



# Fuel Poverty and Well-Being: A Consumer Theory and Stochastic Frontier Approach

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Conventional wisdom and empirical evidence suggest the notion that general poverty has a negative effect on the well-being of individuals. However, the mechanisms through which this effect occurs are understood and researched to a lesser extent. Part of the reason for this is that general poverty manifests itself and affects well-being of individuals (itself a multi-faceted condition) directly and indirectly through several channels.

Fuel poverty is an aspect of poverty that in recent years has gained from the point of view of social as well as energy policy importance in an increasing number of countries. The causes of fuel poverty are multifaceted and include rising energy prices and energy subsidies, stagnating income levels, and housing conditions that add to the cost of energy for consumers. At the same time, social norms and peer comparisons can affect the view of individuals of their own well-being.

In this paper we analyse the effect of general poverty and fuel poverty as well as a specific aspect of social dimension that works through social interaction and peer comparison on the objective and perceived well-being of the households. To do this, we use parametric frontier techniques often used in efficiency and productivity analysis of firms and other decision units. Within this framework, we develop a novel approach where individual preferences are modelled using indifference curves and a distance function where the preferences of individuals are affected by their poverty status. We develop this model to analyse fuel poverty and well-being based on consumer theory as opposed to using production theory approach which is commonly used in the literature.



In Spain, various measures have been developed to eradicate fuel poverty both at national, regional and local level. At national level, a “bono social” discount of 25% on electricity bills has been provided for some consumer groups. However, this has been regarded as being insufficient for addressing the problem. In this paper, we use the survey data from the official Spanish Living Conditions Survey (SLCS) for 2013 which contains over 16,800 observations on household members. The dataset includes a set of socio economic as well as general poverty, energy poverty, and well-being information. Such surveys are becoming increasingly common in various countries and provide a good source of information and data for economic and social research.

The empirical results obtained show that both general and fuel poverty influence subjective individual well-being and the reference indifference curve. At the same time, we find that individuals also tend to compare themselves with their peers. This shows that social interactions influence the individuals’ assessment of their own well-being.

For example, a relevant question is what are the most efficient and equitable measures to address fuel poverty. Lump sum payments as opposed to price supports have economic properties that can make this mechanism part of the solution. Direct payments have also been used as part of subsidy reduction programs. The analysis of the Well-being Loss Index (WLI) show that, in order for an individual in general poverty to reach the same level of well-being of one who is not in that situation, they should receive an increase in income equivalent to 6% of their household expenditure.

The proposed approach and the models used also allow us to better explore and corroborate how general and fuel poverty interact and affect well-being. Although it may be necessary to take the effects of other socio-economic factors into account, the proposed approach may prove a first step towards better understanding and designing measures to mitigate the impact of fuel poverty on individual welfare and well-being.

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