Price Dispersion and Fluctuations: Evidence from Consumer Electronics Markets

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We investigate e-retailers' price setting and customers' purchasing behaviors using a unique dataset collected by a Japanese price comparison site, which contains tick-by-tick prices quoted by each e-retailer as well as clicks made by each customer, both second time stamp.

First, we find that the probability of being clicked decreases with the price ranking of an e-retailer, but it never goes all the way to zero even for e-retailers with low rankings. Specifically, we find that there exists a linear relationship between the log of the click probability for an e-retailer and its price ranking as shown in Fig.1, suggesting that each customer chooses a set of e-retailers based on non-price characteristics of e-retailers, and then looks for one with the lowest price among them.[1]

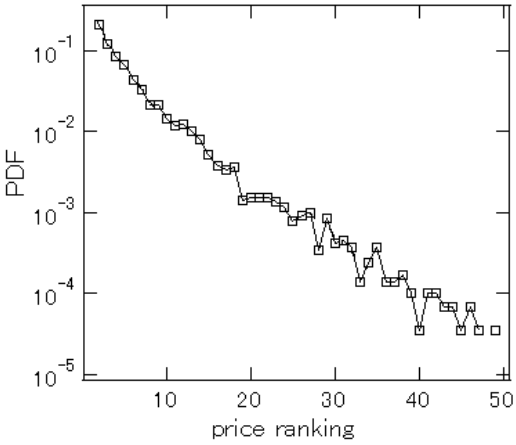

Fig.1 Click probability and price ranking

Second, we find that the average of prices quoted by e-retailers basically follows a random walk with drift, which is a simple reflection of the random walk property of the product inventory held by e-retailers. However, we also find that the average price sometimes deviates from a random walk, e.g. when each e-retailer starts to cut its price in response to price reductions made by others.[1]

Third, we also investigate price setting of retailers without online stores using a scanner dataset. We find that a relationship between the purchase probability for an retailer and its price is well approximated by the Gaussian distribution, and the average of prices quoted by the retailers does not follow a random walk. We will show about such statistical differences between e-retailers and non-e-retailers.

Keywords
Sales data, scanner data, price dispersion, price change

References

[1] T. Mizuno and T. Watanabe, ``Price Dispersion and Fluctuations," *The Economic Review*, v. 59, p. 317-329, 2008.