ABSTRACT

Market Outperformance by Nonparametric, Simugram-Based Portfolio Selection

by

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A new portfolio selection system is presented which weights components in a target major market index such that the resulting portfolio consistently outperforms the underlying market index by most any multi-period return measure. This is accomplished by use of the simugram, which gives a simulation-based distribution of outcomes of a stochastic experiment. This distribution is time- or space indexed and presents the whole distribution instead of a few moments. When applied to financial engineering problems, it provides a time-indexed risk profile of positions, which is applied as the objective function in the non-linear optimization of portfolio weights. This technique is in contrast to the mean-variance selection model, which seeks to minimize portfolio variance subject to a target return. The simugram-based selection system maximizes portfolio return subject to a non-linear risk tolerance parameter based on the simugram risk profile of all possible portfolio outcomes. For the SP-100 stock index portfolio in the 33-year study period, using multi-period return measures of annualized return and terminal value, the simugram annualized return is on the order of 3 times that of the market benchmark. And for every $1 million the market returned in terminal value over this time, the simugram portfolio returned $45 million.

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