Kari-Anne Fange and Olvar Bergland

Electricity Market Reform and Potential Tacit Collusion

Kari-Anne Fange, Faculty of Business, Foreign Languages and Social Sciences, Ostfold University College
Phone: +47 99 77 08 36
kari.a.fange@hiof.no

Olvar Bergland, NMBU School of Economics and Business, Norwegian University of Life Sciences
Phone: +47 64 96 57 00
olvar.bergland@nmbu.no

Overview

In 1991 a new Energy Act was introduced to strengthen the efficiency of production, transmission, and consumption of electricity, with the means of active consumers and sound competition. As part of this the Norwegian Competition Authorities (NCA) gathered prices for electricity contracts for mandatory reporting to an official price comparison site. However, despite price transparency and crucial elements for a competitive market structure in place, we observe features that resembles tacit coordination of prices. We relate to Stigler (1964), Albæk et al. (1997), Porter (2005), and Hahn et al. (2008), and argue that transparency of prices might function as an option for retailers to observe and adjust, hence tacitly coordinate prices at the expense of customers.

Two "story lines" strengthen our curiosity and suspicion that price colluding behavior takes place in this market. Storyline 1: One of the major nationwide retailers sends a signal through media that their company will raise prices due to a long period with prices close to marginal cost. Storyline 2: Factors of crucial importance to facilitate collusion are present. In addition, we draw on a recent study by Fange (2017) which finds that despite a period with low electricity prices from 2010 to 2015, dispersion in prices has increased. The latter strengthens our suspicion that mechanisms other than market forces are driving prices.

Methods

This study investigates presence of tacit collusion from a two-pronged approach. First, we evaluate and discuss presence of relevant factors to sustain collusion. Next, we evaluate the common price adjustments in the market, and finally we disentangle the price adjustments by estimation of an econometric model. We adopt a hidden Markov model (HMM) to evaluate the pricing actions by retailers. By this approach, we estimate the probability that retailers coordinate price setting to obtain extra normal profits in low price periods. We draw on the theoretical approach first presented in Kim and Nelson (1999). This probabilistic sequence model approach, first adopted in econometrics by Hamilton (1989), allows us to determine the probability that prices set by retailers can be linked to a specific predefined hidden state s_t. Here we refer to two hidden state options, which belongs to the set Q as potential sources to drive prices: Collusion denoted as q_1 and business as usual q_2.

We use weekly data drawn from NCA on electricity prices specified by contract type.

Results

Our preliminary results show that as one retailer adjusts the contract price, other retailers follow up by a price raise the following week. Some retailers wait until they experience the general trend among other retailers before they adjust their price, approximately two weeks. The general quick response among retailers to adjust prices indicates a possibility for coordination of prices through the price comparison web site. In addition, we find that price coordination is more likely to happen in periods when demand is low. This is in accordance with findings in Rotemberg and Saloner (1986), which conclude that oligopolies find implicit collusion more difficult when

demand is relatively high. In accordance with larger benefits from undercutting the price (or keep price at status quo) when demand is high.

Conclusions

With presence of factors to sustain collusion and empirical evidence of colluding behavior, we conclude that the price comparison site set up to promote competition has been a tool for coordination of prices at a higher level.

As Norway is an integrated part of an extended European electricity market and with a unique long history of market liberalization, our findings are of relevance to other restructured electricity markets in the process of assessing how to secure a robust design for price transparency and competition.

References:

Albæk, S., Møllgaard, P., and Overgaard, P.B. (1997). Government-assisted oligopoly coordination? A concrete case, *The Journal of Industrial Economics*. 1997, 45 (4), 429–443.

Fange, K. (2017). Price dispersion in the Norwegian electricity market. Working Paper.

Hahn, R.W., Klovers, K.B., and Singer, H.J. (2008). The need for greater price transparency in the medical device industry: an economic analysis, *Health Affairs*, 2008, 27 (6), 1554–1559.

Hamilton, J.D. (1989). A new approach to the econometric analysis of nonstationary time series and the business cycle. *Econometrica* 57, 2 (March), 357-384.

Kim, C.-J. and Nelson, C. R. (1999). *State-Space Models with Regime Switching: Classical and Gibbs-Sampling Approaches with Applications* (The MIT Press, Cambridge).

Porter, R.H. (1983). A study of cartel stability: the Joint Executive Committee, 1880-1886, *The Bell Journal of Economics*, 1983, pp. 301–314.

Rotemberg, J.J., & Saloner, G. (1986). A supergame-theoretic model of price wars during booms. *The American Economic Review*, 76(3), 390-407.

Stigler, G.J., A theory of oligopoly (1964). *Journal of Political Economy*, 1964, 72 (1), 44–61.