

INFORMATION DISCLOSURE IN ELECTRICITY MARKETS

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Overview

Despite some common market design features, wholesale electricity markets around the world differ in terms of information disclosure rules. In particular, as Wolak (2014) already noticed, the type of data available but also the release time of such data vary across markets. The information delivered is usually of two types: it is related to either the physical properties of the grid (i.e. levels of production, consumption, congestion) or to the private valuation of electricity consumption and production (the bid-offers curves). Interestingly, while European electricity markets are moving towards a unification of the disclosure rules for physical characteristics of the grid under the SPDEM regulation (EU, 2013), the information about bidding curves is often not immediately available. In some markets, bidding curves are disclosed with almost no delay, but then the bids are aggregated at a country level. Information per production unit is sometimes available but only with a delay of several weeks/months. Limiting market information is often considered by policy makers that want to enhance competitive behaviors across producers. In particular, delaying the disclosure of the detailed bid is often justified by the repeated interactions of large market participants that could facilitate collusive behaviour. Increased market transparency allows for more coordination between firms making (tacit) collusion easier to sustain (Overgaard and Mollgaard, 2005). This is especially the case in the electricity market when demand is high and capacities are binding. The purpose of this paper is twofold. First it provides an overview of the different information disclosure rules across the world. Second, it suggests a simple framework to better understand the effect of an increased amount of available information on the competitiveness of an electricity market especially in periods of high demand.

Methods

We set up a model that analyses the competitive effect of information sharing in the case of electricity market. Like in Asker's et al. (2016) but considering a multi-unit electricity auction, we assume that information sharing helps firms to predict the likelihood of the next state of the world. In our setup, market transparency allows the firms to know exactly their competitor's supply curve and therefore to better assess the profitability of their own units in the current but also in next period. To put differently, increasing information sharing implies that competitor bidding strategy at period t will reduce the uncertainty faced by a bidder at period $t+1$. This is a particularly interesting case when firms have a mix of generation units with startup costs (see Reguant, 2014). In our model, because information sharing allows firms optimize their bidding, taking into account that startup costs limit the ability of the competitor to change production the next period. Additionally, we provide a comparison of disclosure rules among different electricity exchanges and present typology of information relevant for different decisions at the market.

Results

We provide a careful analysis characterizing the circumstances where full information might increase competitiveness of the market even in periods of high demand. We also show that market transparency changes the nature of the competition on the spot electricity market. In particular, firms are more able to avoid the intense competition in low demand period but are also more likely to compete in high demand period. To put it differently, firms reduce competition in the low demand periods by producing with units with no startup costs. In addition, the competition is increased in the high periods when firms are producing with units with startup cost. The intuition is that increased information about past competitors' bidding curves increases the strategic use of units with startup costs. That is, a firm observing its opponent using his unit with startup costs at period t , will infer that his competitor is likely to produce with such unit in the next period.

It is well documented in the empirical electricity literature that low demand is very competitive while high demand periods are not. We are able to show that such competitive pattern can be changed when increasing amount of

information is available in the electricity market. Moreover, such results provide evidence that the observed trade-off between the aggregation level of the information and the delay with which it is published is not necessarily the best set-up for the information disclosure rules, as more immediate and precise information (as bid-offer curves) could improve competitiveness of the markets where producers own mixed technology.

Conclusion

It is well-known and documented that market transparency facilitates collusive behaviour. Setting aside the dynamic interaction between market participants, we are able to show that market transparency may enhance competition when firms have generation units with dynamic costs. Accounting for dynamic start up costs in the electricity industry and increasing market transparency, defined as fast access to individual bid curves, may improve the competitiveness of the market.

References

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