. Improvements in transport infrastructure will likely decrease levels of food poverty country-wide but could be most beneficial in the extreme south and in the province of Esmeraldas. Investment in rural enterprise development should be encouraged in all regions.

Keywords: Food security; Agricultural productivity; Market access; Rural income generation; Indigenous communities; Ecuador

* Corresponding author. Tel.: +57 2 445 0000; fax: +57 2 445 0073.
E-mail addresses: a.farrow@cgiar.org (A. Farrow), clarrea@interactive.net.ec (C. Larrea), g.hyman@cgiar.org (G. Hyman), g.lema@cgiar.org (G. Lema).

0306-9192/$ - see front matter © 2005 Elsevier Ltd. All rights reserved.
doi:10.1016/j.foodpol.2005.09.005

Introduction

Ecuador, Guatemala, Honduras and Haiti are among the countries in Latin America with the highest rates of chronic infant undernutrition (FAO, 2003). Figures for Ecuador show undernutrition rates of 34% in 1986, 26.5% in 1998[1] (Larrea et al., 2001) and 23% in 2004[2] (CEPAR, 2005). The long-term effects of infant undernutrition on health, educational attainment and capacity to work have been well documented (Steckel, 1995; Grantham-McGregor et al., 2000; Fogel, 2001; Semba and Bloem, 2001). In Ecuador, a country with high social inequality[3] (Larrea and Kawachi, 2005) and 62% of the population falling below the poverty line in 1998, pronounced social, regional and ethnic disparities in the distribution and consumption of food are to be expected.

Policies aimed at reducing inequality and improving nutrition must be based on detailed studies documenting these disparities and identifying their causes. Information for policy formulation and targeting is needed to optimally deploy direct aid, development or research resources. Hentschel et al. (2000) demonstrated a theoretical reduction in resource leakage and greater coverage using a geographically targeted implementation of a pro-poor energy subsidy. Reductions in food poverty are likely to be achieved by the implementation of a range of interventions, rather than a direct cash transfer to recipients. Targeting the range of possible interventions that are not direct aid is inherently more difficult because the benefits are often limited to certain locations, sectors of the economy or demographic groups. The utility of information that improves targeting of public goods is therefore more difficult to quantify.

Analyses based on household surveys, which are representative for a few regions (e.g., Datt and Jolliffe, 1999), often fail to reveal the location of the population affected. On the other hand, qualitative assessments of limited geographical extent (e.g., Hentschel et al., 1996) do not allow a country-wide investigation of the causes of inadequate food consumption and undernutrition. Other studies addressing these problems by combining survey and census data (Larrea et al., 1996; Hentschel et al., 2000) lack consideration of geographic and environmental factors. Our experience in Ecuador suggests that poor accessibility to markets and services and environmental constraints to agriculture have negative impacts on wealth and food security outcomes. Petrucci et al. (2003) deal with some of these issues for Ecuador but use data aggregated to county level, potentially hiding interactions at the household level.

A spatial analysis framework offers advantages over tabular analysis. The visualization of the estimates in map form is an efficient medium for planning responses to food poverty. Spatial statistics can quantify and clarify patterns seen in maps. A spatial framework allows for incorporating spatially continuous environmental variables in the analysis. Explicit spatial analyses take into account the local nature of relationships between food poverty and its determinants.

[1] As measured by children (<2 years old) below international standards of height for age.
[2] As measured by children (<5 years old) below international standards of height for age.
[3] In 1998, the GINI coefficient for total consumption was calculated as 0.468.