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**COORDINATING CROSS-BORDER CONGESTION MANAGEMENT
THROUGH AUCTIONS IN ELECTRICITY MARKETS:
AN EXPERIMENTAL APPROACH OF EUROPEAN SOLUTIONS**

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Overview

The creation of an effective “European integrated competitive market” crucially depends on the way cross-border transactions are run. Auctions are currently under scrutiny as means to efficiently use the full potential of the existing European interconnected grid. Our contribution aims at assessing two particular auction rules: The so-called implicit auction, already applied in some markets, and the coordinated explicit auction, still under project. We use the experimental methodology to characterize and compare these two market institutions in the laboratory. Applied to the western European electricity sector, our results emphasize the superiority of the implicit auction in terms of efficiency.

Methods

We use the experimental methodology to identify and compare the effects of these two market institutions on the economic performances of the electric power market, considering a structure configuration akin to the structure present in the European electricity sector.

Our main goal is to assess whether the two institutions succeed in allocating efficiently scarce transmission capacity while mitigating the ability of generators to exercise market power and behave strategically. We examine the effects of the two auctions mechanisms on the pattern of both energy prices and transmission prices, on the market efficiency and the surplus.

Laboratory experiments can be seen as a complementary tool to analytical models to deal with electricity system complexity.

Results

The experiments have been run in the experimental laboratory of the GATE (Lyon) and in the experimental laboratory of the ENSGI (Grenoble), using a dedicated market-software developed with the experimental software Regate (Zeiliger [2000]).

The comparison of the efficiency of the two alternative auction, all things being equal, emphasizes the superiority of the implicit auction over the coordinated explicit auction.

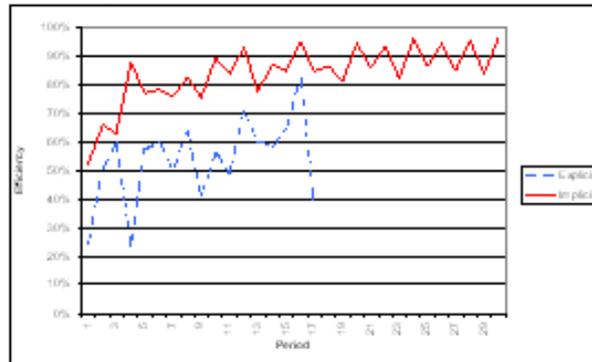


Figure2.: session average efficiency

Conclusions

Our results contribute to the current discussions as they show that even in a simple environment such as the one we have created in the lab to model the coordinated explicit auction, subjects are not able to anticipate what will happen in the energy market and as a consequence they do not take proper decision in the transmission capacity market.

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