

EVIDENCE OF HIDDEN DIMENSIONS THAT DETERMINE THE USE OF ENERGY FOR COOKING IN BRAZIL

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Overview

This article will address energy poverty from the economic inability to cook with modern cooking fuels in urban slums in Brazil. Significant variations in Liquefied Petroleum Gas (LPG) prices and limited household incomes have determined the choice of cooking fuels. The price of LPG has a prominent relevance in the budget of Brazilian households with low income, leading to substitute modern fuels by less efficient fuels. The data from the National Continuous Household Sample Survey indicate that LPG, a modern energy source, is being replaced by traditional fuels as fuelwood and coal, resulting from a fuel price policy aligned with the international market in one moment of high oil prices. Despite policies for access to energy and social programs that seek to deal with the problem of capacity to pay, the problem of the deprivation of modern energy services is not yet complete. In addition to economic factors and pricing policies, there are other dimensions that interact and influence energy poverty. This is called the Hidden Dimensions of Energy Poverty. Three dimensions are identified: (i) political-institutional, (ii) criminal and (iii) localization. Particularly in urban slums as Rio de Janeiro, these dimensions interact and imply in situations of energy poverty. In the absence of the government, parallel groups such as traffic and militias take advantage to control the market and the price of LPG (13 kg), which is sold at higher prices than in the formal market. The irregular sale of LPG is frequently in areas of low-income population, which leads to its replacement by traditional fuels. The article will study the hidden dimensions of energy poverty in the metropolitan regions of Brazil, evidenced in the affordability to LPG.

Methods

The decision on the type of fuel used for cooking will be analyzed according to the final selling price of LPG (P-13) and a vector of variables related to the characteristics of the Brazilian households. Will be studied the probability of choosing the use of traditional sources in urban centers of Brazil according with the final average price of LPG available at the National Petroleum Agency (ANP) and the socio-economic variables of the households, given by the Brazilian Institute of Geography and Statistics (IBGE). It will be necessary at this stage to identify the characteristics of the dwellings that are located in informal settlements of the cities of Brazil from the data of the census and the National Continuous Household Sample Survey. Thus, a binary discrete choice model, logit, will be addressed for a panel data set, since the dependent variable indicates whether the domicile predominantly uses firewood and coal. From the above, it will be possible to determine the probability that external factors, such as prices and the political-institutional dimension, affect the decision to use traditional sources of energy in informal urban slums in Brazil.

Results

Despite the existence of policies for access to modern energy services and financial aid for the purchase of LPG, distortion of fuel prices affects the choice of fuel for cooking. Petrobras' price policies for fuels impacted the average national price of LPG distribution, which, coupled with a stagnant income, affected the decision to use fuels for cooking. The LPG affordability policies have not been sufficient to mitigate the use of fuelwood and coal in Brazil. However, the problem is more complex. In large urban such as Rio de Janeiro, the presence of criminal groups implies higher prices than the regulated market. Thus, substitution by less clean energy sources becomes an alternative for low-income families.

Conclusions

It is possible to conclude that the increase in the proportion of households that predominantly used wood and charcoal during the period of analysis is related to a number of factors, household income, the real increase in LPG prices for the final consumer and the political-institutional dimension. It is referred as a political-institutional dimension to the efficiency of government in the implementation and execution of public policies and the absence of the government, where parallel groups take the control of some urban slums. Particularly in Rio de Janeiro, the presence of criminal groups implies high costs of LPG acquisition that affect the decision to choose the type of fuel for cooking.

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