論文誌掲載論文概要

JORSJ Vol. 64, No. 1, TORSJ Vol. 64

● JORSJ Vol. 64, No. 1

NASH EQUILIBRIA FOR INFORMATION DIFFUSION GAMES ON WEIGHTED CYCLES AND PATHS

Tianyang Li, Maiko Shigeno
(*University of Tsukuba*)

The information diffusion game, which is a type of non-cooperative game, models the diffusion process of information in networks for several competitive firms that want to spread their information. Recently, the game on weighted graphs was introduced and pure Nash equilibria for the game were discussed. This paper gives a full characterization of the existence of pure Nash equilibria for the game on weighted cycles and paths according to the number of vertices, the number of players and weight classes.

AN ANALYSIS OF MECHANISM FOR CUSTOMERS' PURCHASE AMOUNT AND NUMBER OF VISITS IN DEPARTMENT STORE

Hiroki Yamada
(*Gifu Shotoku Gakuen University*)
Tadahiko Sato (*University of Tsukuba*)

The purpose of this study is to reveal how marketing affects customers' purchase amount and number of visits in Japanese department stores. We model purchase amounts by using a hierarchical Bayes regression model and number of visits by using a hierarchical Bayes Poisson regression model. Furthermore, we estimate the latent factor behind price as the purchase amount per month with a Type-1 Tobit model and the structural heterogeneity of each customer with a model for variable selection. Direct mail and events are used as marketing measures. The analytical results reveal marketing measures that raise customers' final purchase amounts.

APPROXIMATION ALGORITHMS FOR A GENERALIZATION OF THE MAXIMUM BUDGET ALLOCATION

Takuro Fukunaga (*Chuo University*)

The maximum budget allocation (MBA) problem is the problem of allocating items to agents so as to maximize the total payment from all agents, where the payment from an agent is the sum of prices of the items allocated to that agent, capped by the agent's budget. In this study, we consider a generalization of the MBA problem in which each item has a capacity constraint, and present two approximation algorithms for it. The first is a polynomial bicriteria algorithm that is guaranteed to output an allocation producing at least $1-r$ times the optimal feasible total payment, where r is the maximum ratio of price to budget, and to violate the capacity constraints on items by at most a factor of 2. The other is a pseudo-polynomial algorithm with approximation ratio $1/3 \cdot (1-r=4)$ that always outputs a feasible allocation.

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ミスプライスに着目した利付債ポートフォリオの構築法

島井　祥行
(アセットマネジメントOne株式会社)
牧本　直樹 (筑波大学)

債券投資に関する典型的な研究は割引債を対象にしているが，中長期の割引債は市場に存在しないため，実務への応用に課題を抱える．本稿では，実際に取引できる利付債を対象にした投資戦略を提案する．まず，

本邦利付国債の観測価格と理論価格の差異をミスプライスと定義し，その統計的性質を考察する．次に，ミスプライスの平均回帰性や低相関性に着目し，ベンチマークとみなした最適割引債ポートフォリオに対する利付債ポートフォリオの構築方法，利付債のロングショート戦略について論じる．実証分析の結果，デュレーションが割引債に最も近い利付債へ投資，または，一定範囲内の利付債へ分散投資する手法がパッシブ運用として有効なこと，ミスプライスの割安な銘柄へ投資する手法がアクティブ運用として有効なことを見出した．また絶対収益型運用では，一定年限におけるロングショート取引のパフォーマンスが良好であることを明らかにした．