

【長崎大学経済学部ディスカッション・ペーパー・シリーズ】

DISCUSSION PAPER SERIES

Faculty of Economics, Nagasaki University

No.2012-07 (September 2012)

Individual-Level Store Visit Analysis Using a Spatial Segmentation Model

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Abstract

Using store purchase record (panel) data, we propose a model to analyze individual store preference by incorporating store location and the residential area of the customer. The proposed model has the following three characteristics. First, since the model estimates parameters for each customer, it is possible to observe customer heterogeneity. The model incorporates not only individual heterogeneity, but also the time trend. Second, the model enables trade area analysis through the use of prior structure. By assuming a hierarchical structure for the model, it is possible to estimate the store visit probabilities of each geo-demographic segment. Third, by incorporating a spatial lag model into the prior structure of geographic parameters, it is possible to complement missing data to supply information from neighboring regions. Therefore, the cost of market survey research is likely to reduce with the application of the proposed spatial lag model.

Keywords

Trade Area Analysis; Spatial Lag Model; Markov Chain Monte Carlo Method