

ENERGY POVERTY PERSISTENCE: A CROSS-COUNTRY ANALYSIS WITH A FOCUS ON GENDER

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Overview

Energy poverty, defined as the inability of households to meet their basic energy needs due to low income and/or low energy efficiency, is a rapidly spreading problem in developed countries. This is partly explained by the recent energy crisis and measures aimed at advancing the energy transition, which have contributed to higher energy costs for households. In 2019, before the health crisis and the surge in global energy prices, 6.9% of the European Union's population faced difficulties in maintaining their homes at adequate comfort temperatures (Eurostat, 2024). By 2023, this indicator had increased to 10.6% (Eurostat, 2024). The rising prevalence of energy poverty in Europe and the significant economic and social costs associated with it (European Commission, 2023; Katoch et al., 2023; Primc et al., 2021) call for a better understanding of this phenomenon and for effective policy designs to combat it. Without addressing energy poverty, it will be difficult to achieve the climate and energy goals pursued by the EU in its fight against the climate emergency.

Most of the academic literature on energy poverty has investigated its drivers relying on cross-sectional data. Cross-sectional energy poverty indicators report how many households or individuals are living in energy poverty in a given year. However, these indicators do not address the dynamics of energy poverty, such as changes or trends over time. This static view fails to reveal the past trajectory of household energy poverty, and therefore, does not allow us to determine whether energy poverty is a persistent (long-term) or transitory (temporary) phenomenon. This differentiation is crucial to design precise, evidence-based policies that can effectively combat energy poverty.

The main objective of this study is to analyze the dynamics of energy poverty in Spain and the Netherlands, considering differences across households headed by females and males. Beyond providing an update on the current extent of energy poverty in both countries, we contribute to the existing literature and ongoing debate by exploring the drivers of energy poverty persistence and compare the results between two distinct countries: Spain, which has a high level of energy poverty and extensive experience in addressing it, and the Netherlands, which has low levels of energy poverty and limited recognition of vulnerable consumers in national policy. Moreover, we examine energy poverty as a gender-uneven phenomenon, which highlights disparities and informs more equitable policy interventions.

Methods

To examine whether energy poverty is a chronic or transitory situation and to compare these patterns between two European countries, we utilized data from the EU Statistics on Income and Living Conditions (EU-SILC). The EU-SILC provides a sample of more than 56,000 household-level data points on energy poverty indicators and a wide variety of socioeconomic variables in 4-year rotating representative panels for the period 2005 to 2023.

We conduct two separate analyses. First, we evaluate the extent to which energy poverty is persistent from a year to the next employing a random effect dynamic probit model and following Wooldridge's (2005) recommendation of specifying the unobservable individual heterogeneity. For this analysis, a dichotomous dependent variable was constructed, taking the value 1 when a household is in a situation of energy poverty—based on indicators proposed by the economic literature such as inadequate temperature and arrears on utilities—and 0 when a household is not considered energy poor.

Secondly, we focus on households that experience energy poverty transiently (for 1 or 2 consecutive years) and those that experience energy poverty chronically (for 3 or 4 consecutive years) and we analyse the drivers of these different experiences. To do so, we employ a multinomial logit model that distinguished households in our sample between never energy poor, transiently energy poor and chronically energy poor.

Results

After accounting for individual effects and addressing the issue of initial conditions, the preliminary results of our first analysis confirm the presence of energy state dependence in both countries. Specifically, we find that being energy poor in the previous year increase the likelihood of a household to be energy poor in the current year by about 3-4 depending on the indicator used. Notably, we find important differences between Dutch households, that exhibit a state dependence of 1-2%, and Spanish households, with an estimated state dependence of 4-6%. We find that the inability to keep home warm presents a much stringer state dependence for households with a woman reference person than for households with a man reference person. While this difference is much smaller for the arrears on utility bills. We find that the households falling in energy poverty this year will experience energy poverty for one year and 1-2 months over the next 4 years, with heterogeneity across countries and gender of the household reference person.

Regarding our analysis of the drivers of transient and chronic energy poverty, we find that household income matters but less so than owning the dwelling in which the household lives and than the economic status of the household reference person (for instance, being an unemployed or retired). Interestingly, we note that households with a woman reference person are more likely to experience transient energy poverty compared to households with a man reference person, yet this effect is much smaller for chronic energy poverty. When comparing the two countries considered, we find that income and higher education reduce the likelihood of being in transient or chronic energy poverty more strongly in the Netherlands than in Spain.

Conclusions

There is little doubt that energy poverty is an urgent problem in Europe, likely to persist in the coming years due to post-pandemic effects and the energy price increases stemming from the Ukraine crisis. We show that there is some persistence in energy poverty and that the drivers of transient and chronic energy poverty differ. Our findings suggest that emergency interventions or temporary measures (from an income perspective) are likely insufficient to address energy poverty. Therefore, it is essential to design new tools that can have a real impact in the medium and long term with particular consideration for the gender aspect of this issue. Our findings also suggest that, while the guidance of the EU on this issue is definitely needed, EU member states should be able to design policies to combat energy poverty that are most suited to the specific characteristics of the energy poor households in their country, given the significant cross-country differences.

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