



The Effect of Social Capital on Food Insecurity: Instrumental Variable Approach

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Background

The World Food Summit (1996) defined food security as when all people have at all times physical, social and economic access to sufficient, safe and nutritious food that meets their daily energy needs and food preferences for an active and healthy life.

Food security corresponds to Goal 2.1 “Zero Hungry” of the Sustainable Development Goals (SDG).

According to FAO *et al.* (2024), in Latin America and the Caribbean (LAC), moderate or severe food insecurity affects 28.2% of the population, impacting 187.6 million people.

Background

Food insecurity is influenced by socioeconomic variables like educational attainment, household income, household size, and number of children (Rezende *et al.*, 2019).

Some governments have put in place assistance programs to improve food procurement, such as, Supplemental Nutrition Assistance Program (SNAP) in the US and *El Programa del Vaso de Leche* in Perú.

The purpose of this study is to analyze the causal relationship between social capital and food insecurity.



¡¡YAY!!

ATENCIÓN
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13⁰⁰ HRS

(COQUIMBO #321)



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Methodology - Dataset

- The National Socioeconomic Characterization Survey of Chile, known as the CASEN survey, is a cross-sectional, multipurpose household survey conducted by the *Ministerio de Desarrollo Social y Familia*.
- A notable feature of the CASEN survey is the inclusion of the Food Insecurity Experience Scale (FIES) since 2017, along with a comprehensive set of 11 social capital variables.
- Food Insecurity Experience Scale consists of an eight-question survey to measure the prevalence of moderate and severe food insecurity.

Methodology – FIES Survey Questions

During the last 12 months, was there a time when, because of lack of money or other resources:

1. You were worried you would not have enough food to eat?
2. You were unable to eat healthy and nutritious food?
3. You ate only a few kinds of food?
4. You had to skip a meal?
5. You ate less than you thought you should?
6. Your household ran out of food?
7. You were hungry but did not eat?
8. You went without eating for a whole day?

Methodology – Instrumental Variables



Case 1: “Does anyone in your household know someone who can help with care in the event of an illness of a household member?”

Instrumental variable: the household is located less than 2.5 kilometers from a health center.

Methodology – Instrumental Variables

Case 2: “Does anyone in your household know someone who can advise household members in case of personal or family problems?”

Instrumental variable: the household is located less than 2.5 kilometers from community facilities, such as neighborhood centers, social headquarters, neighborhood libraries, or cultural centers.

Case 3: “Does anyone in your household know someone who can provide a car if needed?” Instrumental variable whether the household was located less than 20 blocks or 2.5 kilometers from a supermarket, store, or market.

Methodology – Model

Recursive IV Probit Model

- unobservables may correlate both equations
- ivprobit inappropriate for dichotomic instruments

Treatment equation - Probit

$$SCapital_i = \beta_1 Z_i + \mu_i$$

Output equation - Probit

$$FInsecurity_i = \alpha_1 X_i + \alpha_2 SCapital_i + \epsilon_i$$

$$\begin{pmatrix} \epsilon_i \\ \mu_i \end{pmatrix} \sim \mathcal{N}\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right]$$

Results – Descriptive Statistics

Variable	Mean/percentage	Std. dev.
Food insecurity		
moderate probability	12.82%	29.76%
severe probability	3.52%	13.45%
Social capital		
help sick, having someone that can help to take care of a sick person	86.59%	-
help with advice, having someone that can provide advice	77.23%	-
help car, having someone that can lend a car	82.24%	-
Access variables		
health center, less than 2.5 kilometers	76.87%	-
community center, less than 2.5 kilometers	82.96%	-
food shop, less than 2.5 kilometers	86.92%	-
Observations	72,056	

Results – Recursive IV Probit

	Model 1: Help Sick		Model 2: Help Advice		Model 3: Help Car	
	dy/dx	Std. Err.	dy/dx	Std. Err.	dy/dx	Std. Err.
ATE	-0.248	0.044	-0.226	0.034	-0.231	0.031
ATET	-0.168	0.021	-0.162	0.019	-0.160	0.015
ATEC	-0.053	0.004	-0.042	0.003	-0.063	0.003

Results – Additional Tests

- Endogeneity Walt Test
 Reject the null of no endogeneity
- No formal overidentification test. Finlay *et al.* (2013) developed a command for ivprobit.

Discussion

- Valliant *et al.* (2022) identified older rural adults, especially those living alone without access to transportation, as a particularly vulnerable group. Our findings align with this literature, demonstrating that transportation services could significantly reduce food insecurity.
- Social capital offers a complementary approach to alleviating food insecurity that can be less reliant on economic resources. For instance, community gardens, as highlighted by Nosratabadi *et al.* (2020), not only enhance food availability but also foster community engagement and social interaction, which can help build resilience against food insecurity.

Final Remarks

- We show that social capital, such as help with care in case of illness, the ability to receive advice in difficult situations and access to a car if needed, reduces food insecurity.
- The findings provide evidence for designing policy interventions that can leverage social capital through community centers, municipalities, and non-governmental organizations. However, our results should be interpreted with caution, as we cannot assert that every social capital intervention will necessarily reduce food insecurity.

References

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