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Global Pension Funds: An empirical investigation for obtaining the optimal portfolio strategy

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Master's Thesis within Banking, Investment and Finance field

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Abstract

Sufficient management of pension fund schemes entails a prior level of development in the financial sector. ALM and LDI are the most-well known techniques that they provide guidance and control to pension funds from the existing risk types. In order to manage the various risk types affecting the pension plan, it is important to detect and describe them first. Risk tolerance plays a significant role showing the degree of bearing the various types of risks within a pension scheme.

ALM and LDI methods are become more sophisticated nowadays. They can be used as a tool to better manage the future obligations through dynamic modeling producing some possible scenarios for the out coming years. LDI strategy aims to hedge and immunize portfolios from the interest rate risk which was proved to be one of the main risk types affecting the liabilities of a pension plan. Credit default swaps and derivative instruments are evidenced to be solutions in order to hedge interest rate and inflation risks.

Asset or investment management can play an essential role providing pension funds with an extensive shelter from tax, inflation and liquidity issues. Modern Portfolio Theory developed by Nobel Prize awarded economist Harry Markowitz in 1959 discuss the main issues that an institutional investor faces when investing. Asset allocation strategies and diversification methods are some of the theory's goals.

The main purpose of this thesis is to investigate if an investor in general can apply MPT in order to achieve a higher return than investing in an index portfolio. For most investors, combining a sufficient portfolio that beats the market in the long-run would be the ultimate target. Some concepts such as standard deviation, average rate of return, covariance and correlation are used to achieve the optimal risky portfolio. Efficient frontier and Capital Market Line represent the graphical illustration of the numerous optimal portfolios.

The frame for this thesis is constituted by the methodology used. Since the data input are gathered from historical data, the quantitative method is used. This analysis is based on existing theories through MPT and the deductive approach aims to use these concepts in order to accomplish a valid and accurate investigation. Some exchange-Traded Funds are selected in constructing our portfolio in order to be compared with a benchmark index portfolio.

The benchmark portfolio that is used to compare the results from the portfolio is the combination of the S&P 500 and SPDR Aggregate Bond index fund. The mixture of these indices mimics and reflects the market as a whole. The creating portfolio will be then tested at times of a market recession in order to accordingly re-allocate the asset weights in the portfolio.

The finding from this study indicates that the actively managed portfolio developed outperforms the passive indexing benchmark during the selected timeframe. The risk adjusted result provides a strong evidence for a greater return than index. However, the risk involving in the portfolio is much greater than in the passively one. At periods of economic downturn, a more conservative asset allocation in money market funds and bonds was proved to be the ultimate investment approach.

Finally, with these findings, it can be stated that an actively managed optimal risky portfolio with guidance of the MPT can surpass the benchmark index portfolio within the selected time horizon. Nevertheless, the pension fund investor should first define the risk tolerance of the institution before make any investment decisions in order to achieve the best results for the fund and at the same time to defend it from the underlying hazards in the market.

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