

Energy burden in a time of crisis: analysing the evolution of electricity bills in Spanish households

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Abstract

The current global energy price crisis has caused unprecedented increases in electricity and gas bills. To contrast this rise, the Spanish government implemented several ‘emergency measures’ to protect energy consumers.

This paper theoretically estimates the 2022 evolution of electricity bills in Spanish households, with a special focus on vulnerable ones, thus simulating alternative scenarios to evaluate both the impact of the energy prices’ rise and the positive effect of the national emergency measures.

The results show that these policies significantly reduced regulated market consumers’ bills, the vulnerable ones being the most protected by them.

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Introduction

The global energy price crisis that started in 2021 has been exacerbated by the Russian invasion of Ukraine in 2022, which has tensioned the international energy markets even more given Russia's hegemony in the gas supply of Europe. Consequently, both electricity and gas consumers experienced unprecedented increases in their bills. This rise was expected to significantly affect low-income families, who already had issues with paying their utility bills in previous years. However, given the magnitude of the crisis, this might have been a serious issue also for middle-income households. Indeed, focusing on the Spanish case study, the latter have not historically been protected by the social tariffs implemented by the National Government. However, in 2022, several policies have been implemented to reduce energy bills, which includes also measures for the general population, such as the VAT reduction and the Iberian price cap for the regulated electricity market (González-Salas Mosquera et al., 2022).

This paper theoretically estimates the 2022 evolution of electricity bills in Spanish households, with a special focus on vulnerable ones, thus simulating alternative scenarios to evaluate both the impact of the energy prices' rise and the positive effect of the emergency measures introduced by the Government.

Methodology

In the current energy crisis context, this paper estimates the Spanish households' electricity bills' trend throughout 2022 by using the Required ELelectricity Expenditure model proposed by (Barrella et al., 2021). Firstly, the savings of a consumption shift from peak hours to off-peak hours (using January-March 2022 regulated market prices) is calculated for an average household. This was considered as a potential behavioural strategy to cope with the extremely high prices in the first trimester of 2022. Secondly, several electricity prices' scenarios have been simulated to evaluate the impact of the Iberian price cap on the expense of consumed energy throughout the second half of the year. Thirdly, the electricity bill amount for households not benefitting from the Spanish social tariff ('general population') was calculated in the actual 2022 price scenario and in two alternative hypothetical scenarios not considering the measures introduced for them (counterfactual scenarios). Finally, the same calculation was performed for the two main categories of vulnerable consumers benefitting from the energy consumption subsidies, then comparing the 2022 results with the 2021 ones.

Results

From this analysis, several insights can be pointed out. The peak off-peak consumption shift had a negligible effect on Spanish households' electricity bills in the first trimester of 2022. Considering both the impact of the energy price increase and the Government's emergency measures, the bills of an average family in the regulated market over the course of 2022 have risen by 21% compared to the previous year. However, the modelled counterfactual scenarios show that, if no mitigating measure would have been applied, the households' electricity burden would have been much higher. In particular, the Iberian price cap had a significant impact on the 2022 expenses of consumed energy. Indeed, the bills' increase with respect to in 2021 would have been +34% without this mechanism. The rest of the measures introduced for the general population (i.e. VAT, electricity tax and demand charges reduction) had an even greater impact on families' economies. Overall, the two kinds of measures – the Iberian price cap and fiscal measures – have cut off the 2022 electricity bills by 23%. In other words, if none of these measures would have been applied, the regulated market electricity bills would have been 58% higher than in 2021. Figure 1 shows the abovementioned scenarios – 2021, 2022 and the two 2022 scenarios – for an average household with a regulated market tariff.

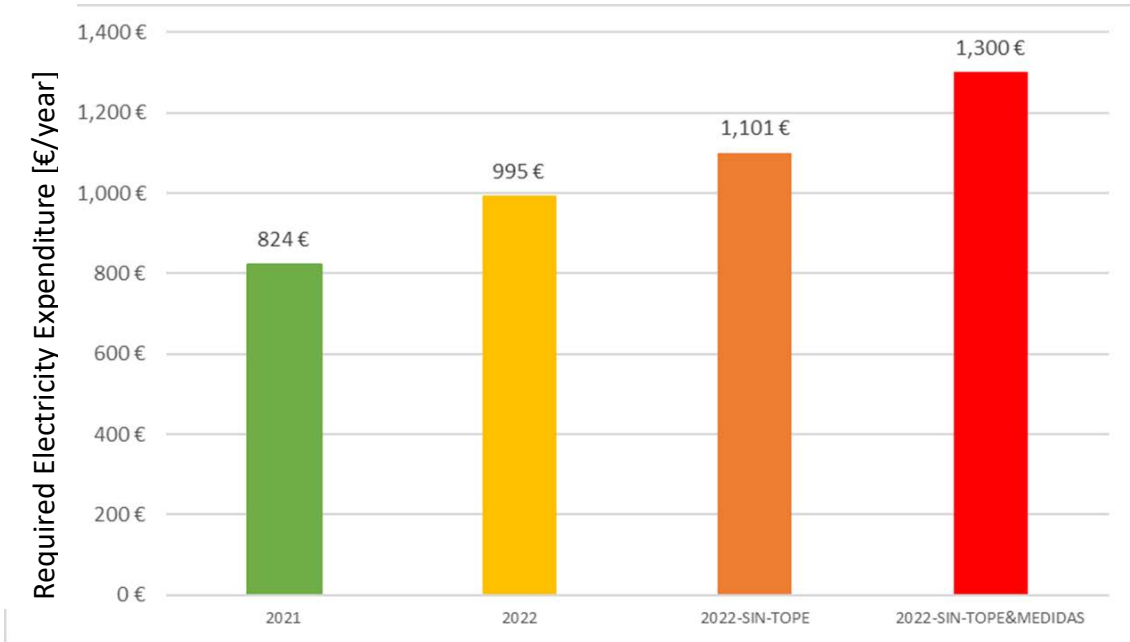


Figure 1. Alternative 2021 and 2022 annual electricity bill scenarios for an average Spanish household with a regulated market tariff (SIN-TOPE: Without Iberian price cap; SIN-TOPE&MEDIDAS: Without Iberian price cap and fiscal measures)

Besides, according to the paper’s results, the increase in the discounts for the electricity social tariff was probably the real lifeline for vulnerable consumers benefitting from it (around 1,3 million at end of 2022). In particular, Figure 2 shows the impact of the electricity social tariff on the two main kinds of vulnerable consumers, i.e. vulnerable and severely vulnerable ones. It can be seen as this measure has reduced the bills of these households by, respectively, 53% and 62% with respect to general population ones. Moreover, the results of Figure 1 and Figure 2 point out that vulnerable consumers bills in 2022 were even lower than the ones of an average ‘general population’ household in 2021.

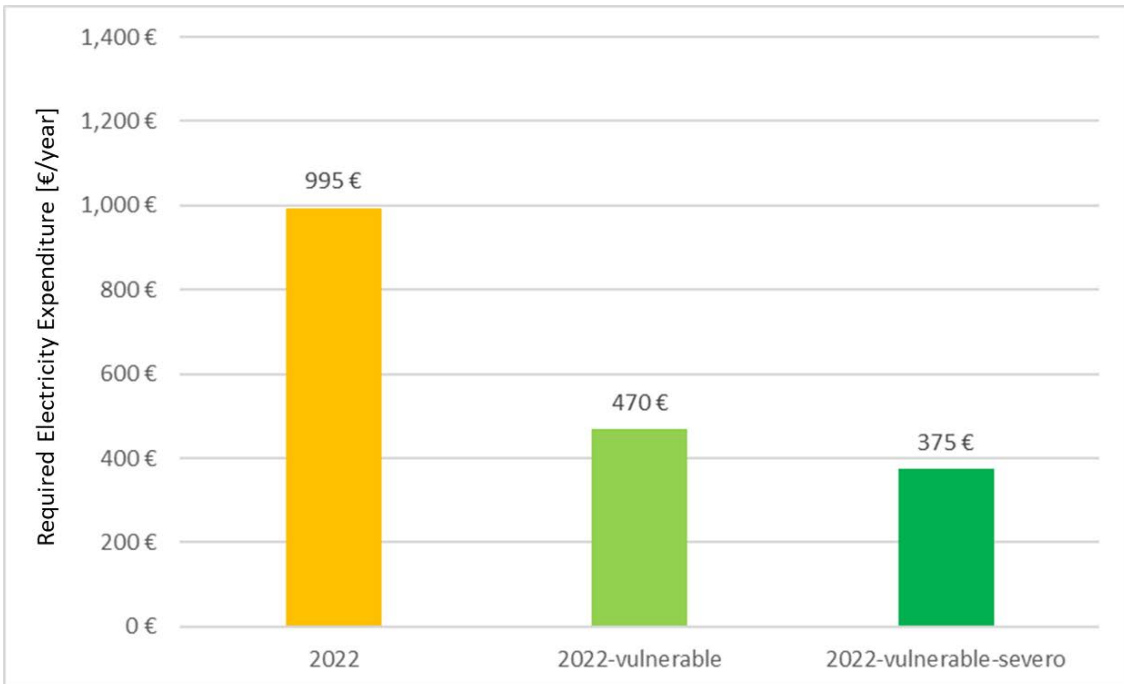


Figure 2. 2022 annual electricity bill for an average ‘general population’ Spanish household with a regulated market tariff compared to the one of vulnerable and severely vulnerable consumers benefitting by the social tariff scheme

Conclusions

This paper analyses 2022 Spanish households' electricity bills in several scenarios. The emergency measures introduced by the Government had a significant impact on regulated market consumers, the vulnerable ones being the most protected by them. Eventually, the showed results might provide a useful tool to anticipate the impact of the energy crisis on Spanish households and potentially provide useful insights for European policymakers to enhance their response to energy market shocks.

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