

CHAPTER 2: LITERATURE REVIEW

2.1) Risk – Return Tradeoff Theory

Return is the numerical measure of investment performance. It represents the percentage increase in the wealth of the investor that results from making the investment. One fundamental characteristic of investors is their desire to increase their wealth. This translates into obtaining the highest return possible. But, higher returns are always accompanied by greater risk. Risk is the uncertainty of future returns. Generally, investors dislike risk and they demonstrate this by avoiding risky situations when riskless ones that offer equivalent expected returns exist; however, they can't always avoid uncertainty. Fortunately, the competitive nature of financial market enables investors to identify investment by their degree of risk. The return investors expect is composed of the risk free rate and risk premium. Risk free rate is the investment's opportunity cost, a minimum return that is sufficient to compensate the investors for giving up the opportunity to spend their money today. Risk premium is the excess of expected return over the risk free rate, which is the compensation to the investors for bearing the risk in their investment. The positive relationship between risk and return is known as the risk-return tradeoff theory. The risk-return tradeoff arises because all investors seek to maximize return subject to a minimum level of risk. If a stock moves up the line into a higher risk level, some investors will find it too risky and will sell the stock, which will drive down its price.

The risk-return tradeoff theory leads the investors to manage the risk facing them in their portfolio. Risk management is meant to control and limit sources of unsystematic and systematic risk through diversification and asset allocation. Unsystematic risk includes business and default risk, and is unique to the firm or security. Unsystematic risk can be reduced by diversification. Systematic risk includes market risk, interest rate risk, inflation risk, reinvestment-rate risk, and impacts the market environment. Systematic risk can be reduced through asset allocation. Asset allocation is the

distribution of assets among different investment choices or classes. At the basic level, this decision involves the split between equity (stocks) and debt (bonds). In addition to stocks and bonds, many funds make allocations to other asset classes such as private equity, commodities, futures and real estate. If an asset class increases the expected return or decreases the risk of the portfolio, it should be considered as a potential investment. The objective of asset allocation is to arrive at a set of risk and return expectations that should provide the fund with the necessary returns and liquidity.

2.2) Literature Review

2.2.1) Asset Allocation And Returns

Asset allocation reduces systematic risk and increases returns based on the principle of diversification. The basic premise is that different asset classes of stocks, bonds and other securities do not move up and down at the same time. Rather, changing economic and market conditions may affect various types of assets differently, at different times in business cycle. To examine the validity of the asset allocation theory, academicians have carried out study on the returns of different portfolio strategies.

RK Advisors of Kovack Securities examined the performance of 82 large US pension plans over 10-year period and found that asset allocation decision accounted for over 91% of the differences among the returns of pension funds. In other words, this creates an argument that investors should consider dedicating their efforts to formulating an appropriate asset allocation policy, rather than just focusing on security selection or market timing. The second study carried out by RK compared the stock and bond market returns from 1971 – 1990 with those of a diversified portfolio. It was found that a 100% stock portfolio (measured by S&P 500) averaged an 11.5% annual return with 5 years negative returns. On the other hand, a 100% bonds portfolio (measured by the Lehman Brothers Government / Corporate Bond

has grown out of the misuse of the leverage available in the futures markets. However, using the unleveraged MLM index, the return and standard deviation of a futures investment are at levels comparable to any financial asset. In fact, on risk-adjusted basis, MLM index compares favorably with all other assets classes, with returns consistently exceeding standard deviation. Results also show that the MLM index has little or no correlation with most asset classes. The final impact of the study examined the impact of adding a futures investment to a representative portfolio of other assets. A base portfolio (allocation 1) is contrasted with an adjusted allocation (allocation 2), which includes a futures asset represented by the MLM index. In allocation 2, 5% of the of the original asset commitments in portfolio 1 that consists of 5% real estate, 10% foreign equities, 51% domestic stocks – 34% domestic bonds are reduced proportionately, and a 5% of investment in MLM index is introduced into the portfolio. Results show that the risk-adjusted rate of return of 1.44 as a results of adding futures. This implies that futures investment is an asset class that offers good returns, reasonable risk and diversification.

Kothari and Shanken (2000) examined the effect of indexed bonds on asset allocation by comparing the properties of a portfolio of stocks and indexed bonds with a portfolio of stocks and non-indexed or conventional bonds. Mean, variance and covariance measures for stock and bond returns are examined. Results show that the real (inflation-adjusted) returns on indexed bonds are less volatile than the returns on otherwise similar conventional bonds. Moreover, unlike conventional bonds, the real returns on indexed bonds are less volatile than the nominal indexed bond returns. Besides, as a result of inflation protection, the correlation between aggregate real stock returns and indexed bond returns is close to zero, whereas the correlation between real conventional bond returns and stock is 0.40. This implies that indexed bonds provide a better opportunity for diversification in the stocks-bonds portfolio. Due to lower volatility and correlation, the standard deviation of an equal-weighted portfolio of stocks and bonds is about 12% lower using indexed bonds, as compared to conventional bonds. Kothari examined the

asset allocation between stocks, five-year bonds, and a riskless asset assuming expected excess returns of 6% for stocks and 1% for both indexed and non-indexed bonds. With these assumptions, the optimal allocation to conventional bond is less than 20% of the portfolio, while that for indexed bonds exceeds 60%. Apart from that, the measures of portfolio performance, Sharpe ratio increases by about 15% with indexed bonds, as compared to conventional bonds. However, by assuming an inflation risk premium of 50-basis-point, the advantage of indexed bonds is reduced. These observations suggest an important role for indexed bonds in a diversified investment portfolio if the inflation risk premium is low.

Harper (2003) studied the decoupling of liquid Treasury bond returns from equity returns during the periods of significant volatility for the period of 1982 to 2001. These periods include the Stock Market Crash of 1987, Latin American Debt Crisis of the Early 1990s, Bond Market Routs of 1994 and 1999, Asian Financial Crisis in 1997, Long-term Capital Crisis in 1998, Bust of Dot.Com Bubble in April 2000 and Corporate Fraud and Accounting Irregularities in 2001. Harper studied 5 portfolios. Each portfolio has an allocation to equities, which has an annualized volatility of 15%. The fixed income portion of one portfolio is invested in 90-day commercial paper (CP), which has negligible volatility. The other four portfolios contain investments in 1-year, 2-year, 5-year and 10-year Treasury securities, which have successively higher volatilities as maturity increases. Harper analysed the performance of the portfolios by reducing the equity allocation and increasing the debt holding to keep the overall portfolio volatility constant. It was found that the stocks-Treasury portfolios have higher returns compared to the stocks-CP portfolio. The combinations of equity and Treasury positions generally outperformed the equity and CP position with the same risk level. Harper also found that the stocks-CP portfolio generated greater losses in periods of significant volatilities than the comparative portfolios of stocks and longer maturity notes, thanks to the phenomenon of decoupling. Treasury securities increase in value when stocks decline sharply. The decoupling

phenomenon is generally confined to Treasury securities because concerns that plague stocks often have a similar effect on the value of corporate debt. The combination of risk-return tradeoff and decoupling effect enables investors to sharply reduce the downside risk during the high volatility period.

2.2.2) Stock Market And Bond Market Volatility

In the financial sense, risk is a measure of variability or uncertainty of a transaction or portfolio. Together with return, risk is used to measure the performance of the portfolio. Investors require higher returns for investing in investment with higher risk. Volatility is the characteristic of fluctuations in price. The most common and basic measure of volatility is called standard deviation, where volatility is measured in relation to a defined time frame. It takes into account the way a security has performed in the past, and estimates the probability as whether it will perform in the same manner in the future. Generally, the higher the standard deviation, the more volatile is the security. Another measure of risk is the beta coefficient, which measures the volatility of a security in relation to that of the stock market as a whole. Any security with a beta higher than one is more volatile than relative market index, while any security with a beta less than one is less volatile than the index. Beta is useful in providing a measurement of a security's past volatility relative to a specific benchmark or index. Academicians have carried out studies related to stock market and bond market volatility to determine the risk premium for their investment. Some interesting studies are stated in the following section.

Stivers and Sun (2002) examined the stock market uncertainty and the bond returns in US over the 1988 to 2000 period. Stivers and Sun examined how the co-movement between the daily stock and the Treasury bond returns varies with stock market uncertainty by using the lagged implied volatility from equity options to provide an objective, observable and dynamic measure of stock market uncertainty. Results of the study show that stocks and bonds

tend to move together when the stock market uncertainty is low. On the other hand, during the period of high stock market uncertainty, the relationship between the bond and stock returns decoupled or even become negative. The findings of the study support the notion of "flight-to- quality" that suggests that the price of the Treasury bonds tends to increase relative to stocks while the co-movement between stocks and bonds becomes less or negatively correlated during times of increased stock uncertainty. The regime-shifting model examined in the study indicates that average bond (stock) returns are relatively higher than the stock returns in the regime with negative (positive) co-movement between stock and bond returns. Result of this study suggests increased diversification benefits for stock-bond portfolios during periods of high stock market uncertainty. This is in contradiction to the cross-equity market diversification as most of the literature have shown that cross-market equity returns is positively correlated during times of high stock market volatility, which is commonly known as the contagion effect. Contagion effect is the phenomenon where all the stock markets in a region is moving downwards, for example, the 1997 Asian economy crisis hit the stock markets in all the Asian countries.

Several studies have been done on the cross-market volatility. Patel and Sarkar (1998) examined the stock index data for eight developed and ten emerging markets over the 1970 to 1997 periods, which cover nine stock market crisis (three each in developed stock market, Asian stock market and Latin America stock markets). Patel and Sarkar examined the important differences in the characteristics of stock market crisis between developed and emerging stock markets besides examining whether the correlation between stock market indices changes during the stock market crisis. This study shows that most countries in a region participate in a crisis and the affected stock markets are about equally affected in terms of the severity of price decline and duration of the crisis. The stock market falls perpetuate from one market to the others in the region in the same month or within one month of one another. An analysis on the correlations between US and emerging markets indicates that the correlations become higher (remain low)

in times of market decline for the short (long) term investors. In other words, the emerging markets do (not) provide diversification benefits during stock market declines for long (short) term cross-market equity investment.

Kortian and O'Regan (1996) examined the behavior of daily assets price movement in Australian bond, share and foreign exchange markets over the period of 1987 to 1996 to study the volatility trend of these assets and the degree of international influences and domestic cross-market influences for the bond, stock and foreign exchange markets in Australia. This paper finds no compelling evidence that the bond and stock market volatility increase over time but the cross-country "contagion" or "spillover" effects on Australia bond and stock markets is significant. The predominant foreign market influencing the Australian bond and stock market is the US. Results also show that cross-country spillovers within the market for the same asset are more pronounced than cross-market spillovers within the same country. Thus, for the Australian stock (bond) market, the US stock (bond) market has a greater influence compared to the Australian bond (stock) market. Besides, this study also found that the volatility for both assets is higher during bear market and the volatility is found to be more correlated both across countries and markets during period of high volatility or when the market is down. The insight learn from this paper is that in Australia, stock-bond portfolio is a better combination than the cross-country equity or bond portfolios due to the contagion effects, which is in line with Patel et al. findings.

The most relevant literature for this paper was written by Reilly, Wright and Chan (2000). Reilly et al. analysed the changes in volatility for the bond and stock market in the US over the period of 1950 to 1999. This study finds that there are significant differences in bond and stock market volatility over time. By examining the 12-month moving average standard deviation of return, the volatility for stocks is about three times the volatility of the bonds volatility in the US. An analysis of the relationship between the bond and stock market volatility indicates a low and volatile relationship. There were periods when both bonds and stocks move in the same or opposite direction. The study

also finds that the ratio of volatility for the bond market over the stock market is in the increasing trend, which indicates that the volatility of the bond market has been increasing faster than the stock market volatility. There is a positive trend in the systematic risk (beta) of bonds compared to the stocks and the correlations between these markets over time. An analysis of the time series properties of the volatility for the bonds and stocks shows that both assets have a stationary volatility series even though these two series have different inter-temporal properties. The low correlation of volatility between the bond and stocks should encourage the portfolio managers to invest in stock-bond portfolios in order to achieve greater return while limiting the market risk, in other words, bonds are good for diversification purposes. However, the positive trend in the relative volatility for the bonds versus stocks through the standard deviation ratio, beta and correlations between these markets implies a smaller allocation to bonds in a portfolio asset allocation decision.

The study on the volatility and the relationship between the stock and bond market is essential for the portfolio managers in making the asset allocation decision. Asset allocation decision is necessary to determine the portion of investment to be put in the stock and bond market. Putting more money in equities may result in higher returns and higher volatility. Thus, volatility and the correlation analysis should help the portfolio managers to gain higher returns from the stock-bond portfolio while limiting the risk. The literature surveys discussed above are related to the foreign markets, namely US and Australia and the findings might not be the same to the Malaysia stock and bond markets. Volatility analysis for both assets in Malaysia should be carried out to examine the suitability of bonds as the "married partner" for stock. In other word, this paper examines characteristics of the stock and bond market, namely the volatility of these markets, the ratio of volatility and the relationship between the two markets to clarify the notion of stock-bond diversification effect in the Malaysia market.