CHAPTER - I
INTRODUCTION

1.1 General Background

Financial management is a rudimentary element that underlies for successful operation of every industry and organization. Management of money directs, determines and enhances the health and productivity of total financial sector hence reciprocating its performance directly to the growth of economy. Financial development of country largely depends upon effective mobilization of its resources and investment. But it is often ridiculous to predict and realize the normal return on business investment due to the competitive market and other environmental constraints which may serve sometime as opportunity and other times threat.

Changing nature of competition and increasing pressure of globalization on today's business world, investment management has become the most critical determinant of the economy. The most important fact of international business operation is continuous change in economic, political and social dimensions. These changes are beyond the control of international business concern. In recent years international investors are attracted towards the financial markets of developing countries. As a result many joint ventures and multinational companies are being established in the country.

The growth of economy depends on availability of funds to finance the increased needs, not only of government and business, but also of individuals. Private domestic investment can be the contributor to economic growth and employment generation in the developing country. For the economic development of any country, public participation plays a vital role. If the people are rich, the country will be rich and people will have enough to invest on development of the country. "To the extent that public investment expenditure results in the provision of public services which reduce the cost of production of the private sector, they have a positive effect on private profitability and investment"(Chhibbeer and Dailami, 1990: 47). An investment in any funds is made to have some positive rate of return. Nobody is ready to bear risk without any return, but to

have return one must ready to face some risk. To minimize the risk at the given rate of return the concept of portfolio diversification is necessary. Portfolio is simply a collection of securities gathered to achieve certain investment goals. Usually investors diversify their portfolios to have minimum risk and maximum the return. So, to meet the investment goals there should be well-managed portfolio. Most investors hope that if they hold several securities then even one goes bad; the others will provide some protection from an external loss.

Portfolio theory explores how risk-avert investors construct portfolios in order to optimize expected returns for a specified level of risk. The theory quantifies the benefits of diversification. Out of a universe of risky assets, an efficient frontier of optimal portfolios could be constructed. Each portfolio on the efficient frontier offers the maximum possible expected return for a given level or risk. Investors should hold the maximum possible expected return for a given level of risk. Investors should hold one of the optimal portfolios on the efficient frontier and adjust their total market risk by leveraging or de-leveraging that portfolio with positions in the risk-free asset. Based upon strong simplifying assumptions, a capital asset pricing model concludes that the market portfolio sits on the efficient frontier and all investors should hold that portfolio leveraged and de-leveraged with positions in the risk-free asset. Portfolio theory provides a broad context for understanding the interactions of systematic risk and return. It has profoundly shaped how institutional portfolios are managed, and motivated the use of passive investment management techniques. The mathematics of portfolio theory extensively applies in financial risk management and is a theoretical precursor for today's value-at-risk measures. Financial management is concerned with efficient management of portfolio investment in financial assets including shares and debenture, preference share, warrants, option etc. A portfolio of an individual or corporate unit is the holding of securities and investment in financial assets. These holding are the results of individual preference and decision regarding risk and return.

If the security markets are highly efficient, a search for undervalued securities is not likely to yield return. If market is efficient, a passive portfolio management practices like indexing the portfolio to some market index may be the most cost effective approach.

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Active portfolio management practices are only appropriate because of significant market deficiencies that exploited legally and beneficially.

Among these investment processes the research is focused on security analysis and portfolio selection. Security analysis involves examine of individual securities or group of securities within the broad categories of financial assets. Portfolio construction identifies those specific assets in which to invest determining the proportion of the investor's wealth. Diversification should be done to minimize the risk and maximize the return. Portfolio performance involves determining periodically how the portfolio performs in terms of not only the return earned, but also the risk experienced by the investor (Sharpe, 2003:12-14).

Financial market facilitates the flow of funds from surplus to deficit units. Those financial markets that facilitate the flow of short-term funds, that is, less than one year are known as money markets, while those that facilitate the flow of long-term funds are known as capital markets. There are two types of market securities. Securities having life less than one year are called money market securities and securities having life of more than one year are called capital market securities. Money market securities generally have higher liquidity whereas capital market securities are used to generate a higher annual return to investors.

"Stock market is a financial market which probably has the greatest glamour and is perhaps the least understood. Some observers consider it as a legalized heaven for gambling and many investors consider stock marker investing as a game in which the sole purpose is pocking winners"(Lorie and Dodd,1985: 325).

The well functioning stock market allows stockholders to achieve efficient diversification, which reduces risk, which in turn, lowers the risk premium component in the cost of capital. Stock markets lower the cost of capital by liquidating investors' investment. It encourages investors to retain their earning and convert it into cash by selling shares in the stock market. The stock market provides an opportunity to the

portfolio managers and public for direct participating and sharing the gain of economic progress.

In Nepalese context the concept of security market began with the set up of "Nepal Stock Exchange" former known as "Securities Exchange Center" in 1976. This is the only stock market in Nepal. In spite of considerable development of stock market there is lot more to be done for the development of stock market in Nepal. Many investors are still afraid to invest in securities because of inadequate knowledge in this field and most investors are exploited from market intermediaries. For this purpose potential investors must be able to analyze risk and return of individual stock to increase market efficiency and consequently speed up the economic development.

This study occupies an important role in the development of stock market. In the market, stock index can be affected by interest rate, inflation and strengths of the rupee. The risk of a stock can be measured by its price volatility and its beta, business sector is the most dynamic part of economy, which collects unused funds and mobilizes it in needed sectors. It is the heart Nepalese economy. In Nepal, stock market is not doing well because lack of awareness towards stock market and lack of knowledge financial investment among the Nepalese people and inefficient financial policy of government. Nowadays, the business activities are growing in the country due to improved and stable political scenario.

1.2 Focus of the Study

The main focus of this study is trend analysis and optimum portfolio selection of Nepalese stock market. The main purpose of the study is to analyze how one can get sustainable profit by minimizing the risk. For this purpose, market return, expected return, total risk, systematic risk and unsystematic risk are analyzed to give an idea to get sustainable profit by diversifying the risk to avoid future loss of the common stock investment.

∫ Portfolio Management

Harry M. Markowitz originally proposed portfolio theory in 1952 (Markowitz, 1952:77-91). It is concerned with selecting optimal portfolio by risk adverse investors. Risk adverse investors selects efficient portfolio that maximizes return at a given level of risk or minimizes risk at a given level of return. With the collection of those efficient portfolios the optimal portfolios can be obtained for given investors. The level of risk and return is depended upon the investors' preferences.

∫ Risk and Return on Portfolio

It is common problem of investment manager how to maximize the expected return of the portfolio subject to some target level of volatility. That is investment is made to have best performance for an expected level of standard deviation. The targeted standard deviation is determined by the investor's tolerance for risk. Expected returns depend upon the firm's life cycle and returns of mature firms with those of growth firms. Time variation can play an important role in determining expected returns of mature firms than of growth firms. Effective risk and return management strategy should be applied in order to manage portfolio risk and return.

∫ Systematic Risk and Unsystematic Risk

Systematic risk is portion of variability in return caused by market failure that simultaneously affects the price of all securities systematic risk is unavoidable.

Unsystematic risk portion of risk is caused by internal deficiencies of organization. It is unexplained by the market movement. It occurs due to problems in industry or company.

1.3 Statement of the Problem

The investment process is concerned with how an investor should go about making decision with regard to what marketable securities to invest in how extensive the investment should be and when the investment should be made.

Due to lower interest rate provided by the banks, Nepalese investors seem to invest their money in capital market in shares and debentures. Such tendency has been seen during this decade significantly. After the establishment of NEPSE, as a result of liberalized economic policy, private sectors initiated to raise funds through capital market. Capital market/stock market, thus, has created investment opportunities to investors.

Investors can be classified into three categories on the basis of risk and return. First types of investors are risk lover investors who become ready to face high risk in the hope of high return. The second types of investors are risk avoider investors who try to avoid facing high risk and became ready to be satisfied in low return. The third types of investors come along in between these two investors. They are ready to bear medium risk and have medium return. These are the three types of institutional investors. The study has examined whether these investors are aware about the portfolio management of the institutions they are investing or not. How effectively the financial institutions are mobilizing their investment and whether the return that investors get back is sufficient or not in compare to the risk they are bearing. It is not necessary that the investors who bear high risk have high return. The investors may bear high risk and have relatively low return or vice versa. The portfolio return is the straight weighted average of returns from the individual assets. But the portfolio risk is affected by the variance of returns as well as the covariance between the returns of individual assets included in the portfolio and their representative weight.

The study has examined about the condition of portfolio management in different business sector whether the institutions have maintained portfolio management or not.
 If they have portfolio management then what is the rate of risk in their institutions? And for bearing that risk what is the rate of return they are having. But if the institutions are careless about the portfolio management how much profit maximization they are having and how they are maintaining their earning? What the difference between the rates is of return of the institutions that portfolio management and do not have portfolio management. The study has also tried to find out the relationship between each sector.

In an efficient market condition, stock price is equal to the intrinsic value of stock. When required rate of return and expected rate of return are not equal, then intrinsic value and market value of stock will not be equal. It is also assumed that all stock remain in security market line, and if the case is not so, they strive towards this line. But theoretical and practical knowledge may not always much each other.

Therefore it needs courage and at the some time faith to invest in common stock. In most of the time which can be generated through proper evaluation with giving view to the prevailing market atmosphere. But what are the criteria for evaluation that the stock they are holding will give them favorable return? What should be the compensation they have to receive for bearing risk? How can investors make higher return through lower risk?

Some research problems towards which this study is directed are as follows:
1. To what extent, the investors should be compensated for taking a certain degree of risk?
2. How can one make higher return assuming lower risk?
3. What are the diversifiable and un diversifiable risks of the common stocks?
4. What is the systematic risk of common stocks?
5. How do they know the scale and intensity of risk?
6. One expects favorable returns by holding stock. But what are the criteria   for evaluation?

1.4 Objectives of the Study

The general objectives of this study are as follows:
1. To examine the portfolio management practices in Nepalese Stock Market
2. To analyze portfolio attributes of Nepalese Stock Market.
3. To measure the optimum portfolio among the different Business Sector.
4. To identfy the best investment security.
5. To provide suggestion and recommondation to the concerned for the future important

1.5 Significance of the Study

Investment practices under the organized stock exchanges are heading gradually in Nepal. But very few studies and researches have been undertaken regarding the stock market. Since we are moving towards the free and open market economy, such studies have become more significant. Due to growing number of investors-individual as well as corporate, such type of studies helps them to make rational investment decisions. Hence, this study assesses the risk characteristics of the stocks of companies that have listed their shares in NEPSE to make them eligible for trading in secondary market. Hence, it's a part of continuous research process to be undertaken in the country.

After the restoration of multi party democracy and introduction of economic liberalization, public involvement in securities investment has tremendously increased. But most of the individual investors are not aware about the risk associated with the return from the stocks. They are just making investment decisions based on hearsay and rumors. Systematic investment practices do not getting practiced. In such a situation, this study determines the optimum portfolio of securities. After all the findings based on fundamental analysis of this study will be beneficial to all the prospective investors who wish to make investment in the securities of common stock. Moreover, respective institutions under study, the official of stock market, brokers, market makers, university graduates and under graduates professor can use the findings of this study.

1.6 Limitations of the Study

Each study is conducted under some constraints and limitations. Likewise, this study is also limited by some common constraints. This study is based on the fundamental analysis of impact of systematic risk on common stock's market price which have issued their shares to general public and listed their shares in Nepal Stock Exchange Limited to make them eligible for trading. However, the specific limitations of the study are as follows:

1. Due to the lacking of the regarding portfolio management may limit the scope of the study.

2. The study has only analyzed index of different business sector of NEPSE. which does not reflect whole market.
3. The study is mainly depending on secondary data.
4. Average return of the individual business sector is taken as expected return.
5. This study only reflect the information 7 years from 2058/059 to 2064/065.

1.7 Organization of the Study

The organization of the study is divided into the following chapters:

The first chapter deals with various aspects of the present study, like background of the study, statement of the problems, objectives of the study, rationale/significance of the study, limitations of the study and scheme of the study.

The second chapter deals with the review of literature. In this chapter, the review from books, journals, thesis and independent studies are taken into account.

The third chapter deals with research methodology, which includes introduction, research design, nature and sources of data, data processing procedures and tools used for analysis.

The fourth chapter, which is the main aspect of the study deals with the data presentation and analysis on the basis of the document received from the related organization. This study used the statistical as well as financial tools in order to fulfill the objectives and problems of the study.

The last or the fifth chapter presents the major summary on the findings, issues and conclusions followed by the recommendations.

At last, list of bibliography and annexes are included.

CHAPTER – II
REVIEW OF LITERATURE

This chapter is mainly concerned with the competent exploration of the background to the work and a comprehensive review of recent and relevant literature. In this regard some basic academic course books, journals, and other related studies are reviewed. But so far nominal research has been performed in this topic in Nepal. Our stock market is on emerging state and unable to provide necessary information concerning to this study.

2.1 Investment

Investment in its broadest sense means the sacrifice of current dollars for future dollars. Two different attributes are generally involved: time and risk. The sacrifice takes place in present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain *(*Francis and Clark, 1986: 33*)*.

Investment Process

The investment process describes how an investor should go about making decisions with regard to what marketable securities to invest in, how extensive the investment should be, and when the investment should be made. The formal investment process includes:

1. **Set Investment Policy:** it involves determining the investor's objectives and the amount of his or her invest able wealth. Investment objective should be stated in terms of both risk and return.

2. **Perform Security Analysis:** It involves examining several individual securities or groups of securities within the broad categories of financial assets previously identified.

3. **Construct a Portfolio:** The third step in the investment process, portfolio construction, involves identifying those specific assets in which to invest, as well as determining the proportions of the investor's wealth to put into each one. Here, the issues of selectivity, timing and diversification need to be addressed by the investors.

4. **Revise the Portfolio:** Portfolio revision concerns the periodic repetition of the previous three steps. That is, overtime the investor may change his or her investment objectives, which in turn may cause the currently held portfolio to be less than optimal.

5. **Evaluate the Performance of the Portfolio:** It involves determining periodically how the portfolio performed, in terms not only the return earned but also the risk experienced by the investors.

2.2 Portfolio Analysis

Nepalese investor tend to invest there entire wealth in single security. It is because of the lack of proper awareness and knowledge about portfolio management. If they construct a portfolio for investment they can reduce unsystematic risk without losing considerable return. Therefore, analyzing risk and return on portfolio context is necessary

"While the portfolio expected return is a straight forward weighted average of returns on the individual securities, the portfolio standard deviation is *not* the simple weighted average of individual security standard deviations. To take a weighted average of individual security, standard deviations would be to ignore the relationship or covariance between the returns on securities. This covariance, however, doesn't affect the portfolio's expected return" (Horne and Wachowicz, 1995:96).

2.3 Return on Common Stock

**Single Period Return**

The investment return is defined as the after-tax increase in the value of the initial investment. The increase in value can come from two sources; a direct cash payment to the investor or an increase in the market value of the investment relative to the original purchase price. The rate of return over the holding period, or holding period return (HPR) is computed as:

$$HPR = \frac{Ending\ Price - Begining\ Price + Cash\ Receipts}{Beginning\ Price}$$

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Holding period returns are often calculated for periods other than one year, for this reason, the length of the holding period must always be indicated for a specific HPR. Many HPRs over periods shorter or longer than one year are annualized. In general, if the length of the holding period is not specified, it is assumed to be one year.

) Annualized Holding Period Returns

Holding period returns measure mentioned above is useful with an investment horizon of one year or less. For longer periods, it is better to calculate rate of return as an investment yield. The yield calculation is present value based and this considers the time value of money (Horne and Jone, 1997: 90).

HPRs are reported as an annual equivalent. One possible measure of annualized HPR might be the average of several HPRs such as:

$$\overline{HPR} = \frac{\sum_{i=1}^{n} (HPR_i)}{n}$$

However, the simple arithmetic averaging ignores the compounding effect that results if the first period's return is reinvested. In addition, the result of an arithmetic average return can be distorted if there are large differences in the rate of returns across time periods. Large difference in the periodic rates of return over longer investment horizons will cause the arithmetic rate of return to be misleading.

The geometric mean rate of return does not suffer from this flaw. The geometric mean rate of return $\overline{HPR}$ g is defined as the rate of return that would make the initial investment equal to the ending investment value. Annualized rate of return is calculated as: Annual Rate of Return $(R) = (1 + HPR) 1/n - 1$

) Required Rate of Return

When setting the required rate of return on an investment, an investor must consider the real rate of return, expected inflation, and risk. Because consumption is foregone today,

the investor is entitled to a rate of return that compensates for this deferred consumption. Since the investor expects to receive an increase in the real goods purchased later, and assuming for the moment, zero inflation and risk, the required rate could equal the real rate of returning in which case it would represent the pure time value of money. The capital markets determine this rate based upon the supply of money to be invested relative to the demand for borrowed money (Cheny and Moses, 1995: 33).

The required rate of return is the minimum rate of return that an investor expects form his/her investment in risky assets. It is the function of real rate of return and risk. The required rate of return is the return on risk free assets i.e. government securities plus risk premium. It is determined by CAPM/SML. The required rate of return using CAPM/SML is:

Required Rate of Return (K) = $\overline{R_f}$ + R$_m$ - $[R_m \, Z\overline{Rf}]$ $\wp$

) Expected Rate of Return

If an investment is to be made, the expected rate of return or the expected holding period return, should be equal to or greater than the required rate of return for that investment. The expected rate of return is based upon the expected cash receipts (e.g. dividends or interest) over the holding period and the expected ending or selling price. The expected rate of return is an ex-ante or unknown future return.

If the investor can describe the possible variable that will influence each of the possible rates of return and assign probabilities to these outcomes, the expected rate of return should equal the weighted average of the various possibilities. Listing the possible investment results and assigning probabilities to each of these outcomes is the same as creating a probability distribution in statistics. Probability distributions are used to describe possible outcomes and to assign individual probabilities, from zero (no chance of occurring) to one (full certainty that the outcome will happen), to each possible outcome.

The investor has forecast possible outcomes, each based upon a possible state of the economy. Each economic state will result in a different expected rate of return. Subjective probabilities are assigned to each outcome. The overall expected rate of return, E (HPR) can be calculated as a weighted average of the three forecasts:

$$E\ (HPR) = \sum_{jXl}^{n} Pj \mid HPRj$$

1.1.1.1.1 2.4 Risk

Risk and uncertainty are real in life. Everyone encounters uncertainty in everyday life. Uncertainty about the weather, performance of one's investment and one's health are few real life examples of uncertainties. It exists when a decision maker knows all the possible outcomes of a certain act but for one reason or another cannot assign probabilities to the various outcomes.

Risk, on the other hand exists when the decision maker knows not only the various outcomes but also the probability associated with each one. Risk and uncertainty are an integral part of an investment decision. Risk can be defined as a situation where the possible consequence of the decision that is to be taken is known. 'Uncertainty' is generally defined to apply to situations where the probabilities cannot be estimated. However risk and uncertainty are used interchangeably.

In finance risk has a very special meaning. It refers to the uncertainty associated with the returns on a particular investment. A risky investment is thus one whose Returns are volatile.

2.5 Measurement of Risk

） Standard Deviation

It is a statistical concept and is widely used to measure risk from holding a single asset. The standard deviation is derived so that a high standard deviation represents a large dispersion of return and is a high risk a low deviation is a small dispersion and represents a low risk. It provides more information about the risk of the asset. Its advantage is that

the uncertainties of returns can b e summarized into a single easily calculated number. The major disadvantage is that the standard deviation considers possible returns above the expected value to be as risky as returns below the expected value.

Standard deviation is donated by the '∃' (sigma) symbol. It can be expressed mathematically as:

$$\exists = \sqrt{\dfrac{\sum\limits_{t\,X1}^{n} \bullet r_t\, Z\, E(r)^{'2}}{n}}$$

Where,

∃ = Standard deviation

r_t = Return for t^{th} possibility

E(r) = Expected rate of return

n = Number of years.

) Coefficient of Variation

If risk is measured by the standard deviation, then risk per unit of expected return can be measured by the coefficient of variation (C.V.). The larger the C.V the larger the relative risk of the investment.

The coefficient of variation shows the risk per unit of return and it provides a more meaningful basis for comparison when the expected return on two alternatives is not the same.

The standard deviation can sometimes be misleading in comparing the risk or uncertainly surrounding alternatives if they differ in size. To adjust for the size or scale, problem, the standard deviation can be divided by the expected return to compute the coefficient of variation (C.V.)

Coefficient of Variation (C.V.) = $\dfrac{\dagger}{E(r)}$

Where,

∃ = Standard deviation

E(r) = Expected rate of return.

The coefficient of variation is a measure of risk per unit of expected return. The larger the C.V., the larger the relative risk of the investment.

The coefficient of variation is more useful when we consider investments, which have different expected rates of return and different levels of risk (Weston and Brigham, 1993).

∫ **Beta**

"The relevant risk associated with an individual stock is based on its systematic risk, which depends on how sensitive the firm's operations are to economic events such as interest rate changes and inflationary pressures. Because the general movements in the economy, the market risk of the stock can be measured by observing its tendency to move with the market, or with an average stock that has the same characteristics as the market. The measure of the stock's sensitivity to market fluctuations is called its beta coefficient. Beta is a key element of the CAPM" (Weston and Brigham, 1996:202). "The beta is simply the slope of the characteristic line. It depicts the sensitivity of the security's excess return to that of the market portfolio if the slope is one, it means that excess return for the stock vary proportionally with excess return for the market portfolio. In other words, the stock has the same unavoidable or systematic risk as the market as a whole. A slope steeper than one means that the stock's excess return varies more than proportionally with the excess return of the market portfolio"(Horne , 1995:67).

"Beta measures non-diversifiable risk. Beta shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. Beta is calculated by relating the returns on a security with the returns for the market. Beta can be positive or negative. But nearly all betas are positive"(Fischer and Jordan, 2002:82).

2.6 Portfolio Return and Risk

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Portfolio is combination of individual or a group of assets. Portfolio is the holding of securities and investment in financial assets like, common stock, preferred stock, bound, debenture etc. Investors have different types of investment opportunity but they have limited resource for investment so that investors have to select that investment, which maximizes return for a given level of risk. Therefore it is needed to extent analysis of risk and return to include portfolio. There are two types of objectives, primary objective and secondary objective. The primary objective of portfolio are to maximize return and to minimize risk and secondary objectives is regular and stable return, safety of investment, appreciation of capital, tax benefits etc.

The expected return on a portfolio is simply the weighted average of expected returns on the individual assets in the portfolio with weights being the fraction of the total portfolio invested in each asset.

Symbolically,

$$E(r_p) = w_i E(r_i) + w_j E(r_i)$$

Where,

$E(r_P)$ = portfolio return

w_i = proportion of wealth invested in i assets.

w_j = proportion of wealth invested in j assets.

$E(r_i)$ = expected return on i assets.

$E(r_j)$ = expected return on j assets.

Portfolio risk is the risk of individual securities plus covariance between the securities. Symbolically,

$$\exists_P = \sqrt{w_i^2 \; \exists_i^2 \; \Gamma w_j^2 \; \exists_j^2 \; \Gamma 2 w_i w_j \, cov(R_i, R_j)}$$

Where,

$\exists_P$ = Portfolio standard deviation

w_i = Proportion of portfolio devoted by security i.

$\exists_i$ = Standard deviation of security i.

w_j = Proportion of portfolio devoted by security j.

$\exists_j$ = Standard deviation of security j.

Cov (R_i, R_j) = Covariance between return of security i and j.

2.7 Capital Asset Pricing Model

Three economist William Sharpe, John Linter and Jack Treynor developed Capital Asset Pricing Model or CAPM in mid 1960's. CAPM is a model that describes the relationship between risk and expected return. It explains the behavior of security price. It also describes how the price and interest rate on risky financial assets are determined in the capital market. In this model, a security's expected return is the risk free rate plus a premium based on the systematic risk of the security, where risk is measured by the beta coefficient. The main massage of the model is "in a competitive market, the expected risk premium varies in direct proportion to beta". This means that all investments must plot along the security market line.

"CAPM provides a measure of risk and method of estimating the market's risk return line. The market or systematic risk of security is measured in terms of its sensitivity to the market movement. This sensitivity is referred to the security's beta. Investors can eliminate unsystematic risk when they invest their wealth in a well diversified market portfolio (Pandy, 1995:344).

The CAPM is sometimes used to estimate the required rate of return for any firm with publicly traded stock. The CAPM is based on the premise that the only important risk of a firm is systematic risk, or the risk that results from exposure to general stock market movements. The CAPM is not concerned with so called unsystematic risk, which is specific to an individual firm, because investors can avoids that type of risk by holding diversified portfolios (Madura, 2001:278).

The CAPM states that the expected risk premium on each investment is proportional to its beta, this mean that each investment should lie on the sloping security market line connecting treasury bills and market portfolio (Richard and Myers, 2002:200).

"The graphical version of CAPM is called the security market line which shows the relation between risk and the required rate of return" (Chandra, 2001:168-169). The security market line clearly shows that return is the increasing function. The SML equation as suggested for the computation of expected rate of return on common stock.

The model is,

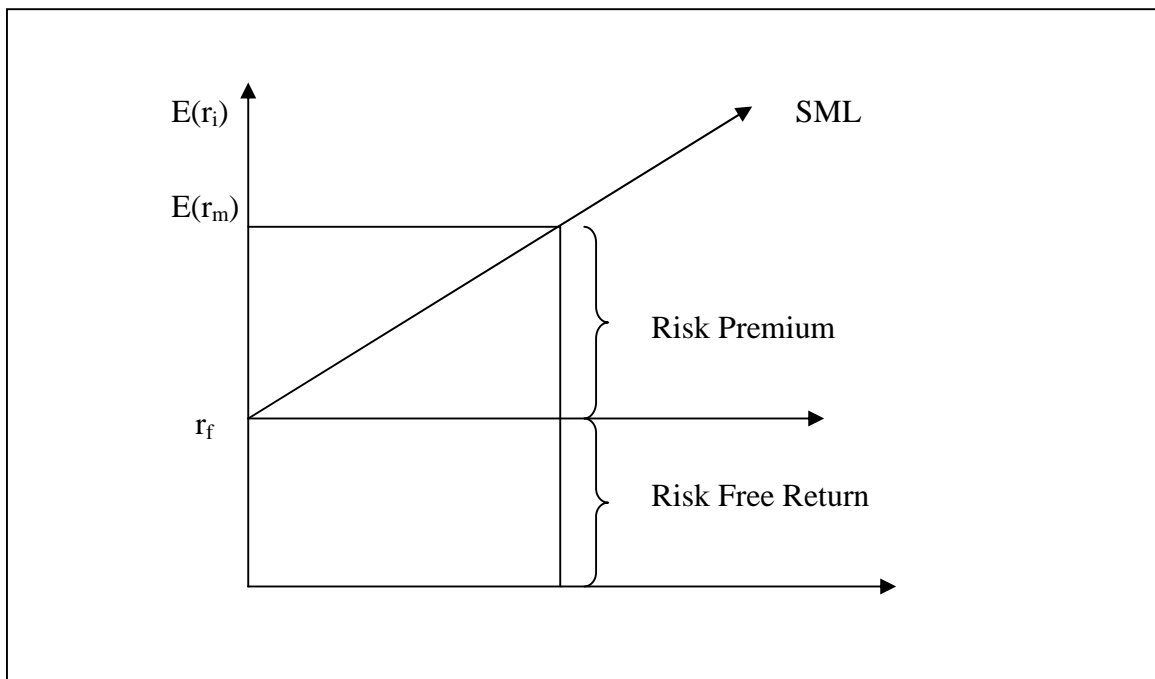$E(r_j) = r_f + [E(r_m) - r_f] \beta$

Where,

$E(r_j)$ = Expected return on security j.

r_f = Risk free rate.

$E(r_m)$ = The expected market return.

β = Assets beta

Figure 2.1

Security Market Line

Source: Francis, 1991: 627

"In market equilibrium the required rate of return on stock equals its expected return. That is all stocks will be on the security market line, what happens when this is not so? The primary concern of portfolio management is to identify the overpriced and under priced of security. Overpriced and under priced securities are identified either comparison of their value with market price or compassion of required rate of return and expected return.

Figure 2.2

Under Price and Over-Priced Stock during Temporary Market Disequilibrium
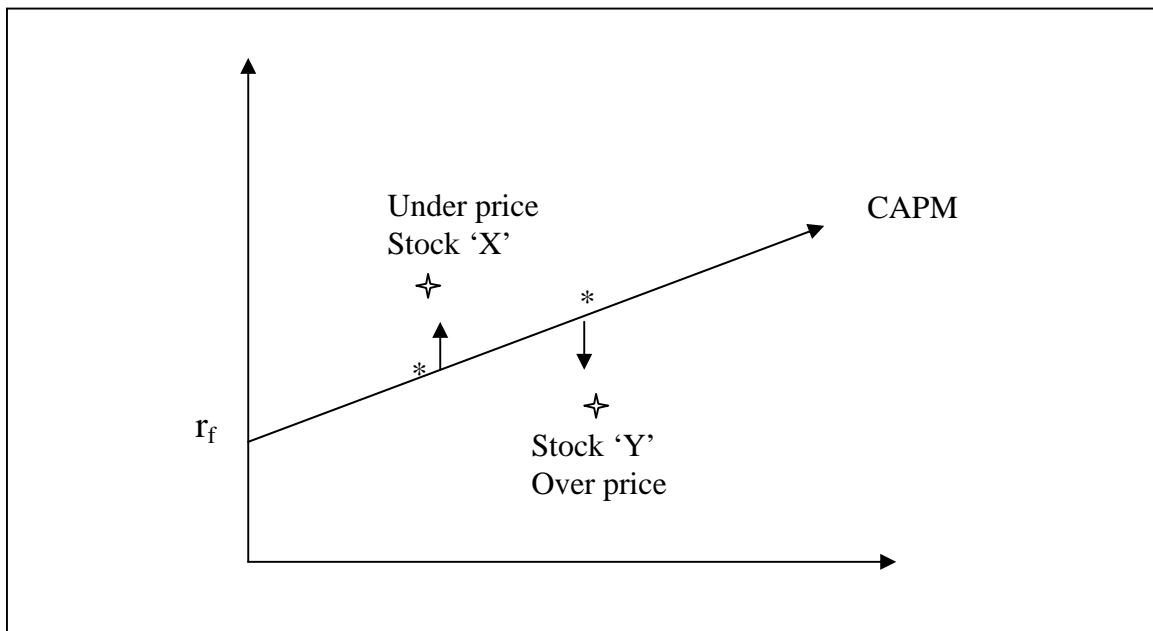
*   = Required return   ✦ = Expected return

Source: Francis, 1991: 628

As a result, stock 'X' is expected to provide a rate of return grater than the required, base on its systematic risk. Stock 'Y' is expected to provide a lower return than required to compensate for its systematic risk. Investors seeing the opportunity for superior returns by investing in stock X should rush to buy it. In the case of stock 'Y', investors holding this stock would sell it, recognizing than they could obtain a higher return for the same amount of systematic risk with other stocks" (Francis, 1991:654-655).

The CAPM is based on the efficient market hypothesis and provides a basis to measure the systematic risk in terms of covariance of its return with the market return.

2.8 Trade-off between Risk and Return

Risk is complicated subject and needs to be properly analyzed. The relationship between risk and return is described by investor's perception about risk and their demand for compensation. No investor will like to invest in risky assets unless he is assured of adequate compensation for the assumption of risk. Therefore, it is the investors required risk premiums that establish a link between risk and return. In a market dominated by rational investor, higher risk will command by rational premiums and the trade-off between the two assumes a linear relationship between risk and risk premium.

） Utility Functions and Investors Choice

The best mix of expected return and standard deviation for a security portfolio depends on the investors' utility function. If you are a risk adverse investor who associates risk with divergence from expected value of return, your utility function might be depicted in the following figure. The expected return is plotted on the vertical axis, while the standard deviation is along the horizontal. The curves are known as indifference curves; the investor is indifferent between any combination of expected return and standard deviation on a particular curve. In other words, a curve is defined by those combinations of expected return and standard deviation that results in a fixed level of expected utility.

Figure 2.3

Hypothetical Indifference Curves

E(r)

Increasing Utility

0

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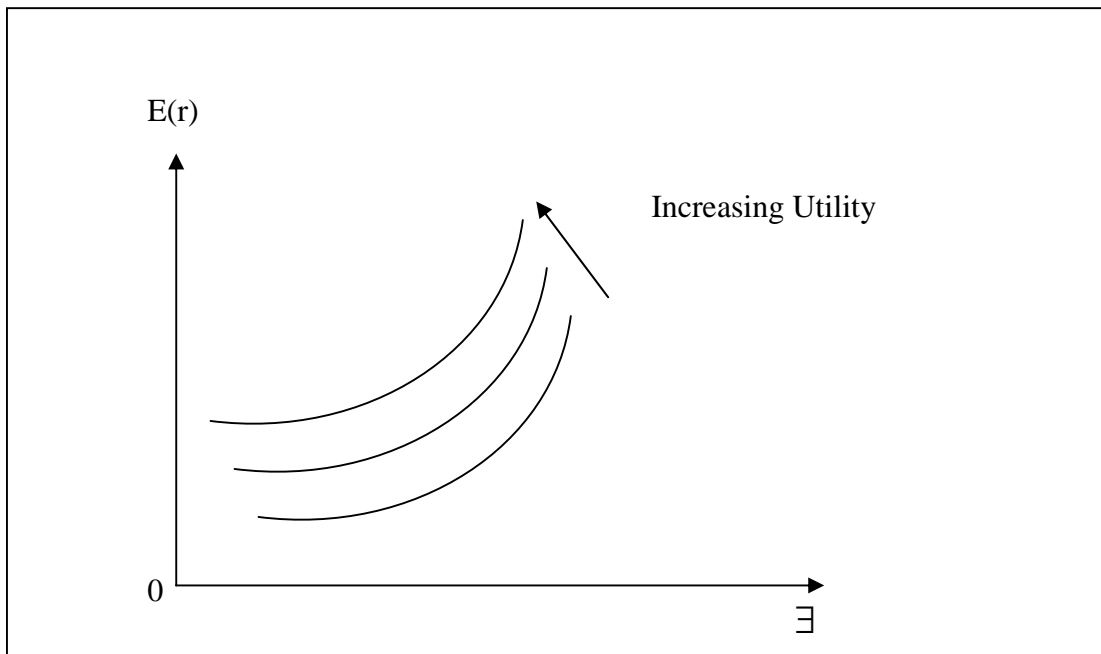
(Source: James C. Van Horne, 2000: 59)

The greater the slope of indifference curves, the more adverse the investor is to risk. As we move to the Figure 2.1, each successive curve represents a higher level of expected utility. It is important to note that the exact shape of the indifference curve will not be the same for different investors. While the curves for all risk-adverse investors will be upward sloping, a variety of shapes are possible, depending on the risk preference of the individual. As an investor, you want to hold that portfolio of securities that places you on the highest indifference curve.

Investors are risk adverse. As result, high-risk assets must offer investors high returns to induce them to make the riskier investment.

Figure 2.4

Positive Trade-off between Risk and Return
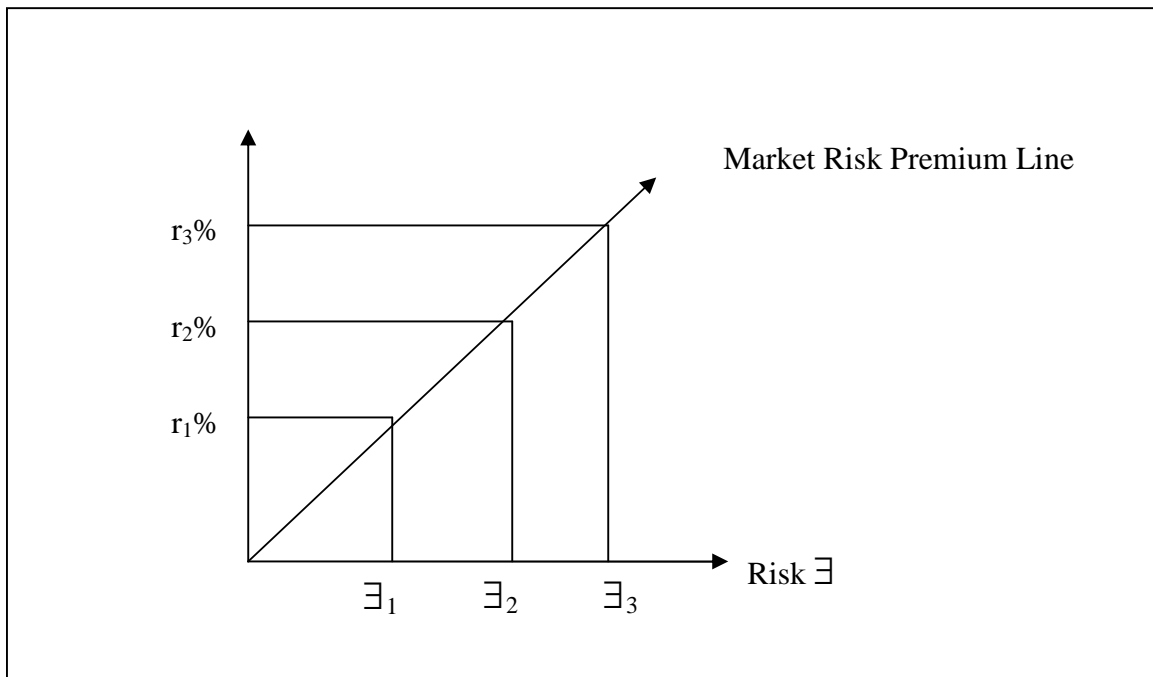
The Figure 2.2 represents a higher risk premium. For taking risk $\exists_1$, the expected return is r_1 when an investor assumed risk $\exists_2$, the return must be r_2 increasing the return (risk premium) by r_2-r_1 for assuming more risk: $\exists_2$-$\exists_1$. The assumption of linear relationship states that the risk premium must increase or decrease in proportion to a change in level of risk. It also indicates- higher the risk, higher the return and lower the risk, lower the return.

2.9   Risk: Systematic Vs. Unsystematic Risk

⏐   Systematic Risk

Systematic risk is the variability of a security's return with that of the overall stock market. It is also called avoidable risk. It is measured by beta. The beta of a stock is the slope of the characteristic line between returns for the stock and those for the market. Beta depicts the sensitivity of the security's excess returns to that of the market portfolio. If the slope is 1, it means that excess returns for the stock vary proportionately with excess returns for the market portfolio. In other words, the stock has the same

unavoidable or systematic risk as the market as a whole. A slope steeper than 1 means that the stock's excess return varies more than proportionately with the excess return of the market portfolio. Put another way, it has more systematic risk than the market as whole. This type of stock is often called an "aggressive" stock NA slope less than 1 means that the stock has less unavoidable or systematic risk than does the market as a whole. This type of stock is often called a "defensive" stock (Weston and Copeland, 1992: 85).

Change in the economic, political and sociological environment that affects securities markets is sources of systematic risk. Systematic variability of return is found in nearly all securities to varying degrees because most securities tend to move together in a systematic manner (Francis, 1986: 265).

∫ **Unsystematic Risk**

It is the amount of a stock's variance unexplained by overall market movements. It can be diversified away. It derives from the variability of the stock's excess return not associated with movement in the excess return of the market as a whole.

Figure 2.5

Risk and Diversification

24
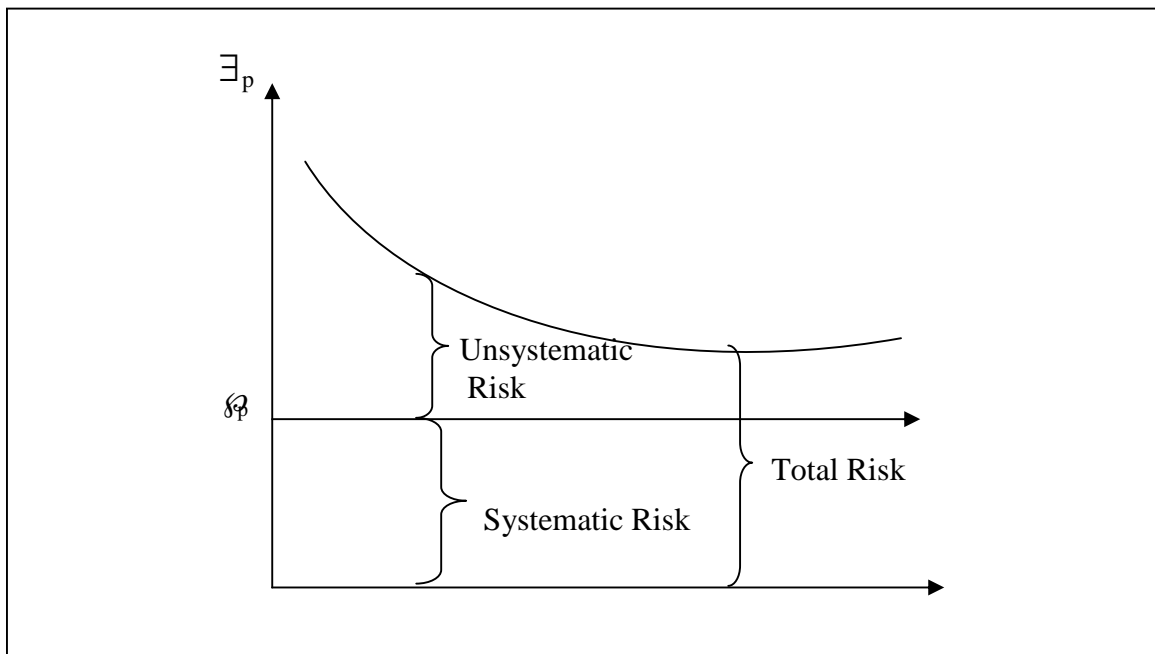
Events such as labor strikes, management errors, inventions, advertising campaigns, shifts in consumer taste, and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic change affect one firm, or at most a few firms, they must forecast separately for each firm and for each individual incident. Unsystematic security price movements are statistically independent from each other, and so they may be averaged to zero when different assets are combined to form a diversified portfolio. Therefore, unsystematic risk is also called diversifiable risk (Weston and Copeland, 1992).

1.1.2 2.10 Reviews of Studies

In the topic of finance very few independent studies can be found. However, the available independent studies which are related to the Nepalese stock market and about shareholders democracy, views expressed by different person in their articles regarding risk and return of common stock of commercial banks are presented or reviewed here in the topic.

Pradhan and Balampaki (2004), entitled "*Fundamentals of Stock Returns in Nepal*", is based on pooled cross sectional data of 40 listed companies in NEPSE Ltd and traded in the stock market. The study examines if dividend yield, capital gain yield and total yield are related to earning yield, book to market ratio and cash flow yield. Pradhan and Balampaki have summarized the following results.

] Earnings yield and cash flow yield have significant positive impact on dividend yield, and an insignificant impact on book to market value, whereas, size has negative impact on dividend yield. In the case of earnings yield and cash flow yield, cash flow yield has been found to be more informative than earnings yield.

] Capital gain yield is positive influenced by earnings yield and size, whereas, the same is negatively influenced by book to market value and cash flow yield. Book to market value has been found to be statistically strong in predicting capital gain yield.

⟩ Similarly, total yield is positively determined by earnings yield and size, where as, the same is negatively determined by book to market value has been found to be more informative than other variables.

⟩ The positive relationship exists among earnings yield, book to market value and cash flow yield. However, the size is negatively related to these three variables."

Ojha (2000), entitled *"Financial Performance and Common Stock Pricing"* concluded that: "An investment in common stock of a corporate from neither ensures annual return nor ensure the return of principle. Therefore, investment in common stock is very sensitive on the ground of the risk. Dividend to common stockholders is paid only of the firm marker on operating profit after tax and performance dividend. The company can return the principal in case of its liquidation only to extent of the residual assets after satisfying to all of its creditors and preferential shareholders. Besides this, investor have to sacrifice the return on their investment in common stock, which could be earned investing fund elsewhere in the next best opportunity.

The Study focused on the financial performance where financial activities involve decision regarding

⟩ Forecasting and planning of financial requirement.

⟩ Investment decision

⟩ Financial decision"

Further, Ojha added that the stock price in Nepal is determined more by other factors rather than the financial performance of the concerned company.

Pokhrel (1999) in his study entitled *"Stock market doing petty"* reviewed that the investment made in the shares of Himalayan Bank Ltd. in October last year, before Dashing has fetched twice as much in return now. If invested the some capital in the shares of Bank of Kathmandu Ltd. the returns would have been three times as much. If the investment were on the shares of Nepal Ltd or Blotters Nepal Teri, the capital appreciation would be more attractive than that. This is how a stock investor shared his

feeling with his friends, who has deposited his saving into an attractive scheme of a finance company that would get him 14% interest per annum''

Pokhrel tried to investigate about "was it better to invest in common stocks or not" by analyzing the data from October 1998 to 1999. And he found that the shares of individual company showed very good performance even the market price of nearly dead NCM mutual fund has been doubled in the year. NEPSE index show upward friend for all shares in this period.

Pokhrel gave following reasons behind the appreciation of shares price.
-) Reasonably, same companies have rewarded the shareholders over time.
-) Reduction on interest rate of money market diverted savings towards stock investment.
-) Financial institutions and co- operatives have provided loan to the stock investors their share as collaterals.

Ghimire (2001) in his study on the *"Nepali Share Market an investor Prospects"*, he concluded that Nepalese share prices are decreasing because of many more unbalanced factors. He has given such a lovely and realistic logic about our market. According to Ghimire "Currently share prices are on the decline". On March 3rd 1999 Nepse index was 178.81(base Feb. 1994=100), it was the highest on December 2000 at 545.25 and then within five months, on May 17, 2001, it plunged to 334.29.

The major reason behind the movement in the index is the domination of banking sector scripts in Nepal stock exchange's transactions. The price changes in bank shares have mostly no justification. When they increased the companies, these mismanagement practices cannot help the growth of a share market.

The broker organizations are very private, and run a one –man show. Most of them do not have real education and knowledge about the market. They do not have analysts or advisors to make suggestion to the investors. Their primary motto is to make transactions

and earn commission. They have not paid a single rupee from the earning they have made from this market for its promotion. They have not even spent on their basic office automation and systematic transaction recording. One of the reasons for such aloofness is the security provided by NEPSE and Board hakims, denying other qualified institutions a free entry into the market.

The public has invested recklessly. They just believe what one broker or the investor says about scrip. They must study (be informed) about the company before making the investment. One of the prime motives for the investment is to earn return on it. Capital market is a long – term concept. The investment on secure and good company does yield good returns in the long run.

Finally, he concluded that general investors should be alert and aware to these situations. They must receive the financial information before they make investment and act rationally (Ghimire, 2001:41-45)

Bowman (1979). In his study about "*The theoretical relationship between Systematic Risk and Financial Variable*" where his prime objective of his study was to examine the relationship between risk and financial variables. He says Systematic risk of livered firm is equals to the systematic risk of the same firm without leverage. There is no direct relationship between earning variability and market risk. Systematic risk is directly related to the accounting beta. There is no theoretical basis for relationship of dividend payout and beta. There is not only theoretical relationship between dividends and systematic risk but also size and growth of the firm and systematic risk.

This study shows that there is a theoretical relationship between systematic risk and firms accounting beta and systematic function are not a function of earning variability, dividends policies and size and growth of firm."

Mitchell and Pulvion (2001) in their study on *"Characteristics of Risk and return in Risk Arbitrage"*, their work was to determine whether the returns to risk arbitrage reflect

market inefficiencies or rewards for bearing rare-event risk over the 1963 to 1986 time period.

"Using a comprehensive sample of cash and stock-for-stock mergers, we examine returns generated from risk arbitrage. For constraints merger an investment in any merger cannot exceed 10 percent of total capital, sizes are limited by the liquidity of the under lying securities. The index fund must have an adequate amount of cash reserves to undertake the investment. In most market environments, risk arbitrage returns are uncorrelated with market returns however, during market downturns, the correlation between market returns and risk arbitrage returns increases dramatically. From this study suggest that risk arbitrage returns are similar to those obtained from writing uncovered index put options. Risk arbitrage may be better evaluated using a contingent claims analysis rather than a liner asset pricing model such as CAPM. However, this analysis shows that when measuring excess returns, the error associated with CAPM is significant only when the nonlinearity in returns is severe. This tends to be the case in time periods when cash, rather than stocks, is the predominant from merger consideration. Although linear assets pricing models mark the true risk in risk arbitrage, they do not result in large errors when measuring excess returns".

Martin & Klemkosky (1976), on their study on "*The Effect of Homogeneous Stock Grouping on Portfolio Risk*" was aimed to assess directly the impact of "Group" effect on portfolio risk. A significant extra market co-variation was observe in common stock returns which could be attribute to the stock's membership in a specific (growth, cyclical, stable, or oil) group. These "Group effects" violate the zero-covariance assumption of the single-index market model. However, two reasons are offered to temper the practical significance of these group effects. First, the proportion of portfolio risk attributable to group effects varied from group to group and, with the exception of the oil group, was 15% or less. Second, the significance of group factors in portfolio risk was found to be very sensitive to inter-group diversification even in a sample of stocks consisting of four reasonably homogeneous gr8uyups. These observations do not absolve the single-index market model of the problem of group effects; however, the practical significance of

these group effects hinges importantly on the fact that portfolios are selected from a single "Group" of stocks and upon the strength of the extra-market group effect for that group.

Above studies suggest that security return is sensitive to more than movements in a market index. And the model which uses other factor then market index to measure risk and return is called a factor model or multiple factor models. Multiple-factor models are potentially more useful than the market model in estimation of expected returns, variances and co-variances for securities. In fact, Shape claims that, all investors, kin practice, employ factor models whether they do so explicitly or implicitly (Sharpe, et. al., 1999:276).

Byrne and Lee (2000), study on "*The impact or market risk on property portfolio reduction*" suggests that to investigate the extent to which risk reduction can be achieved within the UK property market in high and low Beta portfolios. This issue is examined by making simulations of property portfolios of increasing size using the largest sample (392) of actual property returns that is currently available, over the period 1981 to 1996. In particular it is shown that the achievable level of risk reduction is negatively related to the level of market risk of the individual assets. Thus portfolios based on individually high market risk assets require larger numbers of properties to achieve the same level of risk reduction than low Beta risk portfolios. In addition it is shown that the number of properties needed to ``track' 'the market is prohibitively large and unlikely to be achievable for all but the very largest UK property funds. The practical implications of this are that UK property fund performance is likely to be mainly driven by stock selection, even for the largest funds. For those fund managers who wish to track the market the costs in terms of portfolio value seem prohibitively expensive. On this basis, no UK property fund, even the largest, would follow a passive investment policy.

This study has investigated the relationship between Beta (market) risks on the residual variation in individual assets using data for 392 "assets" across the UK. It confirms earlier work on the general effects of diversification, in real estate in particular. It also

provides additional insights into the effect that systematic risk has on the numbers and characteristics of properties that need to be held to reach acceptable tracking error levels for the portfolio.

The regression results reported in Table IV show a significant and positive relationship between individual assets and residual variation, supporting the results of Miller and Scholes (1972) and Klemkosky and Matin (1975) in the equity market. The practical implications of this are that high Beta risk portfolios are likely or risk reduction. The simulation results in Table V confirm this. Indeed some cases the high Beta portfolio can never achieve a reduction in residual risk to below that of the Low Beta Portfolio. The results at first sight imply that find mangers should concentrate their holdings in low Beta strategy.

In the case of typical UK property funds it is likely that their performance will be determined by the level of unsystematic risk (residual variance) in their portfolios, that is by stock selection, rather than any policy considerations as to sector allocations i.e. the portfolio Beta. The results in Table V show that small portfolios, even low Beta portfolios have, on average, extremely high levels of residual variation. Even the performance of the largest funds is likely to be driven as much by stock selection as sector policy decisions on sector/regional allocation and hence portfolio Beta will become as important as the fund size increases. In addition the simulation results in Table VT. VII and VIII show that it is likely to be very difficult for the largest funds to track the market with any confidence since even for funds of £5bn and above the TEV is still high. Consequently fund managers, even the managers of the largest funds, cannot follow a passive investment portfolio strategy and need to monitor the characteristics of their individual property holdings constantly in order to correct for any deviation from the preferred or desired Beta risk of the portfolio as a consequence of changes in the Betas of the individual assets.

The number of properties needed and the cost is far in excess of the current average property portfolio size in the UK. The practical implication of this is that UK property

fund performance is likely to be mainly driven by stock selection. Even for the largest funds who wish to track the market the costs in terms of portfolio value seem prohibitively expensive. No UK property fund, even the largest, can follow a passive investment policy.

Brands and Gallagher (2005) a paper titled "*Portfolio Selection, diversification and fund or funds: a note*". This paper examines the performance and diversification properties of active Australian equity fund-of-funds (FoF). Simulation analysis is employed to examine portfolio performance as function of the number of funds in the portfolio. The present paper finds that as the number of funds in a FoF portfolio increases. Performance improves in a mean-variance setting; however, measures of skew ness and kurtosis behave less favorably given an investor's preference, for die higher movements of the return distribution. The majority of diversification benefits are realized when a portfolio of approximately 6 active equity funds.

The present study examines the performance and diversification properties of FoF portfolios constructed using a sample of actively managed institutional Australian equity funds. The results show that, on average increasing the number of funds in an FoF portfolio leads to reductions in volatility (time-series return and terminal wealth) while the mean time-series return remains constant. When risk-adjusted performance is examined using the Sharpe Ratio, the results show an improvement in risk-adjusted return as *n* increases. FoF portfolios provide investors with improvements in diversification, although measures of the return distribution. The results presented in this study suggest that although variance declines, FoF returns become more investigation into the downside risk properties of these portfolios is warranted and is the subject of future research.

The majority of diversification benefits are realized when a portfolio of approximately 6 active equity funds is included. However, the number of funds utilized by investors would also be influenced by the size of assets and the additional administrative, search and review costs when engaging multiple investment managers. Furthermore, portfolios

with large numbers of funds may achieve and FoF portfolio that mimics the performance of the underlying index, while also incurring active management fees. Future research is currently underway to examine these issues.

Bramante (2006) published an article entitled "*Portfolio Optimization under changing risk via time-varying beta*" where the purpose of the paper was to aim at modeling time varying betas via a state space representation in order Id decompose the marginal contribution to risk of downside and upside deviations of asset returns in portfolio optimization.

This study shows that the application of an asset allocation model which splits beta in two parts, one related to bear and the other to Bull markets, and reconciles them with a non negative risk aversion parameter may produce interesting financial results if compared with typical passive portfolios.

The proposed model was tested by conducting extensive empirical evaluations on set of 170 securities belonging to eight different markets. The results show that active strategies can be developed and can lead to better performances.

The study suggests that use of semi-variance cam improve expected returns and reduce volatility. The research has identified several areas for future research, one of which is lower forecasting accuracy of semi-correlations in mixed markets. It is of interest to comparer our results using different data sets.

Santos and Haimes (2002) in their study on "*Applying the Partitioned Multi Objectives Risk Method (PMRM) to Portfolio Selection*" where they took case study of 10- stock and demonstrated the PMRM-based alternative formulation to the classic Markowitz mean-variance optimization. Results indicate that optimizing the conditional expected value or f_4 at the lower tail of the portfolio distribution of returns is compatible with optimizing the variance. Nevertheless, the article has shown via a filtering algorithm that it is possible to place more emphasis on extreme losses by adjusting the choice of lower-tail probability.

The article tests the performance of the mean-f_4 portfolios against the mean-variance portfolios via the actual stock prices for the week post-September 11, 2001 terrorist attacks. The choice of that week (September 11-21, 2001) is made on the basis of the "aberrant" drop in market performance attributed to the four-day suspension of NYSE trading. Although the Markowitz (i.e., mean-variance) portfolios performed best on the NYSE reopening day (September 17), this is only transient. Referring analysis, we can see that the mean-f_4 portfolios with partitioning with partitioning of 0.01 exhibited the best overall performance for the whole week.

Although the analysis of the mean-f_4 and mean-variance portfolios is specific to the market crash following the September 11, 2001 terrorist attacks, we have provided concrete evidence that our proposed PMRM-based portfolio optimization model can better respond to extreme events. Thus, it is worthy to further explore and test its potential for wide-scale use by individual investors and financial institutions alike. Enhance to our current model underway. These include:

i. Improving the formulation to embrace the dynamics of the portfolio selection, similar to the dynamics Markowitz portfolio selection.

ii. Extending the use of the portfolio selection model to encompass other financial instruments such as currencies, derivatives etc.

iii. Integrating time-series analysis methods in the quantification of f_4, analogous to the generalized autoregressive conditional heteroskedasticity (GARCH) used to estimate volatility; and

iv. Exploring the possible linkage between portfolio diversification strategies and information on industry interdependencies reflected in the economic input-output tables.

Shrestha (1995) on *"Portfolio Behavior of Commercial Banks in Nepal"* where he took five commercial banks viz. Nepal Bank ltd., Rastriya Banijya Bank, Nabil Bank, Nepal Indosuez Bank and Nepal Grindlays Bank ltd. Data are collected from various sources from 1975 to 1990 A.D. The objective of the research was to evaluate the financial performance of the commercial banks, to analyze the investment pattern of commercial

banks on securities and loans, to observe the relationship of bank portfolio variables with national income and other fiscal variables. Among these objectives financial performances of the commercial banks and observe bank portfolio variables is somehow related to this research.

From the analysis of commercial banks, the researcher made following conclusions:

- The general trend of commercial banks asset holding is growing.
- Spread of foreign banks is relatively higher than that of Nepalese banks.
- The relationship of banks portfolio variables is found to be best explained by log linear equations.
- Borrowing of commercial banks from the central bank has been found to be positively affected by the cash reserve requirement, bank rate and Treasury bill rate.
- Following suggestions have been point out from the research:
- The evaluation of the performance of the commercial banks can be made only with reference to the government policy and regulation framework of the central bank.
- Some of the problems of resource mobilization and resource deployment by the commercial banks in Nepal can be directly traced to the fiscal policy of the government and heavy regulatory procedures of the central bank.

The joint venture between foreign banks and Nepalese banks should be encouraged in Nepal, especially in merchant and investment banking, leasing and other new creative financial services. The entry of foreign joint venture banks hopefully will bring healthy competition in the environment that will improve work and service efficiency of Nepalese banks too.

Bhatta (1995) on his study on "*Assessment of the performance of listed companies in Nepal*" where he used a sample size of 10 companies in between 1990 to 1995. One of the major objectives of this study is to analyze the performance of listed companies in terms of risk and return and internal rate of return, systematic risk and diversification of risk through portfolio context.

Following are the findings of this study:

) A highly significant positive correlation ship has been addressed between risk and return character of the company. Investors expect higher return form those stock which associates higher risk. Nepalese capital market is not efficient one. So the stock price doesn't contain all the information relating to market and company itself. Neither investor's analyze the overall relevant information of the stocks or the member of stock exchange try to disseminate the information. So the market return and risk both may not shows high priced stocks such ad BBC, NIB, NIC has higher risk than others. These companies thus require higher returns to satisfy the investors for their risk premium.

) Investors in Nepal have not yet practiced to invest in portfolio of securities. An analysis of the two securities portfolio shows that the risk can e totally minimizes if the correlation is perfectly negative. In this situation, the risk can totally be diversified, but when there is perfectly positive correlation ship between the returns of the two securities, the risk is not diversifiable. The analysis shows some has negative correlation and some has positive on. Negative correlation between securities returns is preferred for diversification of risk.

The following recommendations are made by the researcher:

) Developed institutions to consult investor for risk minimization
) Establish an information channel in Nepal Stock Exchange and
) Make proper amendment on trading rules

Sapkota (2001) on *"Risk and Return Analysis in common stock Investment"* where the main objective to analyze the risk and return of the common stock in Nepalese stock market. This study was focused on the common stock of commercial banks. Sapkota found that the banking sector is the biggest one in terms of market capitalization and turnovers. Expected return on the common stock of Nepal Bank Ltd is maximum (i.e. 66.99%) and common stock of Nepal SBI Bank Ltd. is found minimum. Common stock

of NBL is the most risky and common stock of Nepal SBI is the most risky and common stock of Nepal SBI is least risky. Sapkota has concluded that common stock of Nepal Bangladesh Bank is the best one for investment. On the other hand, portfolio return between the common stock of Nepal Grindlays Bank and Nepal SBL is 26.66 percent but portfolio standard deviation is only 14.97 percent, which is less than single stocks standard deviation. Sapkota has recommended reducing the risk; investors should diversity this fund proper construction of portfolio never creates any considerable less. Private investors should try and work out their attitude towards the risk of various investment and HMG needs to manage the trading of government securities in NEPSE."

Upadhaya (2001) study entitled *"Risk and Return on common stock investment of commercial Bank in Nepal"* With the objectives to evaluate the common stock of the listed commercial banks in terms of risk and return and to perform sector wise comparison on the basis of market capitalization from study. Upadhaya found the common stock of Nepal Grindlays Bank (Now Standard Chartered Bank) bears the maximum rate of return (127.84%) and Nepal SBI Bank has minimum (7.77%) rate of return. In the context of industries or sector, expected return of other sector is highest and manufacturing and production sector is found least performer.

This study had analyzed that "High risk high return" because in this study it has found common stock of NGBL is most risky and Nepal SBI is least risky. Common stock of Everest Bank is most volatile, common stock of Nepal Indosuez Bank is the least volatile and common stocks of all the commercial banks are overpriced. Upadhya has recommended for the portfolio construction, to select the stock that have higher return with not correlated or negatively correlated stocks otherwise stock can not be diversity risk properly."

Similarly, **Shakya** (2001) has conducted master's thesis in *"Risk and Return Analysis on Common Stock Investment"* with the specific objectives of study are to asses the general investors perception, attitude and awareness towards risk associated with return, to calculate risk and return of selected securities and there portfolio and to analyzed the

volatility of common stocks and other valuates. The Researcher's result reveals that 58.3 percent investor consider return, and 33.3 percent investor consider risk before investing: To invest in common stock 50 percent prefer primary market, 21.7 percent prefer secondary and 28.3 percent of total investor prefer bath market. 71.7 percent of total investors give first preference to the banking sector. 46.7 percent investors have knowledge about correlation coefficient, 48.3 percent of total investors prefer C.V and 36.7 percent prefer S.D. for measuring risk. Shakya recommended that, if negatively correlated assets are combined in portfolio, and then risk can be minimized to some extent only negatively correlated assets which are favorable with view paint of diversification.

Pandey (2000) on his research paper entitled "Risk and Return analysis of common stock investment" where he included 7 listed insurance companies data from 2049/56 from Nepal whose objectives are as follows: -

⟩ To understanding and identify problems faced by an individual investor and insurance company

⟩ To calculate the risk and return of the common stocks and their portfolio.

⟩ To analyze the volatility of different stock of insurance companies and other variables that should be considered while deciding investment in stocks.

Where he concluded that: -

⟩ Although overall objective of his study is about investment in common stock, it is mainly concentrated on the risk and return trade off economically Nepal is backward; it is economic performance is not satisfactory. Generally Public are rest understood about the stock market and have fake conceptual thoughts about its risk. Poor education and lack of adequate Source of information are the major Constraints for the development of stock market of Nepal

⟩ Based on market capitalization, size of NIC is the biggest one. Expected return on the common stock of NLGI is maximum (i.e. 65.39%). This high rate of return is due to unrealistic annual return in 2050\51. Expected return on common stock of HGI and EIC is lowest with negative value. In overall industrial sector, expected

return of finance and industrial sector is highest. . Overall, market expected return is 50%. Annualized return is unexpectedly high in FY 2050\51 and then declines in the preceding Years. This is all about return.

⟩ When risk and return compared to different industries, finance and insurance is best as per highest expected return with higher degree of risk whereas trading industry has minimum return and risk.

⟩ In Nepal, however, in terms of the volume of transaction the situation of the capital market, according to NEPSE sources has remained quite optimistic, in aggregate, commercial banks occupy large percentage of traded amount whereas insurance sector is being low responsive to wards its trading Though it is difficult to estimate the exact volume of business potential in insurance, one can have a rough idea by looking at the insurance depth compared to the potentials in the business, the figure is too low, which is also agreed by both the insurance board and insurance companies they accuse government for not doing enough to realize the potentials. Premium collection per capital of population is quite less not even a dollar.

Finally Pandey recommended:

⟩ One of the study most important things to consider when choosing an investment strategy is the balance between risk and return that you are comfortable with.

⟩ Having all of your egg in one basket can be a risky proposition. It is better to invest in mutual funds; however having all investment in on type of mutual fund still exposes investors to the risk of that asset class. The best way to diversity   against market risk is to hold different asset classes in your portfolio that is have differently (not highly correlated). The institution is that an asset with a low correlation to the tangency portfolio is desirable.

⟩ Stock market investment is a risky job. To win the stock market, investors should always be clear to his own –strengths, weaknesses, needs desires risk taking capabilities and how to react on different and ever changing market conditions This is one game where self Knowledge, superior forecasting ability, sound understanding on the information of stock market can give a winning edge to the investor.

⟩ In most countries, an organization publishes updated information periodically informing the public about its economic condition in Nepal, it is lacking.

⟩ There should be an institution to analyze the information provided by the companies' sand to process them to make them understandable by general investors.

⟩ There is complete absence of sensitive index of stock prices and government is not much concerned to conduct a survey of investors in Nepal.

⟩ Whatever be the drawbacks, stock market investment is important to improve the lives of people and to push the economic state of the country. So, we along with government, regulating authority, the stock exchange listed companies etc should understand their perspective roles and should give proper attention to play their roles with sincerity

Kansakar (2003) has conducted the study in the title of *"Risk & Return Analysis of Manufacturing Industries in Nepal"*. He has taken 5-listed manufacturing company's data from FY 1996/97 to 2001/02 where his main objective was to assess the risk associated with return or common stock investment with as special reference to manufacturing industries in Nepal.

Kansakar abstained following finding from the study in term of risk & return is as follows:

⟩ Return is an income received by the investor for bearing a risk within the stock. Expected return on the common stock of Nepal Lever Limited has the highest with 0.5214 i.e.52.14%. Similarly, expected rate of return of the common stock of Bottlers Nepal (Terai) has second highest expected rate of return with 0.5161 i.e.51.61%. Other common stock having expected rate of return is common stock and of Bottlers Nepal (Balaju) and Nepal Lube Oil Limited with 0.2008 i.e. 20.80% and 0.1078 i.e. 1078% respectively. But Arun Vanaspati Udhyog has negative expected rate of return because market price of the common stock of Arun Vanaspati Udhyog is downward from fiscal Year 1997/97 to 2001/02 gradually. In the context of sector wise comparison, Banking sector has the highest expected rate

of return with 0.1323 i.e. 13.23% and then after Finance and Manufacturing and Processing sector has expected rate of return with 0.12.90 i.e. 12.90% and 0.0698 i.e. 6.98% respectively. Hotel, Trading and Others sectors expected rate of return are in negative value.

⟩ Variability in returns is called risk is called risk is measure in terms of standard deviation of returns. From this point of view, Nepal Lever Limited is the most risky assets with 0.9983 and Bottlers Nepal (Balaju) is the least risky assets with 0.2857. Actual least risky asset is Arun Vanaspati Udhyog with 0.0702, but it has negative expected return. So, Bottlers Nepal (Balaju) is taken as least risky asset. Due to highest expected rate of return and standard deviation, Nepal Lever Limited proverb "High risk –High return". A comparison to expected return, common stock of Bottlers Nepal (Balaju) has low standard deviation too. CV is also known as relative tools   for measurement of risk in terms of coefficient of variation; Bottlers Nepal (Balaju) has lowest CV with 1.4226. Hence, having low CV, common stock of Bottlers Nepal (Balaju) is the best one for investment from both points i.e. risk and return. In the context of inter sector comparison, Banking sector has the highest expected rate of return with 0.1323 i.e. 13.23% and then after Finance and Manufacturing and Processing sector have the expected rate of return with 0.1290 i.e. 12.90% and 0.0698 and i.e. 6.98% respectively. Expected rate of return of remaining sector have negative value. Others sector has the highest standard deviation with 0.4927 and trading sector has the lowest standard deviation with 0.1000.Among expected rate of return having positive value, Banking sector has the highest standard deviation with 0.4388 and Manufacturing & Processing sector has the lowest standard deviation with 0.2537. In terms of CV, finance sector has the lowest CV with 1.9674, Manufacturing and Processing sector has 3.6346 and the remaining sectors have negative value.

⟩ The higher risk of common stock may have greater possible return.

⟩ The Hypothesis Testing–I is based on the test of significance difference of mean of Manufacturing and Processing Industries' Return and Market Return. It has been executed to test whether overall return on common stocks of Manufacturing and processing industries is equal to the market or not. Hence, over the study period, it

was found that the null Hypothesis has been accepted i.e. overall returns on common stock of Manufacturing and processing industries is equal to the overall market.

) Standard deviation is a tool for measuring an unsystematic risk, which can be eliminated. But systematic risk is that which cannot be eliminated, is defined by market and measured by beta coefficient ( ). Beta shows the sensitivity or volatility of the stock with the market. Higher the beta greater the volatility. In our research, BNT's common stock is the most volatile with beta =1.80139 i.e. highest beta coefficient and common stock of BNL is the least volatile with beta =0.4121 i.e. Lowest beat coefficient. Others have in between 1.8039 and 0.4121except common stock of AVU has negative beta coefficient with –0.0769.

) With the help of comparison between RRR and ERR, it can be identify whether the stock is over-priced or under –priced .If ERR is greater than RRR, a stock is known as under-priced and investor tends to buy this stock .If RRR is greater than ERR, a stock is known as over –priced and investor tends to sell this type of stock .In market equilibrium, ERR and RRR are equal. The study shows that the all the stocks of manufacturing industries are under-priced except AVU is over-priced.

Kansakar recommended following recommendation:

) A common stock investment is a risky job. It does not guarantee return and principal both. Hence, it is undoubtedly risky in the short term and investor needs to be prepared for it. Investors should be acquainted with the associated risk and work out their attitude towards the riskiness of various investment strategies.

) The tools used in the study could not be appropriate for our economy i.e. .due to differences in prevailing condition with the western market. Alternatively, it may not exactly perform, as it should be in condition like ours. Various sectors could be beneficial from different point of view e. g. Coefficient of variation (C.V.) suggests that the finance sector is the best for an investment. However, banking sector may be the best, if other subjective analyses are considered .Its CV is also not so higher than Manufacturing and processing and overall market. Similarly, while analyzing

individual security, BNL is the best in terms of CV and Beta having lowest among reviewed industries.

) Investors need to diversify their wealth to reduce risk. Proper way of construction of portfolio is a dynamic job .it is changed according to change in environment of the country or market movement .For optimum portfolio, select a stock having high return with not correlated i.e. negatively correlated stocks .A correlated stock cannot diversify risk properly.

) Investment clubs are effective way to exchange investment ideas. There is no any such type of club I n Nepal. Collective investment e.g. mutual fund is worthwhile for a people with little interest in investment. Mutual fund is in emerging stage in Nepal. It allows investors to obtain reasonable diversification from limited wealth. Hence, this recommendation is given to the concerned bodies for entering the mutual fund business in the market for the well diversification of portfolio in national and global levels. Hence, sharing experience, ideas and consulting with an expert will be fruitful.

) Assessment of personal risk attitude, needs and requirements will be an added advantage before making an investment decision in stock market. Making an investment decision in stock market with the help of reliable information rather than rumor and imagination will ultimately favor the investor. Investor's investment decision should be based on financial parameters of the company.

) This is the age of digital technology. NEPSE is still following "Open cry systems" for trading while world is using a sophisticated technology in the field of stock market it needs to develop efficient and effective information channel and to provide up-to-date data.

) The corporate should provide reliable financial statements. Value of assets and liabilities should not be manipulated for under or over profitability. The decisions, taken by the corporation should be headed towards maximize the value of the firm and value per share.

) Government should amend the rules and a regulation regarding stock market frequently that ensures the protection of an individual investor's right. Such amendment is essential to make the act effectiveness with the pace of time. And

also needs to follow the implementation and supervision of rules and regulation to make sire the objectives is achieved.

) All the reviewed stock of Manufacturing and processing industries are under – valued except common stock of AVU is over –valued Investors should invest their wealth on under valued stock and sell over –valued stock.

) It will be fruitful to buy going up stock and sell going down stock. In addition, adding more good stocks will make it better and adding more bad stock will make it worst.

) A risk and return analysis is completely a new area for the country which strongly suggested that further study should be conducted on this topic and also would like to suggest including maximum number of samples. Hence, it is recommended to carry out further more researches on common stock investment to enhance growth and development of the capital market in the country.

Upadhayay (2001) on "*An Analysis of Risk and Return on Common Stock Investment*" where he mainly focused on the commercial banking industry. Upadhayay took 10 commercial banks and data from FY 1994/1995 to 1998/1999 for the study .The objective of the study were as follows:

) To evaluate common stock of listed commercial bank in terms of risk and return.

) To assess the risk compensating return of listed commercial banks and its positions in the stock exchange.

) To analyze the volatility of common stock.

) To identify the correlation between returns of commercial banks.

) To make relevant suggestions and practical ideas and materialize recommendations based on analysis of data.

Upadhayay has obtained following findings from the study in terms of risk and return.

) In general, most people see stock market investment as a black art that they know little about. Many people have unrealistically optimistic or pessimistic study enables investor to put the returns they can expect and the risks they any take into better perspective.

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) As overall economy, Nepalese stock market is in emerging state. Its development is accelerating since the political change in 1990 in effect of openness and liberalization in national economy. But, due to the lack of information and poor knowledge, Nepalese individual investors cannot analyze the securities as well as market properly.

) The return is income received on a stock investment, which is usually expressed in percentage. Expected return on the common stock of Nepal Grind lays bank is maximum (i.e. 127.84 %) which is very high rate of return. In reality this rate exists only due to the effect of realistic annual return because of the issue of bonus share and increase in share price at the same. Similarly expected return of the CS of Nepal SBI Bank Ltd. Is found minimum. Other CS having higher return is CS of NBBL and EBL with more than 59% expected return. Expected return of NABIL is also favorable with 25% expected return but not like NGBL, NBBL and EBL though. In the context of industries (or sector), expected return of "Others" sector is highest (i.e.15.5%). Manufacturing and production sector is the least performer.

) Risk is the variability of returns, which measure in terms of standard deviation of returns. In this regard CS of NGBL is most risky and CS of SBI is least risky. This proves the proverb "high risk-high return." With comparison to expected return, NBBL CS has low standard deviation. This fact shows by the coefficient of variation (C.V.); also know as relative measure of risk. C.V. is good one for investment from risk and return viewpoints. In the context of comparison of banking sector with other sector, it's standard deviation I (0.19) less than that of reading, Instance & Finance and "others" sector. Production, insurance & Finance, hotels and other's sectors and greater than that of Manufacturing & production, Hotels. C.V. is more rational basis of Investment decision and banking sector's C.V. is (6.518) less than that of Manufacturing & production and Hotels sectors.

Some recommending and suggestions according to Upadhyay are as follows:

) It is possible to conquer the stock market. But proper analysis of individual security, industry, and overall market is always needed. General Knowledge about economic political and technological trend will be advantageous. To win the market, hold

shares when the market is rising and hold safer investment when it is failing, and hold shares, which will perform better than the market.

⟩ Tools that have been considered in this study may not be appropriate in our economy giving view to the prevailing condition in western market. This may not perform exactly as it should in condition like ours. Investors can develop different kinds of tools for analyzing, for this they can consult concerned organization e.g., NEPSE people, and SEBO. Using various tools will be beneficial. E.g. Coefficient of Variation (C.V.) suggests that the 'other ' industry is the best one for investment. But banking industry may be the best, if other subjective analyses are also been considered. Its C.V. is also not so high. Similarly, while analyzing individual security, NBBL seems undoubtedly the best for investment. This does not cover the initial three –year's data, which is the major limitation of it. With considering the full times horizon of the study, CS of NGBL is the best investment opportunity for investors whose beta is also very low. Hence, it is prescribed to select the CS of NGBL or the CS of other industry for individual stock investment.

⟩ Before making an investment decision in stock market assessment of personal risk attitude, needs and requirements will always helpful. To make several discussions with stockbroker before reaching at the design on the basis or reliable information rather than rumor and imagination will ultimately favors the investor. Investors should make their investment decisions based on financial parameters of the company. They should not rush over the rumors

⟩ In this age of digital technology NEPSE is following 'open cry system' of trading it need to be modernized it needs to develop efficient and effective information channel and to provide up –to – date data.

⟩ The corporate firms should communicate the real financial statements. Value of assets and liabilities should not be manipulated to report the under or over profitability. Every decision of the corporation should be made to maximize the value of the firm and value per share.

⟩ Government needs to amend the rules and regulations regarding stock market in time to time and to make the policy that protects the individual investor right. Also need to follow up the implementation of rules and regulation and to make sure the

objective is achieved. On that regard, HMG needs to monitor and to make active all the components of stock market properly.

) As risk and return analysis is completely untouched area in context of our country, it is strongly suggested that further study should be conducted on this topics and also would like to suggest including maximum number of samples.

2.11 Summary of Literature Review

Literature review basically focuses upon the conceptual review and the review of related studies. In other words, secondary data, reports, thesis, research paper publication, journals, etc has been referred to find the current and past study and practices in relation to the trend analysis and portfolio of Nepalese stock market.

The study is basically the theoretical background of different concepts like Financial Market, Capital Market, Nepal Stock Exchange, Stock Valuation, Return, and Investment Alternatives, theories of portfolio etc.

In this regards for measuring risk of investment alternatives the study will focus on expected rate of return, range, standard deviation, systematic and unsystematic risk, coefficient of variation, beta coefficient etc. The study also focuses on portfolio risk and returns which is an important for minimizing the risk of investment. In this analysis the different portfolio are crated to get the optimum portfolio which minimizes the total risk of the investments.

The concept of portfolio management is quit new for Nepalese stock market. Since, we have very limited stocks to invest. There has been different studies regarding the portfolio management but, previous studies try to construct portfolio with in one sector but the real picture of portfolio is to invest in different sectors and minimize the risk of investment.

This study is the attempt to provide an optimum portfolio out of eight sector of Nepalese stock market.

2 CHAPTER - III

3 RESEARCH METHODOLOGY

This chapter refers to the overall research processes. It includes research design, sources of data, analytical tools, and procedures of collection and analysis of data. On the basis of historical data, using both statistical tools and financial tools, detail analysis is performed of different variables; Results are presented in simple way in order to easy to understand.

3.1 Research Design

This research is based on recent historical data of last five years. The end of fiscal year is taken as 15 July (Ashad 31) and the data range is from 16 July 2003(1 Sharwan 2060) to 15 July 2008(31 Ashad 2065). The research is mainly focused on risk and return and portfolio management of the different business sector of NEPSE. It deals with the common stocks of business sectors on the basis of available information. As the title of the study suggests, it is more analytical and empirical but less descriptive.

3.2 Data Collection Procedure

The data required for the research is collected from the secondary sources and Most of data used in the research are secondary data. During the study, informal opinion survey has also been taken with the individual investors and institutional investors and stockbrokers. Data related to the market index of stocks are taken from the annual report published by NEPSE, trading report of NEPSE, the website of Nepal Stock Exchange (i.e. www.nepalstock.com) and periodicals of NRB are used as secondary data. NEPSE periodicals, articles and previous research report etc. has also been considered.

Most of data used in the research are secondary data. Annual reports of NEPSE, trading report of NEPSE and periodicals of NRB are used as secondary data.

3.3 Sample

The population of the study is all the listed companies in NEPSE index. These are 241 companies listed in NEPSE until 2065 Chaitra 31st. They consist of 23 commercial bank,

34 development bank, and 17 insurance companies, 62 finance companies' 18 manufacturing companies, 4 hotels, 4 trading companies and 4 hydropower, 15 government bonds, 13 corporate bonds, 1 preference stock, 1 mutual fund, 43 promoter share and 2 others. This study is concentrated in business sectors of NEPSE. Excluding hydropower, government bond, mutual fund, promoter share, corporate bond and preference stock, all remaining business sectors of Nepal Stock Exchange are selected as sample to attain the objectives. They are:

1. Commercial Bank
2. Manufacturing and Processing Sector
3. Hotel Industry
4. Trading Sector
5. Insurance Sector
6. Finance Sector
7. Development Bank
8. Others Sectors

3.4 Tools for Analysis

To achieve the objectives of research, this study has used various financial and statistical tools that are necessary to find out results. The following tools shall analyze the data presented in the study. The data presented in the study shall be analyzed by the following tools.

) **Market Index of Sectors' Stock (MIS)**

There are mainly three types of MIS available in NEPSE annual report. They are high MIS, low MIS and closing MIS. Closing Index is not an average price of high and low MIS but rather it is calculated by considering the whole years MIS. For the closing MIS trading report is followed.

) **Return on Common Stock Investment (R)**

It is known as realized rate of return or single period rate of return. It is cash received plus price changes in period of stock (capital gain/loss). It is calculated in the form of

percentage. It is calculated by adding change in market price with total dividend and than dividing by market price of previous year. This is the annual realized return received on an investment and any change in market price, usually expressed in a percent of the beginning price of the investment.

$$R \ X \frac{D_t \ \Gamma \ \int P_t \ Z P_{tZl} \ A}{P_{tZl}}$$

Where,

R= Actual realized return on common stock at time t.

D_t= Cash dividend received at time t.

P_t =Price of a stock at time t.

P_{t-1} = Price of stock at time (t-1).

) Expected Return on Common Stock ($\overline{R}$)

Expected return is simply arithmetic mean of the past years return. This is an average return on common stock.

$$E \int R_j \ A X \overline{R}_j \ X \frac{R_j}{n}$$

Where,

E (R_j) = Expected rate of return on stock j.

n $\quad$ = Number of years that the return is taken.

$\phi \quad$ = Sign of summation

) Standard Deviation ($\dagger$)

Standard deviation is a statistical measure and is widely used to measure risk from holding a single asset. It is also a statistical measure of the variability of a set of observations. The standard deviation represents a large dispersion of return and is a high risk and vice versa. The symbol is called ($\exists$) sigma. It is the measure the total risk on stock investment. Standard deviation can be calculated using following formula,

If data given as time series;

$$\sigma_j = \sqrt{\frac{\sum (R_j - E(R_j))^2}{n - 1}}$$

If data is probability distribution;

$$\sigma_j = \sqrt{\sum_{t=1}^{n} (R_j - E(R_j))^2 P}$$

Where,

σ_j = Standard Deviation on of return sock j during the time period n.

P_j = Probability distribution of the observation.

R_j = Single period rate of return on stock j.

$E(R_j)$ = Expected rate of return on stock j.

n = Number of years that the returns are taken.

丿 **Coefficient of Variation (C.V)**

It is the relative measurement of risk with return. It measures the risk per unit of return. It provides a more meaningful basis for comparison when the expected returns on two alternatives are not the same. The higher coefficient of variation, higher the risk. It is calculated as

$$C.V. = \frac{\sigma_j}{E(R_j)}$$

Where,

C.V. = Coefficient of variation of stock.

σ_j = Standard deviation of return on stock j.

$E(R_j)$ = Expected rate of return on stock j.

丿 **Capital Assets Pricing Model**

Capital Assets Pricing Model describes the relationship between risk and required return. A security's expected return is the risk-free rate plus a premium based on the systematic risk of the security.

$$E(R_j) = R_f + [E(R_m) - R_f] \, \beta$$

Where,

$E(R_i)$ = the expected return on the jth risky assets.

R_f = the rate of return on a risk less assets.

$E(R_m)$ = the expected return on the market portfolio.

β = Cov (R_i, R_m) / Var R_m = a measure of the un diversifiable risk per unit of the jth security.

) Beta Coefficient (s)

Beta coefficient shows the market sensitivity of stock. Higher the beta, greater the sensitivity and reaction to the market movement. Beta coefficient of a particular stock will be less than equal or more than 1, but the beta for market will be always 1.

$$\beta = \frac{\mathrm{Cov}(R_j, R_m)}{\sigma^2_m}$$

Where,

β = Beta coefficient of stock j.

Cov (R_j, R_m) = Covariance between return on stock j and return on market.

$$= \frac{\sum R_j \, ZE(R_j)' \, R_m \, ZE(R_m)'}{n \, Z1}$$

$\exists^2_{m} =$ Variance of market return.

) Correlation Coefficient

Two variables are correlated when they are related that the change in the value of one variable is accompanied by change in the value of other. Correlation may be positive or

negative. If returns on two securities are negatively correlated which combined in portfolio reduces the risk. If securities are positively correlated risk cannot be reduced. Correlation coefficient measures the relationship between two variables in quantitative terms. Correlation coefficient always lies in the range of +1 to –1. A positive correlation coefficient indicates that the returns from two securities generally move in the same direction and vice versa. It can be calculated as.

$$\ell_{ij} = \frac{\text{Cov}_{ij}}{\exists_i \ \exists_j}$$

Where,

ℓ_{ij} = Correlation coefficient for securities i and j.

Cov_{ij} = Covariance between securities i and j.

$\exists_i \ \exists_j$ = Standard deviation of returns for securities i and j.

ﾉ **Return on Market (R$_m$)**

It is the percentage increase in NEPSE index. Market return is the average return of the market as a whole. It is calculated as.

$$R_m = \frac{NI_t \ Z \ NI_{t\,Zl}}{NI_{t\,Zl}}$$

Where,

R_m = Return on Market

NI_t = NEPSE index at time t

NI_{t-1} = NEPSE index at time t-1.

ﾉ **Expected Return on Market, E(R$_m$)**

It is average return of future expectation. It is calculated by summing up the past return and dividing by number of samples period.

$$E(R_m) = \frac{R_m}{n}$$

Where,

$E(R_m)$ = Expected return on market.

Portfolio Risk and Return

Portfolio is combination of individual or a group of assets. Investors have different types of investment opportunity but they have limited resource for investment so that investors have to choose that investment opportunity which maximizes return for a given level of risk or minimize risk for a given level of return. Thus the combination of these investments is called portfolio

Portfolio Return

The expected return on a portfolio is simply the weighted average of expected returns on the individual assets in the portfolio with weights being the fraction of the total portfolio invested in each asset.

Symbolically,

$$E(r_p) = w_i\, E(r_i) \ + \ w_j\, E(r_i)$$

Where,

$E(r_P)$ = portfolio return

w_i = proportion of wealth invested in i assets.

w_j = proportion of wealth invested in j assets.

$E(r_i)$ = expected return on i assets.

$E(r_j)$ = expected return on j assets.

Portfolio Risk

It is the combined standard deviation of individual stock return. It is the risk of individual securities plus covariance between the securities. The formula for the calculation of portfolio risk for two assets case is given by

Symbolically,

$$\exists_P = \sqrt{w_i{}^2\,{}_i{}^2\,\Gamma\,w_j{}^2\,{}_j{}^2\,\Gamma\,2w_i w_j\,cov(R_i, R_j)}$$

Where,

$\exists_P$ = Portfolio standard deviation

w_i = The proportion of portfolio devoted by security i.

$\exists_i$ = The standard deviation of security i.

w_j - The proportion of portfolio devoted by security j.

$\exists_j$ =The standard deviation of security j

Cov (R_i, R_j) = Covariance between return of security i and j.

) **Optimum Proportion of Stock**

It is the portfolio with lowest level of risk in the efficient frontier. In other word it is the proportion of stock that minimizes the risk. With the help of Cov (R_i, R_j), we can calculate optimal weight of stock i and j which minimize the risk. In two stock portfolio the optimal weight to invest in stock i and j are calculated as follows

$$W_i = \frac{{}_j^2 \ ZCov \int R_i, R_j \ A}{{}_i^2 \ \Gamma \ {}_j^2 \ Z2 Cov(R_i, R_j)}$$

$W_j = 1 - W_i$

Where,

w_i = optimal weight to invest in stock i.

w_j = optimal weight to invest in stock j.

$\exists_j^2$ = Variance of stock j.

$\exists_i^2$ = Variance of stock i.

Cov (R_i, R_j) = Covariance of returns between stock i and j.

) **Systematic Risk**

Systematic risk is portion of variability in return caused by market failure that simultaneously affects the price of all securities systematic risk is unavoidable

Symbolically,

Systematic Risk= ℓ_{am} | $a = \dfrac{Cov_{am}}{m}$

Where,

ℓ_{am} = Correlation coefficient between securities a and market.

$\exists_a$ = standard deviation of security a

Cov_{am} = covariance between market and security a

$\exists_m$ = standard deviation of market.

The percentage of systematic risk is measured by the coefficient of determination those will shows how much risk has been increased when per unit change in systematic risk.

$$Proportion\ of\ Systematic\ Risk = \frac{Systematic\ Risk}{Total\ Risk}$$

ʃ **Unsystematic Risk**

Unsystematic risk portion of risk is caused by internal deficiencies of organization. It is unexplained by the market movement. It occurs due to problems in industry or company.

Symbolically,

Unsystematic Risk = $_a (1\ Z\ \ell_{am})$

Where,

ℓ_{am} = Correlation coefficient between securities a and market.

$\exists_a$ = standard deviation of security a

Or, Unsystematic risk= total risk – systematic risk

$$Proportion\ of\ Unsystematic\ Risk = \frac{Total\ Risk - Systematic\ Risk}{Total\ Risk}$$

ʃ **Investment Performance Evaluation**

Numerous investment companies may available for the investment to an investor but an important task of the investor is to select the best company which can provide highest return. It is easier to select the better one if the ranking of investment is done before

taking any decision. There are three types of ranking method for portfolio performance. They are:

) Sharpe's Portfolio Performance Measure

An index of portfolio performance devised by William F. Sharpe is known as Sharpe Ratio (denoted S,). It is the risk premium divide by total risk. Risk premium is the additional return over and above the risk less rate that is paid to induce investors to assume risk. The higher the resulting number, the better is the portfolio performance. Symbolically,

$$S_i = \frac{Risk\,Premium}{Total\,Risk}$$

Where,   Ri   = average return from portfolio i

∃I   = Standard deviation of returns for portfolio I

Rf   = risk free rate of return

) Treynor's Portfolio Performance Measure

The performance measure developed by Jack Treynor is known as Treynor's Portfolio Performance Measure (denoted Tp). Treynor used systematic risk as measured by portfolio beta coefficient instead of total risk, as in Sharpe. The higher is the Treynor index, the better is the portfolio performance.

Symbolically,

$$Tp = \frac{Risk\,Premium}{Systematic\,Risk\,Index}$$

$$= \frac{\overline{R}_p - R_f}{b_p}$$

Where,   Rp   = average rate of return for portfolio p

b_p = beta coefficient for portfolio p

Rf   = risk free rate of return

ل **Analysis of Variance (ANOVA)**

Analysis of variance (ANOVA) was developed by R. A. Fischer. The analysis of variance is a statistical technique used to test whether the difference between the mean of three or more populations is significant or not. Our testing procedure is to find out differences among the sample means which is done by investing variances. As the procedure focuses on analysis of variance, we call it Analysis of Variance (ANOVA).

$$F_C = \frac{MSC}{MSE} \qquad\qquad Fr = \frac{MSR}{MSE}$$

3.5 Method of Analysis and Presentation

Data collected from various sources are properly organized, analyzed and presented in appropriate tables and formats. Such tables and formats are interpreted and explained as necessary and obtain the results. To make report simple and easily understandable charts, diagrams and graphs have been used. Results are presented in tabular form and clear interpretation on it is given simultaneously. All the method of analysis and presentation are applied as simple as possible. Detail calculations are presented in appendices at the end of report. The risk and return measures are obtained by using risk and return analysis techniques. Standard deviation and beta test are used to test the risk of different listed companies and correlation between these tests is done. ANOVA test is used for variance test among business sectors. Summary conclusion and recommendations are presented finally.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

This chapter is the main part of study. In this chapter the effort has been made to analyze trend analysis and optimum portfolio selection of Nepalese stock market, which includes, detail data of market index of stock of different business sectors and their interpretation and analysis. With reference to the various readings and literature review in the preceding chapter effort is made to analyze the recent Nepalese stock market movement to the business sectors. The analysis of data consists of organizing, tabulating and assessing financial and statistical result. Different table and Figures are used to make the result easily understandable.

Risk and return is considered to be one of the best ways to analysis the behavior of changing market price of common stock. In this analysis, it is attempted to find out periodical realized returns to the investors, its expected return or average rate of return, standard deviation, co-efficient of variation, portfolio risk and portfolio return. In the following paragraph each sector is introduced and their common stock's risk and return are analyzed here.

4.1 Analysis of Individual Sector

4.1.1 Commercial Bank

Table 4.1 represents the closing, beginning, high and low index per share of Commercial Bank for the purpose of risk and return analysis.

Table 4.1

Index Status of Commercial Bank

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	416.08	230.83	397.17	220.7
2059/060	677.22	228.89	370.38	329.71
2060/061	349.1	155.16	219.35	384.08
2061/062	225.43	188.60	199.9	210.79
2062/063	241.48	181.75	231.97	199.33
2063/064	326.06	232.87	304.64	232.87
2064/065	449.79	306.52	437.49	306.52

Source: Trading Report of NEPSE

Figure 4.1

Index Status of Commercial Bank
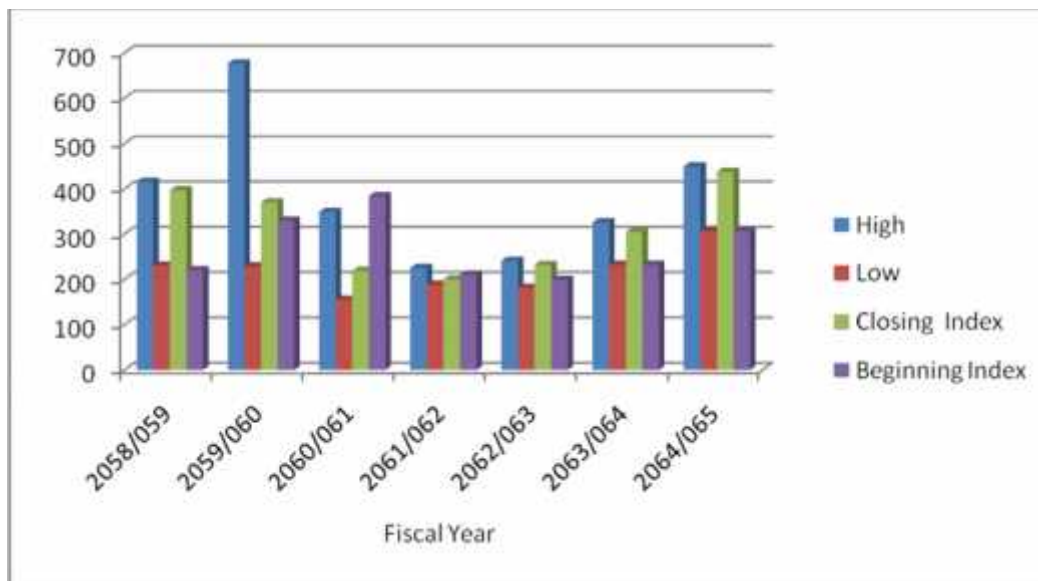
Index was highest in year FY 2059/060 and lowest in year 2060/061.

Rate of Return and Trend Line of Commercial Bank

Closing index and beginning index are used to calculate realized rate of return and Trend line for each year.

Figure 4.2

Movement of Rate of Return and Trend Value of Commercial Bank
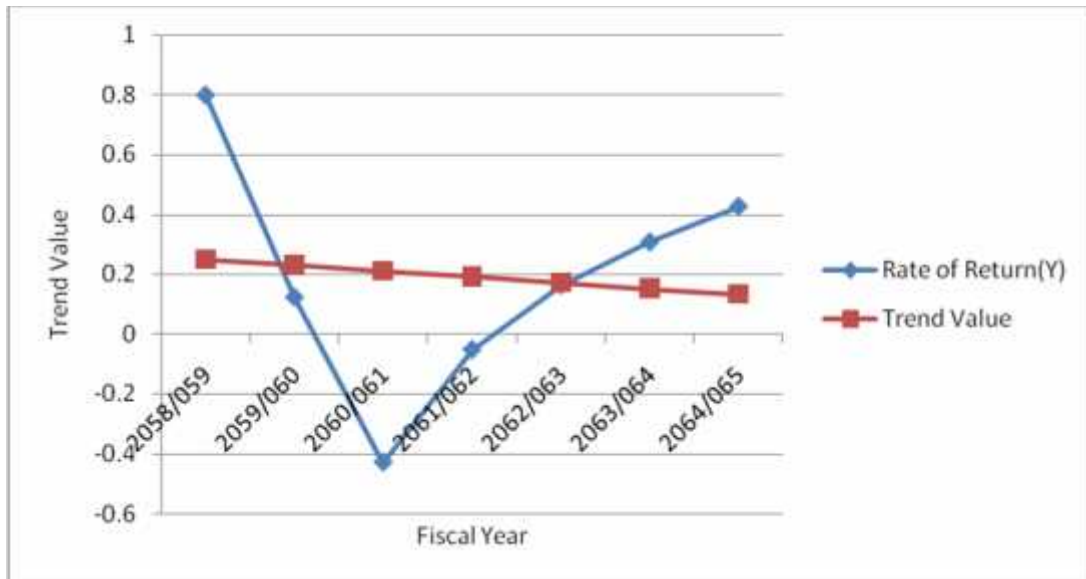
Data Source: Appendix 1, Table No. 2

Figure 4.2 shows the movement of Commercial Bank's rate of return (R) and trend line. In the (FY 2058/059) R is high at 0.8 after that it started to move downward very fast in (FY 2059/060) and it goes to negative i.e. (-0.4289) in (FY 2060/061), but in the FY 2061/062 due to improved in situation the R has a upward movement not above the positive condition. But it moves up positively in FY 060/61 and constantly started to move up rapidly up to 0.45 in FY 2064/065. The trend line shows how the industry is moving. In the figure 4.1 the trend line has the negative movement but very gradual movement. It was 0.3 in FY 2058/059 and it reached to 0.1in FY 2064/065. It shows that the commercial banking industry is in favorable condition compare to other sectors. This is the only sector in our study that has performing in constant manner i.e. hasn't changed as much compared with other sectors.

4.1.2 Manufacturing and Processing Sector

Table 4.2 represents the closing, beginning, high and low index per share of Manufacturing and Processing for the purpose of risk and return analysis.

Table 4.2

Index Status of Manufacturing and Processing Sector

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	350.71	232.38	340.59	232.38
2059/060	390.66	240.82	349.31	340.59
2060/061	384.08	273.67	273.67	349.31
2061/062	273.67	237.84	250.13	273.67
2062/063	268.38	194.76	255.58	250.13
2063/064	279.8	225.58	276.5	255.58
2064/065	305.45	246.43	301.11	276.5

(Source: Trading Report of NEPSE)

Figure 4.3

Index Status of Manufacturing and Processing Sector
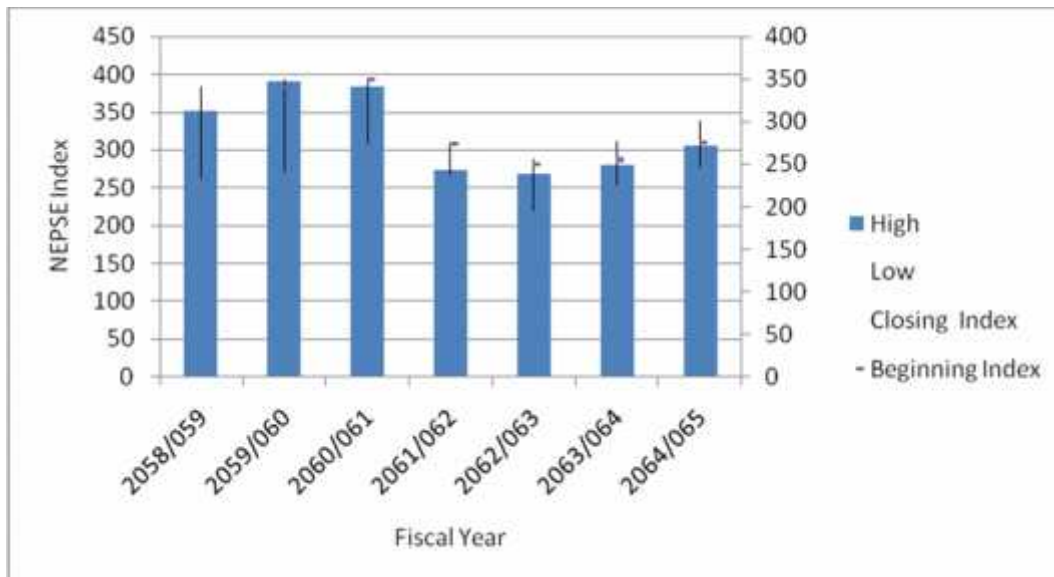
Market price per share was highest in FY 2059/060 and Lowest in FY 2062/063.

Rate of Return and Trend Line of Manufacturing & Processing Sector

Rate of return for each year are calculated for the basis of closing index of common stock of respective year.

Figure 4.4

Movement of Rate of Return and Trend Value of Manufacturing and Processing Sector
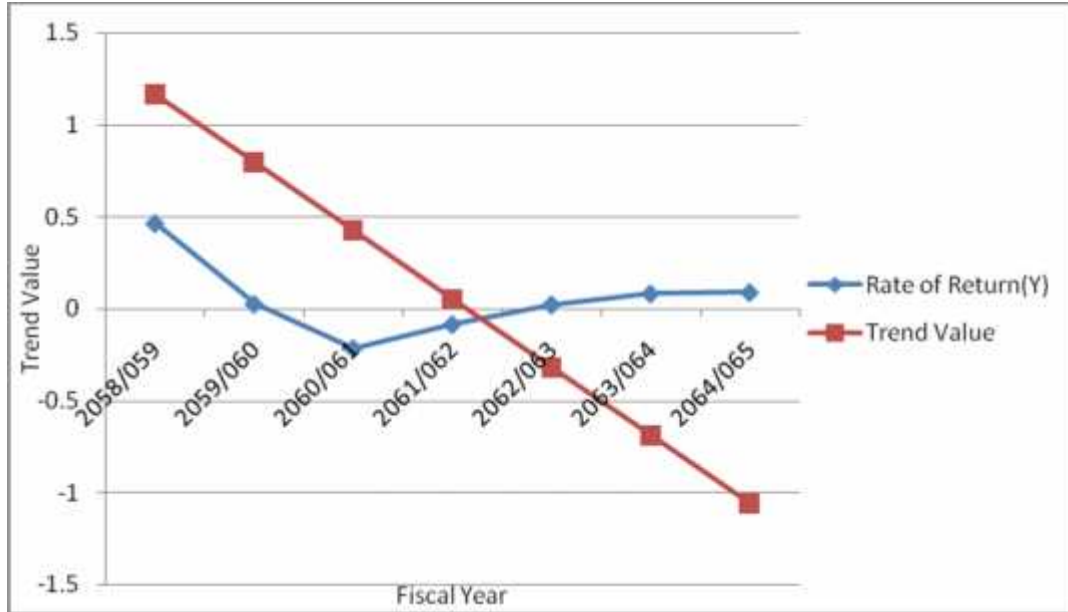
(Source: Appendix 1, Table No. 4)

Figure 4.4 shows the movement of Manufacturing and Processing's rate of return (R) and Trend line (Y_c). In the FY 2058/059 R has the downward movement. It started to move upward from FY 2060/061, in FY 059/60 it started to move in positive direction. But the trend line has a negative movement. The trend line has the downward sloping curve. Shows in the figure 4.4 high in FY 2058/059 to downward movement and negative in FY 2060 /61 and goes down negative up to 2064/065. This trend line indicates that the manufacturing and processing sector is not doing well. This might be mainly due to strikes in the national highways which have negative impact in the transportation of the finished goods to the different part of country.

4.1.3 Hotel Industry

Table 4.3 represents the closing, beginning, high and low index per share of Hotel for the purpose of risk and return analysis.

Table 4.3

Index status of Hotel Industry

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	384.38	240.46	346.15	242.52
2059/060	402.46	244.57	291.34	346.15
2060/061	291.34	214.5	216.51	291.34
2061/062	216.51	100.00	196.68	216.51
2062/063	196.68	178.85	184.41	196.68
2063/064	194.98	172.25	178	184.98
2064/065	183.55	177.23	180.77	178

Source: Trading Report of NEPSE

Figure 4.5

Index Status of Hotel Industry
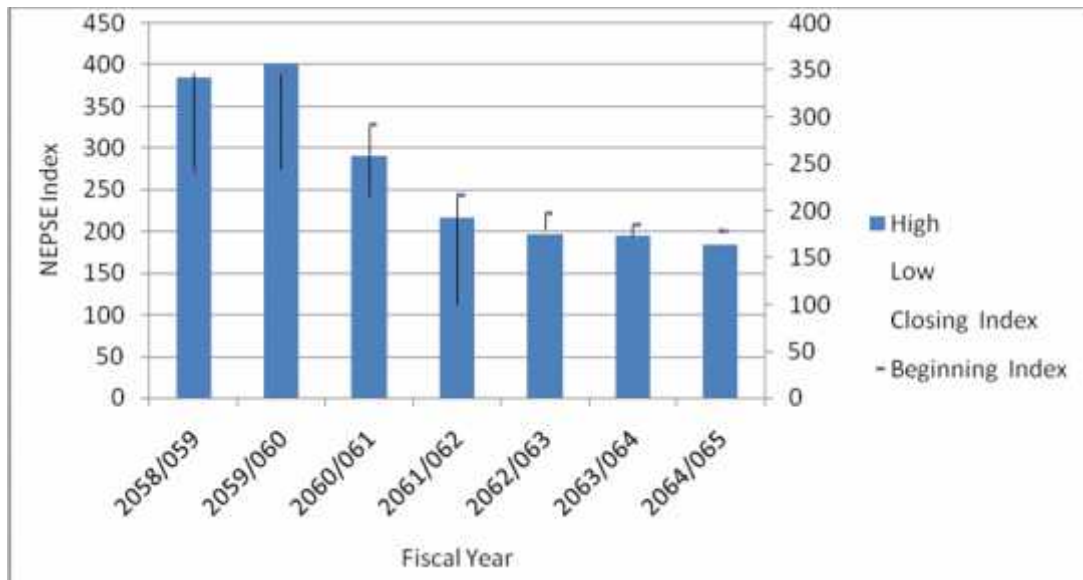
Market index per share is highest in FY 2059/060 and Lowest in FY 2064/065.

Rate of Return and Trend Line of Hotel Industry

Rate of return for each year are calculated for the basis of closing index of common stock of respective year.

Figure 4.6

Movement of Rate of Return and Trend Value of Hotel Industry
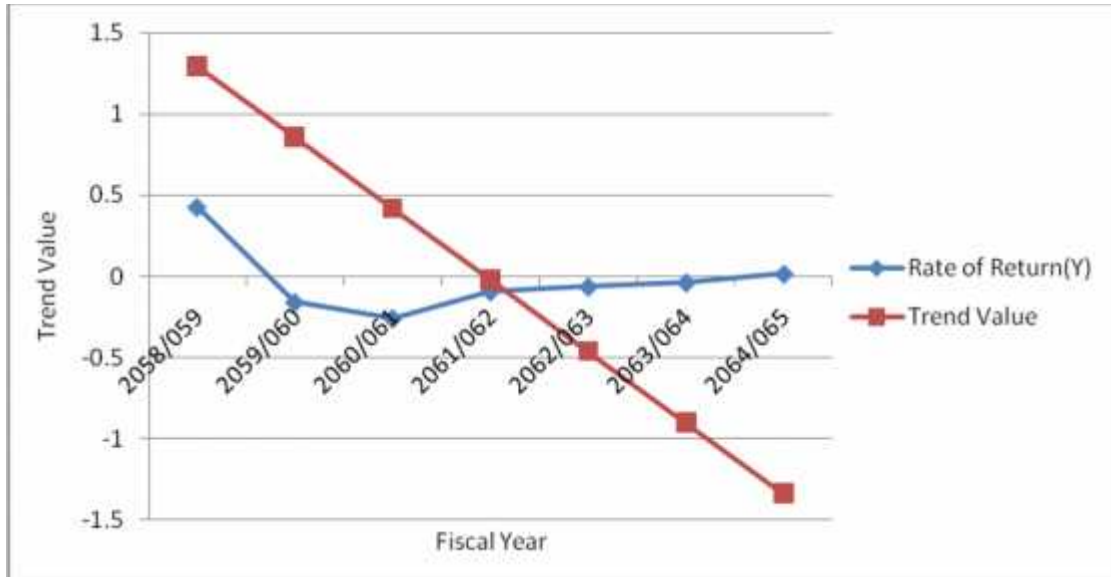
Source: Appendix 1, Table No. 6

Figure 4.6 shows the movement of Hotel industry's rate of returns (R) and the trend line. In FY 2058/059 R was at 0.4272 but it started to move downward in FY 2059/060. But due to improve in the industry there is the positive movement in R and gradually it moved above the negative situation in FY 2064/065. Trend line has a very steep downward slope it was 1.2 in FY 2058/059 and it is -1.2 in FY 2064/065. Hotel industry is not doing well in terms of return as shown by the trend line. This visible change in the trend line is mainly due to political instability and decrease in the influx of tourist.

4.1.4 Trading Sector

Table 4.4 represents the closing, beginning, high and low market index per share of TRADING for the purpose of risk and return analysis.

Table 4.4

Index Status of Trading Sector

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	127.98	113.67	123.74	123.99
2059/060	127.09	114.63	115.55	123.74
2060/061	118.11	95.03	102.2	115.55
2061/062	102.2	89	94.56	102.2
2062/063	103.55	94.29	95.01	94.56
2063/064	123.84	95.01	123.2	95.01
2064/065	148.11	177.23	148.11	123.2

(Source: Trading Report of NEPSE)

Figure 4.7

Index Status of Trading Sector
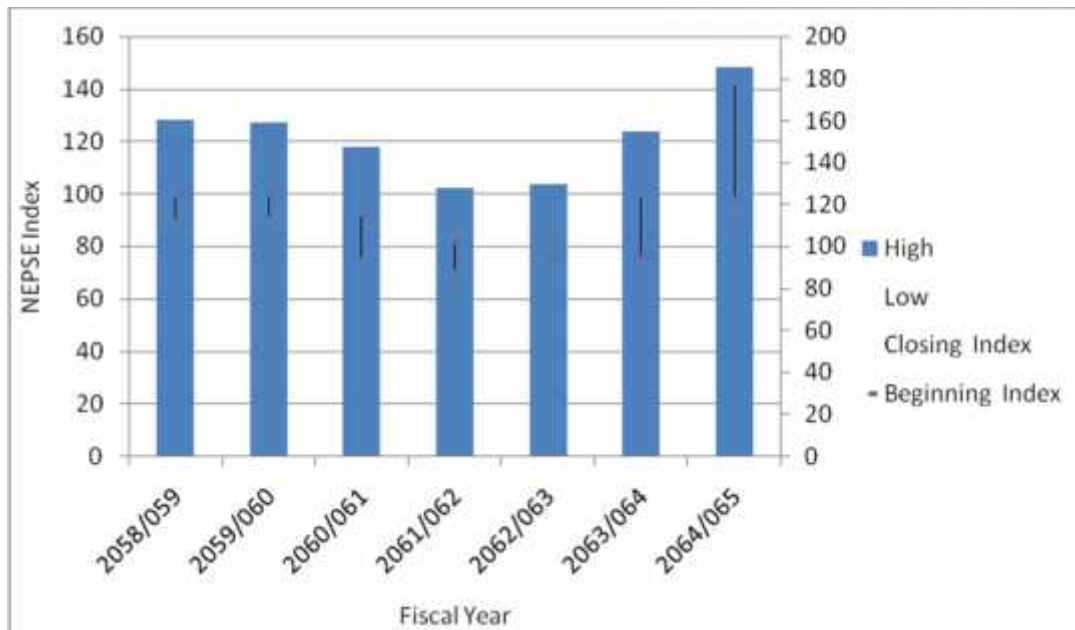
Market index per share is highest in FY 2064/065 lowest in FY 2061/062.

Rate of Return and Trend Line of Trading Sector

Rate of return for each year are calculated for the basis of closing index of common stock of respective year. Rate of returns (Trend Value) for each year are calculated on the basis of rate of return on common stock of trading respective year by using least square method.

Figure 4.8

Movement of Rate of Return and Trend Value of Trading Sector
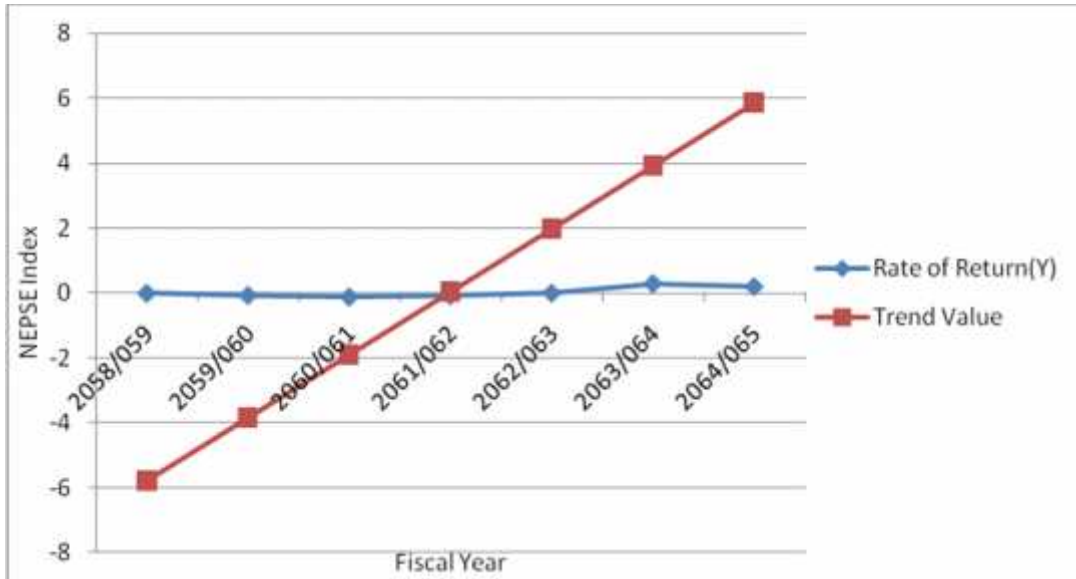
Data Source: Appendix 1, Table No. 8

Figure 4.8 shows the Trading sectors rate of return (R) and trend line. Here, in the beginning (FY 2058/059) R is negative and this condition stay up to 2061/062. But it started to move up slowly From FY 2060/062 and the situation is improved, as a result the return is positive. Similarly, the trend line (Y_c) in the beginning is very low and negative up to FY 2060/061. But it started to move up ward slowly from 2061/062. The trend line has a positive impression, since it is moving in positive direction it implies that the trading sector is doing better in terms of return.

4.1.5   Insurance Sector

Table 4.5 represents the closing, beginning, high and low market index per share of Insurance for the purpose of risk and return analysis.

Table 4.5

Index Status of Insurance Sector

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	398.87	195.96	305.98	195.96
2059/060	364.02	203.77	318.67	306.02
2060/061	327.28	258.27	315.22	325.89
2061/062	315.14	200.00	240.64	315.14
2062/063	244.52	139.52	237.62	240.64
2063/064	333.09	230.21	320.24	237.39
2064/065	381.79	314.19	381.25	319.95

Source: Trading Report of NEPSE

Figure 4.9

Index Status of Insurance Sector
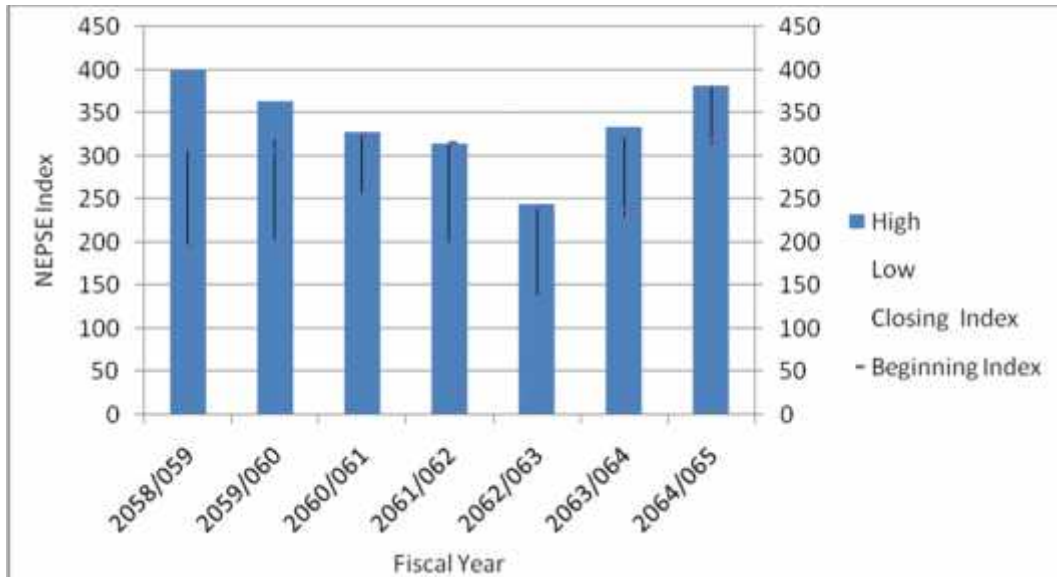

Market index per share is highest in FY 2059/060 and Lowest in FY 2062/063.

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Rate of Return and Trend Line of Insurance Sector

Rate of returns (Trend Value) for each year are calculated on the base of rate of return on index of common stock of Insurance of respective year by using least square method.

Figure 4.10

Movement of Rate of Return and Trend Value of Insurance Sector
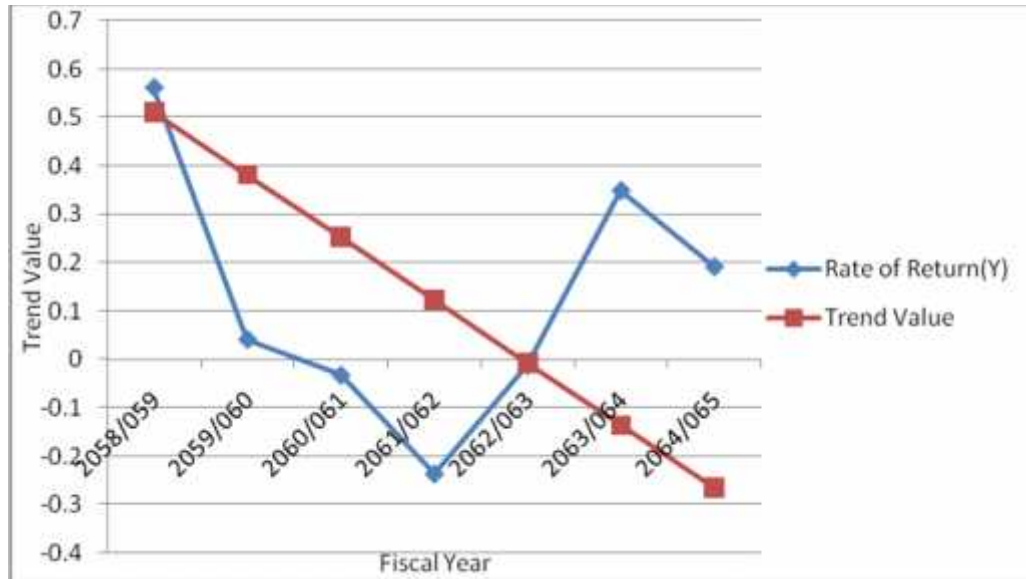
Data Source: Appendix 1, Table No. 10

Figure 4.10 shows the movement of Insurance sector's rate of returns and trend line. In the FY 2058/059 R was 0.54 but it fall downward to negative in FY 2060/061. The situation improved a bit in FY 2062/063 but couldn't provide positive return. From FY 2063/064 it moved upward positively but again turned downward from 2064/065. The trend line was at 0.5 in FY 2058/059 and started to move downward slowly and it was negative in FY 2060 /061 and this condition exists up to FY 2064/065. The trend line gives the message that the insurance sector has a negative return. Since the concept insurance is developing in our country and apart from that unawareness about the insurance are might be the causes in this heavy fluctuation in the rate of return in insurance sector.

4.1.6   Finance Sector

Table 4.6 represents the closing, beginning, high and low market index per share of Finance for the purpose of risk and return analysis.

Table 4.6

Index Status of Finance Sector

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	398.87	195.96	305.98	195.96
2059/060	364.02	203.77	318.67	306.02
2060/061	327.28	255.87	262.29	325.89
2061/062	263.65	205.18	208.14	262.29
2062/063	207.93	192.03	195.99	207.93
2063/064	231.34	196.19	228.39	196.32
2064/065	348.15	228.54	261.37	228.54

Data Source: Trading Report of NEPSE

Figure 4.11

Index Status of Finance Sector
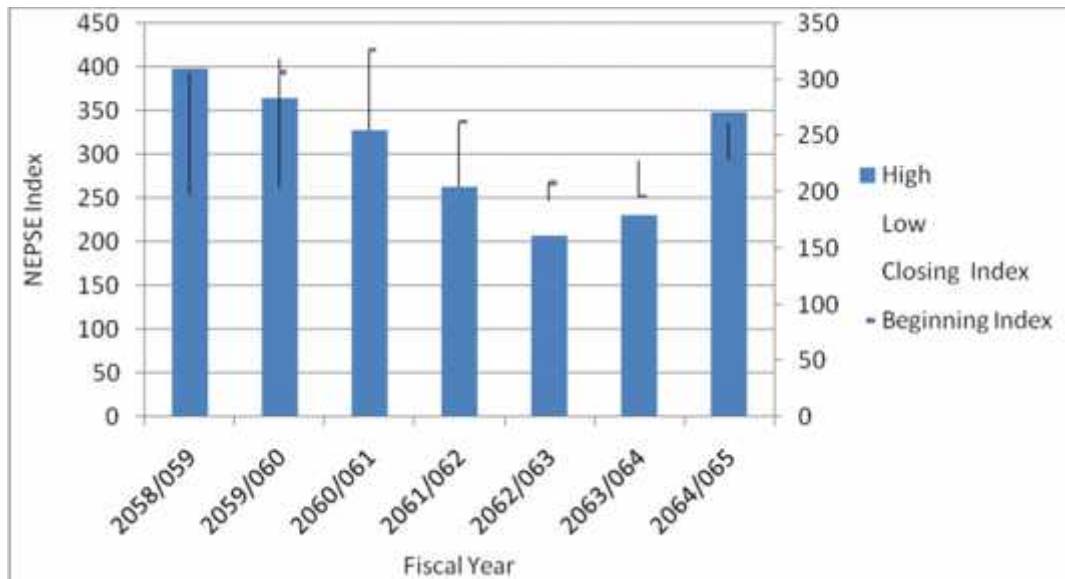
Index is highest in year FY 2058/059 and lowest in year 2062/063.

Rate of Return and Trend Line of Finance Sector

Rate of return for each year are calculated for the basis of closing index of respective year.

Figure 4.12

Movement of Rate of Return and Trend Value of Finance
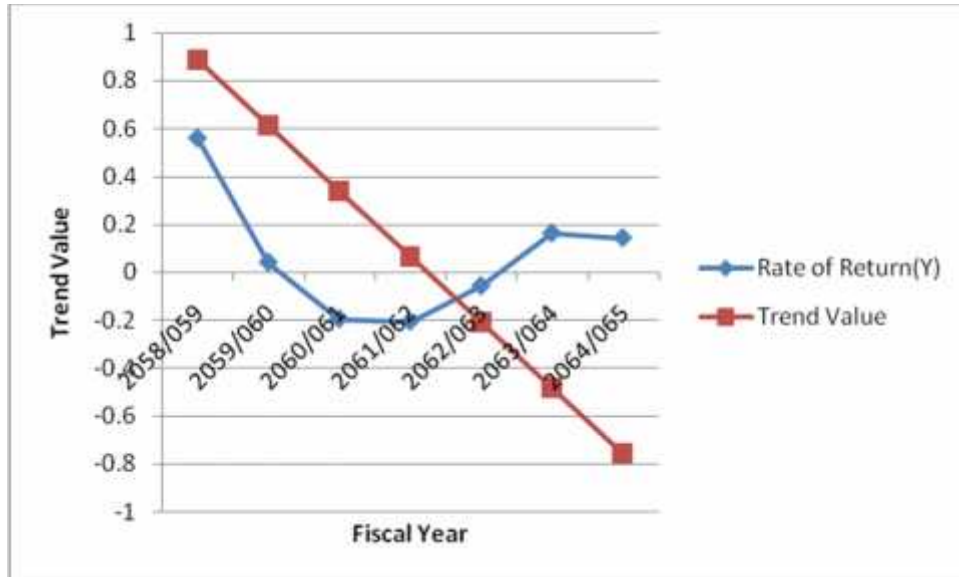
Data Source: Appendix 1, Table No. 12

Figure 4.12 shows the movement of Finance Sector's rate of return (R) and trend line. In FY 2058/059 R was very high after that it goes to negative in FY 2060/061 and this condition exist up to FY 2062/063. From FY 2063/064 it goes upward very slowly. The trend line in the beginning is very high but it started to move downward ultimately negative in FY 2062/063, FY 2061 /62 and 2064/065 till study period. The trend line is negatively sloped, which indicates that the finance sector is not doing well. The main reason in the decrement of rate of return in between 2056 to 2060 is mainly due to lack of proper utilization of fund but later on finance sector improved positively due to attractive schemes of different types of loan. The negative tend line is due to heavy fluctuation in the rate of return.

4.1.7 Development Bank

Table 4.19 represents the market index per share of Development Bank Sector for the purpose of risk and return analysis.

Table 4.7

Index Status of Development Bank

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	-	-	-	-
2059/060	-	-	-	-
2060/061	295.53	262.94	280.61	262.94
2061/062	273.08	241.67	246.72	261.53
2062/063	247.49	138.83	190.03	247.49
2063/064	259.72	186.04	237.86	190.02
2064/065	298.05	215.94	294.4	241.85

Source: Trading Report of NEPSE

Figure 4.13

Index Status of Development Bank
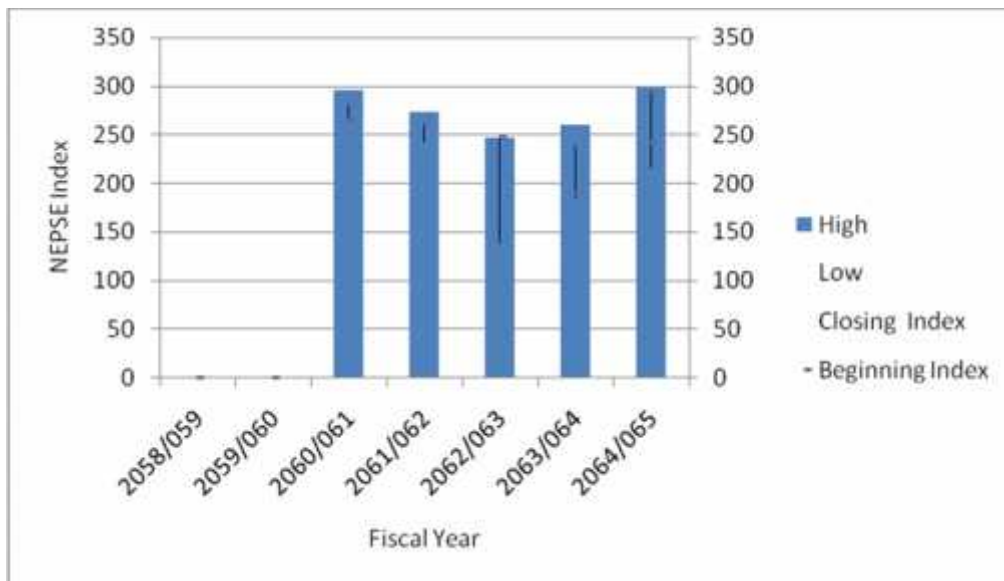
Market index per share is highest in FY 2064/065 and Lowest in FY 2060 /061.

Rate of Return and Trend Line of Development Bank

Rate of return for each year are calculated for the basis of closing index of respective year. Rate of returns (Trend Value) for each year are calculated on the base of rate of return on common stock index of Development bank sector of respective year by using least square method.

Figure 4.14

Movement of Rate of Return and Trend Value of Development Bank
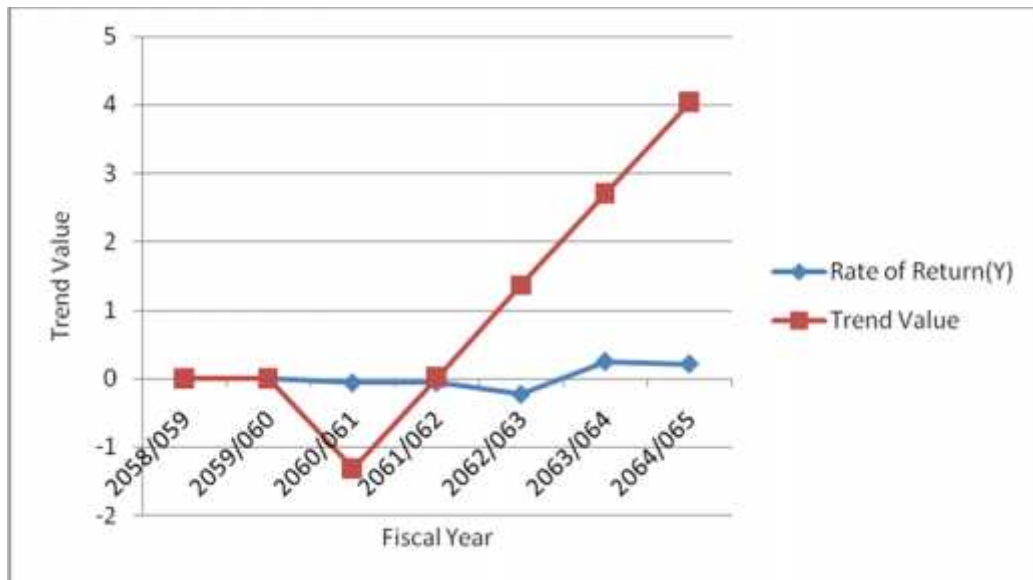
Data Source: Appendix 1, Table No. 14

Figure 4.14 shows the Development Bank Sector's realized rate of return (R) and trend line. Initially at FY 2060/061, R is very low and negative and this condition stays up to FY 2062/063. But the rate of return increased slowly in FY 2063/064 and remained constant till FY 2064/065. As every sector initially has negative trend line, but this sector has shown positive progression during the course of time. The positive trend line indicates that development banks have stable and positive return. The reasons behind the increment in the return are positive response from Donor, flexible government policies and positive attitude of local people towards development banks.

4.1.8   Other Sector

Table 4.8 represents the closing, beginning, high and low market index per share of Other Sector for the purpose of risk and return analysis.

Table 4.8

Index Status of Other Sector

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	488.34	195.29	308.46	372.09
2059/060	392.74	172.08	190.9	309.6
2060/061	192.9	77.34	77.34	192.9
2061/062	90.6	42.75	48.56	77.34
2062/063	143.94	48.56	142.65	48.56
2063/064	354.67	142.13	347.65	142.65
2064/065	410.38	290.01	410	347.65

Data Source: Trading Report of NEPSE

Figure 4.15

**Index Status of Other Sector**
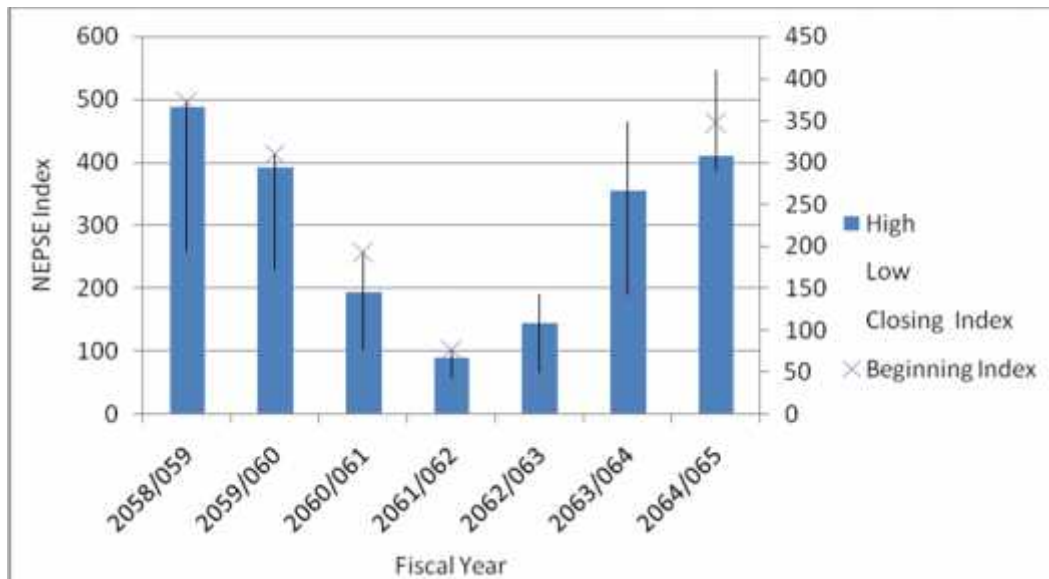
Data Source: Table 4.8

Market index per share is highest in FY 2058/059 and Lowest in FY 059/060

Rate of Return and Trend Line of Other Sector

Rate of returns (Trend Value) for each year are calculated on the base of rate of return on common stock index of Other Sector of respective year by using least square method.

Figure 4.16

Movement of Rate of Return and Trend Value of Other Sectors
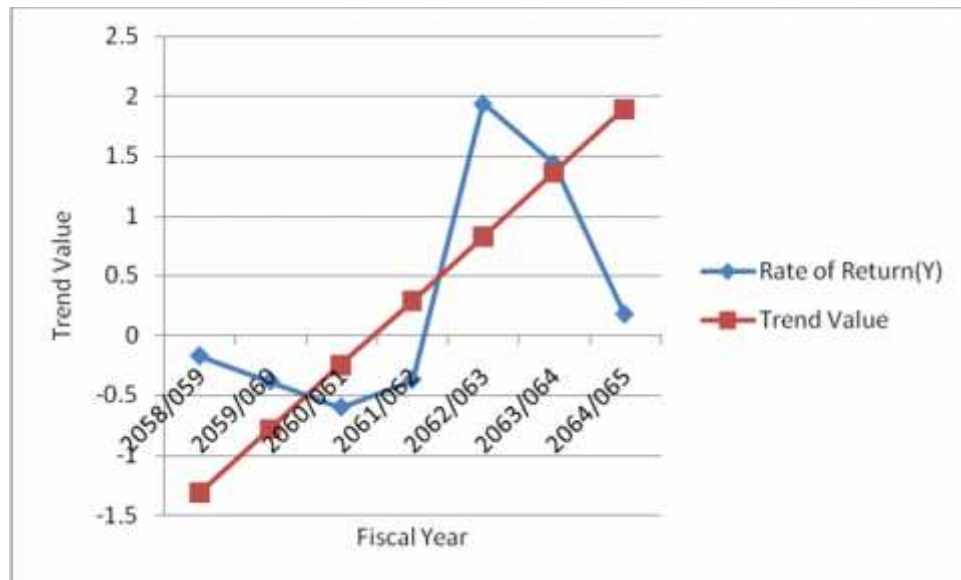
Source: Appendix 1, Table No. 16

Figure 4.16 shows the Other Sector's rate of return (R) and trend line. Here, in the beginning (FY 2058/059) R is very low and negative and this condition stays up to FY 2061/062. But it moved up slowly in FY 2062/063. It started to move up very positively in FY 2063/064 and 2062/2063. Similarly, the trend line in the beginning it is negative in FY 2058/059 but it started to move upward positively from FY 2061/062 and ultimately high in FY 2064/065. Other sector can provide high return since trend line has the positive slope.

4.2 Inter – Sector Comparison

4.2.1   One the basis of Risk and Return Analysis

After analyzing the expected returns, standard deviation of returns, and coefficient of variation of each sector for the FY 2058/059 to FY 2060/61 results are given in the following table 4.9.

Table 4.9

Inter Sector Comparison

S.No.	Sectors	Expected Return E(r)	Std. Dev.	C.V.	Remarks E(r)		C.V.
1	Commercial Bank	0.1917	0.3563	1.8586			Lowest
2	Mfg. and Pro.	0.0545	0.195	3.5780			
3	Hotel	-0.0234	0.2013	-8.6026	Lowest		
4	Trading	0.035	0.1433	4.0943		Lowest	
5	Insurance	0.1231	0.2468	2.0049			
6	Finance	0.0644	0.2447	3.7997			
7	Development Bank	0.0235	0.3386	14.4104			Highest
8	Other Sector	0.2898	0.921	3.1781	Highest	Highest	

Source: Appendix 1

Figure 4.17

Expected return, Standard Deviation and CV of Different Sectors
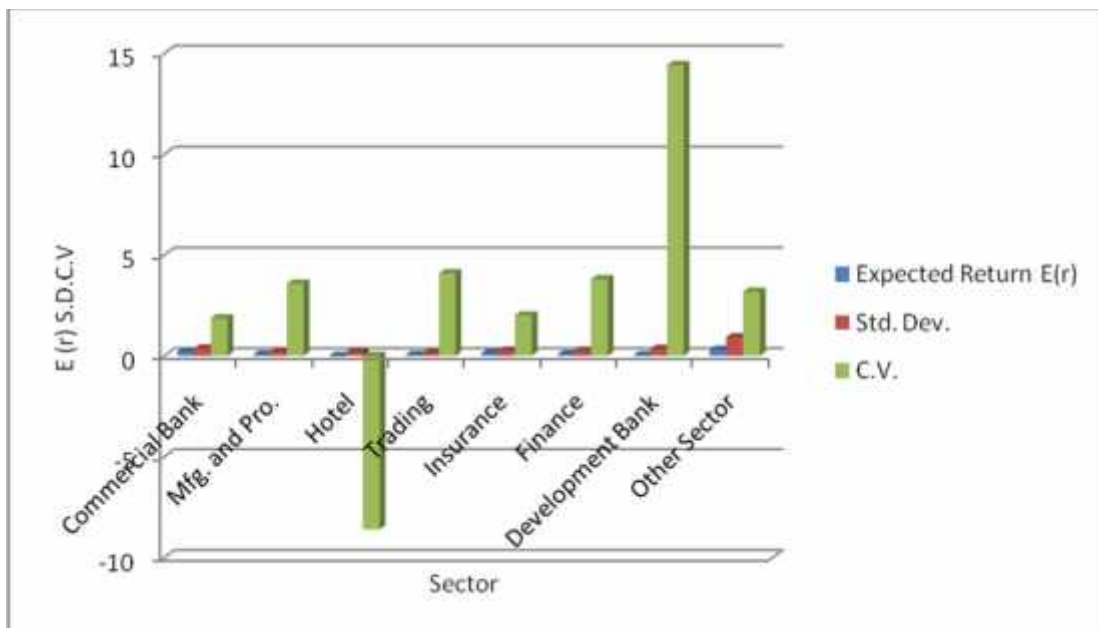
Table 4.9 and figure 4.17 shows that investors were benefited with highest return for investment in common stocks of other sector and lowest return from investment in common stock of Hotel Sector. Other Sector has the highest and Trading Sector has the lowest standard deviation, which means risk involvement in investment in trading sector is much lower than that of other sector. But coefficient of variation is best way to make investment decision in common stock when two or more investment has different return and different risk. Coefficient of variation measures the risk per unit. Development Bank has highest and the Commercial Bank has the lowest C.V. To earn one unit of return an investor has to bear 1.8586 unit of risk by investing in Commercial Bank whereas 14.4104 unit of risk by investing in Development Bank.

4.2.2 One the basis of Systematic Risk and Unsystematic Return

Systematic Risk - a surprise that affects a large number of assets, each to a greater or lesser extent - sometimes called market risk.

Unsystematic Risk - a risk or surprise that affects at most a small number of assets sometimes called unique risk.

Table 4.10 shows the systematic risk and the unsystematic risk of different sector. The systematic risk and the unsystematic risk are the portion of the total, as mentioned earlier the unsystematic risk can be diversified.

Table 4.10

Systematic Risk and Unsystematic Risk of Different Sectors

S. No	Sectors	%	Systematic Risk	%	Unsystematic Risk	Total Risk
1	Commercial Bank	98.78	0.3519	1.22	0.0044	0.3563
2	Mfg. and Pro.	94.63	0.1845	5.37	0.0105	0.1950
3	Hotel	91.37	0.1839	8.63	0.0174	0.2013
4	Trading	55.89	0.0801	44.11	0.0632	0.1433
5	Insurance	85.28	0.2105	14.72	0.0363	0.2468
6	Finance	92.73	0.2269	7.27	0.0178	0.2447
7	Development Bank	80.81	0.2736	19.19	0.0650	0.3386
8	Other Sector	26.40	0.2432	73.60	0.6779	0.9210

Figure 4.18

Systematic Risk and Unsystematic Risk of Different Sectors
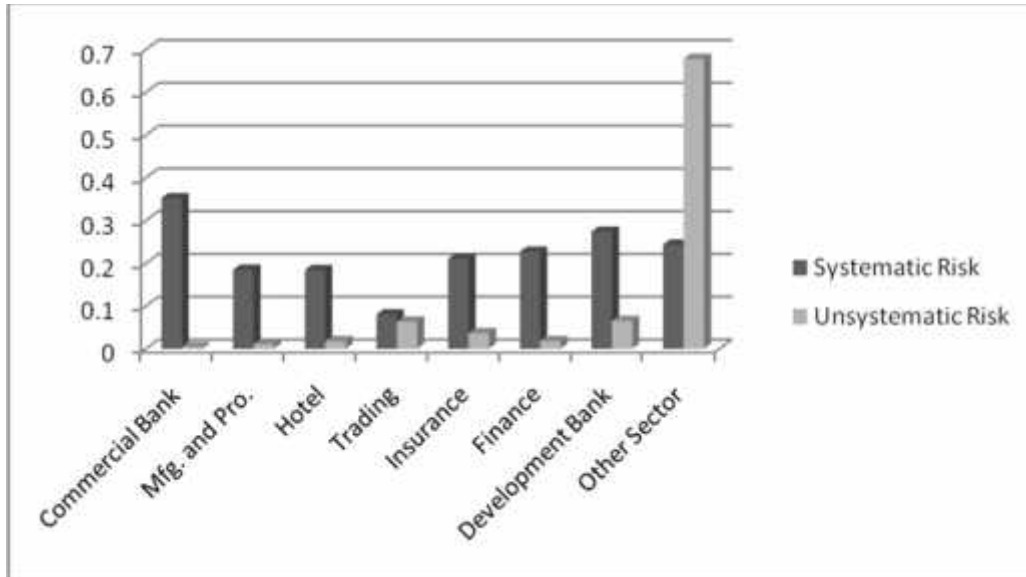
Table 4.10 and Figure 4.18 show that the Systematic risk of commercial bank is the highest among all the sectors which is about 99%. As we know the systematic risk can not be diversified so while investing in commercial bank and other sectors (meaning different sector) the diversifiable risk is minimum. The highest diversifiable risk is of other sector which is about 74 %; there is lot of opportunity to diversify the risk of other sector .Second highest systematic risk is of manufacturing and processing sector which is about 94%. In this manner the diversifiable risk of manufacturing is also less. The second least diversifiable risk is of trading sector which is about 44%.

Diversification of these unsystematic risks is possible by constructing the portfolio. For further analysis Portfolios has been constructed to analyze how these risk can be minimized.

4.3 Analysis of Market Risk and Return

In Nepal these is only one stock market, namely Nepal Stock Exchange. Overall market movement is represented by NEPSE index. To calculate annual return, expected return on

market, market standard deviation and coefficient of variation of overall market is presented below in table 4.10.

Table 4.11

Index Status of Market

Fiscal Year	High	Low	Closing Index	Beginning Index
2058/059	373.46	218.32	360.7	218.32
2059/060	545.82	322.74	348.48	358.06
2060/061	352.25	186.22	227.54	352.25
2061/062	230.01	198.44	204.86	222.06
2062/063	227.83	195.14	222.04	204.41
2063/064	298.78	222.65	286.67	222.65
2064/065	388.49	287.90	386.83	287.9

Source: Trading Report of NEPSE

Figure 4.19

Index Status of Market
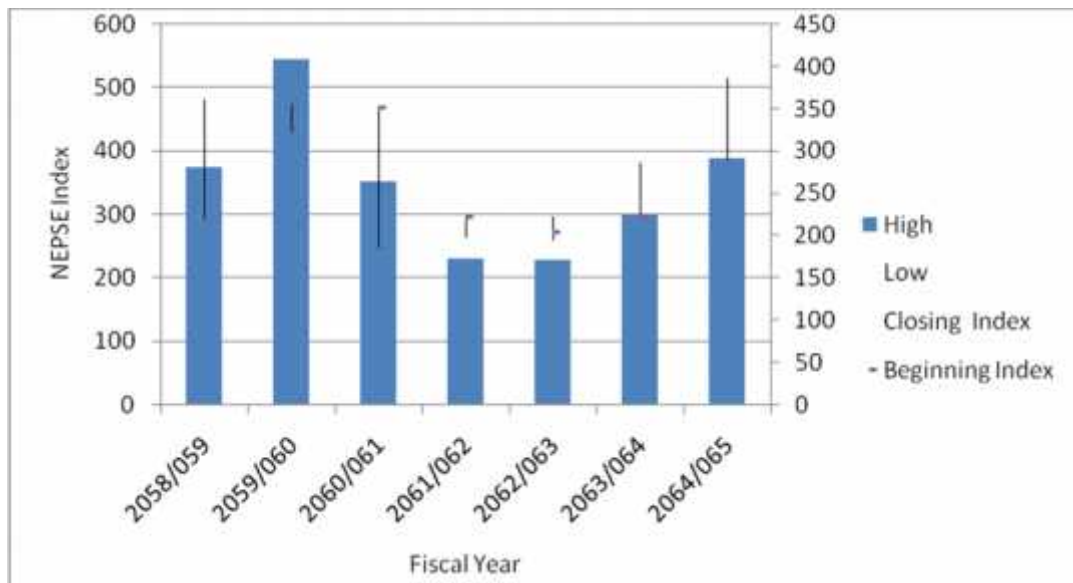
Table 4.11 and figure 4.19 shows that the Expected rate of returns (Trend value) for each year are calculated on the basis rate of return on the market index respective year by using least square method.

Figure 4.20

Movement of Market Rate of Return and Trend Line of Market Return
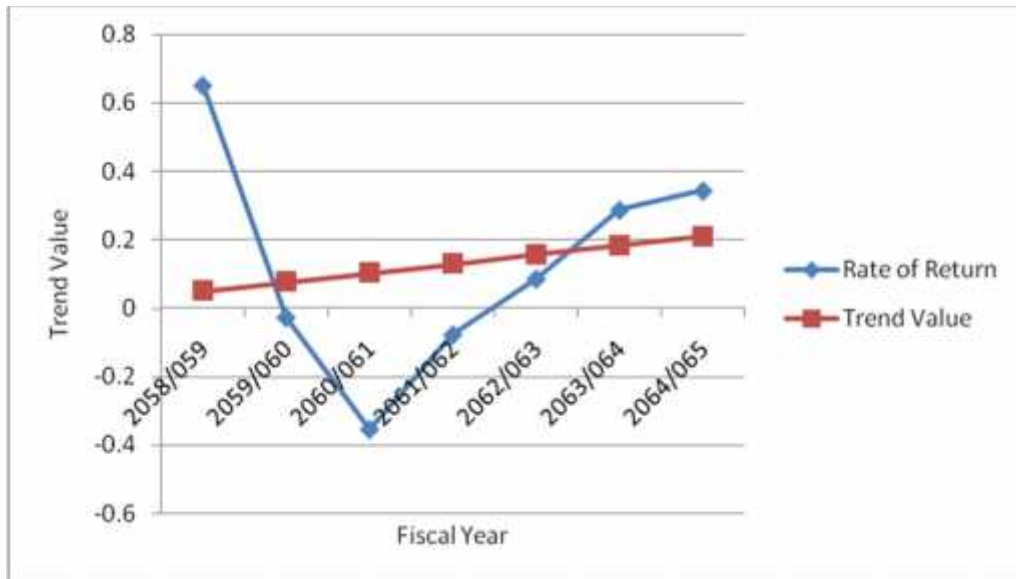
Source: Appendix 1, Table No. 18

Figure 4.20 shows the movement of rate of returns(R) and trend line of market. In the beginning FY 2058/059 R was at 0.65 but it moved downward very steeply and crossed the negative point. It further felled negatively in FY 2060/061. The negative situation was controlled in FY 2061/062.then it started to rise from FY 2062/063 till the study period .this market return shows the positive return of the market. Similarly the trend line in the beginning (FY 2058/059) is positive and it started it move upward slowly, ultimately high in FY 2064/065. There is positive growth of the market trend but in very gradual pace. This slow development of market index is due to the negative attitude of general investor towards investment in common stock and also capital markets overall low performance.

4.4 Index Evaluation of Each Sector

CAPM is model that assumes stock's required rate of return is equal to the risk free rate plus its risk premium where risk is measured by the beta, coefficient. Beta coefficient play vital role in CAPM approach. If the required rate of return is less than expected rate of return, the stock is said to be under priced and required rate of return is more than expected rate of return, the stock is said to be over priced. For this analysis the risk free

rate of return is needed, which is taken from the interest rate of Treasury bill issued by Nepal Rastra Bank. NRB issued Treasury bill, 91 days and 364 days time duration. Table 4.36(appendix 1) shows the required rate of return, expected return and price evaluation. 91 days duration Treasury bill rate is taken as a risk free rate from web site [http: nrb.org.np/pdm/tba/Treasury-bill-Auction--2063-01-27%20 (Rs. % 2013500 % 20crore). htm] of NRB. Which is approximately 3.65 percent in date 05/05/2006.

Table 4.12

Calculation of Required Rate of Returns and Price Evaluation

by CAPM Model

S.No.	Sectors	Beta Coeff.	Required Rate of Return	Expected Return E (r_i)	Price Situation
1	Commercial Bank	1.1831	-0.0002	0.0163	Under priced
2	Mfg. and Processing	0.577	0.0220	0.001	Overpriced
3	Hotel	0.5865	0.0217	-0.0022	Overpriced
4	Trading	0.2698	0.0333	0.001	Overpriced
5	Insurance	0.7707	0.0149	0.0089	Overpriced
6	Finance	0.6612	0.0189	0.0056	Overpriced
7	Development Bank	0.5462	0.0232	0.0137	Overpriced
8	Other Sector	2.2349	-0.0388	0.0322	Under priced
Required Rate of Return		$E(r_i) = r_i + [E(r_m) - r_f)b_i$			

Source Appendix 2

The stocks of commercial bank, Insurance and other sector are under priced so the investor can gain from buying the stock. Their stocks value will be increased in the near future providing the investors higher return. So investor should buy these stocks and who are holding they shouldn't sell. And the stocks of Manufacturing & Processing, Hotel, Trading, Finance and Development Bank are over priced so the investor can gain from selling the stock. Their stocks value will be decreased in the near future providing the investors loss or lower return. So investor should sell these stock and who are intending to buy they shouldn't buy. These analyses are based upon the industry. The individual part of the industry my not comply with this industry average.

4.5 Portfolio and Risk Diversification Analysis

Portfolio is a combination of more than two types of assets for the investment. In this study the portfolio analysis has done to find out, that portfolio return is more than individual security's return. It is a group of assets compiled to minimize the risk on investment. To invest in single security is risky, but to be relatively safe if hold in a portfolio. The major objective of portfolio analysis is to suggest the assets for investment that stabilized the earnings and minimize the risk. It helps to minimize the chance of loss from the change in stock price.

The risk diversification is based on two asset portfolio and tools for analysis are persecuted in research methodology chapter.

4.5.1 Portfolio between Commercial Bank and Manufacturing & Processing Sector

Here, the portfolio of the common stock of commercial bank and manufacturing & processing is analyzed. The following results are obtained by constructing portfolio. (Detail calculation is shown in Appendix-3).

- The stock must be in the following proportion: Commercial Bank = -0.9082, Manufacturing & Processing = 1.9082
- The return of this portfolio is, $E(r_p) = -0.0701$
- The portfolio risk is , $\exists p = 0.10947$

Since the optimal weight of stock of commercial bank was -0.9082 and stock of manufacturing & processing is 1.9082. When holding portfolio of commercial bank and manufacturing & processing, weight of manufacturing & processing is greater than 1, so weight of commercial bank is negative.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and manufacturing & processing was 0.3563and 0.1950 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.10947, which is lower than the average risk of these two sectors. But expected return of this portfolio is

negative, so it is recommended that investor should not select this portfolio for investment.

4.5.2 Portfolio between Commercial Bank And Hotel

Here, the portfolio of the common stock of commercial bank and hotel is analyzed (Detail calculation is shown in Appendix-3).

- ⟩ The stock must be in the following proportion: Commercial Bank =-0.6411, Hotel = 1.6411
- ⟩ The return of this portfolio is, $E(r_p) = -0.1613$
- ⟩ The portfolio risk is , $\exists p = 0.15798$

Since the optimal weight of stock of commercial bank is -0.6411and weight of stock of hotel is 1.6411.When holding portfolio of commercial bank and hotel, weight of hotel is greater than 1, so weight of commercial bank is negative.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and hotel is 0.3563and 0.2013 respectively before the diversification. But after portfolio construction, the risk is minimized at 0.10947. . But expected return of this portfolio is negative, so it is recommended that investor should not select this portfolio for investment.

4.5.3 Portfolio between Commercial Bank and Trading

Here, the portfolio of the common stock of commercial bank and trading is analyzed. Table 4.33 shows the calculation of, portfolio returns and portfolio risk of given two stocks and the proportion of these stocks that minimizes the risk (Detail calculation is shown in Appendix-3).

- ⟩ The stock must be in the following proportion: Commercial Bank =-0.0316, Trading = 1.0316
- ⟩ The return of this portfolio is, $E(r_p) = 0.0300$
- ⟩ The portfolio risk is , $\exists p = 0.14295$

Since the optimal weight of stock of commercial bank is -0.0316 and trading is 1.0316 when holding portfolio of commercial bank and trading, weight of trading is greater than 1, so weight of commercial bank is negative.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and trading was 0.3563and 0.1433 respectively before the diversification. But after portfolio construction, the portfolio risk is minimized at 0.14295. But expected return of this portfolio is very low so it is recommended that investor should not select this portfolio for investment.

4.5.4 Portfolio between Commercial Bank and Insurance

Here, the portfolio of the common stock of commercial bank and insurance is analyzed (Detail calculation is shown in Appendix-3).

⎰ The stock must be in the following proportion:
  Commercial Bank = -0.2460, Insurance = 1.2460
⎰ The return of this portfolio is, $E(r_p) = 0.1062$
⎰ The portfolio risk is , $\exists p = 0.24131$

Since the optimal weight of stock of commercial bank is -0.2460 and insurance is 1.2460. When holding portfolio of commercial bank and insurance, weight of insurance is greater than 1, so weight of commercial bank is negative.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and insurance was 0.3563and 0.1231 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.24131 which is not minimized than average risk of these two stocks. So it recommended investor should not select this portfolio.

4.5.5   Portfolio between Commercial Bank and Finance

Here, the portfolio of the common stock of commercial bank and finance is analyzed. Table 4.35 shows the calculation of, portfolio returns and portfolio risk of given two

stocks and the proportion of these stocks that minimizes the risk (Detail calculation is shown in Appendix-3).

⟩ The stock must be in the following proportion: Commercial Bank = -0.8957, Finance = -0.1611

The return of this portfolio is, $E(r_p) = 0.1062$

⟩ The portfolio risk is , $\exists p = 0.20150$

Since the optimal weight of stock of commercial bank is -0.8957and finance is 1.8957 when holding portfolio of commercial bank and finance, weight of finance is greater than 1, so weight of commercial bank is negative.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and finance was 0.3563and 0.2447 respectively before the diversification. . But after portfolio construction, the portfolio risk is minimized at 0.2015. But expected return of this portfolio is very negative so it is recommended that investor should not select this portfolio for investment.

4.5.6 Portfolio between Commercial Bank and Development Bank

Here, the portfolio of the common stock of commercial bank and development bank is analyzed. Table 4.36 shows the calculation of, portfolio returns and portfolio risk of given two stocks and the proportion of these stocks that minimizes the risk (Detail calculation is shown in Appendix-3).

⟩ The stock must be in the following proportion: Commercial Bank = 0.4689, Development Bank = 0.5311

⟩ The return of this portfolio is, $E(r_p) = 0.1024$

⟩ The portfolio risk is , $\exists p = 0.26666$

Since the optimal weight of stock of commercial bank is 0.4689 and development bank is 0.5311. When holding portfolio of commercial bank and development bank, weight of development bank is smaller than 1, so weight of commercial bank is positive.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and development bank was 0.3563and 0.3386 respectively before the diversification. But after portfolio construction, the portfolio risk s is minimized at 0.26666 and expected portfolio return is 0.1024 which is positive and satisfactory. So it recommended investor should select this portfolio for investment.

4.5.7 Portfolio between Commercial Bank and Other Sector

Here, the portfolio of the common stock of commercial bank and other sector is analyzed. Table 4.37 shows the calculation of, portfolio returns and portfolio risk of given two stocks and the proportion of these stocks that minimizes the risk (Detail calculation is shown in Appendix-3).

∫ The stock must be in the following proportion: Commercial Bank = 0.9393, Other Sector = 0.0607

∫ The return of this portfolio is, $E(r_p) = 0.1977$

∫ The portfolio risk is , $\exists p = 0.35203$

Since the optimal weight of stock of commercial bank is 0.9393 and other sector is 0.0607.

Using the diversification, we can reduce the risk. Standard deviation of commercial bank and other sector was 0.3563and 0.921 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.35203 which is not minimized. But expected return of this portfolio is satisfactory, so it is recommended that investor should not select this portfolio for investment.

4.5.8 Portfolio between Manufacturing & Processing and Hotel

Here, the portfolio of the common stock of manufacturing & processing and hotel is analyzed (Detail calculation is shown in Appendix-3).

∫ The stock must be in the following proportion:
Manufacturing and Processing = 0.9236, Hotel = 0.0764

∫ The return of this portfolio is, $E(r_p) = 0.0486$

∫ The portfolio risk is , $\exists p = 0.19496$

Since the optimal weight of stock of manufacturing & processing is -0.9236 and hotel is 0.764 when holding portfolio of manufacturing & processing and hotel.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and hotel was 0.195and 0.2013 respectively before the diversification. . But after portfolio construction, the portfolio risk is **0.19496** which is not minimized. And expected return of this portfolio is satisfactory, so it is recommended that investor should not select this portfolio for investment

4.5.9 Portfolio between Manufacturing & Processing and Trading

Here, the portfolio of the common stock of manufacturing & processing and trading is analyzed.

- ⟩ The stock must be in the following proportion:
  Manufacturing and Processing =0.2974 Trading = 0.7026
- ⟩ The return of this portfolio is, $E(r_p) =$ 0.0408
- ⟩ The portfolio risk is , $\exists p = 0.12930$

Since the optimal weight of stock of manufacturing & processing is -0.2974and trading is 0.7026 when holding portfolio of manufacturing & processing and trading.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and hotel was 0.195and 0.1433 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.1293 which is minimized. And expected return of this portfolio is satisfactory, so it is recommended that investor should select this portfolio for investment.

4.5.10 Portfolio between Manufacturing & Processing and Insurance

Here, the portfolio of the common stock of manufacturing & processing and insurance is analyzed. Table 4.39 shows the calculation of, portfolio returns and portfolio risk of

given two stocks and the proportion of these stocks that minimizes the risk (Detail calculation is shown in Appendix-3).

꘡ The stock must be in the following proportion:

Manufacturing and Processing = 1.1920, Hotel = -0.1920

꘡ The return of this portfolio is, $E(r_p) = 0.0413$

꘡ The portfolio risk is, $\exists p = 0.19343$

Since the optimal weight of stock of manufacturing & processing is 1.1920 and hotel is -0.1920 when holding portfolio of manufacturing & processing and insurance.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and insurance was 0.195and 0.2013 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.19343 which is not minimized. And expected return of this portfolio is low, so it is recommended that investor should not select this portfolio for investment select this portfolio.

4.5.11 Portfolio between Manufacturing & Processing and Finance

Here, the portfolio of the common stock of manufacturing & processing and finance is analyzed (Detail calculation is shown in Appendix-3).

꘡ The stock must be in the following proportion:

Manufacturing and Processing = 2.7285, Finance = -1.7285

꘡ The return of this portfolio is, $E(r_p) = 0.0374$

꘡ The portfolio risk is , $\exists p = 0.15289$

Since the optimal weight of stock of manufacturing & processing is -2.7285 and finance is -1.7285 when holding portfolio of manufacturing & processing and finance.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and hotel was 0.195and 0.2447 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.15289 which is minimized. And

expected return of this portfolio is low, so it is recommended that risk averter investor should select this portfolio for investment

4.5.12 Portfolio between Manufacturing & Processing Sector and Development Bank

Here, the portfolio of the common stock of manufacturing & processing and development bank is analyzed (Detail calculation is shown in Appendix-3)

〕 The stock must be in the following proportion:

Manufacturing and Processing = 0.7803, Development Bank = 0.2197

〕 The return of this portfolio is, $E(r_p) = 0.0477$

〕 The portfolio risk is , $\exists p = 0.17728$

Since the optimal weight of stock of manufacturing & processing is -0.7803 and development bank is 0.2197 when holding portfolio of manufacturing & processing and development bank.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and development bank was 0.195and 0.3386 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.1773 which is minimized. And expected return of this portfolio is satisfactory, so it is recommended that investor should select this portfolio for investment portfolio.

4.5.13 Portfolio between Manufacturing & Processing and Other Sector

Here, the portfolio of the common stock of manufacturing & processing and other sector is analyzed (Detail calculation is shown in Appendix-3).

〕 The stock must be in the following proportion:

Manufacturing and Processing = 0.9784, Other Sector = 0.0216

〕 The return of this portfolio is, $E(r_p) = 0.0596$

〕 The portfolio risk is , $\exists p = 0.19398$

Since the optimal weight of stock of manufacturing & processing is -0.9784 and other sector is 0.0216 when holding portfolio of manufacturing & processing and other sector.

Using the diversification, we can reduce the risk. Standard deviation of manufacturing & processing and other sector was 0.195and 0.921 respectively before the diversification. . But after portfolio construction, the portfolio risk is 0.19398 which is not minimized. And expected return of this portfolio is very low, so it is recommended that investor should not select this portfolio for investment.

4.5.14 Portfolio between Hotel and Trading

Here, the portfolio of the common stock of Hotel and trading is analyzed (Detail calculation is shown in Appendix-3).

⟩ The stock must be in the following proportion: Hotel = 0.3138, Trading = 0.6862
⟩ The return of this portfolio is, $E(r_p) = 0.0167$
⟩ The portfolio risk is , $\exists p = 0.12350$

Since the optimal weight of stock of Hotel is 0.3138 and trading is 0.6862 when holding portfolio of Hotel and trading.

Using the diversification, we can reduce the risk. Standard deviation of Hotel and trading was 0.2013 and 0.1433 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.12350 which is minimized. And expected return of this portfolio is higher than the average expected return of these two stocks, so it is recommended that investor could select this portfolio for investment

4.5.15 Portfolio between Hotel and Insurance

Here, the portfolio of the common stock of Hotel and trading is analyzed (Detail calculation is shown in Appendix-3).

⟩ The stock must be in the following proportion: Hotel = 0.9426, Insurance = 0.0574
⟩ The return of this portfolio is, $E(r_p) = -0.0150$
⟩ The portfolio risk is , $\exists p = 0.20111$

Since the optimal weight of stock of Hotel is 0.9426 and insurance is 0.0574 when holding portfolio of Hotel and Insurance.

Using the diversification, we can reduce the risk. Standard deviation of Hotel and Insurance was 0.2013 and 0.2468 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.2011 which is little bit minimized. And expected return of this portfolio is negative so it is recommended that investor should not select this portfolio for investment.

4.5.16 Portfolio between Hotel and Finance

Here, the portfolio of the common stock of Hotel and trading is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion: Hotel = 1.7408, Finance = 0.6862
- ﹚ The return of this portfolio is, $E(r_p)$ = -0.0884
- ﹚ The portfolio risk is , $\exists p$ = 0.19037

Since the optimal weight of stock of Hotel is 1.7408 and Finance is 1.9082 when holding portfolio of Hotel and Finance.

Using the diversification, we can reduce the risk. Standard deviation of Hotel and Finance was 0.2013 and 0.2447 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.19037 which is minimized. And expected return of this portfolio is negative, so it is recommended that investor should not select this portfolio for investment.

4.5.17 Portfolio between Hotel and Development Bank

 Here, the portfolio of the common stock of Hotel and Development is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion:
     Hotel = 0.7578, Development Bank = 0.2422
- ﹚ The return of this portfolio is, $E(r_p)$ = -0.0120
- ﹚ The portfolio risk is , $\exists p$ = 0.17913

Since the optimal weight of stock of Hotel is 0.7578 and Development Bank is 0.2428 when holding portfolio of Hotel and Development Bank.

Using the diversification, we can reduce the risk. Standard deviation of Hotel and Development Bank was 0.2013 and 0.3386 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.17913 which is highly minimized but expected return of this portfolio is negative, so it is recommended that investor should not select this portfolio for investment.

4.5.18   Portfolio between Hotel and Other Sector

Here, the portfolio of the common stock of Hotel and Other Sector is analyzed (Detail calculation is shown in Appendix-3).

-) The stock must be in the following proportion:
    Hotel = 0.9619 Other Sector = 0.0381
-) The return of this portfolio is, $E(r_p) = -0.0115$
-) The portfolio risk is , $\exists p = 0.03925$

Since the optimal weight of stock of Hotel is 0.9619 and Other Sector is 0.0381 when holding portfolio of Hotel and Other Sector.

Using the diversification, we can reduce the risk. Standard deviation of Hotel and Other Sector was 0.2013 and 0.9210 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.03925 which is not minimized but expected return of this portfolio is negative, so it is recommended that investor should not select this portfolio for investment.

4.5.19   Portfolio between Trading and Insurance

 Here, the portfolio of the common stock of trading and Insurance is analyzed (Detail calculation is shown in Appendix-3).

-) The stock must be in the following proportion: Hotel = 0.9255, Insurance = 0.0745
    The return of this portfolio is, $E(r_p) = 0.0416$
-) The portfolio risk is , $\exists p = 0.14238$

Since the optimal weight of stock of Trading is 0.9255 and insurance is 0.0745 when holding portfolio of Trading and Insurance.

Using the diversification, we can reduce the risk. Standard deviation of Trading and Insurance was 0.1433 and 0.2468 respectively before the diversification. But after portfolio construction, which is lower than the risk is 0.14348. Which is minimized but expected return of this portfolio is low, so it is recommended that investor should not select this portfolio for investment.

4.5.20 Portfolio between Trading and Finance

Here, the portfolio of the common stock of trading and Finance is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion:
  Hotel = 0.8602, Finance = 0.1398
- ﹚ The return of this portfolio is, $E(r_p) = 0.0391$
- ﹚ The portfolio risk is , $\exists p = 0.13953$

Since the optimal weight of stock of Trading is 0.8602 and Finance is 0.1398 when holding portfolio of Trading and Finance.

Using the diversification, we can reduce the risk. Standard deviation of Trading and Finance was 0.1433 and 0.2447 respectively before the diversification. But after portfolio construction, the portfolio risk is minimized at 0.13953 and portfolio return is satisfactory. So, it recommended the investor could select this portfolio.

4.5.21 Portfolio between Trading and Development Bank

Here, the portfolio of the common stock of trading and Development Bank is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion:
  Hotel = 0.9688, Development Bank = 0.0312

⟩ The return of this portfolio is, $E(r_p) = 0.0346$

⟩ The portfolio risk is , $\exists p = 0.14296$

Since the optimal weight of stock of Trading is 0.9688 and Development Bank is 0.0312 when holding portfolio of Trading and Development Bank.

Using the diversification, we can reduce the risk. Standard deviation of Trading and Development Bank was 0.1433 and 0.3386 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.14296 and the average risk of these two stocks is 0.2409 which is minimized by 0.0913. The expected portfolio return is 0.0346 and average return of these two stocks is 0.0292 which is also increased by portfolio construction. So it highly recommended that investor should select this portfolio for higher return with comparatively lower risk.

4.5.22 Portfolio between Trading and Other Sector

Here, the portfolio of the common stock of trading and Other Sector is analyzed (Detail calculation is shown in Appendix-3).

⟩ The stock must be in the following proportion:

  Hotel = 1.0558, Other Sector = -0.0558

⟩ The return of this portfolio is, $E(r_p) = 0.0208$

⟩ The portfolio risk is , $\exists p = 0.13496$

Since the optimal weight of stock of Trading is 1.0558 and Other Sector is -0.0558 when holding portfolio of Trading and Other Sector.

Using the diversification, we can reduce the risk. Standard deviation of Trading and Other Sector was 0.1433 and 0.9210 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.13496 which is not minimized and the expected portfolio return is also very low. So it recommended investor should not select this portfolio.

4.5.23 Portfolio between Insurance and Finance

 Here, the portfolio of the common stock of Insurance and Finance is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion:

   Insurance = 0.3706, Finance = 0.6294

- ﹚ The return of this portfolio is, $E(r_p) = 0.0862$
- ﹚ The portfolio risk is , $\exists p = 0.24358$

Since the optimal weight of stock of Insurance is 0.3706 and Finance is 0.6294 when holding portfolio of Insurance and Finance.

Using the diversification, we can reduce the risk. Standard deviation of Insurance and Finance was 0.2468 and 0.2447 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.24358 which is not minimized and the expected portfolio return is also comparatively low. So it is recommended that investor should not select this portfolio.

4.5.24 Portfolio between Insurance and Development Bank

Here, the portfolio of the common stock of Insurance and Development Bank is analyzed (Detail calculation is shown in Appendix-3).

- ﹚ The stock must be in the following proportion:

   Insurance = 0.6991, Development Bank = 0.3009

- ﹚ The return of this portfolio is, $E(r_p) = 0.0931$
- ﹚ The portfolio risk is , $\exists p = 0.22066$

Since the optimal weight of stock of Insurance is 0.6991 and Development Bank is 0.3009 when holding portfolio of Insurance and Development Bank.

Using the diversification, we can reduce the risk. Standard deviation of Insurance and Development Bank was 0.2468 and 0.3386 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.22066 and   the average risk of these

two stocks is 0.2927 which is minimized by 0.07204. The expected portfolio return is 0.0931and average return of these two stocks is 0.0733 which is also increased after portfolio construction. So it is highly recommended that investor should select this portfolio for higher return with comparatively lower risk.

4.5.25   Portfolio Between Insurance and Other Sector

Here, the portfolio of the common stock of Insurance and Other Sector is analyzed (Detail calculation is shown in Appendix-3).

〕 The stock must be in the following proportion:
   Insurance = 0.9711, Other Sector   = 0.0289
〕 The return of this portfolio is, $E(r_p) =$ 0.1279
〕 The portfolio risk is , $\exists p = 0.24539$

Since the optimal weight of stock of Insurance is 0.9711 and Other Sector is 0.0289 when holding portfolio of Insurance and Other Sector.

Using the diversification, we can reduce the risk. Standard deviation of Insurance and Other Sector was 0.2468 and 0.9210 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.24539 which is minimized but the expected portfolio return is comparatively low. So it is recommended that investor should not select this portfolio.

4.5.26 Portfolio between Finance and Development Bank

 Here, the portfolio of the common stock of Finance and Development Bank is analyzed (Detail calculation is shown in Appendix-3).

〕 The stock must be in the following proportion:
   Finance = 0.6927, Development Bank   = 0.3073
〕 The return of this portfolio is, $E(r_p) =$ 0.0518
〕 The portfolio risk is , $\exists p = 0.21553$

Since the optimal weight of stock of Finance is 0.3073 and Development Bank is 0.0518.

Using the diversification, we can reduce the risk. Standard deviation of Finance and Development Bank was 0.2447 and 0.3386 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.21553 and the average risk of these two stocks is 0.2916 which is minimized by 0.0761. The expected portfolio return is 0.0518 and average return of these two stocks is 0.0439 which is also increased after portfolio construction. So it is highly recommended that investor should select this portfolio for higher return with comparatively lower risk.

4.5.27 Portfolio between Finance and Others

Here, the portfolio of the common stock of Finance and Other Sector is analyzed (Detail calculation is shown in Appendix-3).

-) The stock must be in the following proportion:
  Finance = 0.9565, Other Sector   = 0.0435
-) The return of this portfolio is, $E(r_p) = 0.0742$
-) The portfolio risk is , $\exists p = 0.24134$

Using the diversification, we can reduce the risk. Standard deviation of Finance and Other Sector was 0.2447 and 0.921 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.24134 which is not minimized. At the same time portfolio return is also comparatively lower than the average return of these two stocks. So it is recommended that investor should not select this portfolio.

4.5.28 Portfolio between Development Bank and Other Sector

Here, the portfolio of the common stock of Development Bank and Other Sectors is analyzed. (Detail calculation is shown in Appendix-3).

-) The stock must be in the following proportion:
  Development sector = 0.8752, Other Sector   = 0.1248
-)   The return of this portfolio is, $E(r_p) = 0.0567$
-)   The portfolio risk is , $\exists p = 0.31533$

Since the optimal weight of stock of Development Bank is 0.8752 and stock of Other Sector is 0.1248

Using the diversification, we can reduce the risk. Standard deviation of Development Bank and Other Sector was 0.3386 and 0.921 respectively before the diversification. But after portfolio construction, the portfolio risk is 0.31533 which is lower than the average risk of individual stock but the portfolio return is very low than the average expected return of these two stocks. So it is recommended that investor should not select this portfolio for the reason of very low portfolio return.

4.6 Evaluation of Portfolio Performance

Portfolio Constructed above is measured by Sharpe, Treynor and Jensen portfolio performance measure.

4.6.1 Sharpe's Portfolio Performance Model

In assessing the performance of portfolio, it is necessary to consider both risk and return. Ranking portfolios' average returns ignores the skill with which they minimize risk and therefore presents an over simplified pictures. William F. Sharpe devised an index of portfolio performance, denoted S_i.

$$S_i = \frac{\text{Risk premium}}{\text{Total Risk}} = \frac{E(r_p)\,Zr_f}{\exists_p}$$

Where

$E(r_p)$ = Expected of return of portfolio

$\exists_p$ = Standard deviation of return for portfolio

r_f = Risk free rate

Sharpe's Ratio measures the performance on the basis of total risk measured by standard deviation. The results is first ranked and tabulated on table 4.12.

Table 4.13

Sharpe's Portfolio Performance Model

Portfolio	E(rp)	r_f	β_p	S_i	Ranking
A	-0.0701	0.0432	0.1095	-1.0347	26
B	-0.1613	0.0432	0.158	-1.2943	27
C	0.03	0.0432	0.143	-0.0923	19
D	0.1062	0.0432	0.2413	0.2611	3
E	-0.1611	0.0432	0.2015	-1.0139	25
F	0.1024	0.0432	0.2667	0.2220	5
G	0.1977	0.0432	0.352	0.4389	1
H	0.0486	0.0432	0.195	0.0277	11
I	0.0408	0.0432	0.1293	-0.0186	15
J	0.0413	0.0432	0.1934	-0.0098	13
K	0.0374	0.0432	0.1529	-0.0379	17
L	0.0477	0.0432	0.1773	0.0254	12
M	0.0596	0.0432	0.194	0.0845	8
N	0.0167	0.0432	0.1235	-0.2146	21
O	-0.015	0.0432	0.2011	-0.2894	22
P	-0.0884	0.0432	0.1904	-0.6912	24
Q	-0.012	0.0432	0.1791	-0.3082	23
R	-0.0115	0.0432	0.0392	-1.3954	28
S	0.0416	0.0432	0.1424	-0.0112	14
T	0.0391	0.0432	0.1395	-0.0294	16
U	0.0346	0.0432	0.1443	-0.0596	18
V	0.0208	0.0432	0.135	-0.1659	20
W	0.0862	0.0432	0.2436	0.1765	6
X	0.0931	0.0432	0.2207	0.2261	4
Y	0.1279	0.0432	0.2454	0.3452	2
Z	0.0518	0.0432	0.2156	0.0399	10
A1	0.0742	0.0432	0.2413	0.1285	7
B1	0.0567	0.0432	0.3153	0.0428	9

Source: Appendix 3

Findings:

⌡ Stocks of Portfolio G (Portfolio between Commercial Bank and Other Sector), Portfolio Y (Portfolio between Insurance and Other Sector) and Portfolio D

(Portfolio between Commercial Bank and Insurance) are the best performing stocks as they have highest risk premium at per unit risk.

) Stocks of Portfolio R (Portfolio between Hotel and Other Sector) have the worst performance as they have lowest risk premium, in fact they have negative risk premium at per unit of total risk.

4.6.2   Treynor's Portfolio Performance Model

In assessing the performance of portfolio, it is necessary to consider both risk and return. Ranking portfolios' average returns ignores the skill with which they minimize risk and therefore presents an over simplified pictures.

$$T_p = \frac{\text{Risk premium}}{b_p} = \frac{E(r_p)\,Zr_f}{b_p}$$

Where

T_p = Treynor's portfolio performance

$E\,(r_p)$ = Expected of return of portfolio

r_f = Risk free rate of return

b_p = portfolio beta

Treynor's Ratio measures the performance on the basis of systematic risk as measured by portfolio beta.

Table 4.14

Treynor's Portfolio Performance Model

Portfolio	E(rp)	r_f	b_p	T_p	Ranking
A	-0.0701	0.0432	0.1069	-1.0599	**28**
B	-0.1613	0.0432	0.2509	-0.8151	**27**
C	0.03	0.0432	0.2021	-0.0653	**19**
D	0.1062	0.0432	0.5779	0.1090	**3**
E	-0.1611	0.0432	0.4161	-0.4910	**26**
F	0.1024	0.0432	0.6637	0.0892	**5**
G	0.1977	0.0432	1.1362	0.1360	**1**
H	0.0486	0.0432	0.607	0.0089	**11**
I	0.0408	0.0432	0.3431	-0.0070	**15**
J	0.0413	0.0432	0.5907	-0.0032	**13**
K	0.0374	0.0432	0.3314	-0.0175	**17**
L	0.0477	0.0432	0.5237	0.0086	**12**
M	0.0596	0.0432	0.6113	0.0268	**9**
N	0.0167	0.0432	0.3487	-0.0760	**20**
O	-0.015	0.0432	0.6102	-0.0954	**22**
P	-0.0884	0.0432	0.4856	-0.2710	**25**
Q	-0.012	0.0432	0.5137	-0.1075	**23**
R	-0.0115	0.0432	0.6126	-0.0893	**21**
S	0.0416	0.0432	0.2657	-0.0060	**14**
T	0.0391	0.0432	0.3062	-0.0134	**16**
U	0.0346	0.0432	0.2313	-0.0372	**18**
V	0.0208	0.0432	0.1997	-0.1122	**24**
W	0.0862	0.0432	0.7391	0.0582	**6**
X	0.0931	0.0432	0.5524	0.0903	**4**
Y	0.1279	0.0432	0.6955	0.1218	**2**
Z	0.0518	0.0432	0.6009	0.0143	**10**
A1	0.0742	0.0432	0.768	0.0404	**8**
B1	0.0567	0.0432	0.2987	0.0452	**7**

Source: Appendix 3

Findings:

⌡ Stocks of Portfolio G (Portfolio between Commercial Bank and Other Sector), Portfolio Y (Portfolio between Insurance and Other Sector) and Portfolio D

(Portfolio between Commercial Bank and Insurance) are the best performing stocks as they have highest risk premium at per unit risk.

) Stocks of Portfolio A (Portfolio between Commercial Bank and Manufacturing & Processing) have the worst performance as they have lowest risk premium, in fact they have negative risk premium at per unit of total risk.

4.7 Correlation between Sectors

The correlation coefficient always lies between + 1 and -1. Returns of securities are very perfectly together when the correlation coefficient is +1 and in perfectly opposite direction when it is -1. A zero correlation coefficient implies that there is no relationship between the returns of securities. Correlation between the returns of the two securities plays a significant role in risk reduction by portfolio construction. The table 4.14 presented below shows the various consolations between each sector.

Table 4.15

Correlation Matrix

S.No.	Sectors	C. Bank	Mfg. Pro.	Hotel	Trading	Insurance	Finance	Dev Bank	Other
1	Commercial Bank	1	0.9643	0.9035	0.4642	0.8165	0.934	0.1807	0.2350
2	Mfg. and Pro.		1	0.9630	0.2756	0.8561	0.975	0.1212	0.1097
3	Hotel			1	-0.1283	0.7890	0.940	0.0836	0.0388
4	Trading				1	0.4807	0.368	0.3586	0.4705
5	Insurance					1	0.967	0.2429	0.1619
6	Finance						1	0.1955	0.0989
7	Dev. Bank							1	-0.0234
8	Other Sector								1

Source: Appendix1 and Appendix 2

Table 4.58 shows that correlation between each sector's stocks. There is positive correlation between various sectors. But correlation between Hotel & Trading and Development Bank & Other Sector are negative. If correlation between stocks is +1, any part of risk can not be reduced by diversification. On the other hand, if correlations

between stocks are -1, the proper combination of two stocks can reduces all the risk. As long as there exit negative correlation between securities, the risk can be minimized. The correlation between hotel and trading is negative (-0.1283) the risk of the hotel and trading sector can be minimized by constructing the portfolio.

4.8 ANOVA Test

Null hypothesis H_0: There is no significant difference between mean return of business sector.

Alternative hypothesis H_1: There is significant difference between mean return of business sector.

Test statistics; ANOVA

SUMMARY

Groups	Count	Sum	Average	Variance
Column 1	6	1.274192	0.212365	0.156941
Column 2	6	0.460216	0.076703	0.048592
Column 3	6	-0.12574	-0.02096	0.055547
Column 4	6	0.414432	0.069072	0.03304
Column 5	6	1.255495	0.209249	0.05981
Column 6	6	0.676909	0.112818	0.067062
Column 7	6	0.208385	0.034731	0.03548
Column 8	6	3.658299	0.609716	1.237864

ANOVA

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1.639274	7	0.234182	1.105717	0.378398	2.249024
Within Groups	8.471681	40	0.211792			
Total	10.11095	47				

Decision: Since the calculated value of F is less than the tabulated value of F, the null hypothesis H_0 is accepted. Therefore there is no significant difference between mean return of business sector.

4.9 Primary Data Analysis

This chapter deals with the analysis of primary data collected from questionnaire techniques. Questionnaires are given to the various respondents from different level, gender, occupation, age, education and income group who are interested in common stock investment. All the questions have multiple choices to select ranging from 2 to 4 options. All questions given to respondents are structured and closed ended but some are opened ended. The respondents are selected on stratified random basis on the visit to the stock exchange, broker company and regarding the questionnaire their views, and analyzed.

Altogether 100 respondents are selected on the stratified random basis

Note: source of charts and tables are from annex 4

A. Knowledge about Common Stock

<div align="center">

Figure 4.21

Knowledge Toward Common Stock

</div>
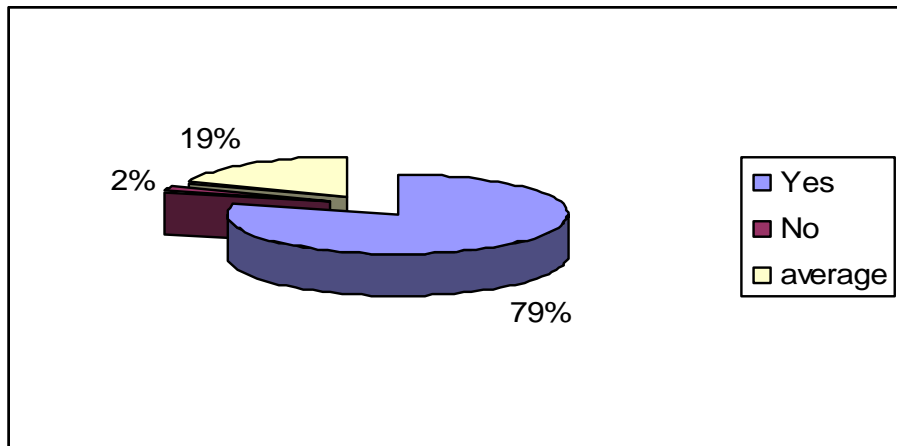
Figure 4.21 shows that out of 100 respondents, 79% respondents have knowledge about common stock, 2% respondents have no ideas and 19% respondents have little knowledge.

B. Selecting Sector of Investing Common Stock

Figure 4.22

Selecting Sector of Investing Common Stock

Figure 4.22 shows that out of 100 respondents 50% respondents are interested to invest in commercial banking sector, 4% respondents are interested in to invest in manufacturing sector, 5% respondents are interested to invest in hotel sector, 4% respondents are interested to invest in hotel trading, 8%, respondents are interested to invest in insurance sector, 14% respondents are interested to invest in finance sector, 12%, respondents are interested to invest in development banking sector and 3% respondents are interested to invest in other sector

C. Performance of Stock Market in Nepal

Figure 4.23

Respondents view towards Performance of Stock Market in Nepal

Figure 4.23 shows that out of 100 respondents 62%respondents view is fair, 30% respondents view is good, 6% respondents view is poor and only 2% respondents view is excellent towards the performance of banking industries in Nepal.

D. Basis for selection of Specific Company's Shares

Figure 4.24

Respondents view on basis for selection of Specific Company's Share

Figure 4.24 shows that of 100 respondents,10% respondents are taken expert opinion , 30% respondent go after risk and return analysis, 52% go after company's reputation and 8% go after other included market price, ratio analysis , income statement, etc. for

selection of specific company's share.

E. Method use for calculation of Return

Figure 4.25

Method use by the respondents to Calculate Return
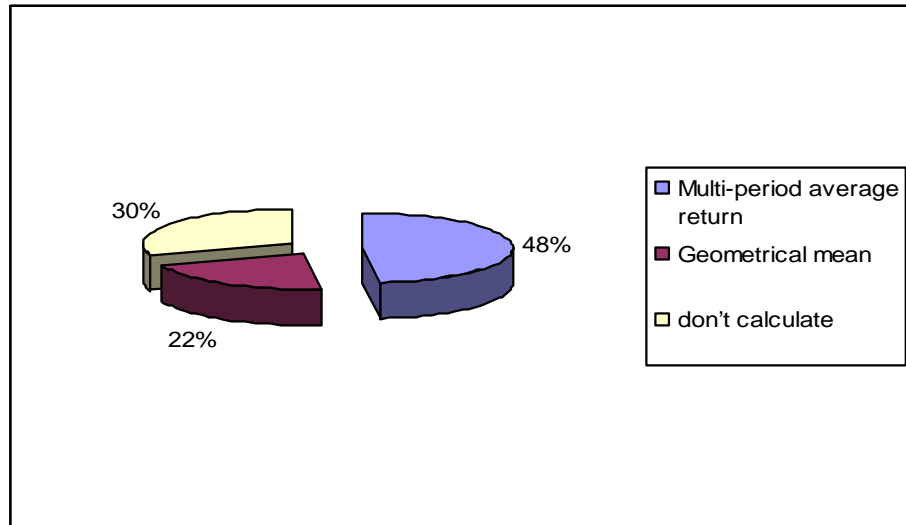
Figure 4.25 shows that out of 100 respondents, 48% respondents use multi period average method, 22% respondents use geometric mean method and 30% respondents do not calculate return.

F. Most reliable tool for measurement of Risk

Figure 4.26

Most reliable tool for measurement of Risk

Figure 4.26 shows that out of 100 respondents 16% respondents use variance, 28% respondents use standard deviation, 6% use coefficient of variance for measurement of risk and 50% respondents don't calculate risk or they don't know about risk measurement tools.

G. Main purpose of Buying Shares

Figure 4.27

Options of respondent's purpose of Buying Shares

Figure 4.27 shows that out of 100 respondents, 53% respondents purchase shares for dividend, 29% respondents purchase shares or buying and selling purpose, 15% respondents purchase shares for capital gain and 3% purchase shares for not any specific

purpose.

H. Securities market index show the current situation of Market

Figure 4.28

Securities market index show the current situation of Market
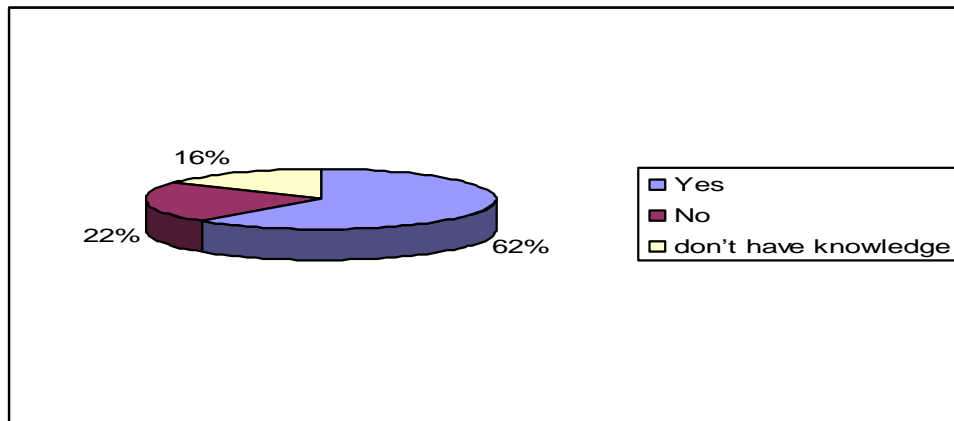
Figure 4.28 shows that out of 100 respondents, 62% respondents are positive, 22% respondents are negative on security market index show the current situation of market an d 16% respondents don't know about security index.

I. Dividend offers by the company

Figure 4.29

Option of respondent toward dividend offer by the Company

Figure 4.29 shows that out of 100 respondents, 22% respondents prefer cash dividend, 18% respondents prefer stock dividend, and 59% respondents prefer both cash and stock dividend and 1% respondents don't know about dividend.

J. Knowledge of Portfolio Management

Figure 4.30

Knowledge toward Portfolio Management
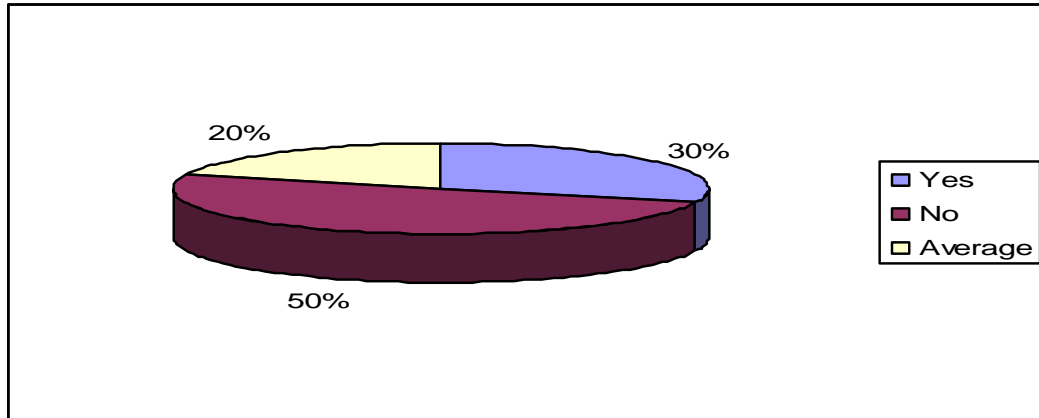
Figure 4.30 shows that out of 100 respondents, 30% respondents have knowledge about Portfolio management, 50% respondents have no ideas and 20% respondents have little knowledge.

K. Making portfolio minimizes the Risk

Figure 4.31

Knowledge toward portfolio management that Minimizes Risk

Figure 4.31shows that out of 100 respondents, 25% respondents have knowledge about Portfolio management minimizes the risk, 60% respondents have no ideas and 15% respondents have little knowledge

L. Constructing portfolio by investors before Investing

Figure 4.32

Constructing Portfolio by investors before Investing

Figure 4.32 shows that out of 100 respondents, 10% respondents that they make portfolio before investment, 90% respondents that they don't construct portfolio before investing.

4.10 Finding from Primary Data Analysis

The investment environment in Nepal is in early stage. In general people don't know much about stock market. The investment are done with out prior knowledge, the construction of portfolio is out of question. People invest without any information about the organization also.

Most of the investor invests in common stock. Common stock is the most risky securities than any other securities. Common stock of a corporate firm neither ensures annual return nor ensures the return of principle. Dividend or annual return of common stock is paid after tax and preference dividend paid, if a company gets profit.

Most of the people do not have knowledge of common stock; they just invest in common stock as a shot in the dark.

CHAPTER - V
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Return is fundamental requirement of investment and a certain level of risk is attached with it. Saving is worthless until and unless used in productive investment. Finance mostly deals with the monetary risk and return which is the most influencing subject matter for an individual and to small and large corporations as well. Past trend shows that the field of finance is gradually improving and it has truly undergone a revolution and it is one of the leading sectors. Stock market has become a global phenomenon.

Generally, investors invest their current cash only to those areas where these are high return and low risk. And investor looking for the common stock investment usually pays the price for stock based on his estimation about future dividends and grown in stock price. This study occupies an important role in the development of stock market.

Lack of information and lean knowledge is chief problem faced by individual investor who are manipulated and exploited by the financial institutions and there market intermediaries. The attitude and perception of investors play chief role in investment decision which is influenced by the information and access to the data required for analysis. Investors invest their wealth on the basis of guess and hunches because they do not have any information about the financial asses and they also lack the idea to reach to ideal investment decision. Investor purchase stocks merely looking past trend of stock prices and sometimes they have to bear heavy loss due to inadequate knowledge and information related to the stock investment. One expects favorable returns by holding stock. How can one make higher return assuming lower risk?

Since the main objective of the study is to Trend Analysis and Optimum Portfolio Selection of Nepalese Stock Market. The study is focused on the common stock of all business sectors. Thus all eight sectors are taken as sample to construct a portfolio. Before constructing

portfolio we need to analysis the risk and return of common stock. While analyzing the risk and return, brief review of related studies has been performed. This analysis of risk and return is a significant in investment decision as will as managerial decision. It influences risk and return of the shareholders. Consequently the risk and return analysis influences the market price of stock. This risk can be minimized but constructing portfolio and the constructed portfolio will provide optimum return at the given level of risk.

However, different scholars have suggested various statistical as well as financial tools like required rate of return, expected rate of return, standard deviation, variance, coefficient of variation, beta coefficient, correlation coefficient, portfolio risk portfolio return, least square regression equation and so on. Different diagrams, tables, graph are used to present the result. All the data are collected from the secondary sources. Secondary sources of data are NEPSE Report, trading report of SEBO, web site of NRB etc. Findings of analysis are summarized below.

- Out of 100 respondents, 79% respondents have knowledge about common stock, 2% respondents have no idea and 19% respondents have little knowledge about common stock Over all knowledge about common stock is positive.
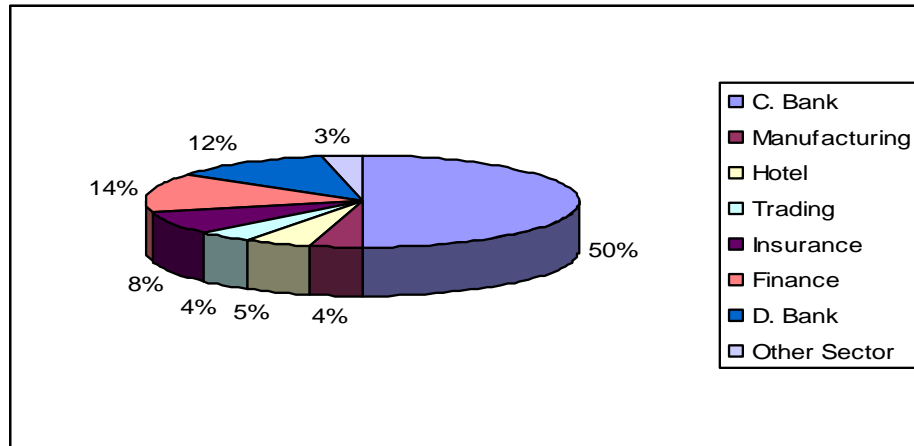
- Out of 100 respondents 50% respondents are interested to invest in commercial banking sector, 4% respondents are interested in to invest in manufacturing sector, 5% respondents are interested to invest in hotel sector, 4% respondents are interested to invest in hotel trading, 8%, respondents are interested to invest in insurance sector, 14% respondents are interested to invest in finance sector, 12%, respondents are interested to invest in development banking sector and 3%   respondents are interested to invest in other sector.
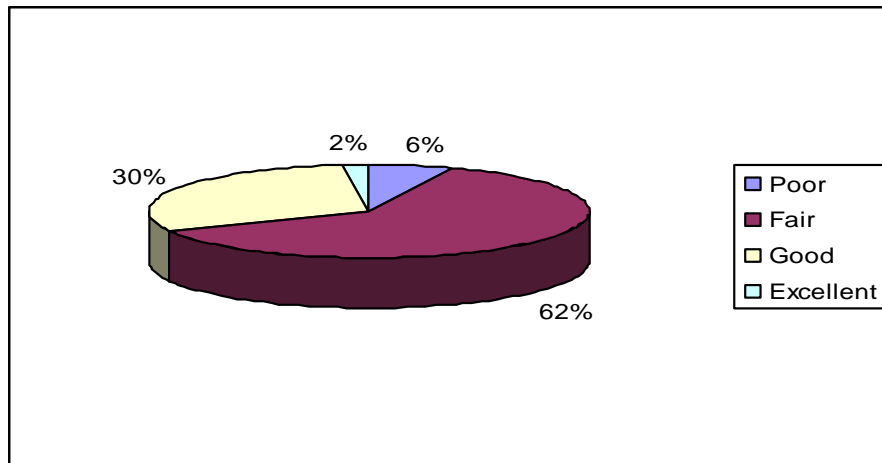
- Out of 100 respondents, 62% respondents' view is fair, 30% respondents' view is good, 6% respondents' view is poor and 2% respondents' view is excellent towards the performance of banking sector in Nepal. Most of the investors' view against performance of banking sector in Nepal is good.

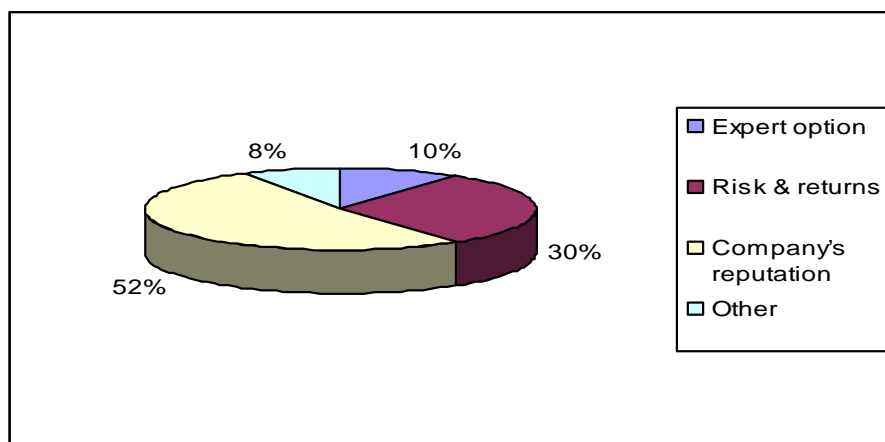- Out of 100 respondents, 10% respondents are taken expert option, 30% respondents go after Risk & Return analysis, 52% go after company's reputation and 8% go after other

included market price, Ration analysis, income statement etc; for selecting of specific company's share.

) Out of 100 respondents, 48% respondents use multi-period average method, 22% respondents use geometric mean method and 30% respondents don not calculate return. Most of the respondents nearly half of the respondent uses multi-period method to calculate return. And unfortunately large chuck does not calculate return.
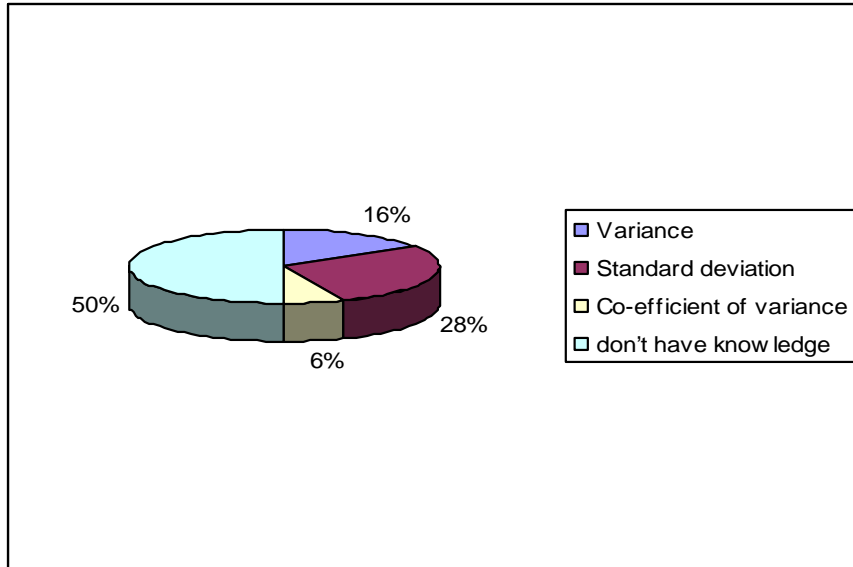
) Out of 100 respondents, 16% respondents use variation, 28% respondents use standard deviation, 6% use co-efficient of variance for the measurement of risk and 50% respondents don't calculate risk or they don't know about risk measurement tools. Only half of the respondents use measurement tools for calculation of the risk and unfortunately, half of the respondents do not know about it.
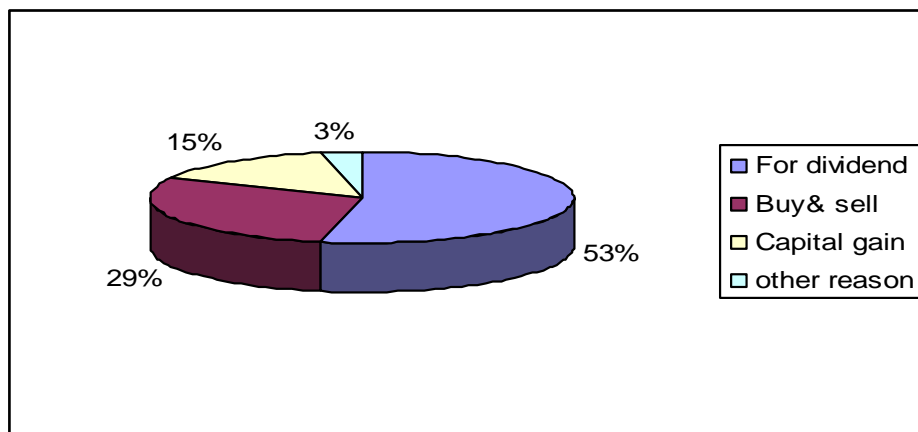
) From the analysis, it is clear that out of 100 respondents, 53% respondents purchase shares for dividend, 29% respondents purchase shares for buying and selling purpose, 15% respondents purchase share for capital gain and 3% respondents purchase share for not only specific purpose.

) From the analysis, it is clear that out of 100 respondents, 62% respondents are positive on market index, i.e. 2% said 'yes' that indicate, they believe in security's market indexes, 22% respondents go against index (i.e. they said No') that mean securities market index don't show the situation of market. And unfortunately, 16% respondents do not know about security's market indexes.

) Out of 100 respondents, 22% respondents prefer cash dividend, 18% respondents prefer stock dividend (Bonus Share), and 59% respondents prefer both stock and cash dividend and only 1% respondents do not know about dividend.
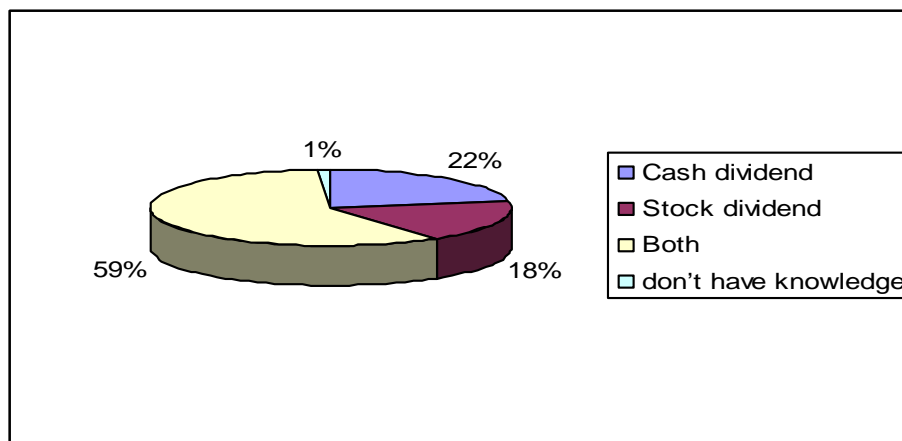
) Out of 100 respondents, 30% respondents have knowledge about Portfolio management, 50% respondents have no ideas and 20% respondents have little knowledge.
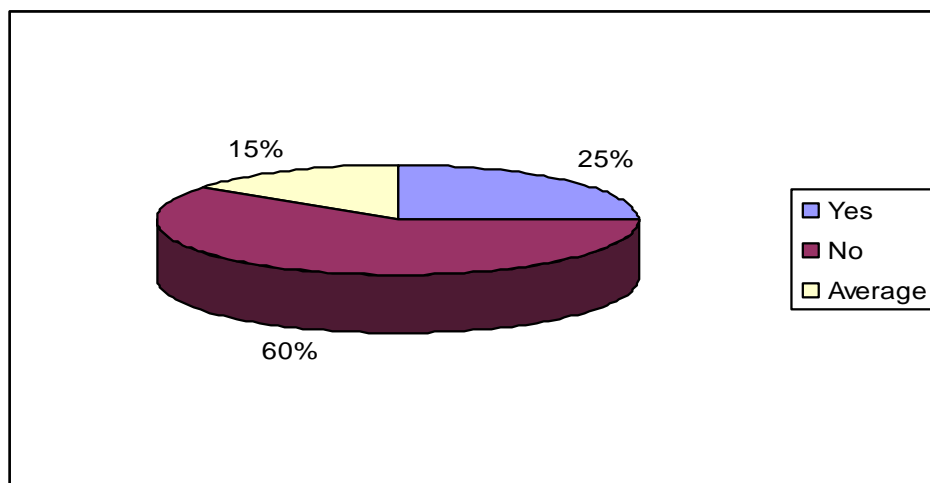
) Out of 100 respondents, 25% respondents have knowledge about Portfolio management minimizes the risk, 60% respondents have no ideas and 15% respondents have little knowledge
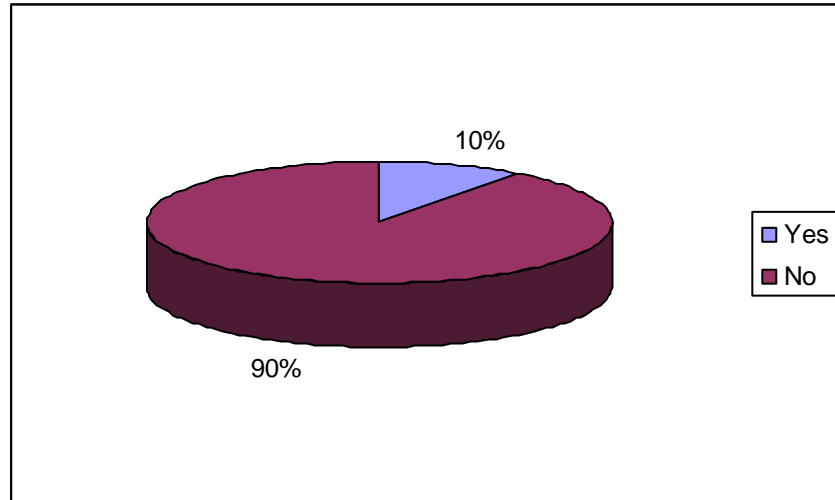
) Out of 100 respondents, 10% respondents that they make portfolio before investment, 90% respondents that they don't construct portfolio before investing.

- Investment decision would not be fruitful without proper analysis of individual security, industry and overall market. General knowledge on political, economical, social and technological trend will be more advantageous.
- Most of the investor invests in common stock. Common stock is the most risky securities than any other securities. Common stock of a corporate firm neither ensures annual return nor ensures the return of principle. Dividend or annual return of common stock is pad after tax and preference dividend paid, if a company gets profit.
- Most of the people do not have knowledge of common stock; they just invest in common stock as a shot in the dark.

Secondary data analysis is very important part of the study. All people investors, researcher and other who are related to investment on common stock may gain advantage from the findings of this study. From the analysis of this study the major findings are summarized as under

- Expected return on the common stock of other sector is the highest (i.e. 28.98%) among eight business sectors.
- Expected return on the common stock of Hotel is the lowest (i.e. -2.34%) among eight business sectors.
- On the basis of S.D., common stock of other sector is most risky since, it has high S.D. (i.e. 0.921) and common stock of Trading is least risky because of it has lowest S.D. (i.e. 0.2013).
- Coefficient of variation (C.V.) is more rational basis of investment decision, which measures the risk per unit of return. On the basis of C.V. common stock of Commercial Bank has lowest C.V. among eight business sectors. Commercial Bank has 1.8586 unit of risk per one unit of return. And common stock of Development Bank can be considered as more risk because it has the highest C.V. (i.e. 14.4104) among the selected eight business sectors.
- Beta coefficient measures the systematic risk and explains the sensitivity or volatility of stock with market. In this context, common stock of other sector is the most volatile (i.e. $\beta=2.2349$) and common stock of Trading is least volatile (i.e. 0.2698).

〕 The common stock of Commercial Bank and Other Sector are aggressive because it has beta more than beta coefficient of market ($\beta > 1$). And common stock of Manufacturing & Processing, Hotel, Trading, Insurance, Finance and Development Bank are defensive stock because has beta less than beta coefficient of market ($\beta < 1$), its price fluctuations are less volatile than the market.

〕 Correlation between stock of Manufacturing & Processing and Finance is the highest positive (i.e. 0.975) nearly +1 and stock of Development Bank and Other sector, Hotel and Trading have found negative correlation.

〕 Unsystematic risk can reduce by making a portfolio of individual security significantly. If investor selects the securities for investment, which have highly negative correlation of returns, the risk can be reduced totally. If the correlation between the return of two stocks is highly positive, risk reduced is not so significant. In this research Hotel and Trading, Development Bank and Other Sector have negative correlation between their returns, which is favorable with the view point of the diversification. And all remaining sectors have positive correlation among their returns.

〕 Calculation for the trend value least square method is used and drawn the trend line. The common stock of the six sectors' trend line, when graphically presented shown the downward movement but Trend line of Development Bank and Other Sector when graphically presented shown upward movement.

〕 Capital Assets Pricing Model describes that the relationship between risk and return. We can identify the stock is over priced or under priced by comparison between expected rate of return and required rate of return. If required rate of return is lower than expected rate of return stock is known as under priced and if the required rate of return is greater than the expected rate of return, the stock is overpriced. This study shows that the stock of commercial bank and other sector are under priced and stocks of remaining six sectors are overpriced.

〕 By Sharpe's and Treynor's portfolio performance measure, constructing portfolio between commercial bank and other sector provide highest risk premium at per unit risk and constructing portfolio between hotel and other sector provide lowest risk premium, in fact negative risk premium at per unit of total risk.

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⟩ Since the calculated value of F is less than the tabulated value of F, the null hypothesis H_0 is accepted. Therefore there is no significant difference between mean return of business sector.

5.2 Conclusion

The basic objective of this study is to construct portfolio out of eight different sectors of Nepalese stock market. This constructed portfolio will maximize the return of the investment at given level of risk**.** Nepalese investors invest their current saving only to those areas where these are high return and low risk.

General tendency of Nepalese investors is to invest in the security on hearsay basis. This study has given the basic ground for investment. Investors can reduce risk by investing in the security of trading sector of the market. Since the standard deviation of the trading sector is the lowest while comparing with different other sector. Expected return of the Other sector is highest among the other sector meaning different sector.

Invest in portfolio of hotel industry and trading sector will provide more return then other sector in the market since there exit negative correlation between two sector. The portfolio construction can reduce total risk with   the condition that investments are made in more then two sector of the market.

The trend analysis suggests that the market has positive but very slow growth. This indicates that there exist investment environment but the return is not so attractive.

5.3 Recommendations

Common stock is most risky security among all the marketable securities. Therefore, the investor must have proper knowledge and information to (make) take an investment decision. Before making an investment decision in stock market, the investors should analyze the market situation carefully by analyzing your own risk return attitude, needs and requirements. Make several discussions with stockbroker and make your decision on the

basis of reliable information rather than rumor and imagination. Investor can join to investors groups and share experience, ideas and expertise to each other.

Proper analysis of individual stock industry and overall market is always demanded to make possible to beat the stock market. General knowledge is about economic, political technological trend is advantageous. This is proved by the present political situation of Nepal, which caused a great deterioration in the share price.

This study is focused on individual investors other related components of stock market are also taken into account to sources extent. On the basis of data analysis and major findings of this study following recommendation can be outlined.

- In this study, Since the return of Other Sector for given sample period is the highest so that investors could be more benefited if they invest in the common stock of Other Sector. By the same time, the risk is also maximum of this stock which is consistent with risk and return theory. But

- From the correlation matrix (Table no. 4.12), the correlation coefficient of Hotel with stock of Trading is negative and Beta of Trading is 0.2698 which is defensive, investor can use stock of Trading to minimize the risk of portfolio.

- Since the correlation coefficient between different stock concept, correlation between Hotel with stock of trading and Development Bank with Other Sector have negative correlation and remaining Sectors are strongly positive correlated, the portfolio risk can not be minimized significantly. If the investors construct a portfolio of such securities which are negatively correlated, investor can be minimizing the risk.

- This study find out that the stock in sampling has higher return than market return and under the CAPM approach, stocks are under priced from this angle. Investors can grab the opportunity. New investors are suggested to purchase and who are holding the stocks of this business sector, they do not sell the stocks.

- If the investor is risk averter. Then s/he can choose stock of Commercial Bank, if the investor is risk seeker, investor can choose stock of Other Sector.

⟩ To assess profitable investment, it is better to measure the coefficient of variation because C.V. is a measure of relative dispersion (risk), a measure of risk per unit of expected return and more useful than absolute one i.e. S.D. of a give security.

⟩ In conclusion, this study shows it is better to invest in individual sector rather than constructing portfolio between sectors to get higher return with bearing lower risk.

⟩ However, this study is done under certain limitation both methodological as well as scope limitation, further research in this field will give more information to the investors, market makers and corporate. For further study some recommendation are outlined.

⟩ Portfolio Risk and return analysis of Nepalese stock market with reference to business sectors' index is completely untouched area in Nepalese context. It is strongly suggested that further study should be conducted on this topic and research should include primary data, all the listed companies of each sector and long period data will be use for research.

⟩ It is recommended to use latest risk and return analysis tools and techniques for better analysis.

APPENDICES
Appendix-1

1) Commercial Bank

Table No. 1
Rate of Return, Expected return, Standard Deviation, Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	0.7996	0.1917	0.6079	0.3695
2059/060	0.1234	0.1917	-0.0683	0.0047
2060/061	-0.4289	0.1917	-0.6206	0.3851
2061/062	-0.0517	0.1917	-0.2434	0.0592
2062/063	0.1637	0.1917	-0.028	0.0008
2063/064	0.3082	0.1917	0.1165	0.0136
2064/065	0.4273	0.1917	0.2356	0.0555
Total				0.8885

Standard Deviation ($\exists$) = $\sqrt{\dfrac{\phi[r\,Z E(r)^2}{N}}$ = 0.3562

Variance ($\exists^2$) = 0.1269

Coefficient of Variation (C.V.) = $\dfrac{\dagger}{E(r)}$ = $\dfrac{0.3562}{0.1917}$ = 1.8585

Table No. 2
Year wise Expected Rate of Returns Data

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062(X)	XY	X^2	Trend Value
2058/059	0.7996	-3	-2.3988	5.754	0.2493
2059/060	0.1234	-2	-0.2468	0.061	0.2301
2060/061	-0.4289	-1	0.4289	0.184	0.2109
2061/062	-0.0517	0	0	0	0.1917
2062/063	0.1637	1	0.1637	0.027	0.1724
2063/064	0.3082	2	0.6164	0.380	0.1532
2064/065	0.4273	3	1.2819	1.643	0.1340
Total	**1.3416**	0	-0.155	8.049	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, a $= \dfrac{Y}{N} = \dfrac{1.3416}{7} = 0.1917$

$\quad$ b $= \dfrac{XY}{X^2} = \dfrac{Z0.155}{8.049} = -0.0192$

2) Manufacturing and Processing

Table No. 3

Rate of Return, Expected return, Standard Deviation, Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	0.4657	0.0545	0.4112	0.16909
2059/060	0.0256	0.0545	-0.0289	0.0008
2060/061	-0.2165	0.0545	-0.271	0.0734
2061/062	-0.086	0.0545	-0.1405	0.01974
2062/063	0.0218	0.0545	-0.0327	0.0011
2063/064	0.0819	0.0545	0.0274	0.0008
2064/065	0.089	0.0545	0.0345	0.0012
Total				0.2661

Standard Deviation ($\exists$) $= \sqrt{\dfrac{\phi[r\,ZE(r)^2}{N}} = 0.1950$

Variance ($\exists^2$) $= 0.0380$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = \dfrac{0.5348}{0.0010} = 3.5776$

Table No. 4

Year wise Expected Rate of Returns Data

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	0.4657	-3	-1.3971	1.952	1.1677
2059/060	0.0256	-2	-0.0512	0.003	0.7966
2060/061	-0.2165	-1	0.2165	0.047	0.4256
2061/062	-0.086	0	0	0	0.0545
2062/063	0.0218	1	0.0218	0.000	-0.3166
2063/064	0.0819	2	0.1638	0.027	-0.6876
2064/065	0.089	3	0.267	0.071	-1.0587
Total	**0.3815**	0	-0.779	2.100	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.3815}{7} = 0.0545$

$b = \dfrac{XY}{X^2} = \dfrac{Z0.779}{2.100} = -0.3711$

3) Hotel

Table No. 5

Rate of Return, Expected return, Standard Deviation Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	0.4273	-0.0234	0.4507	0.2031305
2059/060	-0.1583	-0.0234	-0.1349	0.018198
2060/061	-0.2568	-0.0234	-0.2334	0.0544756
2061/062	-0.0916	-0.0234	-0.0682	0.0046512
2062/063	-0.0624	-0.0234	-0.039	0.001521
2063/064	-0.0377	-0.0234	-0.0143	0.0002045
2064/065	0.0156	-0.0234	0.039	0.001521
Total				0.2837

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\ \Zeta E(r)^2}{N}} = 0.2013$

Variance $(\exists^2) = 0.0405$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = $ - 8.6033* [Risk per expected return is negative]

Table No. 6

Year wise Expected Rate of Returns Data

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	0.4273	-3	-1.2819	1.643	1.2936
2059/060	-0.1583	-2	0.3166	0.100	0.8546
2060/061	-0.2568	-1	0.2568	0.066	0.4156
2061/062	-0.0916	0	0	0	-0.0234
2062/063	-0.0624	1	-0.0624	0.004	-0.4624
2063/064	-0.0377	2	-0.0754	0.006	-0.9014
2064/065	0.0156	3	0.0468	0.002	-1.3404
Total	**-0.1639**	0	-0.800	1.821	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{\Zeta 0.1639}{7} = $ - 0.0234

$b = \dfrac{XY}{X^2} = \dfrac{\Zeta 0.80}{1.821} = $ - 0.4390

4) Trading

Table No. 7

Rate of Return, Expected return, Standard Deviation, Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	-0.002	0.035	-0.037	0.0014
2059/060	-0.0662	0.035	-0.1012	0.0102
2060/061	-0.1155	0.035	-0.1505	0.0227
2061/062	-0.0748	0.035	-0.1098	0.0121
2062/063	0.0048	0.035	-0.0302	0.0009
2063/064	0.2967	0.035	0.2617	0.0685
2064/065	0.2022	0.035	0.1672	0.0280
Total				0.1437

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\,ZE(r)^2}{N}} = 0.1433$

Variance $(\exists^2) = 0.0205$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = 4.093$

Table No. 8

Year wise Expected Rate of Returns

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	-0.002	-3	0.006	0.000	-5.7919
2059/060	-0.0662	-2	0.1324	0.018	-3.8496
2060/061	-0.1155	-1	0.1155	0.013	-1.9073
2061/062	-0.0748	0	0	0	0.0350
2062/063	0.0048	1	0.0048	0.000	1.9773
2063/064	0.2967	2	0.5934	0.352	3.9196
2064/065	0.2022	3	0.6066	0.368	5.8619
Total	0.2452	0	1.459	0.751	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.2452}{7} = 0.0010$

$b = \dfrac{XY}{X^2} = \dfrac{0.459}{0.751} = 0.0187$

5) Insurance

Table No. 9
Rate of Return, Expected return, Standard Deviation and Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	0.5614	0.1231	0.4383	0.1921069
2059/060	0.0413	0.1231	-0.0818	0.0066912
2060/061	-0.0327	0.1231	-0.1558	0.0242736
2061/062	-0.2364	0.1231	-0.3595	0.1292403
2062/063	-0.0125	0.1231	-0.1356	0.0183874
2063/064	0.349	0.1231	0.2259	0.0510308
2064/065	0.1916	0.1231	0.0685	0.0046923
Total				0.4264

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\, Z E(r)^2}{N}} = 0.2468$

Variance $(\exists^2) = 0.0609$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = \dfrac{0.5349}{0.0089} = 2.005$

Table No. 10
Year wise Expected Rate of Returns

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	0.5614	-3	-1.6842	2.837	0.51123
2059/060	0.0413	-2	-0.0826	0.007	0.38185
2060/061	-0.0327	-1	0.0327	0.001	0.25248
2061/062	-0.2364	0	0	0	0.12310
2062/063	-0.0125	1	-0.0125	0.000	-0.00628
2063/064	0.349	2	0.698	0.487	-0.13565
2064/065	0.1916	3	0.5748	0.330	-0.26503
Total	**0.8617**	0	-0.474	3.662	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.8617}{7} = 0.1231$

$$b = \frac{XY}{X^2} = \frac{Z0.474}{3.662} = -0.1294$$

6) Finance

Rate of Return, Expected return, Standard Deviation, Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	0.5614	0.0644	0.497	0.247009
2059/060	0.0413	0.0644	-0.0231	0.0005336
2060/061	-0.1952	0.0644	-0.2596	0.0673922
2061/062	-0.2065	0.0644	-0.2709	0.0733868
2062/063	-0.0574	0.0644	-0.1218	0.0148352
2063/064	0.1634	0.0644	0.099	0.009801
2064/065	0.1437	0.0644	0.0793	0.0062885
Total				0.4192

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\,Z E(r)^2}{N}} = 0.2447$

Variance $(\exists^2) = 0.0599$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = \dfrac{0.5349}{0.0056} = 3.8001$

Table No. 12

Year wise Expected Rate of Returns Data of Finance

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	0.5614	-3	-1.6842	2.837	0.8869
2059/060	0.0413	-2	-0.0826	0.007	0.6127
2060/061	-0.1952	-1	0.1952	0.038	0.3385
2061/062	-0.2065	0	0	0	0.0644
2062/063	-0.0574	1	-0.0574	0.003	-0.2098
2063/064	0.1634	2	0.3268	0.107	-0.4839
2064/065	0.1437	3	0.4311	0.186	-0.7581
Total	**0.4507**	0	-0.871	3.177	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.4507}{7} = 0.0644$

$$b = \frac{XY}{X^2} = \frac{Z0.871}{3.177} = -0.2742$$

7) Development Bank

Rate of Return, Expected return, Standard Deviation and Variance and Coefficient of Variation

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	-	-	-	-
2059/060	-	-	-	-
2060/061	-0.63	0.0235	-0.6535	0.4270623
2061/062	-0.0566	0.0235	-0.0801	0.006416
2062/063	-0.2322	0.0235	-0.2557	0.0653825
2063/064	0.2158	0.0235	0.1923	0.0369793
2064/065	0.2173	0.0235	0.1938	0.0375584
Total				0.5734

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\,ZE(r)^2}{N}} = 0.3386$

Variance $(\exists^2) = 0.1147$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = 14.4104$

Table No. 14
Year wise Expected Rate of Returns

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	-	-3	-	-	
2059/060	-	-2	-	-	
2060/061	-0.063	-1	0.063	0.004	-1.3158
2061/062	-0.0566	0	0	0	0.0235
2062/063	-0.2322	1	-0.2322	0.054	1.3627
2063/064	0.2518	2	0.5036	0.254	2.7019
2064/065	0.2173	3	0.6519	0.425	4.0411
Total	**0.1173**	0	0.986	0.736	

We have,
The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.1173}{7} = 0.0235$

$$b = \dfrac{XY}{X^2} = \dfrac{0.986}{0.736} = 1.3392$$

8) Other Sectors
Rate of Return, Expected return, Standard Deviation and Variance and Coefficient of Variation
Table 15

Fiscal Year	Rate of Return (r)	Expected Return E(r)	r - E(r)	$[r-E(r)]^2$
2058/059	-0.171	0.2898	-0.4608	0.2123
2059/060	-0.3834	0.2898	-0.6732	0.4532
2060/061	-0.5991	0.2898	-0.8889	0.7901
2061/062	-0.3721	0.2898	-0.6619	0.4381
2062/063	1.9376	0.2898	1.6478	2.7152
2063/064	1.4371	0.2898	1.1473	1.3163
2064/065	0.1793	0.2898	-0.1105	0.0122
Total	2.0284	2.0286	-0.0002	5.9375

Standard Deviation $(\exists) = \sqrt{\dfrac{\phi[r\,Z E(r)^2}{N}} = 0.9210$

Variance $(\exists^2) = 0.8482$

Coefficient of Variation (C.V.) $= \dfrac{\dagger}{E(r)} = \dfrac{0.5402}{0.0322} = 3.1780$

Table No. 16
Year wise Expected Rate of Returns Data of Other Sector

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062 (X)	XY	X^2	Trend Value
2058/059	-0.171	-3	0.513	0.263	-1.3148
2059/060	-0.3834	-2	0.7668	0.588	-0.7800
2060/061	-0.5991	-1	0.5991	0.359	-0.2451
2061/062	-0.3721	0	0	0	0.2898
2062/063	1.9376	1	1.9376	3.754	0.8246
2063/064	1.4371	2	2.8742	8.261	1.3595
2064/065	0.1793	3	0.5379	0.289	1.8944
Total	**2.0284**	0	7.229	13.515	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, $a = \dfrac{Y}{N} = \dfrac{0.0284}{7} = 0.2898$

$$b = \frac{XY}{X^2} = \frac{7.229}{13.515} = 0.5349$$

9) Market

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Table No. 17
Rate of Return, Expected Return, S.D. and C.V

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Fiscal Year	Rate of Return (r)	Expected Return	r - E(r)	$[r-E(r)]^2$
		E(r)		
2058/059	0.6522	0.1302	0.522	0.2725
2059/060	-0.0268	0.1302	-0.157	0.0246
2060/061	-0.354	0.1302	-0.4842	0.2344
2061/062	-0.0775	0.1302	-0.2077	0.0431
2062/063	0.0862	0.1302	-0.044	0.0019

Data Source: NEPSE Index.

We have,

Standard Deviation (∃)= $\sqrt{\dfrac{\phi[r\, Z E(r)^2}{N}}$ = 0.3040

Variance ($∃^2$) = 0.0924

Coefficient of Variation (C.V.) = $\dfrac{†}{E(r)}$ = 2.3349

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Table 18
Year wise Expected Rate of Returns

</div>

Fiscal Year	Rate of Return(Y)	Deviation from FY 2061/062(X)	XY	X^2	Trend Value
2058/059	0.6522	-3	-1.9566	3.828	0.05009
2059/060	-0.0268	-2	0.0536	0.003	0.07678
2060/061	-0.354	-1	0.354	0.125	0.10348
2061/062	-0.0775	0	0	0	0.13017
2062/063	0.0862	1	0.0862	0.007	0.15687
2063/064	0.2875	2	0.575	0.331	0.18356
2064/065	0.3436	3	1.0308	1.063	0.21025
Total	**0.9112**	0	0.143	5.357	

We have,

The Equation of trend line is $Y_c = a + bx$

Here, $\phi X = 0$, a = $\dfrac{Y}{N}$ = $\dfrac{0.9112}{7}$ =0.1302

$$b = \frac{XY}{X^2} = \frac{0.143}{5.357} = 0.0267$$

Table 19
Covariance between Sectors

$$\text{Cov(i,j)} = \frac{\phi[R_i \ Z E(R_i)] \mid [R_j \ Z E(R_j)]}{N}$$

S.No.	Sectors	C.Bank	Mfg. Pro.	Hotel	Trading	Insurance	Finance	Dev Bank	Other
1	Commercial Bank	1	0.0667	0.0648	0.0237	0.0718	0.0814	0.0218	0.0771
2	Mfg. and Pro.		1	0.0378	0.0077	0.0412	0.0465	0.008	0.0197
3	Hotel			1	0.0037	0.0392	0.0463	0.0057	0.0072
4	Trading				1	0.017	0.0129	0.0174	0.0621
5	Insurance					1	0.0584	0.0203	0.0368
6	Finance						1	0.0162	0.0223
7	Dev.t Bank							1	-0.0073
8	Other Sector								1

Table No. 20
Correlation Matrix

S.N.	Sectors	C. Bank	Mfg. Pro.	Hotel	Trading	Insurance	Finance	Dev Bank	Other
1	Commercial Bank	1	0.9643	0.9035	0.4642	0.8165	0.934	0.1807	0.2350
2	Mfg. and Pro.		1	0.9630	0.2756	0.8561	0.975	0.1212	0.1097
3	Hotel			1	-0.1283	0.7890	0.940	0.0836	0.0388
4	Trading				1	0.4807	0.368	0.3586	0.4705
5	Insurance					1	0.967	0.2429	0.1619
6	Finance						1	0.1955	0.0989
7	Dev. Bank							1	-0.0234
8	Other Sector								1

Calculation of Required Rate of Return and Price Evaluation By CAPM Model

S.No.	Sectors	Beta Coeff.	Required Rate of Return	Expected Return E (r $_i$)	Price Situation
1	Commercial Bank	1.1831	-0.0002	0.0163	Underpriced
2	Mfg. and Processing	0.577	0.0220	0.001	Overpriced
3	Hotel	0.5865	0.0217	-0.0022	Overpriced
4	Trading	0.2698	0.0333	0.001	Overpriced
5	Insurance	0.7707	0.0149	0.0089	Overpriced
6	Finance	0.6612	0.0189	0.0056	Overpriced
7	Development Bank	0.5462	0.0232	0.0137	Overpriced
8	Other Sector	2.2349	-0.0388	0.0322	Underpriced

Required Rate of Return = $E(r_i) = r_i + [E(r_m) - r_f)b_i$

Appendix 2

Calculation Beta Coeeficient of individual sector

Covariance between Market and Commercial Bank

Fiscal Year	$r_m - E(r_m)$ (A)	$r_c - E(r_c)$ (B)	(A) *(B)
2058/059	0.0213	0.035	0.0007
2059/060	-0.0044	0.0026	0.0000
2060/061	-0.0365	-0.0488	0.0018
2061/062	-0.0124	-0.0188	0.0002
2062/063	0.0004	-0.0032	0.0000
2063/064	0.014	0.0059	0.0001
2064/065	0.0175	0.0276	0.0005
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= 0.0003|	0.0033
COV (c,m) = $\dfrac{Cov(c,m)}{\dagger_m^2}$	0.0005		
$S_{c=}1$	1.1831		

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Covariance between Market and Manufacturing and Processing

Fiscal Year	$r_m - E(r_m)$ (A)	$r_{mp} - E(r_{mp})$ (B)	(A) *(B)
2058/059	0.0213	0.0315	0.0007
2059/060	-0.0044	0.0031	0.0000
2060/061	-0.0365	-0.0186	0.0007
2061/062	-0.0124	-0.00876	0.0001
2062/063	0.0004	-0.0179	0.0000
2063/064	0.014	0.0042	0.0001
2064/065	0.0175	0.0068	0.0001
Total	φ r - E(r)= -0.0001|	φ|r - E(r)= 0.0003|	0.0016
COV (mp,m) = $\dfrac{Cov(mp,m)}{\dagger_m{}^2}$	0.0002|	|	
S$_{mp}$ =1	0.5770		

Covariance between Market and Hotel

Fiscal Year	$r_m - E(r_m)$ (A)	$r_h - E(r_h)$ (B)	(A) *(B)
2058/059	0.0213	0.0375	0.0008
2059/060	-0.0044	-0.0107	0.0000
2060/061	-0.0365	-0.0195	0.0007
2061/062	-0.0124	-0.00482	0.0001
2062/063	0.0004	-0.0038	0.0000
2063/064	0.014	-0.0015	0.0000
2064/065	0.0175	0.0027	0.0000
Total	φ|r - E(r)= -0.0001|	φ r - E(r)= -0.0001|	0.0016
COV (h,m) = $\dfrac{Cov(h,m)}{\dagger_m{}^2}$	0.0002|	|	
S$_{h =}$	0.5865		

Covariance between Market and Trading

Fiscal Year	$r_m - E(r_m)$ (A)	$r_t - E(r_t)$ (B)	(A) *(B)
2058/059	0.0213	-0.0108	-0.0002
2059/060	-0.0044	-0.004	0.0000
2060/061	-0.0365	-0.0094	0.0003
2061/062	-0.0124	-0.0089	0.0001
2062/063	0.0004	0	0.0000
2063/064	0.014	0.018	0.0003
2064/065	0.0175	0.015	0.0003
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0001|	0.0008
COV (t,m) = $\dfrac{Cov(t,m)}{\dagger_m^2}$	0.0001		
$S_{t=}$1	0.2698		

Covariance between Market and Insurance

Fiscal Year	$r_m - E(r_m)$ (A)	$r_i - E(r_i)$ (B)	(A) *(B)
2058/059	0.0213	0.0376	0.0008
2059/060	-0.0044	-0.0052	0.0000
2060/061	-0.0365	-0.0163	0.0006
2061/062	-0.0124	-0.0304	0.0004
2062/063	0.0004	-0.0101	0.0000
2063/064	0.014	0.0183	0.0003
2064/065	0.0175	0.0063	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= 0.0002|	0.0022
COV (i,m) = $\dfrac{Cov(i,m)}{\dagger_m^2}$	0.0003		
$S_i =$	0.7707		

Covariance between Market and Finance

Fiscal Year	$r_m - E(r_m)$ (A)	$r_f - E(r_f)$ (B)	(A) *(B)
2058/059	0.0213	0.0409	0.0009
2059/060	-0.0044	-0.0019	0.0000
2060/061	-0.0365	-0.0134	0.0005
2061/062	-0.0124	-0.0247	0.0003
2062/063	0.0004	-0.0127	0.0000
2063/064	0.014	0.0061	0.0001
2064/065	0.0175	0.0055	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0002|	0.0019
COV (f,m) = $\dfrac{Cov\ (f,m)}{\dagger_m^2}$	0.0003|	|	
S_{f}=1	0.6612		

Covariance between Market and Development Bank

Fiscal Year	$r_m - E(r_m)$ (A)	$r_d - E(r_d)$ (B)	(A) *(B)
2058/059	0.0213	-	-
2059/060	-0.0044	-	-
2060/061	-0.0365	-0.0276	0.0010
2061/062	-0.0124	-0.0178	0.0002
2062/063	0.0004	0.0266	0.0000
2063/064	0.014	0.011	0.0002
2064/065	0.0175	0.0078	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0274|	0.0015
COV (c,m) = $\dfrac{Cov(d,m)}{\dagger_m^2}$	0.0002		
S_{d}=	0.5462		

Covariance between Market and Other Sector

Fiscal Year	$r_m - E(r_m)$ (A)	$r_d - E(r_d)$ (B)	(A) *(B)
2058/059	0.0213	0.0338	0.0007
2059/060	-0.0044	-0.0667	0.0003
2060/061	-0.0365	-0.096	0.0035
2061/062	-0.0124	-0.0658	0.0008
2062/063	0.0004	0.1279	0.0001
2063/064	0.014	0.084	0.0012
2064/065	0.0175	-0.0173	-0.0003
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0001|	0.0063
COV (d,m) = $\dfrac{Cov\,(o,m)}{\dagger_m^{\,2}}$	0.0009		
$S_o = 1$	2.2349		

Calculation of Required Rate of Return and Price Evaluation By CAPM Model

S.No.	Sectors	Beta Coeff.	Required Rate of Return	Expected Return E (r i)	Price Situation
1	Commercial Bank	1.1831	-0.0002	0.0163	Underpriced
2	Mfg. and Processing	0.577	0.0220	0.001	Overpriced
3	Hotel	0.5865	0.0217	-0.0022	Overpriced
4	Trading	0.2698	0.0333	0.001	Overpriced
5	Insurance	0.7707	0.0149	0.0089	Overpriced
6	Finance	0.6612	0.0189	0.0056	Overpriced
7	Development Bank	0.5462	0.0232	0.0137	Overpriced
8	Other Sector	2.2349	-0.0388	0.0322	Underpriced

Required Rate of Return = $E(r_i) = r_i + [E(r_m) - r_f)b_i$

Appendix 2

Calculation Beta Coeeficient of individual sector

Covariance between Market and Commercial Bank

Fiscal Year	$r_m - E(r_m)$ (A)	$r_c - E(r_c)$ (B)	(A) *(B)
2058/059	0.0213	0.035	0.0007
2059/060	-0.0044	0.0026	0.0000
2060/061	-0.0365	-0.0488	0.0018
2061/062	-0.0124	-0.0188	0.0002
2062/063	0.0004	-0.0032	0.0000
2063/064	0.014	0.0059	0.0001
2064/065	0.0175	0.0276	0.0005
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= 0.0003|	0.0033
COV (c,m) = $\dfrac{Cov(c,m)}{\dagger_m^2}$	0.0005		
$S_{c=}1$	1.1831		

Covariance between Market and Manufacturing and Processing

Fiscal Year	$r_m - E(r_m)$ (A)	$r_{mp} - E(r_{mp})$ (B)	(A) *(B)
2058/059	0.0213	0.0315	0.0007
2059/060	-0.0044	0.0031	0.0000
2060/061	-0.0365	-0.0186	0.0007
2061/062	-0.0124	-0.00876	0.0001
2062/063	0.0004	-0.0179	0.0000
2063/064	0.014	0.0042	0.0001
2064/065	0.0175	0.0068	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ|r - E(r)= 0.0003|	0.0016
COV (mp,m) = $\dfrac{Cov(mp,m)}{\dagger_m{}^2}$	0.0002|	|	
$S_{mp} = 1$	0.5770		

Covariance between Market and Hotel

Fiscal Year	$r_m - E(r_m)$ (A)	$r_h - E(r_h)$ (B)	(A) *(B)
2058/059	0.0213	0.0375	0.0008
2059/060	-0.0044	-0.0107	0.0000
2060/061	-0.0365	-0.0195	0.0007
2061/062	-0.0124	-0.00482	0.0001
2062/063	0.0004	-0.0038	0.0000
2063/064	0.014	-0.0015	0.0000
2064/065	0.0175	0.0027	0.0000
Total	ϕ|r - E(r)= -0.0001|	ϕ r - E(r)= -0.0001|	0.0016
COV (h,m) = $\dfrac{Cov(h,m)}{\dagger_m{}^2}$	0.0002|	|	
$S_{h =}$	0.5865		

Covariance between Market and Trading

Fiscal Year	$r_m - E(r_m)$ (A)	$r_t - E(r_t)$ (B)	(A) *(B)
2058/059	0.0213	-0.0108	-0.0002
2059/060	-0.0044	-0.004	0.0000
2060/061	-0.0365	-0.0094	0.0003
2061/062	-0.0124	-0.0089	0.0001
2062/063	0.0004	0	0.0000
2063/064	0.014	0.018	0.0003
2064/065	0.0175	0.015	0.0003
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0001|	0.0008
COV (t,m) = $\dfrac{Cov(t,m)}{\dagger_m^{\,2}}$	0.0001		
$S_{t=}1$	0.2698		

Covariance between Market and Insurance

Fiscal Year	$r_m - E(r_m)$ (A)	$r_i - E(r_i)$ (B)	(A) *(B)
2058/059	0.0213	0.0376	0.0008
2059/060	-0.0044	-0.0052	0.0000
2060/061	-0.0365	-0.0163	0.0006
2061/062	-0.0124	-0.0304	0.0004
2062/063	0.0004	-0.0101	0.0000
2063/064	0.014	0.0183	0.0003
2064/065	0.0175	0.0063	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= 0.0002|	0.0022
COV (i,m) = $\dfrac{Cov(i,m)}{\dagger_m^{\,2}}$	0.0003		
$S_i =$	0.7707		

Covariance between Market and Finance

Fiscal Year	$r_m - E(r_m)$ (A)	$r_f - E(r_f)$ (B)	(A) *(B)
2058/059	0.0213	0.0409	0.0009
2059/060	-0.0044	-0.0019	0.0000
2060/061	-0.0365	-0.0134	0.0005
2061/062	-0.0124	-0.0247	0.0003
2062/063	0.0004	-0.0127	0.0000
2063/064	0.014	0.0061	0.0001
2064/065	0.0175	0.0055	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0002|	0.0019
COV (f,m) = $\dfrac{Cov\ (f,m)}{\dagger_m^2}$	0.0003|	|	
$S_{f=}$1	0.6612		

Covariance between Market and Development Bank

Fiscal Year	$r_m - E(r_m)$ (A)	$r_d - E(r_d)$ (B)	(A) *(B)
2058/059	0.0213	-	-
2059/060	-0.0044	-	-
2060/061	-0.0365	-0.0276	0.0010
2061/062	-0.0124	-0.0178	0.0002
2062/063	0.0004	0.0266	0.0000
2063/064	0.014	0.011	0.0002
2064/065	0.0175	0.0078	0.0001
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0274|	0.0015
COV (c,m) = $\dfrac{Cov(d,m)}{\dagger_m^2}$	0.0002		
$S_{d=}$	0.5462		

Covariance between Market and Other Sector

Fiscal Year	$r_m - E(r_m)$ (A)	$r_d - E(r_d)$ (B)	(A) *(B)
2058/059	0.0213	0.0338	0.0007
2059/060	-0.0044	-0.0667	0.0003
2060/061	-0.0365	-0.096	0.0035
2061/062	-0.0124	-0.0658	0.0008
2062/063	0.0004	0.1279	0.0001
2063/064	0.014	0.084	0.0012
2064/065	0.0175	-0.0173	-0.0003
Total	ϕ r - E(r)= -0.0001|	ϕ r - E(r)= -0.0001|	0.0063
COV (d,m) = $\dfrac{Cov\ (o,m)}{\dagger_m^2}$	0.0009		
$S_o =1$	2.2349		

Portfolio and Risk Diversification Analysis

$$(R_p) = W_x\,E(R_x) + W_y\,E(R_y)$$

$$\dagger_p \ X\sqrt{\dagger_x^{\ 2}\,W_x^{\ 2}\ \Gamma\dagger_y^{\ 2}\,W_y^{\ 2}\ x\ 2W_x\,W_y\ Cov.\,(R_x, R_y)}$$

$$W_i = \frac{\dagger_j^{\ 2}\ Z\,Cov\!\!\int\!R_i, R_j\,Å}{\dagger_i^{\ 2}\ \Gamma\dagger_j^{\ 2}\ Z\,2\,Cov\,(R_i, R_j)}$$

1) Portfolio Between Commercial Bank And Manufacturing & Processing Sector

Table No. 1

Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
Commercial Bank	0.1917	0.3563	**0.0667**	**-0.9082**	**1.9082**
Mfg. and Processing	0.0545	0.195			
W1(commercial bank)	**W2(mfg & pro)**	**Portfolio Return**	**Portfolio Risk**		
		E(r$_p$)	**$\dagger_p$1**		
-0.9082	1.9082	**-0.0701**	**0.10947**		

2) Portfolio Between Commercial Bank And Hotel

Table No. 2

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0648**	**-0.6411**	**1.6411**
2	Hotel	-0.0234	0.2013			

W1	W2	Portfolio Return	Portfolio Risk
		E(r$_p$)	**$\dagger_p$1**
-0.6411	1.6411	**-0.1613**	**0.15798**

3) Portfolio Between Commercial Bank And Trading

Table No. 3

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0237**	**-0.0316**	**1.0316**
2	Trading	0.035	0.1433			
	W1	**W2**	Portfolio Return	Portfolio Risk		
			E(r_p)	$\dagger_p\rceil$		
	-0.0316	1.0316	**0.0300**	**0.14295**		

4) Portfolio Between Commercial Bank And Insurance

Table No. 4

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0718**	**-0.2460**	**1.2460**
2	Insurance	0.1231	0.2468			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r_p)	$\dagger_p\rceil$		
	-0.2460	1.2460	**0.1062**	**0.24131**		

5) Portfolio Between Commercial Bank And Finance

Table No. 5

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0814**	**-0.8957**	**1.8957**
2	Finance	0.0056	0.2447			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r_p)	$\dagger_p\rceil$		
	-0.8957	1.8957	**-0.1611**	**0.20150**		

6) Portfolio Between Commercial Bank And Development Bank

Table No. 6

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0218**	**0.4689**	**0.5311**
2	Development Bank	0.0235	0.3386			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	†$_p$1		
	0.4689	0.5311	**0.1024**	**0.26666**		

7) Portfolio Between Commercial Bank And Other Sector

Table No. 7

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Commercial Bank	0.1917	0.3563	**0.0771**	**0.9393**	**0.0607**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	†$_p$1		
	0.9393	0.0607	**0.1977**	**0.35203**		

8) Portfolio Between Manufacturing & Processing and Hotel

Table No. 8

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.0378**	**0.9236**	**0.0764**
2	Hotel	-0.0234	0.2013			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	†$_p$1		
	0.9236	0.0764	**0.0486**	**0.19496**		

9) Portfolio Between Manufacturing & Processing and Trading

Table No. 9

S.No.	Sectors	Expected Return E (r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.0077**	**0.2974**	**0.7026**
2	Trading	0.035	0.1433			

W1	W2	Portfolio Return	Portfolio Risk	
		$E(r_p)$	$\dagger_p{}^1$	
0.2974	0.7026	**0.0408**	**0.12930**	

10) Portfolio Between Manufacturing & Processing and Insurance

Table No. 10

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.0412**	**1.1920**	**-0.1920**
2	Insurance	0.1231	0.2468			

W1	W2	Portfolio Return	Portfolio Risk	
		$E(r_p)$	$\dagger_p{}^1$	
1.1920	-0.1920	**0.0413**	**0.19343**	

11) Portfolio Between Manufacturing & Processing and Finance

Table No. 11

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.0465**	**2.7285**	**-1.7285**
2	Finance	0.0644	0.2447			

W1	W2	Portfolio Return	Portfolio Risk	
		$E(r_p)$	$\dagger_p{}^1$	
2.7285	-1.7285	**0.0374**	**0.15289**	

12) Portfolio Between Manufacturing & Processing Sector and Development Bank

Table No. 12

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.008**	**0.7803**	**0.2197**
2	Development Bank	0.0235	0.3386			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	$\dagger_p$⌐		
	0.7803	0.2197	**0.0477**	**0.17728**		

13) Portfolio Between Manufacturing & Processing and Other Sector

Table No. 13

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Mfg. and Processing	0.0545	0.195	**0.0197**	**0.9784**	**0.0216**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	$\dagger_p$⌐		
	0.9784	0.0216	**0.0596**	**0.19398**		

14) Portfolio Between Hotel and Trading

Table No. 14

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Hotel	-0.0234	0.2013	**0.0037**	**0.3138**	**0.6862**
2	Trading	0.035	0.1433			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	$\dagger_p$⌐		
	0.3138	0.6862	**0.0167**	**0.12350**		

15) Portfolio Between Hotel and Insurance

Table No. 15

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Hotel	-0.0234	0.2013	**0.0392**	**0.9426**	**0.0574**
2	Insurance	0.1231	0.2468			
W1	**W2**	**Portfolio Return**	**Portfolio Risk**			
		$E(r_p)$	$\dagger_p$|			
0.9426	0.0574	**-0.0150**	**0.20111**			

16) Portfolio Between Hotel and Finance

risk.

Table No. 16

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Hotel	-0.0234	0.2013	**0.0463**	**1.7408**	**-0.7408**
2	Finance	0.0644	0.2447			
W1	**W2**	**Portfolio Return**	**Portfolio Risk**			
		$E(r_p)$	$\dagger_p$|			
1.7408	-0.7408	**-0.0884**	**0.19037**			

17) Portfolio Between Hotel and Development Bank

Table No. 17

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Hotel	-0.0234	0.2013	**0.0057**	**0.7578**	**0.2422**
2	Development Bank	0.0235	0.3386			
W1	**W2**	**Portfolio Return**	**Portfolio Risk**			
		$E(r_p)$	$\dagger_p$|			
0.7578	0.2422	**-0.0120**	**0.17913**			

18) Portfolio Between Hotel and Other Sector

Table No. 18

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Hotel	-0.0234	0.2013	**0.0072**	**0.9619**	**0.0381**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	$\dagger_p 1$		
			E(r$_p$)	**0.00000**		
	0.9619	0.0381	**-0.0115**	**0.03925**		

19) Portfolio Between Trading and Insurance

Table No. 19

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Trading	0.035	0.1433	**0.017**	**0.9255**	**0.0745**
2	Insurance	0.1231	0.2468			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	$\dagger_p 1$		
	0.9255	0.0745	**0.0416**	**0.14238**		

20) Portfolio Between Trading And Finance

Table No. 20

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Trading	0.035	0.1433	**0.0129**	**0.8602**	**0.1398**
2	Finance	0.0644	0.2447			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r$_p$)	$\dagger_p 1$		
	0.8602	0.1398	**0.0391**	**0.13953**		

21) Portfolio Between Trading and Development Bank

Table No. 21

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Trading	0.035	0.1433	**0.0174**	**0.9688**	**0.0312**
2	Development Bank	0.0235	0.3386			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r_p)	$\dagger_p$⌉		
	0.9688	0.0312	**0.0346**	**0.14296**		

22) Portfolio Between Trading and Other Sector

Table No. 22

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Trading	0.035	0.1433	**0.0621**	**1.0558**	**-0.0558**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r_p)	$\dagger_p$⌉		
	1.0558	-0.0558	**0.0208**	**0.13496**		

23) Portfolio Between Insurance and Finance

Table No. 23

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Insurance	0.1231	0.2468	**0.0584**	**0.3706**	**0.6294**
2	Finance	0.0644	0.2447			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			E(r_p)	$\dagger_p$⌉		
	0.3706	0.6294	**0.0862**	**0.24358**		

24) Portfolio Between Insurance and Development Bank

Table No. 24

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Insurance	0.1231	0.2468	**0.0203**	**0.6991**	**0.3009**
2	Development Bank	0.0235	0.3386			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			$E(r_p)$	$\dagger_p\rceil$		
	0.6991	0.3009	**0.0931**	**0.22066**		

25) Portfolio Between Insurance and Other Sector

Table No. 25

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Insurance	0.1231	0.2468	**0.0368**	**0.9711**	**0.0289**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			$E(r_p)$	$\dagger_p\rceil$		
	0.9711	0.0289	**0.1279**	**0.24539**		

26) Portfolio Between Finance and Development Bank

Table No. 26

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Finance	0.0644	0.2447	**0.0162**	**0.6927**	**0.3073**
2	Development Bank	0.0235	0.3386			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			$E(r_p)$	$\dagger_p\rceil$		
	0.6927	0.3073	**0.0518**	**0.21553**		

27) Portfolio Between Finance and Others

Table No. 27

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Finance	0.0644	0.2447	**0.0223**	**0.9565**	**0.0435**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			$E(r_p)$	$\dagger_p1$		
	0.9565	0.0435	**0.0742**	**0.24134**		

28) Portfolio Between Development Bank and Other Sector

Table No. 28

S.No.	Sectors	Expected Return E(r)	Standard Deviation	Covariance	W1	W2
1	Development Bank	0.0235	0.3386	**-0.0073**	**0.8752**	**0.1248**
2	Other Sector	0.2898	0.921			
	W1	**W2**	**Portfolio Return**	**Portfolio Risk**		
			$E(r_p)$	$\dagger_p1$		
	0.8752	0.1248	**0.0567**	**0.31533**		

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RESEARCH QUESTIONNAIRES

Dear Sir/Madam

I am conducting a study titled *"Trend Analysis and Optimum Portfolio Selection of Nepalese Stock Market"*. I'll be very grateful if you could kindly respond to this questionnaire. It will be helpful for my thesis writing. Your kind co-operation in this regard will be highly appreciable.

Thank you.

Name:

Age:

Occupation:

Remuneration:

Sex:

I) Below 5000   (II) 5000-10000   (III) 10000-20000   (IV) Above 20000

1. Do you know about common stock?

a. Yes   b. No   c. Little bit

2. Which sector's stock do you want to buy?

a. Banking   b. Manufacturing   c. Hotel   d. Trading

e. Insurance   f. Finance   g. Development Bank   h. Other Sector

3. What you found in performance of stock market in Nepal?

a. Excellent   b. Good   c. Poor

4. What is the base for selecting specified shares?

a. Expert option   b. Risk & Rate analysis   c. Company reputation

d. Other

5. Which method do you use to calculate the return?

a. Multi period average returns   b. Geometric Mean   c. I don't know

6. Which one is the most reliable tool for the measurement of risk?

a. variance   b. Standard deviation   c. Co-efficient of variance

7. What is the main purpose of buying share?

a. For dividend   b. Buy & Sell   c. Getting capital gain

8. Do you think market index show the current situation of market?

a. Yes   b. No   c. I do not know

9. What types of dividend do you want from share?

a. Cash dividend   b. Stock dividend (Bonus)   c. Both

10. Would you know portfolio management?

a. Yes   b. No, I don't know   c. little bit

11. Would you know constructing portfolio between different type of securities minimize the risk?

a. Yes   b. No, I don't know   c. little bit

12. Would you construct portfolio between different types of securities before making investment?

     a. Yes   b. No, I don't construct.

Thank You!