

Market Concentration and Market Power Measurement on the German Balancing Energy Market

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June 2010

Keywords: *electricity reserves market, market power analysis*

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Abstract

We analyze the German market for tertiary electricity reserves in 2008, which costs of about € 200 million accounted for 15% of the total cost of system services. The market is organized as a discriminatory (pay as bid) auction. It is a two step process, first considering capacity bids, then bids for actual power supply. We concentrate on capacity bids, since the cost of capacity account for 93% of the overall cost of tertiary reserves.

The aim of the paper is to analyze the market structure to reveal possible opportunities for the execution of market power. To do so, we apply various concentration measures for the total market, as well as for all submarkets (i.e., different time frames, positive and negative reserves). We analyze: market shares, Herfindahl-Hirschman-Index, Pivotal Supplier Index, Residual Supply Index, and the price elasticity of the residual demand of the individual bidders.

The analysis is based on the complete data set for 2008, including all individual bids of all 29 bidders. Based on all concentration indicators, we find that all submarkets are best characterized as tight oligopolies with a (competitive) fringe. The four largest companies always qualify as being jointly dominant according to German competition law (§ 19 Absatz 3 GWB). The role of the fringe firms is, however, not negligible, in particular not for positive reserves. Strongest indication for market power is found for negative reserves from 0-8 a.m.

As a methodological contribution, our analysis highlights that relying on single concentration indicators (e.g., market shares) can be misleading. It is sensible and often necessary to consider the full set of indicators. In terms of absolute levels of the average revenues per unit of capacity, a competition policy judgment is not possible. An interesting observation is that the large bidders can achieve significantly higher average revenues than the fringe bidders.

In order to evaluate the market outcome, and in order to judge whether (unilateral or multilateral) market power is executed, further research is required. This needs to achieve a better understanding what we would expect under the given market rules if the market was (perfectly, or oligopolistically) competitive.