

**Model for sequential dynamic competition between random investment portfolios and portfolios selected by collective expert opinions**

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There is a prolonged international and interdisciplinary dispute on the topic of financial market efficiency. On one hand famous researchers such as Moris Kendall, Burton Malkiel and Eugene Fama have studied the properties of financial time series with the general idea that the phenomenon financial market is principally unpredictable. The best suggestion for the investor in such information-reach environment is to choose investments randomly and not to follow any analysis and forecasting. Of course on the other hand the notion that there could be no methodology for predicting financial markets objects most of the theoreticians and practitioners in the field of financial investments.

For the last several decades a numerous tests of market efficiency have been conducted – both scientifically sophisticated and more wide-public oriented. With the Wall-Street Journal Dartboard Contest being the most outreaching and well commented.

The current paper describes the principal and analytical model of a more thorough version of similar research, based on collecting expert opinions (predictions in principle) in a single investment portfolio and is competes it with a randomly picked portfolio. Such a research has been a long coming project of the author and it could only be executed in a fast-communication environment with easily accessed information streams. It would be even more interesting to test the efficiency of an emerging market such as Bulgarian Stock Exchange.

The methodology of the research has several important features:

It is conducted online (Internet), following the principles of Delphi approach such as expert anonymity, unified information stream, ability to exchange supporting arguments among experts and combining all expert opinions in one collective portfolio.

The main innovation is that the model is designed to render dynamically collected expert opinions (this has always been the challenge with applying Delphi method for forecasting financial markets).

A possible solution of the problem with “Non-rhythmic” expert opinions (a typical issue with the Delphi approach) is suggested.

It presents the experts useful information even during the forecasting stage of the competition.

In honour of one of the most famous quote of Burton Malkiel and in attempt to be as genuine as possible real random number generators such as darts and dice are used.

Wide market index is used as a benchmark.

Modified Sharpe ratio is suggested to be used as a measure of prediction success.

Frictionless market is assumed.

Incorporated mechanism for weighting (correcting) the expert opinions as a function of time of submitting prediction with the newer having bigger impact on the final collective portfolio

Incorporated mechanism for weighting (correcting) the expert opinions as a function of success with the better predictors having bigger impact on the final collective portfolio

Both of the above-mentioned correction mechanisms and the model as a general introduce inherent systematic errors for which an adapting mechanism is proposed (i.e. stochastic approximation).

*Keywords:* Random walk theory, Efficient market hypothesis, Investment portfolio, Online expert opinion survey, Delphi approach, Random portfolio, Modified Sharpe ratio