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Is Spain's energy voucher lighting the way for the poor? A microeconomic evaluation of the Bono Social Eléctrico

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Manuel Llorca and Ana Rodriguez-Alvarez

This paper explores to what extent the Bono Social Eléctrico (BSE), a Spanish social electricity voucher, has helped vulnerable households coping with energy poverty. Energy poverty usually refers to a situation where households cannot afford to adequately meet a minimum level of energy services (e.g., heating, cooling or cooking) in their homes. With rising energy prices and economic pressures following the COVID-19 pandemic and the war in Ukraine, this problem has become more severe in Spain, affecting millions of households. The BSE aims to reduce the burden of energy bills through a discount, but its effectiveness has not been clearly evidenced.

To analyse that issue, we develop and apply a novel microeconomic framework that takes advantage of applying a Stochastic Frontier Analysis (SFA) approach. This approach allows us to estimate how far households are from their best possible situation regarding energy needs, given their income, energy prices, and other household characteristics. The gap between this ideal and a household's actual condition is captured by the Energy Poverty Gap Index (EPGI), which measures the distance between the observed level of energy poverty and the minimum that could be achieved for each household given the resources available to them. The smaller the gap, the closer a household is to its optimal use of resources to meet its energy needs.

We use microdata from the Spanish Living Conditions Survey (LCS) for the years 2021-2023, covering more than 3,000 households. The dataset provides information on which specific households received the BSE. This information is essential because eligibility alone does not guarantee access to support. Many households that meet the criteria never benefit from the programme, often due to lack of information or administrative barriers. In our analysis, we also include a set of

additional variables, such as housing type, geographical region, education level, digital access, and receipt of other forms of public assistance. This allows us to explore in more detail the different factors that shape vulnerability and influence access to BSE.

We find mixed results. On the one hand, the BSE helps reduce energy poverty overall. Households that receive the voucher tend to show lower levels of energy poverty than similar households that do not. This suggests that the programme is, to some extent, achieving its goal. However, its effectiveness is constrained by insufficient coverage and lack of impact on the poorest households. This counterintuitive result may be linked to differences in access to information, digital literacy, and the ability to navigate application procedures. Moreover, energy poverty has worsened over the years and there has been a decline in the mitigating effect of the BSE, while some regional disparities persist, which could reflect differences in climate, local energy prices, housing quality, and infrastructure. Education and digital access play a significant role. Households with a computer, for example, tend to experience lower levels of energy poverty, possibly because they are more informed about available support and better equipped to complete application processes.

Overall, we argue that while the BSE goes in the right direction, it does not go far enough, especially when it comes to reaching and supporting the most vulnerable. Reforms are needed to improve the programme's targeting and accessibility. Public institutions could play a more proactive role in identifying and informing eligible households, using income and administrative data they already hold. This would reduce reliance on self-application and cut through bureaucratic hurdles that currently act as a barrier for many low-income households. Structural reforms should also accompany financial assistance. Improving energy efficiency in housing, adjusting support levels to local conditions, and integrating electricity vouchers with broader social and environmental strategies could enhance both the fairness and the effectiveness of the response.

Energy poverty is a complex, multi-dimensional issue that requires more than a one-size-fits-all solution. Financial aid alone is often not enough. However, with smarter targeting, more responsive design, and better integration across social and energy policies, programmes like the BSE can play a stronger role in protecting vulnerable households and ensuring access to essential energy services.

Contact mll.eco@cbs.dk
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