Entry under Quality Uncertainty: Lessons from Supermarkets

Andrés Gómez-Lobo, Juan Luis Jiménez and Jordi Perdiguero

Discussed by Jianyu Yu
INRA-GREMAQ, TSE

May 2011

Motivation

Interesting observation of the price changes of incumbent supermarkets with the entry of Lidl

	Products sold by Lidl	Products not sold by Lidl
Near	remain constant or ↘	↗
Far	↗	remain constant or ↘

Theoretical model which captures that

- incumbents are uncertain about the type of the entrant (variety of product offered)
- Strategically pricing behavior of the incumbent to accommodate entry (by exploiting consumer loyalty)

Empirical model to verify the theoretical results

- Difference-in-difference estimator

Theoretical part– the game

- t0: Entrant: announcing entry in t_2 but not variety of its products
- t1: Incumbent: pricing p_j^1
- t2: Entrant variety is revealed. Incumbent and entrant compete in prices.

$\Longrightarrow$ Entrant commits on its entry decision and Incumbent cannot anticipate entry and deter entry.

Theoretical part– important assumptions

- The demand faced by the incumbent in t_2 depends on p_j^1 (habit formation, customer fidelity, consumer loyalty). $\Longrightarrow$ Incumbent can strategically control the demand at t_2 by pricing at t_1.

$$\frac{\partial \pi_j^2}{\partial p_j^1} < 0, \frac{\partial \pi d_j^2}{\partial p_j^1} < 0$$

- Incumbent offers two independent products A and B $\Longrightarrow$ there is no dynamic interaction between the pricing strategy of A and B.
- Uncertainty: with prob α entrant sells just A and $1-\alpha$ sells $A\&B$ in t_2. $\Longrightarrow$ Entry variety is decided at t_0. Incumbent cannot strategically change the variety by using p_j^1.

Theoretical part–prediction

$p_j^1|_{\text{no Entry}}$ V.S. $p_j^1|_{\text{Entry}}$ V.S. $p_j^2|_{A\&B}$ or $p_B^2|_B$

1. $p_j^1|_{\text{Entry}} < p_j^1|_{\text{no Entry}}$ Incumbent should reduce price for all products, once entry is announced.
   - Intuition: $\frac{\partial \pi d_j^2}{\partial p_j^1} < \frac{\partial \pi_j^2}{\partial p_j^1} < 0 \Longrightarrow p_j^1$ has larger impact on π_2 when there is entry than that without entry, i.e. it is more important for the incumbent to gain consumers when facing entrant competition.
   - However, there is lack of information about $p_j^1|_{\text{no Entry}}$ in the data.
2. After entry, if the entrant supplies $A\&B$, $p_j^1 \geq p_j^2$
   - Intuition: the incumbent has more power at t_1 than at t_2.
3. If the entrant supplies only B, $p_B^2 > p_B^1$, incumbent should increase the price for the product not sold by the entrant.
   - Intuition??

Empirical methods

Difference-in-difference estimator

- Treatment: $p_2^{ij} - p_1^{ij}$ near Lidl
- Control: $p_2^{ij} - p_1^{ij}$ further away Lidl

Price difference after and before entry =
Product + distance + Product$*$Distance
+ Population + city dummy + supermarket size

Questions and Remarks

- There might be other strategic consideration of incumbent in addition to attracting the royal consumers
  - Product not sold by Lidl may be *substitute* to that sold by Lidl (e.g. Potatoes and rice) $\Longrightarrow$ responding with a reduction in price of product not sold by Lidl.
  - For large supermarket, products may be *compliments* due to one-stop shopping consumers $\Longrightarrow$ the larger price reduction for the product sold by Lidl and higher increase for the unsold product.
  - Using p^1 to reduce the variety of Lidl (α becomes endogenous)
- Empirical results on the supermarket size? Entry should have different impacts on the store with different sizes
- Control group: Supermarket further away may receive stronger impact due to the size differences. (e.g. entry induces small change in the price of a giant neighbor, which may however have large impact on small super market far away.)