SYNTHESIS OF THE WORKSHOP:
ELECTRICITY DEMAND: NEW MODELLING PERSPECTIVES
Monday 6 March, Université Paris-Dauphine, Room A 709, New wing (7th Floor)

On the 6 of March 2017, at Université Paris-Dauphine, the Chaire European Electricity Markets (CEEM), the Climate Economics Chair (CEC) and the Center for Geopolitics of Energy and Raw Materials (CGEMP) gathered several researchers interested in modeling electricity demand.

"Empowering consumers" is the keyword of the Energy Union. Energy efficiency, self-consumption and dynamic demand management are the challenges to be faced in a liberalized and green market that paves the way for a new way of consuming electricity, complementary to the production of electricity by intermittent sources (like renewables). However, many questions are still to be answered. Are consumers entirely rational? Do they want to change their habits, manage energy efficiency and optimize the timing of their consumption? Is self-consumption a new paradigm? In the quest for answers, the researchers gathered in Dauphine proposed several methodologies to study energy demand: industrial economics, computational models of smart meter simulation, approaches to experimental economics, behavioral and discrete choice methods as well as huge data gathering efforts. Five markets were analyzed: France, Switzerland, Sweden, Germany and Italy.

In particular, Massimo Filippini (ETH Zürich) presented a study in which he analyzes the importance of investment literacy on the consumer´s choice of electric appliances finding that education is a key factor in the consumer´s availability to choose energy efficient appliances but that the most significant progress in terms of choice is reached when efficient appliances are accompanied by on-line consumption calculators. This finding suggests that encouraging the provision of information regarding the efficiency of appliances through better labeling is not enough. Policy makers should make available on-line calculators to help consumers in their appliance choice. In this regard, Dominique Finon (CIRED-CNRS) underlined the importance of the findings suggesting that a lot of effort has been put in Europe in terms of labeling requirements and that it would be interesting to further investigate to which extent the previous conclusions can be applied to other sectors (like cars) and in an international comparison context.

Lars Persson (Umeå University and the Centre for Environmental and Resource Economics (CERE)) presented a study on the willingness for consumers to accept a real-time tariff finding that a strong economic compensation is needed for consumers to change their habits in terms of electricity consumption. Anna Creti (CEEM, CEC, CGEMP, Université Paris-Dauphine) highlighted the difficulty to perform such studies in a way that its conclusions can be extrapolated to other countries due to the importance of utility-related parameters that can be quite different among countries and regions. She also reminded the difficulty to study and measure the difference between willingness-to-accept and willingness-to-pay: while we can only measure the former, the key concept we wish to understand for policy design is the latter.

Dirk Neumann (University of Freiburg) presented the difficulty of using smart meter data while Jean-Christophe Poudou (Professor at the University of Montpellier, member of LAMETA and Labex Entreprendre) discussed the role of prosumers in terms of grid costs and welfare under alternative tariffs showing the benefits of using net-metering.

René Aid discussed the importance of the definition of grid costs and to which extent the theoretical model conclusions depend on the hypothesis used in this regard. In general, prosumers generate costs to other grid users, which represents a key variable in the understanding of efficient market design. That externality is not explicitly considered in the paper´s analysis but could significantly modify the conclusions extracted.

Finally, Jacopo Torriti (University of Reading) showed the interest and difficulties of using time use data to model residential electricity load profiles by explaining how consumer´s flexibility in terms of electricity consumption depends mostly sex, age, occupancy and its predictability diminishes strongly in the case of non-unit member households. María Eugenia Sanin (Evry Val d´Essonne University and CEEM) discussed the interest for policy design of the immense amount of data gathered by the presenter's research team as well as the value of understanding

flexibility of electricity consumption. In particular, she underlined that flexibility should be a key variable to design energy efficiency policies but that its predictability is still challenging.

The workshop was closed by some comments of Fabienne Salaün (EdF) that underlined the importance of regulation choices to understand the limits imposed on electricity demand management.

As a conclusion we could say that the identity of the consumer of the future has emerged from the discussions: a well-educated individual, equipped with smart meters and possibly solar panels, but who asks for a high monetary compensation to change his habits in order to accept an efficient tariff (related to its own consumption). A strong potential for change has also been sketched but this potential is still unexploited so far in the most consuming section of demand (40% in most European countries): residential consumers. The revolution in electricity demand has still to come.

For the programme and presentations, please consult the CEEM website via the link:
http://www.ceem-dauphine.org/agenda/en/743df99701e05fd64d33e8a69e3be95f2a45901d

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