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Market power issues in the reformed Russian electricity supply industry

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Nadia Chernenko

In this paper we evaluate the level of market power on the post-reform Russian electricity market both from long-term and shot term perspectives. The Russian electricity industry was reformed in 2033-11: the existing monopoly company RAO EES was unbundled into many generation companies (over 20 in total) and the electricity markets were liberalised. We observe that due to mergers and acquisitions that followed the restructuring long-run potential for market power abuse look disturbing. However, short-run dynamics of price-cost mark-ups demonstrates absence of actual market power abuse before or after market liberalisation. We attribute our finding to the bid-at-cost rule which requires generators to bid at variable cost. The rule is implemented twice: first, during a weekly unit commitment procedure and second, on the day-ahead market. More importantly the rule is practically enforced by the Federal Anti-Monopoly Service of Russia that inflicted fines on several companies suspected of manipulating the bids.

We begin our paper with an overview of the Russian electricity market reform conducted in 2003-11, with a focus on market zoning and restructuring. Geographically, the market is now separated into two price areas 'Europe' and 'Siberia' which are further subdivided into free flow zones (28 in total). Trade within zones is unrestricted, but trade between zones is subject to transmission constraints. The vertically integrated monopoly RAO EES was separated into many independent generation companies and grid companies. The bidding code of practice (the bid-at-variable-cost rule) was introduced at the early stage of the reform to avoid price manipulations as observed on other electricity markets. The code is enforced by the Federal Anti-Monopoly Service who inflicted fines on several companies suspected of manipulating their price bids.

We then look at long-term and short-term perspectives of market power on the Russia electricity market. We first discuss the initial composition of assets to new private generation companies and we observe that the wholesale companies have assets of roughly equal size but distributed across the country in different free flow zones so as to avoid localised market power. The mergers and acquisitions that followed the initial privatisation phase were led by state-owned companies InterRAO and Gazprom who accumulated a sufficiently large volume of generation capacity under their control or direct ownership. The companies that merged have their power plants in different free flow zones so at present the concentration on the market has hardly changed (HHI index remains practically the same in each of the 28 free flow zones). Since some of the free flow zones will be integrated with each other, concentration on the market could potentially increase so further mergers or acquisition should not be allowed.

Having examined concentration on the market, we then analyse short-run dynamics of price-cost mark-ups in order to access actual market power abuse on the liberalised wholesale market. During liberalisation process, the share of the free-trading sector on the market was gradually increased every 6 month by 10-20%, the process started in January 2007 and was completed by January 2011. We first estimate benchmark electricity prices for two years (2010 and 2011) and each free flow zone using a linear programming model that takes fuel cost and hourly demand data, as well as data on inter-zone transmission constraints, as inputs and produce hourly equilibrium System Marginal Prices as output. We then estimate hourly price-cost mark-ups using our benchmark prices and real prices and examine the dynamics of the mark-ups. We observe that the mark-ups are quite small and reject hypothesis of unit root in the mark-ups thus concluding that the mark-up series are stationary and fluctuate around zero.

We use a Tobit regression model to evaluate the dynamics of mark-ups versus the actual pace of liberalisation. We use a Tobit model for a regression analysis because the mark-ups value cannot exceed 100% (corner value). The actual pace is computed as the actual hourly share of the regulated contracts on the wholesale market in the total trading volume. We control for demand characteristics such as peak/shoulder/off-peak hours, weekends/holidays and winter/summer seasons (all – dummy variables), as well as air temperature (degrees centigrade).
We observe that mark-ups variation can be extremely high between summer off-peak and winter peak hours. We conclude that the liberalisation, in fact, decreased mark-ups by about 1.66 percentage

points over the course of two years 2010-11. We attribute our result to the enforcement of the bidding rules.

To conclude, we find no evidence of market power abuse of the liberalised Russian wholesale electricity market just before and after liberalisation. In fact, the price-cost mark-ups decreased by a small amount which might be due to the bidding rules on the market. However, long-term perspectives of market power are less optimistic as the mergers increase ownership concentration on the market and with future zone integration can adversely affect competition on the market.

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