

# Electricity Market Reform and Potential Tacit Collusion –An Event Study

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## Overview

In Norway, the Energy Act came into force in 1991, and laid the foundation for one of the first market based electricity systems in the world. Numerous studies have studied the performance of the liberalized electricity market in Norway and conclude that the overall performance of the market is fairly good (Amundsen & Bergman, 2003; Amundsen, Bergman & Von der Fehr, 2006; Bye & Hope, 2005; Littlechild, 2006). However, there are market characteristics that represent strong incentives for tacit price collusion in the Norwegian electricity retail market.

In this paper we investigate whether retailers perform tacit collusion to drive up prices on the variable price contract (default contract) in certain periods when retail electricity prices are close to marginal cost. We base our study on price data provided by the Norwegian Competition Authority (NCA). Our aim is to find out whether NCA's price listings can function as a price coordinating tool for retailers. By going beyond the seemingly well-functioning reformed market structure we investigate and evaluate the potential for exercising market power in a mature, liberalized electricity market.

The starting point for our interest in doing research on potential price collusion in this market was a price announcement made by one specific retailer in fall 2011. This specific retailer sent out an announcement in media and argued that a price increase on the variable price contract was needed after a long period where electricity prices had been close to marginal costs. The price announcement was widely covered by Norwegian media, and it is likely to believe that the message reached the other retailers. We investigate how/whether this specific price announcement influenced other retailers pricing the following weeks after the announcement was launched. We do this by testing the null hypothesis,  $H_0$ , that the event had no impact on the pricing behavior of the other retailers.

In addition to investigating the specific price announcement described above, we have analyzed the main price adjustments (positive) made by the 10 biggest retailers over the years from 2004 up until 2012. The argument for excluding the years prior to 2004, is that both market structure, retailers, and end-users still were in a too immature state (i.e. the market was not fully opened up before 1997). Based on this we argue that data covering the years between 2004 and 2012 are best suited for our analysis of potential tacit collusion in this specific market.

## Methods

Our approach to investigate potential tacit collusion among retailers is based upon the well-established event study methodology, and in particular the modeling framework by Fama et al.(1969); Fama (2012); Brown & Warner (1980,1985); MacKinlay (1997).

Our study differ from the traditional event studies, in the manner that we do not estimate "normal" and "abnormal" prices based on respectively estimation window and OLS regression estimators. We identify the main price adjustments (positive) made by the 10 biggest retailers and test whether we find price adjustments that are significant for the other retailers the following two-three weeks. Our aim is to find out whether there is a pattern that can support evidence of tacit price collusion in the market under investigation. Applying this methodology allows us to econometrically estimate how retailers respond to price signals announced by one retailer and estimate price adjustments by retailers due to price announcements posted in NCA's price overview.

Our dataset has the form of panel data and the entire dataset is drawn from NCA. We have included the 10 biggest retailers that have consistent data over the years from 2004-2012 in our study. Based on the same price

data we have made a selection of the biggest price differences, and we have econometrically regressed prices the following weeks (set by other retailers) to check for significance.

### **Results**

The estimated results show that when one retailer adjusts the variable contract price, other retailers follow up by raising the price the following week. Some retailers wait until they experience the general trend among the retailers before they adjust their price, approximately two weeks. The general quick response time among retailers to adjust prices after an announcement is made available, indicates that there exists a possibility for coordinating prices in the market by getting information about the other retailers pricing strategies through the price overview. We find that price coordination is more likely to happen in periods where demand is relatively low. This is according to findings by Rotemberg and Saloner (1986) where they conclude that oligopolies find implicit collusion more difficult when their demand is relatively high, according to the benefit from undercutting the price (or keep price at status quo) being larger when demand is high.

### **Conclusions**

Our empirical analysis and preliminary findings show that retailers to a certain degree coordinate their prices by using NCA's price overview. This tacit colluding behavior is not according to the premises defining an efficient market. We also find that certain announcements in media, where retailers signal an attempt to raise prices, are followed up by the other retailers. We find that there is a tendency that price adjustments (higher price) are more likely to happen in periods where demand is low. The findings from using an event study methodology in this study emphasize the importance of going beyond the market characteristics and investigate market performance in the restructured retail electricity market. As Norway being one of the first restructured electricity market and being an integrated part of an extended European electricity market, this experience can be of relevance for other restructured electricity markets.

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