

MARKET POWER IN POWER MARKETS: THE CASE OF FRENCH WHOLESALE ELECTRICITY MARKET

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Overview

The electric power sector worldwide has experienced an exceptional policy trends that fundamentally reshaped the industry over the last 20 years: liberalization and deregulation, or more generally "electricity reform". This policy refers to a transition from economic model of ðvertical integration monopoly under regulationð to a market-based system with regulatory restructuring. Indeed, one of the problems arose from the shift to reliance on market prices instead of regulated tariffs for electric generation has been market power, defined in economics as the ability to alter profitably prices away from competitive level.

There have been some doubts provoked in electricity market in France on the issue of market power as Electricité de France (EDF), the biggest producer of electric power in Europe, still dominates the domestic market after the reform in 2000. Moreover, despite the market opening, wholesale prices in France have drastically increased: the index of Powernext Baseload Forward Year Ahead almost tripled between 2004 and 2008, increasing even faster than oil price. The wholesale prices in France have been increasingly higher than those in its neighbor market Germany since the end of 2012 after a long period of strong price convergence between the two markets. In this paper, we analyze the level of competition in the French wholesale markets using hourly data from 2009 to 2012.

The French electricity market is the third largest in Europe after the German and British ones in term of consumption, and is about to change drastically. Following the European Commission decision, the regulated rates for electricity will discontinue in 2016 for small businesses on the retail market. Therefore, the number of electricity contracts offered by suppliers with market prices will increase. That is why the French wholesale market should become more liquid with more participants in the near future. It is highly relevant to study the wholesale electricity prices in France at this stage.

Methods

In this paper, we employ a structural model developed in New Empirical Industrial Organisation (NEIO), usually named as the Bresnahan-Lau (BL) method (Bresnahan [1982] and Lau [1982]), to investigate the exercise of market power. A great advantage of using this method is to overcome the problem of not knowing accounting datum of economic marginal cost. Marginal costs are not subject to be directly simulated but indirectly estimated through econometric estimates using historical data. A firm conduct parameter is introduced in the system of demand and supply equations to identify market power. The BL method was extended in the dynamic framework taking into account time series' properties by Steen and Salvanes [1999] and popularized recently in electricity industry in Hjalmarsson [2000], Bask, Lundgren and Rudholm [2011], Mirza and Bergland [2012]. In this paper, we apply this dynamic model to the French wholesale market and we consider a different modelling strategy: we treat the data as a panel framework. Indeed, electricity is the unique good with a market where there exist 24 different prices for 24 hours per day due to the combination of strong variability of demand for electricity and non-storability of electricity. Most papers use daily or weekly aggregated data. This probably ignores the exercise of market power in short run and especially during the low-demand elasticity hours.

Results

The results suggest that though market power is found statistically significant in several peak-load hours, it stays at very low level. On average, no market power is exercised over the examined period (2009-2012). The main economic explanation for this conclusion would be the extremely regulated model of wholesale power market in France. Since "market" comprises only 17 % of domestic delivery and prices in this market are strictly regulated, it is very hard for firms in France to exercise their market power especially in the context of strong interconnected network with neighbouring countries. Furthermore, the incumbent firm - EDF - seems not to have incentives to exercise its market power even though it possesses one because the potential gains from doing this would fall far behind the risks of being broken up the monopoly by European competition authority.

Conclusions

This paper investigate the presence of market power abuse in the French wholesale electricity market during 2009-2012. The results of this paper confirm that there is little evidence of correlation between market concentration and market power abuse. Among countries which liberalized their electricity markets in Europe, France follows a market structure which is the most concentrated with one dominant firm, EDF, controlling almost entire domestic market (with the exception of Belgium). The idea of "big one" producing bad performance is unjustifiable in the case of French wholesale market. Although no market power abuse is found, the price system in France with the overlap of different prices and regulated tariff seems now to become too far to be able to send the right signals to investors and consumers.

It is important to note that our analyses in French market have been done ex-post with historical data (2009-2012).. During these years, there has been an excess capacity at European level with the exception of certain areas such as southern Germany. The total installed capacity during this period was at about 128 GW while the peak demand was observed at only 102.1 GW in France. In the context of overcapacity, it seems to be unprofitable for the dominant firm to unilateral withhold its capacity, thus exercising market power seems not a gainful strategy. However, energy markets have been evolving dynamically since recent years. In the next 10 - 20 years, electricity balances in France as well as in Europe are supposed to change drastically, particularly with the strong integration of renewables, the adjustment of nuclear and other fossil fuels shares in the energy mix, the evolution of demand, or the enlargement of market size due to the end of tariff for consumers, etc. Therefore, one potential extension to this paper would be an ex-ante analysis of competition level under different scenarios in long term.

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