Research and Reports on Mathematics

Editorial

A SCITECHNOL JOURNAL

Mathematical Model of Intertemporal Selection

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Editorial

Generally speaking, mathematical finance allows multiple methods; one of them involves the implementation of mathematical models that can explain the complexity of the actual financial situation. In particular, intertemporal selection has attracted the attention of researchers due to its increasing application in other fields, such as psychology or health. Obviously, all models have logical errors (or gaps), and intertemporal selection is no exception. This has been proven in a recent research topic called "Intertemporal Selection and Its Anomalies". The goal of this research topic is to describe intertemporal selection as a mathematical model that is as general as possible. The purpose is to cover all possible situations and analyse the attributes that are useful to decision makers. Since most financial decisions involve making decisions over time, this research topic also focuses on the mathematical modelling of important anomalies, such as the Allais paradox (which violates the von Neumann and Morgen stein axioms of independence) , psychological accounting and loss aversion from myopia in behavioural finance Additionally, in the field of behavioural finance, Nobel Prize winner Professor Robert J. Schiller observed excessive volatility compared to the future flow of dividends from the US stock market, reflecting inefficiency of the market and the irrationality of the stockbrokers.

The mathematical models that affect these anomalies in the market are also within the scope of this set. In addition, recent advances in neuro economics have revealed the important role of emotions in decision-making over time and uncertainty. He introduced a new Gibbs slice sampling algorithm for estimating a four-parameter logical model that is of great interest in educational testing and psychometrics. The sampling process is divided into two parts. The first part is the Gibbs algorithm. When non-informative uniforms are used a priori for typical cases of education and psychopathology elements, the algorithm is used to update guessing and sliding parameters. The second part is the slicing algorithm, which shows the 2PL IRT model of truncated fully conditional posterior distribution using auxiliary variables. Because they address the sequential effects of improvements in the credit environment. Traditionally, the anomaly of this intertemporal choice has been simplified as a choice between increasing incomes and other increasing / decreasing sequences. At first, previous research showed that in the context of loan repayment plans, the preference for descending sequences was constant. However, the results show that consumers follow a decision-making process based on comparison rather than optimization when evaluating temporarily re-established loan offers. Only when the interest rate is 10% and the loan situation is described every year, people will tend to be higher than the fixed situation. On the other hand, Sun introduced a model called "Mixed Determinant Strategy, Input, Noise, and Gate (MMSDINA)" to study the choice of answer category Individual differences. Simulation shows that the Monte Carlo Markov Chain Algorithm (MCMC) can be used to obtain accurate parameter estimates. In addition, two evaluation criteria of the Bayesian model are also considered to evaluate the degree of fit between the DINA model, the MSDINA model and the MMSDINA model.

Therefore, the results show that when data are generated from a single strategy simple DINA model, the MMSDINA model is more suitable for the data than the MSDINA model. Finally Zhang introduced the multidimensional Rasch model (MRMLC) to measure learning and change and its dichotomous and multiple-choice extensions for longitudinal research. Two simulation studies have been conducted to further illustrate that this item-weighted likelihood estimation method is similar to the traditional maximum posterior estimation (MAP) method, the maximum likelihood estimation method (MLE) and the estimation method. Warm weighted probability (WLE), the advantages and the Type Weighted Maximum Likelihood Estimation (TWLE) method, compared to the existing likelihood estimation method, can better restore the examinee's true ability level of the complex longitudinal IRT model and the one-dimensional IRT model.

Citation: *Peterphani K (2021) Mathematical Model of Intertemporal Selection. Res Rep Math 5:8. e129.*

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Received: August 16, 2021 **Accepted:** August 20, 2021 **Published:** August 25, 2021

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