Literature review on the portfolio management

Literature

This essay will provide an in-depth study of the literature on the portfolio management in order to meet the main purpose that carrying out with the objective constructing investment portfolio based on the characteristic of institution investors. The study of the literature has been divided into several areas. Firstly, introducing the reason of setting investment objective and the development of Markowitz mean – variance model. Secondly, the benefits of diversification. Thirdly, the based theories to determine a utility function and the value of its risk aversion parameter, finding and evaluating the optimal portfolio based on the individual investment objective, risk appetite, and constraints of nationalized traffic investment groups in China in 2018. What is more, the exist strategies of evaluating the performance of this company's investment portfolio. Finally, this part also focuses on the basis opinions about alpha strategy for hedging risk.

First of all, according to portfolio management process, the first step of portfolio strategy is creating a goal including targeted returns, risk appetite and constraints based on nationalized traffic investment groups data. In terms of constraints, accounting to CFA institute, the project considered about several types, which are Liquidity Constraints, Time Horizon and Tax Concerns. What is more, Legal and Regulatory and Unique Circumstances.

Markowitz published a paper in 1952 is that one can determine the set of efficient portfolios that lie on a hyperbolic curve in a perfect market context, called the efficient frontier, where each portfolio that has a determined return with minimal risk. He has initiated significant contribution to the finance body of knowledge when he introduced the mean- variance model which has become a foundation to the modern portfolio theory (MPT).

According to Markowitz (1956), the first step of choosing a portfolio is estimating and observing available securities. He proved the ‘ critical line algorithm’ to trace out the efficient frontier, given descriptive statistic estimates, for any number of securities subject to various kinds of constraints. For this purpose, the dissertation calculated the expected returns, covariance matrix and correlation matrix of Chinese stocks price indexes before 2018 to build minimum-variance frontier of these risky assets to create the efficient frontier, as the efficient frontier is the set of optimal portfolios that offers the lowest possible variance based on a definite portfolio expected return.

Markowitz mean-variance model is continuously gaining interest among scholars and then expended by Sharpe (1966), Mossin (1966) and Lintner (1965). In 1964, Sharpe has shown that when there is a risk free active in the portfolio, the efficient frontier is a straight line which can be determined based on the capital asset pricing model theory (CAPM).

Secondly, according to Markowitz (1952), diversification can help investors eliminate unique risk, looking on total volatility rather than no diversifiable risk. Way and Lafond, etc. (2018) also discusses about a trade-off between concentrating investments in one project to spur rapid progress or diversifying over many projects to hedge against failure. They find that that accounting for uncertainty and risk aversion promotes diversification even if one option has better intrinsic technological characteristics. This means that inside a critical region of parameter space a small change in one of the parameters can lead to a very significant change in the optimal portfolio.

Thirdly, in terms of utility function and risk aversion parameter, Tabachnick, B. G. and Fidell, L. S. (2007) claim that the utility function measures the welfare or satisfaction of a client as a function of consumption of goods. Utility function is widely used in the rational choice theory to analyze human behavior. To postulate the utility function, economists typically make assumptions about the human preferences for different goods. Based on the Expected Utility Theory (EUT) with CARA utility functions, risk premium is generated by non-linear evaluation of outcomes.

Risk attitudes are different in groups including risk aversion, risk neutral and risk seeking. Risk aversion is the reluctance of a person to accept an uncertain reward in a transaction. Instead, it is safer to accept another choice with a lower expected reward. Risk aversion is the characteristics of a person’s preferences when they are in risk. It can be used to measure people’s willingness to pay for reducing the risks they face. In the process of reducing the cost and increasing the reward of risk, people who dislike the risk tend to make choices with low risks at the same cost. For example, if the investor is used to have willing to accept a lower expected rate of return on an investment mainly due to the lower risk of the investment, he is a risk aversion. When choosing the same investment projects with the same expected rate of return, risk averse generally chooses the lowest risk items. When facing the same speculative value of capital, people who are risk averse like the result with more definite chances rather than the unsure speculation.

What is more, since backtesting had been used in this dissertation to evaluate the performance of this company’s investment portfolio, the theory

of backtesting is introduced. Backtesting allows a trader to simulate a trading strategy using historical data to generate results and analyze risk and profitability before risking any actual capital. The ideal backtest chooses sample data from a relevant time period of a duration that reflects a variety of market conditions. In this way, one can better judge whether the results of the backtest represent a fluke or sound trading.

Finally, in terms of the theory of Alpha strategy, alpha investment strategies, designed to manage risks within a portfolio while also delivering market-beating returns, which can play a role in risk management and even offer more stable returns on investment when markets fall. He takes value strategies as an example, it can benefit under poor market conditions thanks to investors' search for quality assets during periods of market underperformance. A long-short value strategy involves buying stocks which are trading below their fair or potential value, and selling ones which are overpriced. He also claims that Alpha strategies can also complement each other, and in doing so, contribute to risk management within a fund. Long-short value strategies, for example, tend to be relatively uncorrelated to long-short momentum portfolios – in other words, they often generate alpha at different times. Other strategies, including minimum volatility (which targets stable stocks and avoids volatile stocks or sectors) and equal-risk-contribution indices (where constituents contribute equally to overall portfolio risk) can maintain solid performances when investment market bubbles burst, thanks to the diversification features of these types of funds. Naturally, a volatile stock adds more risk to a fund or portfolio than others, as does a stock which is highly correlated to other constituents in the

portfolio. An equal-risk-contribution fund helps spread risks more evenly across sectors, since stocks which are highly correlated with one another contribute lower weightings towards the index.

In conclusion, all the theories have been mentioned above just want to meet one main purpose that we are not only looking for the portfolio that is managed well but also for the portfolio that is right for the firm.