PRAGMATIC PORTFOLIO OPTIMIZATION: GAUGING BLACK-LITTERMAN MODEL IN EMERGING MARKETS

Kumuthini Sivathas

(128910X)

Degree of Master of Science

Department of Mathematics

University of Moratuwa
Sri Lanka

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Declaration

"I declare that this is my own work and this thesis does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

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…… ……..

K Sivathas Date

The above candidate has carried out research for the Masters thesis under my supervision.

…… ……..

A. R. Dissanayake Date

B.Sc. Mathematics (Colombo), M. Sc. (Pune)

Senior Lecturer,

Department of Mathematics,

Faculty of Engineering, University of Moratuwa

…… ……..

L. P. Ranasinghe Date

B.Sc. (Colombo), M. Sc. in Financial Mathematics (Moratuwa)

Ph.D. Student

Department of Mathematics, University of Colombo

Abstract

With the advent of modern portfolio theory[1] in 1952 by Harry Markowitz, the investment management industry had witnessed an uprising. Yet the encountered shortfalls and rigidity of the methodologies lead to the development of Black- Litterman model by 1990s. The Black- Litterman model addressed those deficiencies and introduced the luxury of incorporating the unique views of Asset managers about the assets under management in their portfolios.

This projected research efforts implementing the difficult phases of the Black-Litterman model and depicts its practical and pertinent nature by comparing to other portfolio allocation methods which uses the historical and CAPM methods. The modeling of mean variance (reward and risk) and then the portfolio allocation has been done using these three distinct methods. Thereafter the benevolent leads of the BL method over others have been discussed.

To assess the BL model, eight stocks such as Samsung Electronics Co., Ltd (SAMSUNG-Korea), China Mobile Communications Corporation (CHINA MOB- China), Naspers Limited (NASPERS-South Africa), Emaar Properties (EMAR- United Arab Emirates), Koc Holding AS (KCHOL- Turkey), Akbank (AK BANK- Turkey), Braskem SA (BRKM5-Brazil) and Taiwan Cement Corporation (TAIWAN CE- Taiwan) which comes under Emerging markets have been considered. For the analysis, the monthly stock closing prices published by Bloomberg L.P. have been taken. In addition to this the monthly closings of the MSCI Emerging Markets Index and US Treasury rates have been obtained to use respectively as the market benchmark and market risk free rate.

Four outlooks/views about these stocks were evaluated and the vector of BL Expected Excess Return which is the weighted average of Equilibrium market return vector and the View vector have been established using the Black- Litterman model. The grandeur of the BL method that's tailored portfolio weightages corresponding the Asset managers' views was studied.

The model has been implemented using the scientific software MATLAB. Other than the Black-Littreman methodology, the concepts of Markowitz portfolio theory, efficient frontier, CAPM returns, Portfolio expected returns, Portfolio variances and the Sharp ratios have been used to describe the portfolio dynamics.

The portfolio weightages derived using BL Expected Excess Returns did accord with the four views. It has been clearly witnessed that the incorporation of View vector, had caused the Equilibrium market return vector to get adjusted with respect to the outlooks/views.

Keywords: Black- Litterman model, Asset/ Portfolio allocation, Portfolio Optimization, Corporate Finance, Investment management

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[1]Modern Portfolio Theory (MPT), a hypothesis put forth by Harry Markowitz in his paper "Portfolio Selection," (published in 1952 by the Journal of Finance) is an investment theory based on the idea that risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk, emphasizing that risk is an inherent part of higher reward. It is one of the most important and influential economic theories dealing with finance and investment. [W1]

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List of Abbreviations

BL	-	Black- Litterman
CAPM	-	Capital Asset pricing Model
ETF	-	Exchange Traded Funds
MSCI	-	Morgan Stanley Capital International