***THE IMPACT OF SOCIAL NORMS AND INFORMATION IN PORTUGUESE ENERGY CONSUMPTION DECISIONS***

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## Overview

Issues related to the efficient management of resources and energy consumption have become pressing in the last decade. If, on the one hand, the worsening of environmental problems has led to a growing awareness that there must be collective accountability for the harmful action of humanity, on the other hand, the different stages of economic development of the countries have postponed concerted and effective action for a sustainable path. Although this collective action relies largely on agreements between policy makers and key economic actors, the reality reveals, not only the impact of public opinion on the creation of environmental policies, but also the importance of changing consumer behaviour.

In addition to the direct regulation, economic and/or monetary incentives, such as subsidies and taxes, are considered to be the most cost-efficient and easily monitored mechanisms for implementing environmental policies (OECD, 2012). Taxes not only correct market failures and encourage a change in consumer behaviour through price signals, but also contribute to the state's tax revenue.

However, more and more authors today argue that non-pecuniary mechanisms, designed based on theory and empirical evidence of behavioural science, can have as much or more efficient effects on changing consumer behaviour as economic instruments (Allcott and Mullainathan, 2010; Allcott, 2011, Ferraro and Price, 2013; Hahn and Metcalfe, 2016). The field of Behavioural Economics studies how consumers' behaviour affects their decision-making process, leading to assumptions biases that contradict classical economic models. The influence of social norm or, simply, the comparison with others, is one of the factors that may be found in several researches, whose experiments have revealed different impacts on human action, although with mixed effects, not always measurable.

The purpose of this study is to understand the impact of some instruments created in the light of research in the fields of behavioural economics and experimental economics, such as the potential influence of the social norm and the sending of information in Portuguese household energy consumption decisions.

## Methods

Using a Differences-in-Differences method, the present study provides empirical evidence on the energy consumption of 212 Portuguese households in the city of Évora. With the cooperation of Galp Energia, one of the national energy operators with greater market share, a natural experiment was performed using a sample of its household costumers, which share characteristics as location, consumption reading through Smart Meters, same billing period, and having Galp Energia as supplier of both gas and electricity for more than one year. The experimental method was considered the most appropriate one to identify and measure the causal effect of a treatment on an outcome variable, making possible to compare the performance of a sample of treated households on both pre- and post-treatment periods, with the behaviour of a control group on pre- and post-treatment periods. First, we have split the sample randomly in two groups - treatment and control – and created a database with the consumption data (referring to gas and electricity) of all the 212 households in March, April and May of 2016. These three months of 2016 were considered the pre-treatment period of the experiment. The treatment itself consists on sending a report (only for the treatment group) with the consumption comparison between each dwelling and its similar neighbours, as well as information on energy conservation and efficiency tips along with the costumers’ monthly bills. The procedure was repeated during March, April and May of 2017, which is considered as our post-treatment period. By the end of the experiment, it was possible to study data for 4 distinct groups: 1) pre-treatment of control group; 2) post-treatment of control group; 3) pre-treatment of treatment group; and 4) post-treatment of treatment group. The data was used to infer about the potential impact of social norms and information on treated groups’ behaviour.

## Results

The results revealed a small and non-conclusive influence of the social norm and information on the energy consumers’ decision-making. In the case of the few households that experienced changes due to the treatment, the data was still inconclusive, since some of them have increased their consumption, whereas others have decreased it. These results may be associated to some factors as the short period of application and repetition of the treatment (which might not have enabled the social norm activation) or due to a “boomerang affect” in the increasing consumption’s cases.

An additional small survey with questions to some members of the treatment group allowed us to detect other mixed reactions from the participants. While some respondents denied the impact of the comparison, there seems to be an interest in continuing to receive the monthly report and a convergence among participants' answers and the behaviour addressed in the literature.

## Conclusions

The study allows to conclude that the social comparison and the energy saving tips seem not to have had a significant impact in the decisions of the consumers’ sample. Thus, although the experiment results revealed to be inconclusive regarding the impact of social norms and information on Portuguese energy consumption decisions, the feedback from treatment group participants allowed identifying behavioural trends that converge with other previous studies results. The limitations in this study provide valuable future research ideas. More specifically increasing the sample number and extending the study to a national level would allow to generalize results and provide more valuable insights, which should be taken into account by energy policy makers and would reinforce a more consciousness, by consumers behaviour in the future.

## References

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