

The Valuation of Callable Financial Commodities with Two Stopping Boundaries

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Abstract: In this paper we consider a model of valuing callable financial commodities which enable both an issuer and an investor to exercise their rights, respectively. We show that such a model can be formulated as a coupled stochastic game for the optimal stopping problem with two reflecting barriers. It is also shown that there exists a pair of optimal stopping rules and the value of the stochastic game. Most previous work concerning American options, Israeli options, convertible bonds and callable derivatives has required the specific pay off function when either of the issuer or the investor has exercise their option. However, we deal with a rather general payoff function of the underlying asset price and the time. We also explore some analytical properties of optimal stopping rules of the issuer and the investor.

Best strategies for formation changes in a soccer game based on game theory

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Abstract: This paper illustrates an example of the best strategies of two teams' formation changes in a soccer game. Here, it is assumed that probabilities of scoring and conceding a goal follow Poisson distributions and a regression model is applied to evaluate the means of these distributions. These means represent the offensive strength for scoring a goal and the defensive propensity to concede a goal in terms of a team's formation and can be estimated by means of the maximum likelihood method. Then, a mathematical model is developed to calculate the probability of the home team winning or the expected number of league points gained in a game. The model is applied to find the best strategies of the two teams' formation changes under the zero-sum or the non-zero-sum game. An example of the best strategies is demonstrated using real data of the Japan professional football league.

Flexible Pricing and Empty Balancing on Container Transportation

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Abstract: Some shipping companies not only concentrate on building up proper sized container carrier fleet, efficient leg and liner. Flexible pricing system is another one of the core parts in the shipping service: based on the optimized or fixed legs and liner schedule, reasonable price of transiting the cargo should be provided, not too high to maintain the competition ability, not too low to gain profit. The price should be evaluated not only by weight or distance, but also transit time. The business rules system provides rapid and convenient framework to map the various conditions and constraints, say weight, distance and transit time to certain known value: the price. However, How to set the price mapping? How to know whether curtain cargo shipping demand would bring profit? Would the empty container balancing affect the price? In the talk we will discuss above questions and propose a concept solution.

China's Long March Towards Military Transformation And the Role of Military Operations Research

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HERO

Abstract: China's leaders have long recognized the need to modernize—indeed, to transform—PLA warfighting capabilities, especially the ability to command and to control more agile, better equipped forces operating according to “local wars under modern, informationalized conditions” doctrine. The ‘long march’ to transform has not been an easy one, and has been hobbled by distractions and debate. Finally, for the past decade, the PLA seems to be getting it about right, and the way ahead looks more promising than many have expected.

A Survey on Applications of OR Techniques in Japan

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Abstract: This study presents the result of a survey taken among corporate members of Operations Research Society of Japan as to perceive utility, familiarity and concern degree with sixteen operations research techniques commonly used in private companies and non-profit organizations. By evaluating Kendall's Coefficient of Concordance, we conclude there is acceptable agreement among the opinions of respondents. Then we determine the rank order of utilities of the techniques by Weighted Majority Rule, which is based upon the respondents' degree of familiarity or expertise.

Comparing with a similar study in the United States in 1979, we found that there are no significant change in the rank orders of the techniques, but the techniques seems to be less used now in Japan.