# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Risk and Return

According to Cohen, Zinbang and Zeikel (1987), risk is the variability of possible returns applicable to an investment. Return, on the other hand is expected to be realized from an investment, comes from the current income and appreciation in market value. The expected rate of return on a security is the weighted average of possible returns, weights being represented by the corresponding probability. The holding period return is the total return earned from holding an investment for a specified period of time and equals.

$$\text{Holding Period Return} = \frac{\text{Capital gain/loss} + \text{Current income}}{\text{Cost of Investment}}$$

Where:

Current income = Cash dividend

Capital gain/loss = Selling price – purchase price.

Risk is a difficult concept to grasp and a great deal of controversy has surrounded attempts to define and measure risk. There are many causes of uncertainty such as variations in dividends, stock prices as well as interest rates. Share prices depend on the fundamental strength of the company such as the stability of earnings as reflected by growing in its earnings per share, dividend policy, and corporate image and growth prospects. In addition, the stock prices are also dependent on external factors such as government policy, political stability and other economic conditions. The extent of risk inherent in a particular investment or in a portfolio and the attitude of investors to that risk are entirely subjective and thus difficult to analyze quantitatively.

Ordinary investors when purchasing a stock would consider the risk level and the return. However, because of the existence of a fundamental trade off between risk and return, most investors do not seek a zero-risk investment.

In stock investment, risk measures the extent to which the actual return is likely to vary from that predicted. It is a commonly held view that the mix of common stocks maintained by an investor should depend on his willingness to bear risk.

Blume and Husick (1973) added, that risk has two implications that is, for future returns and future share prices. First, a widely accepted investment principal assumption is that investors in general are risk averse. The implication of risk averse for security prices and rates of return, other things are held constant that is the higher the security's risk, the higher its required return.

The second implication of risk for future returns is that risk means variability of returns. However, the total variation is not the principal determinant of the expected return that investors will require before shares are acquired.

Cohen, Zinbarg and Zeikel (1987) found in both UK and USA investors in financial securities demand higher returns from risky investments in equities than from comparatively risk free government securities. Investors demand a premium for bearing risk that is the higher than the riskiness of a security, the higher the expected return required to induce investors to buy (or hold) it. In addition, if profitability of the firm takes a dip, its financial condition deteriorates and hence its securities are

more risky and vice versa. On the other hand, an increase in interest rates tends to cause a drop in market prices of securities.

According to Modigliani and Pogue (1974) the stability of the market prices of securities are affected by risk. Three risk measures of the security are used in the investigation of the relationship between risk and return, namely:

a. Total risk measured by the standard deviation of return.

b. The unsystematic risk (or diversifiable risk) measured by residual variance (or standard error denoted by SE)

c. The systematic risk measured by the Beta coefficient.

Total risk for a share is divided into two parts: Unsystematic (unique or diversifiable risk) and systematic risk (market or un-diversifiable risk). The relationship between rate of return and the three risk measures are analyzed for individual securities portfolios. The standard deviation is a statistical measure of dispersion of the distribution of possible returns. The higher the standard deviation the wider the distribution and thus the greater the investment risk. The standard deviation is calculated for the sub-period rates of return for each security. These sub-periods are mutually exclusive that is non-overlapping.

The standard deviation measures total risk that is systematic risk and unsystematic risk. The standard deviation can either be calculated using actual historical return data (ex-post standard deviation) or be estimated using potential future return data (ex-ante standard deviation). To evaluate historical risk-return performance the ex-post value

is used. The ex-ante standard deviation is used in determining proper investment strategy for the future.

Wagner and Lau (1977) stated, the ex-post standard deviation is often used as proxy for ex-ante standard deviation. Essentially residual risk is a measure of the variance about the regression line. The variance (dispersion) of returns on a security is determined by two factors. The first related to systematic risk which is a complete measure of risk, often referred to as "market risk". It relates to how sensitive a security's returns are to events, in return affect all securities. This sensitivity is captured by beta. It is an inherent risk, which cannot be diversified away, resulting in situations beyond management's control, and is thus not unique to the particular security, as opposed to the second factor unsystematic risk, which can be diversified away.

Unsystematic risk reflects changes on a stock that are not associated with the return on the market but are caused by factors peculiar to the particular stock which affect the price changes on the stock in a unique manner. This part of a security return is totally independent of returns on other securities. As a result, these residual returns tend to net out across a large number of securities.

Moreover, when using beta coefficient care must be taken when historical data is used to assess future risk. Beta coefficient is not constant and its value must be predicted over time. It is the single most important aspect of common stock risk in a portfolio context, because it determines systematic risk, which in turn, is the bulk of investment risk in a diversified portfolio.

For example, a diversified portfolio of high beta stocks is more risky than a diversified portfolio of low beta stocks. High risk however is associated with the possibility of high returns.

This therefore, Fama and Macbeth (1973), suggest that betas of efficient portfolio are stable and that betas of inefficient portfolios are unstable. The stability and predictability of beta for stocks is an important property, which will largely determine the usefulness of beta in security portfolio analysis and investment strategy selection. Suffice it is for us to mention that available evidence indicates that adjusted beta serve as a better guide then unadjusted or raw betas.

The fact that returns are not strictly proportional to beta – proportionality implied by Sharpe's (1964) CAPM that was explained by Black, Jensen and Scholes (1972).

In measuring variability, the method must widely used is the beta coefficient which is a relative index of the systematic or un-diversifiable risk of a security. The beta coefficient measures the slope of the characteristic line and is defined as:

$$\beta_i = \frac{\mathrm{Cov}\,(r_i, r_m)}{\sigma^2_m}$$

Where:

Cov $(r_i, r_m)$ = denotes the covariance of returns of the i th security with the market returns.

$\sigma^2_m$ = represents the variance of return for the market index.

The covariance is a measure which reflects both the variance (or volatility) of stocks return and the tendency of those returns that move up or down at the same time other stocks move up or down. For example, negative covariance means that the two stocks move counter to one another, positive covariance denotes that both stocks move together and zero covariance represents both stocks fluctuate randomly. The covariance of returns can be computed using the following procedure:

$$\mathrm{Cov}(r_i, r_m) = \frac{\sum_{t=1}^{N}[(r_i, t - r)(r_m, t - \bar{r}_m)]}{N-1}$$

Where:

$r_i$,t = the rate of return on i th stock at time t.

$r_i$ = average rate of return on i th stock.

$r_m$,t = rate of return on market index at time t.

$r_m$ = average rate of return on market index and N is number of period.

As for variance of return for market index, $\sigma^2_m$, it can be computed using the following formula:

$$\sigma_m^2 = \frac{\sum_{t=1}^{N}(r_m, t - \bar{r}_m)}{N-1}$$

The beta coefficient is an index of systematic risk. Beta coefficients may be used for (ordinal) rankings of the systematic risk of different stocks. However, the beta coefficient is not a (cardinal) measure, which may be compared directly with total or unsystematic risk. If the beta is larger than 1, the stock is more volatile than the market and is called an aggressive stock. If the beta is less than 1, the stock is a

defensive stock. It is less volatile than the market. The other method of measuring the beta coefficient is using the security market line (SML) is shown as follow:

$$r_i = r_f + (r_m - r_f)\beta_i$$

where:

$r_i$ = the required rate of return on the t-th stock.

$r_f$ = the riskless rate of return.

$r_m$ = the required rate of return on an average stock or market index ($\beta$=1.0).

$\beta_i$ = beta coefficient of the i th stock

$$\beta_i = \frac{r_i - r_f}{r_m - r_f}$$

The beta coefficient can therefore be interpreted as a measure of risk for individual security, and can be calculated by regressing the observed returns of the security on the corresponding observed return of the market index over the first sub- period and second sub-period.

$\beta_i$ is used to calculate risk of an individual security, whereas $\beta_p$ is used to compute the portfolio beta and it is defined as a simple weighted average of betas of the securities in the portfolio, where the weights $X_i$, are the relative amount rested in each security. The formula for portfolio beta is;

$$\beta_p = \sum_{i=1}^{N} X_i \beta_i$$

where N = number of securities in a portfolio.

## 2.2 The Markowitz Mean – Variance Model

Modern Portfolio Theory as pioneered by Markowitz (1952 & 1959) in his paper has resulted in a revolution in the financial theory and has laid down the foundation for modern capital market and investment theory. He treated investor portfolio selection, as a problem of utility maximization under conditions of uncertainty has become the foundation for most of what has been say about the risk and return.

Figure 2.1 gives a geometric presentation of the Markowitz (1959) mean-variance model. According to this model, an investor should choose a portfolio of securities that lies on the boundary ABMD, known as the efficient frontier or efficient set. The efficient frontier denotes all possible efficient portfolios and the portfolios lying on this efficient frontier are mean-variance (or mean standard deviation) efficient since it represents possible investments which yield maximum expected returns for a given risk level and minimum risk for a given expected return. Obviously, point A on the frontier represents the portfolio with the least possible risk, while D represents the portfolio with the highest possible rate of return.

According to Tobin (1958), risk – averters will not be satisfied to accept more risk unless they can also expect to receive greater expected return. Therefore, the investor has to select a portfolio from among all points represented by the efficient frontier: this will depend upon his risk-return preference. The indifference curves of these risk averters are positively sloped and represented by $I_1$, $I_2$, $I_3$ in the mean-variance plane

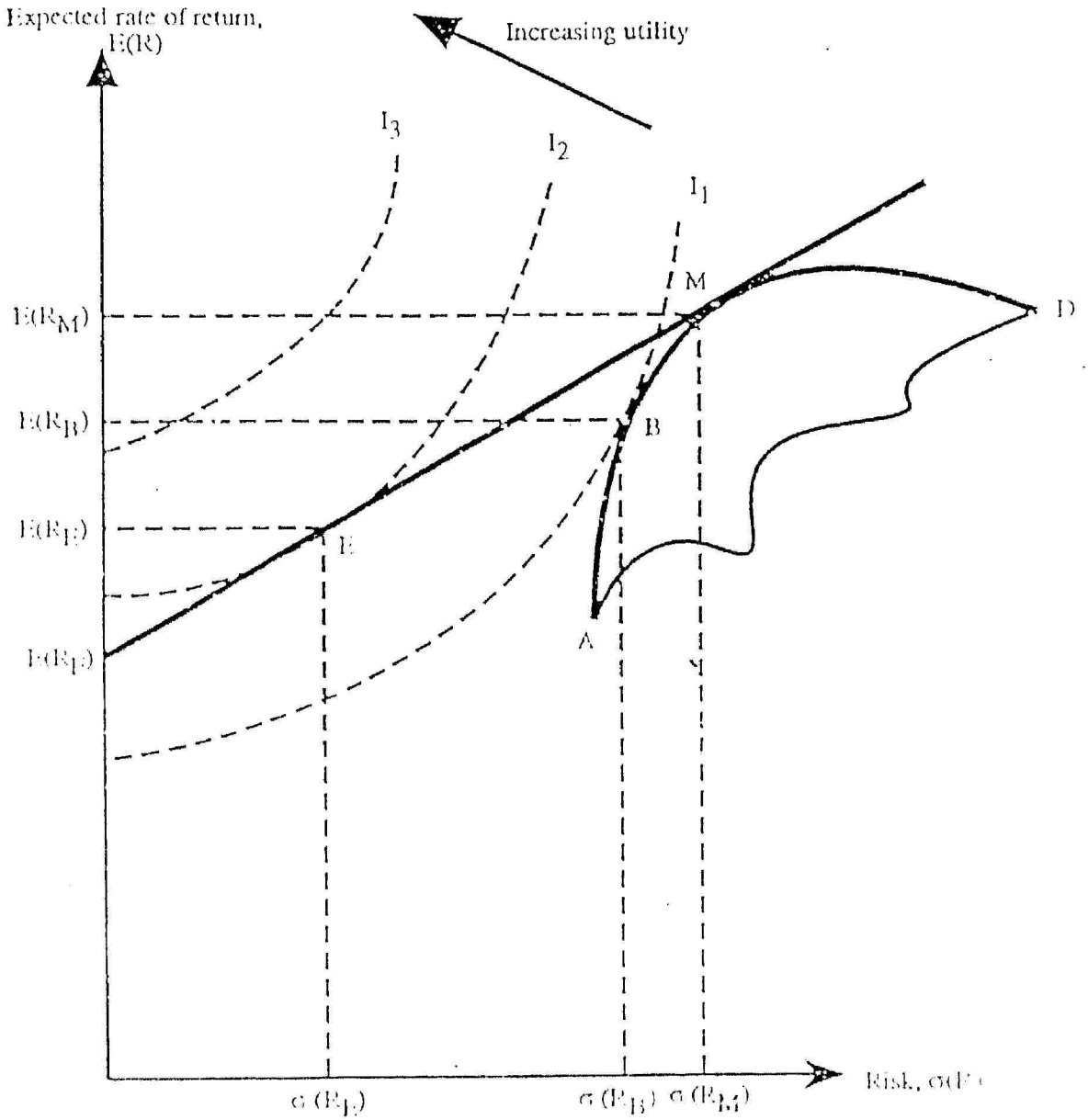


Figure 2.1 : Investor Equilibrium : Combining the risk free asset with the market portfolio.

Source: Adopted from Cohen, Zinbang and Zeikel (1987).

as shown in figure 2.1. The individual is indifferent between any combination of expected return and standard deviation on a particular curve; that is, his utility is constant along the curve. Successively higher indifference curves represent successively higher levels of utility, since, for a given risk level, expected return increases. The investor therefore wishes to be on the highest possible indifference curve in order to obtain the maximum possible level of utility, and this is given by the point of tangency between an indifference curve and efficient frontier. Point B in figure 2.1 is the point of tangency between an investor's utility function I, and the efficient frontier and it represents the optimal portfolio for the investor yielding $E(R_B)$ and $E(R_f)$ in the absence of risk-free asset.

### *2.2.1 Existence of A Risk-Free Asset and the Capital Market Line*

Suppose that an investor can lend and borrow at some risk-free rate of interest, $R_F$. If an investor invests in portfolio M and lends at a risk-free interest rate, $R_F$, then accomplishment of any combination of expected return and risk along the straight line joining $R_F$ and M in figure 2.1 is possible. The combinations of risk-free asset and risky portfolio, which may be achieved by points between these two limits, are termed 'lending portfolios'. Thus the investor can distribute the funds by investing in portfolio M and at the same time lending at the risk-free interest rate, $R_F$, such that the combined portfolio E, provides an investor with an expected return $E(R_E)$, a standard deviation $\sigma(R_E)$ and maximum utility of $I_2>I_1$.

The risky portfolio chosen by an individual will always be at the point of contact between the efficient frontier and a straight line from the risk-free rate of interest $R_F$ on the vertical axis drawn tangible to it, as illustrated by M in figure 2.1. Risky

portfolio M will clearly be preferred to any other portfolio on the section of the efficient frontier between A and M. For the array of points between A and M, or any combination of these efficient portfolios with the risk-free asset, there exists a corresponding portfolio on the line $R_FM$ which has a higher expected return for the same level of risk. Hence, by introducing the concept of a risk-free asset into the analysis, a new set of portfolios depicted by the line $R_FM$ may be derived, which dominates the section of the efficient frontier between A and M. The individual is therefore able to move to a higher level of utility than previously (for example from indifference curve $I_1$ to indifference curve $I_2$ in figure 2.1).

If the investor is able to borrow money at the same risk-free rate of interest, $R_F$, then by investing the investor can supplement the available wealth and construct a 'borrowing' portfolio. If the straight line joining $R_F$ and M is extended to the right of point M, this section of the line represents borrowing portfolios (that is, portfolios in which the individual invests the available capital and an additional borrowed amount). As an investor moves further to the right of point M, an increasing amount of borrowed money is being invested. Clearly, the borrowing portfolios dominate the section of the efficient frontier between M and D. Since borrowing is merely negative lending, the investor can extend the range of possible combinations beyond M by borrowing funds at an interest rate of $R_F$ and investing accordingly in portfolio M.

The straight line from $R_F$ passing through point M shows the range of all possible portfolios in which the individual can invest by borrowing or lending at the risk-free rate of interest $R_F$ and investing in the risky portfolio M. This line dominates the Markowitz efficient frontier, and is termed the capital market line (CML). The

particular point chosen on the line will depend upon the individual's utility function, which will be determined by his attitude towards risk and expected return, (Bodie, Kane and Marcus, 1999).

According to the model, all investors will hold a portfolio on the CML – that is, a portfolio comprising some ratio of the risky portfolio M and the risk –free security. Hence, portfolio M is the universally desired optimal portfolio, which must therefore contain all risky securities in proportions reflecting the total equity values of the companies they represent, and is known as the 'market' portfolio in order to be traded, since all investors hold combinations of the market portfolio and the risk-free asset.. Tobin (1958) thus derived a separation theorem, which states that an investor's choice of risk level is completely independent of the problem of deriving the optimal portfolio of risky securities. The market portfolio represents the optimal combination of risky securities. Therefore, in choosing an efficient portfolio, all investors are directed towards the market portfolio. The risk level associated with the market portfolio may be too high or too low for an individual investor, and who tends to hold a lending portfolio if an investor prefers lower risk and expected return than those of the market portfolio. Likewise, borrowing portfolio if an investor prefers higher risk and expected return than those of the market portfolio. The decision to hold a lending or borrowing portfolio is, however, purely a financial decision based upon the investor's risk preference, and is completely independent of the investment decision to construct an efficient portfolio (that is, market portfolio).

Markowitz's treatment of the portfolio selection problem was later extended and considerably refined by Sharpe (1964). He derived equilibrium models of asset prices

and is jointly known as the Capital Asset Pricing Model (CAPM). The CAPM specifies the relationship between risk and required rates of return on assets when held in well-diversified portfolios.

### 2.3 The Capital Asset Pricing Model

The development of the Capital Asset Pricing Model (CAPM) began with the work of Sharpe (1964). In his article, he expressed the need for the existence of an economic theory, which could deal with conditions of risk while attempting to predict the behavior of capital markets. Sharpe (1966) had also showed that, investors are risk-averters, have similar (probabilistic) beliefs about the future performance of various assets, and can borrow or lend funds at a risk-free interest rate, market prices of capital assets will adjust so that the predicted risk of each efficient portfolio's rate of return is linearly related to its predicted expected rate of return. This relationship can be represented by the following equation:

$$E(R_i) = \frac{R_F + \{E(R_M) - R_F\}\sigma_i}{\sigma_M}$$

Where:

$E(R_i)$ = Expected return on portfolio – i consisting of a risk-free asset and risky asset

$E(R_M)$ = Expected return on portfolio M made up of only risky securities.

$\sigma_i$ = standard deviation of portfolios

$\sigma_M$ = standard deviation of portfolio M

$R_F$ = risk-free rate of return.

The above equation can be represented graphically in Figure 2.2. Point $R_F$ is the risk-free rate of interest. In market equilibrium, and if the previously mentioned

assumption hold, an investor will be able to attain any desired point along a capital market line. The slope of the capital market line can be regarded as the reward per unit risk borne, in Figure 2.2. In practice, we usually represent the market portfolio M by a popular stock average, such as the Composite Index. The market portfolio represents the ultimate diversification.

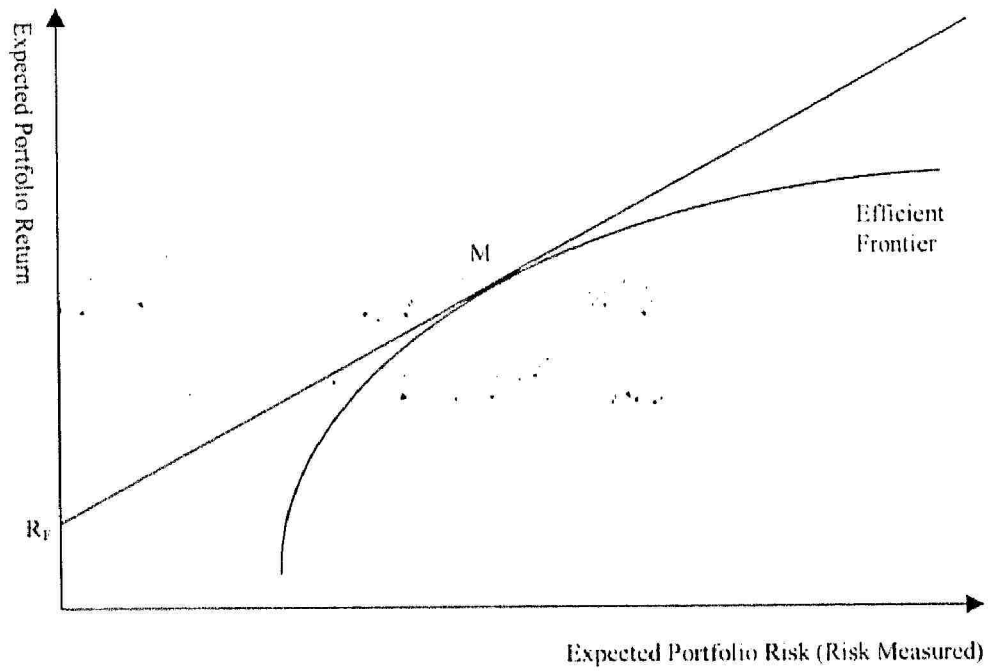


**Figure 2.2: The trade-off between risk and return. The efficient frontier and capital market line (CML)**

A number of simplifying assumptions lead to the basic version of the CAPM. The fundamental idea is that individuals are as alike as possible, with the notable expectations of initial wealth and risk aversion. The list of assumptions that describes the necessary conformity of investors as follows:

1. Investors cannot affect prices by their individual trades. This means that there are many investors, each with an endowment that is small compared with the

total endowment of all investors. This assumption is analogous to the perfect competition assumption of microeconomic.

2. Investors plan for one identical holding period.

3. Investors form portfolios from a universe of publicly traded financial assets, such as stocks and bonds, and have access to unlimited risk-free borrowing or lending opportunities.

4. Investors pay neither taxes on returns nor transaction costs (commissions and service charges) on trades in securities. In such a simple world, investors will not care about the difference between returns from capital gains and those from dividends.

5. All investors attempt to construct efficient frontier portfolios; that is, the investor is rational mean-variance optimizer.

6. All investors analyze securities in the same way and share the same economic view of the world. Hence, all investors end with identical estimates of the probability distribution of future cash flows from investing in the available securities. This means that, given a set of security prices and the risk-free interest rate, all investors use the same expected returns, standard deviations and correlations to generate the efficient frontier and the unique optimal risky portfolio. This assumption is often called homogeneous expectations.

Obviously, these assumptions ignore many real-world complexities. However, the model lead to some powerful insights into the nature of equilibrium in security markets.

Given these assumptions, Bodie, Kane and Marcos (1999), simplify these implications as per the following

1. All investors will choose to hold the market portfolio (M), which includes all assets of the security universe. For simplicity, all assets are referred as stocks. The proportion of each stock in the market portfolio equals the market value of the stock (price per share times the number of shares outstanding) divided by the total market value of all stocks.

2. The market, in the CAPM, is the portfolio in the modern portfolio theory efficient frontier from which a tangent can be drawn to the risk-free rate of return. Such a portfolio is shown as point M in figure 2.2. It can be seen intuitively that portfolio M is the only one that is sensible to hold, provided that an investor are able to borrow and lend at the risk free rate. If an individual investor holds any other combination of risky assets then by implication an investor will also hold unsystematic risk. If the capital market is efficient it will not reward unsystematic risk. Under conditions of equilibrium, the return to a security will be just commensurate with the systematic risk of the security. In other words, the difference between the returns to two securities can be explained in terms of the amount of systematic risk that they bear. If an investor want a lower risk portfolio, an investor should hold some proportion of the market portfolio and some proportion of risk- free asset; this is equivalent to moving left along the tangency line CML, and is clearly a better risk-return bet than moving down the efficient frontier of portfolios of risky assets. Alternatively, if an investor wishes to hold a portfolio with a beta greater than one, an investor should borrow cash, leverage up the portfolio, and move upwards to the right along the tangency line. The market, in this context, is the total of all securities that exist anywhere and that the CAPM claims that this universal market set is an efficient set

3. The risk premium on the market portfolio will be proportional to the variance of the market portfolio and investors' typical degree of risk aversion.

4. The risk premium on individual assets will be proportional to the risk premium on the market portfolio (M) and to the beta coefficient of the security on the market portfolio. This implies that the rate of return on the market portfolio is the single factor of the security market. The beta measures the extent to which returns on the stock respond to the returns of the market portfolio. Formally, beta is the regression (slope) coefficient of the security return on the market portfolio return, representing the sensitivity of the stock return to fluctuations in the overall security market.

### 2.4 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) is a reaction to the CAPM and also an extension of the CAPM because it argues that more than one factor determines the return to a risky security. The APT was developed by Ross (1976) which than became a competitive model. The principle that competitive markets do not permit profitable arbitrage opportunities to remain unexploited is clearly unquestionable and is also intuitively clear and appealing. Hence, asset pricing based on the principle of arbitrage is certainly a more welcomed move.

The basic idea of the APT model is that investors can create a zero-beta portfolio with zero-net investment. If the zero-beta portfolio constructed with zero-investment yields non-zero return, then arbitraging can make a sure profit. Hence, investors would buy such a portfolio and consequently its price would go up until the net return decreases to zero (in equilibrium). Thus, when such a situation is reached, no more arbitrage opportunity is available anymore. In short, it should not be possible to form a portfolio, which is riskless, costless and yet earns a positive return.

APT states that a stock's return depends on its sensitivity to a number of macroeconomic factors. Thus the return can be stated as:

$$\text{Return} = a + \beta_1(\text{factor } 1) + \beta_2(\text{factor } 2) + \ldots\ldots\ldots + \beta_n(\text{factor } n).$$

While it is possible for the individual investor to eliminate unique risk by diversification, it is not possible for the investor to diversify away a security's exposure to a variety of macroeconomic factors. These factors appear in the above equation. The beta coefficients will vary from share to share depending on the share's exposure to each factor.

The advantage of APT compared with the CAPM is that the CAPM depends on the identification of the market portfolio while APT makes no such assumption. It is not possible to identify the market portfolio precisely, since it should include the prices of all assets, not just those of securities quoted on stock markets. A major disadvantage of the APT is that the theory gives no insights into what the macroeconomic factors might be. There have been a number of attempts to test APT. One class of tests uses factor analysis. This attempts to identify first whether a number of common factors which determine stock returns are present in the data and secondly what weights to give to each of these factors. However, while the technique may identify common factors, the factors are in essence statistical artifacts and may not have any direct economic interrelation. This severely limits the usefulness of these tests. An alternative approach has been adopted by Chen, Roll and Ross (1986) to test whether the factors that were suggested by the economic theory are priced. Their results showed that the following macroeconomic variables were important:

1. An index of industrial production
2. Changes in default risk premium.
3. Changes in the yield curve.
4. Unanticipated inflation.

However, Poon and Taylor (1991) have criticized this study on econometric grounds, and their attempt to replicate it, using UK data, proved unsuccessful. While APT has a number of theoretical attractions, the inability to determine what factors should be included in the model severely limits its practical application.

**2.5 The Efficient Markets Hypothesis**

One of the most important ideas in Modern Portfolio Theory is the Efficient Market Hypothesis (EMH) where the concept of market efficiency (or the efficient market hypotheses) relates to the precision with which the market prices securities reflect current information. If prices respond to all relevant new information in a rapid fashion, the market is said to be relatively efficient. If, instead the information disseminates rather slowly throughout the market, and if investors take time in analyzing the information and reaction, and possibly overacting to it, prices may deviate from values based on a careful analysis of all new information such a market could be characterized as being relatively inefficient.

The extent to which the market is strictly efficient or strictly inefficient is one of degree and depends on what types of information are reflected in the securities prices.

Fama (1991) added that, there are three forms of the Efficient Market Hypothesis. Each different types of information is assumed to be reflected in the securities prices. Under the weak form of the efficient market hypothesis, stock prices are assumed to reflect any information that may be contained in the past history of the stock price itself. Examples of such include patterns of price series, which will be detected and eliminated in similar fashion until it becomes impossible to predict the future course of the series by analyzing its past behavior. If the weak form is valid, technical analysis or charting becomes ineffective. This weak form of EMH is supported by many of earlier studies, including by MacKinlay (1997).

Under the semi-strong form of the efficient market hypothesis, all publicly available information are presumed to be reflected in securities prices. This includes information in the stock price as well as information in the firm's accounting reports, the reports of competing firms, announced information relating to the state of the economy, and any publicly available information relevant to the valuation of the firm. If the semistrong form of the efficient market hypotheses is in effect, no form of analysis will ensure that an investor attain superior returns as long as the analysis is based on publicly available information. Again, great many studies support the hypothesis, including by Jagadeesh and Titman (1993).

The strong form of the efficient market hypothesis takes the notion of market efficiency to the ultimate extreme. If an investor believe in this form, so an investor believe that all information is reflected in stock prices. This includes private or insider information as well as that which is publicly available. Under this form, those who acquire inside information act on it, buying or selling the stock. Their actions affect

the prices of the stock, and the prices quickly adjust to reflect the insider information. If this form holds, then even insiders would find it impossible to earn abnormal returns in an efficient market. There have been many studies of the strong form of the EMH, including Sharpe (1966), Jensen (1967) and Elton and Gruber (1991).

Moreover, there are at least three conceptually distinct types of efficiency relevant to investment markets.

- Transactional Efficiency – this implies low friction in trading on the market.
- Informational Efficiency – this implies that information available to participants is impounded in market prices quickly and cost-effectively. This is the type of efficiency that is most often considered, albeit implicitly. The levels of efficiency described in the previous section all relate to this type of efficiency.
- Allocational Efficiency – this implies that the prices set for all securities are correct in the sense that they force to allocate capital in the way that maximizes the current and future productive capacity of the capital stock of the economy.

Portfolio managers are most concerned with the first two types of efficiency because whilst they want transactional efficiency so that they can implement their investment ideas, they do not want perfect informational efficiency because this would imply that they have no substantial ability to add value.

### 2.6 Empirical Studies of Unit Trust in Malaysia.

The theory and measurement of the performance of unit trust or mutual funds has been the subject of much research in the area of finance. It is also prompted by the need to set a benchmark for the comparison of their performances with other forms of

investment. The research work has been intensified particularly since the development of Modern Portfolio Theory pioneered by Markowitz (1952) and risk-adjusted performance methodology founded by Jensen (1967), Sharpe (1966) and others.

Here, we highlight some of the major studies of the performance of unit trusts and their empirical results in Malaysia.

However, the study by Tan (1995) revealed that the funds underperformed the market. He studied the performance of a sample of 21 funds for a ten-year period from January 1984 to December 1993. The mean monthly return of the sample was 0.73 compared to the market portfolio of 1.6692. The adjusted Sharpe Index of the sample was merely 0.049 whereas the value of the market portfolio was 0.1497. In addition, none of the fund managers could forecast stock prices well and also did not adhere very well to their stated objectives. Nevertheless, the sample did show some other encouraging result. Over time, the funds performed quite consistently and were well diversified with systematic risk lower than that of the market portfolio.

Ewe (1994) studied the performance of 32 funds for the period 1988-1992. Based on the Sharpe Index, 22 funds underperformed the market portfolio. The Jensen Index also showed that 17 funds have a negative excess returns. By the large, the returns of the sample of the fund were 1.076% less than the market returns.

At the same time, Shamser and Annuar (1995) also studied the performance of 54 unit trusts funds which include some foreign unit trusts for the same period as that the average returns for the total sample was 3.5% which is significantly below the risk-

free treasury bill's 6.55% and the market portfolio's 17.8%. Out of the 54 funds, only 2 funds outperformed the market portfolio but, by contrast, there were 26 funds, which have negative returns. In addition, 72% of the sample funds were poorly diversified with R-Square values below the 0.5 cut-off point. In general, the performance of the funds was also not consistent over time.

Another study by Liew (2002) revealed that unit trusts as a whole did not outperform the market portfolio. In contrast, the mean return of funds was even lower than the return of the risk free assets during some of the study periods. The performance of funds was also found to be very dependent on the performance of the market portfolio. Degree of consistency in the funds' performance and the degree of risk diversification were also found to be generally low. Risk-return characteristics of funds indicated that funds did not adhere to their stated objectives in all different sub-periods. Differences in the performance were found evident between income funds and the others. However, balanced funds and growth funds performed generally equivalent.

From the above-mentioned studies, it appeared that generally the performance of unit trusts in Malaysia was not better than that of the market portfolio.

### 2.7 Research Objective

After reviewing the various studies above, the objectives of this study are to find out whether the market portfolio in the CAPM are practically applied by the institutional investors (unit trust funds). In the CAPM, market portfolio is the most efficient combination of risky assets that an investor can hold. Empirical studies found that by

diversifying the assets in a portfolio; most of unsystematic risk can be eliminated which are present in the securities. The market portfolio is, therefore, the ultimate diversified portfolio (point M in figure 2.2). Utility maximization investors will not hold other portfolios, which are different from point M. Various combinations of risks and returns are achieved by combining market portfolio with borrowing or lending at risk-free rate. In other words, if Malaysian institutional investors such as unit trust funds behaved in the same way as the capital asset pricing model, then the various combinations of risks and returns of the various types of investments will form a straight line, such as Capital Market Line (CML) in figure 2.2.

In summary, the research objectives that are being examined in this project paper are:

1. Institutional investors in Malaysia are at their optimum risk-return trade off which is on the capital market line. In an efficient market, institutional investors will hold their portfolio, which is well diversified which is the market portfolio. How true is this statement?
2. Validating whether institutional investors not holding a well-diversified portfolio will realize lower than the return given by the capital market line.