MARKET TRANSPARENCY THROUGH A COMMON DATA PLATFORM: EVIDENCE FROM NORD POOL

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Overview

This paper provides evidence of the effect of increasing market transparency on market outcomes. We focus on the introduction of the *Transparency Platform* operated by the European Network of Transmission System Operators for Electricity (ENTSO-E), a data platform which stores information provided by each member state on physical grid conditions and generation capacities. Using detailed hourly zonal data on Nord Pool, we find evidence that increasing information does not necessarily lead to more competitive outcomes. At times of congestion, the competitive effects of transparency appear to be zone specific.

Information structures are incredibly dense in electricity markets. As electricity storage is limited, demand and supply must match at all times; up-to-date information about available capacities as well as forecasted and actual grid conditions are therefore essential to market participants. Generators, retailers, TSOs, consumers, or traders rely on this information to do a proper risk assessment and optimize their strategy.

The internet-connected digital technologies have greatly improved the information flow. There is a general belief that increasing shared information (e.g., with the development of smart grids, shared grid, decentralized energy production, or energy communities) is essential to create a more sustainable and energy-efficient economy.

However, whether more information leads to more efficient outcomes in the electricity markets is highly debated. The public information disclosure rules differ drastically across electricity markets (Lazarczyk, Le Coq, and Spagnolo, 2021). Depending on the country or region, the available information can be limited or detailed and made available to the market participants immediately or with some delay (see Lazarczyk and Le Coq, 2018 for the European countries' case). This diversity across market designs is in line with the general theoretical literature finding that the effect of increased market transparency is ambiguous. Increasing available information on the electricity market might have a competition enhancing effect by reducing search costs for buyers or facilitating entry. It may also have an anti-competitive effect by facilitating collusion among firms or becoming too noisy to exploit market participants. Ultimately, whether more information leads to more efficient outcomes in the electricity market is an empirical question.

This paper aims to estimate the impact of increased available information on the competition of the Nordic electricity market. We exploit the 2015's introduction of an EU data platform (the Transparency platform), providing open access to strategic data related to electricity market trading. The platform has increased the information on available transmission capacity and the actual composition of generation. It gives information on the operational units and their supply – the competitors' behavior can be better assessed. As already documented in the literature, producers in one specific price zone might exercise market power by inducing transmission congestion in their zone. In this paper, we are interested in testing whether producers have induced more congestion after the platform became operational. To address this research question, we have built an extensive dataset that includes detailed data for the period 2014-2016, around the time of the implementation of the platform.

Methods

In order to evaluate the introduction of a public platform with quite detailed data regarding the physical characteristics of the electrical grid we set up an econometric model. We focus on the analysis of price changes before and after the platform became operational. We choose Nord Pool as it is a well-developed liquid market, has a well limited geographical scope and in case of congestion splits into regions which are under the same regulatory regime. We look at the evolution of the hourly Nordic zonal electricity prices as determined through the centralized energy exchange market, the Nord Pool, during the 2014-2016 period, but removing the implementation period to account for learning. In our analysis we focus on one potential strategic use of transparency information – congestion.

Our variable of interest is the hourly system price – the main reference price at Nord Pool. The platform has become operational on 5th January, 2015. However, at the beginning data quality issues were reported and some information was uploaded to the platform only with few months delay (Hirtch et al. 2018). In order to account for the

problem of data availability our window of evaluation starts 9 months before the launch of the platform, disregards 9 first months of 2015 and continues 9 months after 7th of October.

Our approach is similar to Bergland and Mirza (2015) as we analyse congestion occurrences to show the exercise of market power. In particular we test whether the transmission congestion in the Nord Pool market is endogenous and what is the extent of market power being exercised under such a situation. We focus on the effect congestion has on zonal prices. We set up an Instrumental Variables model where we instrument both for production and congestion and for the interaction between the treatment i.e. introduction of the Platform and congestion. We repeat our analysis separately for each zone and for each hour. This way we are able to capture the heterogeneity of production across NordPool zones and hours of the day.

Results

Our Preliminary results indicate that among analysed 288 hours 32% of hours have significantly *higher* zonal prices after the implementation of the platform and 34% of hours have significantly *lower* zonal prices after the implementation of the platform. Endogeneity tests indicate that indeed in chosen zones and hours congestion is endogenous indicating that under certain circumstances there is indication of potential market power – when producers can strategically affect congestion.

Conclusions

This paper contributes to the policy debate on electricity market performance currently taking place in Europe and elsewhere. Electricity is a homogenous good but electricity markets around the world are heterogeneous by design. This variety of market rules may suggest that an optimal set of rules has not yet been identified. More importantly countries who share electricity grids and hope for competitive prices, do not always have the same information disclosure rules (see Lazarczyk and Le Coq, 2018). In this perspective, it is essential to assess the effect of different rules about information disclosure on the performance of electricity market and, as far as we are aware, the literature on this issue is scarce. This is especially important as EU countries are moving towards higher transparency1 and other countries follow in their step – for e.g. Turkey2. Like for any other complex markets, information disclosure rules are essential components that determine electricity markets' efficiency. According to the literature, the effect of an increased market transparency is ambiguous. Given the amount of information available in this market, a natural question is whether more information lead to more efficient outcomes on the electricity markets.

Focusing on this specific broad change of regulation and given our estimation strategy, we provide the first study that empirically tests whether an increased transparency in the power market impacts the behavior of market players and trading. We find that results are heterogenous varying across zones and hours. In some zones and chosen hours we find that in some peak hours the effect of congestion on prices has increased with the introduction of the reform, which would indicate that some information is being used to aggravate congestion.

References (only those appearing in the abstract)

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[1] https://www.entsoe.eu/news/2019/02/01/tsos-increase-number-of-open-data-available-through-entso-e-s-transparency-platform/

[2] Turkey has recently increased the amount of data available on their electricity market webpage.