

## Summary

### Dynamic Store Adjustment: Switching Store Formats in Retail

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#### Background

Powerful retail chains dominate the retail food markets in both Europe and the U.S. due to increasing importance of for example information technology, distribution systems and demand. Each chain operates a number of well-defined store formats and continuously considers a trade-off between repositioning of store formats, entry of new stores and exit. Recent investment strategies aim to increase product differentiation in store formats. Each investment implies, however, a sunk cost. Because both entry and repositioning of formats are regulated, insights about the trade-off between entry and repositioning and its link to competition closely connect to competition policy. A large variety of store formats can ensure that consumers achieve low prices and with access to wide and attractive product assortments (Nordic Competition Authorities 2005:1). To reach this goal, knowledge about the costs of store format entry, exit, repositioning as well as demand is crucial. This is particularly important as municipalities through Plan- och Bygglagen have the obligation to evaluate the competitive impact of new stores (Swedish Competition Authority 2008:5).

#### Purpose

The overall purpose of the present research project is to analyze dynamic market structure adjustments in the Swedish retail food market. The first part of the project deals with firms' strategies on repositioning (switching) store formats, entry and exit. This also incorporates a detailed analysis of store format demand. The second part of the project investigates sunk-cost of entry and sell-off values of exit, and evaluates their role for profits and market structure. Detailed data of all retail food stores in Sweden during the period 2001 to 2008 are used in the empirical application.

#### Method, literature and contribution

The returns from repositioning store format, entry, and exit are realized over a number of periods and, therefore, dynamic models are the best choice to estimate costs of repositioning, entry and exit. The theoretical literature on dynamic models of entry and exit emphasizes that the decisions of incumbent firms differs from the decisions of potential entrants (Jovanovic 1982, Hopenhayn 1992, Ericson and Pakes 1995). The incumbent firm decides to operate after it compares the expected sum of discounted future profits with the scrap value of exit. The potential entrant compares the discounted profits if they enter with the sunk entry cost. The uncertainty about future market conditions makes firms respond asymmetrically to changes in demand and not only to current but also future profit determinants. This project uses recent methods for estimating dynamic games when markets are imperfectly competitive by incorporating information on the sell-off value faced by incumbents and the sunk cost of entry faced by potential entrants (Pesendorfer and Schmidt-Dengler 2003, Aguirregabiria and Mira 2007, Aguirregabiria et al. 2007, Bajari et al. 2007, Pakes et al. 2007a).

The first part of the project, which focuses on repositioning, entry and exit of store formats, is based on the two-step procedure proposed by Bajari et al. (2007). To estimate the sunk costs in the second step we use moment inequalities from Pakes et al. (2007b). A crucial contribution is to extend Sweeting (2012) to allow for costs of repositioning (Maican 2010). To estimate demand, the recent empirical literature includes at least two major changes. First, the focus is moved to heterogeneous agents instead of representative agent models. Second, there has been a movement away from models in product space to those in characteristics space (Berry et al. 1995, Nevo 2000, Nevo 2001, Petrin 2002, Davies 2006). To analyze demand in the differentiated product market of retail food and highlight store formats, we apply recent innovations in this area.

The second part, which emphasizes costs of entry and exit for stores of different sizes, builds on the approach by Pakes et al. (2007a). The analysis allows stores to differ in size and to estimate sunk-costs of entry and sell-off values of exit across different market sizes. A key advantage of this framework is that it allows us to use counterfactual simulations to evaluate outcomes from hypothetical changes. An important contribution is that we extend the approach taken by Dunne et al. (2011) to incorporate differentiation (Orth 2012).

## **Results**

The results from the first part show that repositioning markets have about twice the median population and twice the median number of stores throughout period. Repositioning markets are less concentrated and have more entrants and exits than markets without repositioning. There is persistent high correlation between the numbers of repositionings and entries, increasing over time (0.63 in 2002 compared to 0.88 in 2006), as does the correlation between the numbers of repositionings and exits (0.50 in 2002 compared to 0.66 in 2005). Consequently, it is important to analyze entry, exit, and repositioning at the same time as done here. Both repositioning and entry costs increase with market size, and their growth decreases when moving to larger markets. Small markets have higher sell-off values than repositioning costs, but large entry costs. The difference between higher entry and lower repositioning costs explains why the number of observed repositionings is higher than the number of entrants (Maican 2012).

Based on demand estimates, the findings show that entry is more likely in large markets and if rivals have high quality (price-adjusted), i.e., if there is room for product differentiation. Stores are less likely to exit if they have high quality, if they are located in large markets, or if the firm operates many stores in the same format. Stores with high quality are more likely to be in large formats, and old stores are less likely to reposition themselves. Finally, store's quality is more persistent for non-repositioning stores.

The results from the second part show that long-run profits are highly influenced by differences in population across local markets, stressing importance of demand. For small stores, the average entry cost is almost double the sell-off value of exit. For large stores, the sell-off value is 17 percent higher than the average entry cost. These findings explain the change toward larger but fewer stores. Furthermore, a majority of stores that exit does not belong to the national chains (Maican and Orth 2012a, 2012b).

In the counterfactual simulations, we are able to evaluate the impact of hypothetical changes in entry costs on long-run profits and market structure for stores of different sizes. If the entry cost for small stores reduces by 30 percent, the long-run profits decrease on average by about 11 percent for small stores and by about 16 percent for large stores in medium sized markets. In addition, lower entry costs leads to an increase in the exit rate for small stores in large markets.

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