

An Innovative Holistic Approach to Optimal Portfolio Management

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Abstract

The portfolio management methodology discussed in the present paper combines the principles of Quality Engineering, Value Investing and Forecasting was able to beat the average market return with a huge margin. The portfolio management methodology allowed long and short positions on stocks and options. The portfolio management process outlined here made the portfolio focused and as a result the expenses associated with the transaction costs were lower.

The main objective of this research is to propose a holistic approach for optimal, efficient and accurate portfolio management. In contemporary stock market conditions, three questions are crucial: What to buy or sell? How much to buy and sell? When to buy or sell? So the need of holistic approach has appeared; to forecast the stock price and the stock trends then optimize the portfolio. Besides that, the ability of volatility models to forecast future fluctuations of different asset classes is of interest to financial market participants. These arguments motivate our empirical future examination of the forecast quality of the S&P 100 implied volatility. Real case analysis and the forecasting results will reveal the limitations and the advantages of the proposed theoretical integrative-framework.

Stock market analysis, also known as technical analysis, is the process of deriving patterns from price movement. In the literature, different methods have been applied in order to predict stock market returns. These methods can be grouped in four major categories: technical analysis methods, fundamental analysis methods, traditional time series forecasting, and machine learning methods ("Neuro-Logit", Artificial Neural Network based Logistic Regression Analysis).

Keywords

Financial Engineering, Portfolio Optimization, Market Volatility Forecasting, Stock Market Trends and "Neuro-Logit"

Biography

Galia Novakova is a chief assistant professor in the Department of Computing Systems at the Faculty of Mathematics and Informatics (FMI), Sofia University. Her scientific interests are mainly in e-Government, Software Analytics, Cloud Computing and Big Data, Operations Management, Statistical Quality Control and Performance Measurement. She holds a PhD degree from Politecnico di Torino (Italy) and in the period 2002-2006 Galia Novakova was a researcher and lecturer at Politecnico di Milano. She has about 30 scientific (peer-reviewed) publications in international conference proceedings and scientific journals. Dr. Novakova has performed a postdoc research also in the USA (from 2010 through 2012) in the area of production optimization and financial engineering/investing. She has a significant practical experience as e-Government adviser (2013), corporate business consultant, project manager in an IT company and marketing and sales manager in the natural-gas distribution sector and pharmaceutical industry. She is currently teaching courses in Cloud Technologies and Architectures (undergraduate course), and in Supply Chain Management as well as Software Development Life Cycle (SDLC) Management in a Master course in e-Business and e-Government at the FMI, University of Sofia.

Waleed E. Almonayirie is Egyptian Telecom Engineer (IEOM Society Member), he has more than fifteen-year experience in satellite communication (Technical Support, Operations and Pre-Sales) and works as VSAT Expert in Abu Dhabi, UAE. He earned B.Sc. in Electronics and Communication from Faculty of Engineering, Helwan University, Egypt. He has awarded by MIBA (Master of International Business Administration), Global Finance, ESLSCA Business School, Egypt. He is now enrolling the DBA program in Swiss Business School (SBS-UAE). His interests in Artificial Neural Networks, Pattern Recognition, Optimization, Modeling, Financial Analysis, Cryptosystems, Quantitative Finance, Financial Engineering and Management Science. He is publishing his work of the MIBA research project and the DBA dissertation (5 papers till now). This paper is based on the MIBA graduation research project.