CHAPTER-I
INTRODUCTION

1.1. BACKGROUND

Nepal is a landlocked country with agro-based economy. Its economy is characterized by unutilized natural resources mass economy, illiteracy, miserable agriculture, deficit trade and so on. Although agriculture is the main livelihood, scientific method of agriculture has not yet been implemented. Although it is one of the richest countries in the world in terms of natural resources, it should not utilize effectively. Its economy is unbecoming not because of lack of resources but inefficient utilization of resources, therefore, the proper plan and strategy should be developed for the efficient utilization of resources to enhance the growth of economy. The natural resources available here have remained unutilized due to various reasons. The living standard of people is very low; poverty misery and conflict are existed all around. While the country has been moving towards a market oriented economy since early 1990's frequent change in government have hampered the realization of policy reform and delayed the implementation of development projects. It not only depends on availability of fund to fulfill the need of government and businesses but also of individuals. The private domestic investment is very essential for the economic growth as well as for employment generation for the developing country.

The healthy economy can be made only through resource mobilization, which is possible, by the efficient collection of the scattered capital of the people and transfer of these capitals to the firms and individual who are in need to make investment on productive sector. Resource mobilization won't be fruitful only by collecting the scattered resources and making investment. For this, proper investment should be made for its productivity. Here investment management plays significant role.

In today's market is highly competitive, consumers are treated as king and consumers are now quality oriented and they prefer qualities goods. Technological changes has made easier to give many new and surprising materials to the market. Organizations that do not have new technology cannot compete in the market. But technologies are very costly. So an organization should raise enough money to get the new technology. But it is not easy to raise enough money by the firm's post profit and surplus of individual sector only. Thus market manages the funds transfers to one unit to another. "The financial market permits both

business-man and government to raise the needed funds by selling securities, simultaneously, investor with excess of funds is able to invest and earned in term enhancing their welfare". (John, 1992.261) The purpose of financial market is an economy is to allocate saving efficiently during the period of time, a day, a week or quarters to parties, who used funds for investment in real assets of consumption (Van Horne, 1998: 491). In financial market financial intermediaries play an important role to inflow of saving from sever to uses of founds indirectly.

Securities market exists in order to bring together buyers and sellers of securities. The 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 market investing as a game in which the sole purpose is picking winner. Lord Keynes was the first person to express stock market as "a game of professional investments". The main objective is to win or loss of money. Stock market provides both opportunity as well as threats. The people having better knowledge realize opportunity and those who is unknown get threats.

As already mention that Nepal is land locked country having limited resources and unutilized natural resources. The economic development of Nepal has been limited by the variety of geographical and structural constraints. Such as limited exportable resources, low economic growth, low saving, low income, limited transport facilities and infrastructure are the major obstacles for the economic growth.

So in context of Nepal banking plays significant role to the development of national economy. Bank is a financial institution, which primary deals in borrowing and lending. Modern bank perform verities of function. So it is not easy to define the function of bank. The bank is derived from the Italian word 'BNACA' which means counter table or bench used by medieval money exchange. Oxford dictionary defined bank as "an establishment for the custody of money" (Oxford, 1986).

The different economist defines bank in different way, "a bank is an institution whose debts (bank deposit) are widely accepted in settlement of their people's debt to each other" (Sayer, 1967:3).

Financial transactions were operated though Nepal from ancient time. Financial transaction through personal lenders is still present in economy. In eighteenth century, King Gunkma Dev took the loan from the merchant to rebuild the Kathmandu city and later on Shankhadhar Shakh, a trader cleared the loan in B.S. 937 and established "Nepal Sambat" as found in the history.

In Nepal some financial institution involved in capital market are Nepal Rastra Bank, Commercial Bank, Nepal Industrial Development corporation, Agriculture Development Bank, Citizen investment trust, Rastriya Bima Sansthan, Financial institution, employees provident funds, Securities board, NEPSE , Co-operative organization. The non-government organization some hotel, manufacturing companies and trading agencies are also involves in capital market.

Among various types of bank only commercial bank are consider. Nepal bank limited is the commercial bank established in 1994 B.S. later on Nepal Rastra Bank was established in 2013 B.S. as a central bank and Rastriya Banijya Bank was established in 2022 B.S. under full ownership of government. After then many other joint venture Banks were established. Nepal Arab bank limited (NABIL) was the first joint venture bank established in 2041 B.S. In 2043 B.S. second joint venture Bank was established named as Indousez Bank Ltd, now it is known as Investment Bank. In the same year Nepal Grindlay's Bank (Now standard Chartered) in the form of joint venture was also established. After the restoration of democracy more joint venture bank came into existence. After the restoration of democracy, economic policies were liberalized and provision was made to establishment of joint venture. After then Himalayan Bank Ltd. (2049), Nepal SBI Bank Ltd. (2050), Everest Bank Ltd. (2051).

These institutions plays vital role in the development of capital market. Nepalese capital market is also classified in organized and non-organized sector. Government agencies and other institution, which are already mentioned above categorized in organized sector. They provide long term funds for development of agriculture and commercial sector by investing Common stock, debenture and government bond. Investors, Merchant and private sector also help for development of capital market.

In Nepal, the institutional development of stock market began after the establishment of "Security Exchange Center "in 1976 A.D. Now it is called Nepal stock Exchange limited. Securities board Nepal (SEBO) was established on 26 May 1993 under the provision of securities exchange act, 1993. It is established with the objective of protecting promoting and development of securities market in Nepal. Buying and selling activities of financial securities is conducted in Nepal stock exchange (NEPSE). NEPSE is only stock exchange in Nepal. It is owned by Nepal Rastra Bank (the capital Bank) and Nepal Industrial Development Corporation (NIDC).

People visit the NEPSE with an objective to test their fate, while doing so, many people visits the NEPSE with broker and loose their

money. Thus investment requires knowing why a stock should be purchased. What will be the expected return of his/her investment? What is the risk and how to minimize it?

Thus the present study is carried out to analyses the risk and return of stock. Why they are important and how to minimize the risk. The risky side of investment cannot be denied. But most of the investors are risk averter, they do not like risk and they do every activity to avoid or minimize the risk.

"Risk is defined as the variability of returns of a period, greater variability of returns risky investment. Risk can be defined as the chance of loss. Assets having greater chances of loss are viewed as more risky than those with lesser chances of loss. More formally, the term risk is used inter changeable with uncertainty to refer to the variability of returns associated with a given asset ". (Lawrence, 2001: 237).

"Risk is considered as the variability of return from those are expected and return is considered as an income received or an investment plus amount of change in market price that is generally expressed as the percentage of beginning market price of an investment ". Van Horne and John, 1997:90). Risk cannot be avoided if investor is seeking higher rate of return. Investor will require different rate of return on various securities. Since they have risk differs. Higher the risk of security, higher the rate of return demanded by investor.

"Risk present in virtually every decision. Assessing the risk and incorporating the same in the final decision is an integral part of the financial analysis. The objective in decision making is not to eliminate or avoid risk often it may be neither feasible or non necessary to do so but properly asses it and determine whether it is worth bring " (Prasanna, 1999:67).

Thus it creates curiosity to researcher and other individuals towards the risk and return. Hence study of the risk and return on analysis of commercial bank has great importance and are interesting subject. In today's dynamic and competitive environment, it is increasingly important for the financial institution to evaluate the risk and return position and compare with their competitors to retain their existing customers and attract their potential customers.

1.2. FOCUS OF THE STUDY

Financial institutions are pillar of nation's economy. They are required as storehouses of country's wealth as well as reservoirs as of source for economic development. The main focus of this study is the risk and return analysis of the common stock investment of listed commercial banks of Nepal. Various kinds of financial decision, deposit, acceptance, enhancing loan and investment decision are most important one. When the term investment is pronounced two fundamental aspects risk and return are associated with it. Since an investor always analysis the risk and return thoroughly before investing their wealth. Thus the study is focused on the risk and return analysis of selected commercial banks. Although the risk and return analysis sounds to be familiar, the conceptual meaning of risk and return are varying for investor to investor.

The main purpose of study is to analyze how one can get sustainable profit by minimizing the risk. People prefer less risk to more return i.e., they try to ignore risk, which is not possible for this purpose. Expected return, total risk, systematic risk and unsystematic risk are analyzed to give an idea to get sustainable profit by divesting the risk to avoid future loss of the common stock investment. The analysis of risk and return is very significant in investment decision as well as financial decision. It influences the risk and return of the shareholder. Consequently, the risk and return analysis influences the market price of the stock. So before making an investment decision a person must analysis the risk and return from the particular stock as well as they can make good risk minimizing portfolio between their investments in the stock.

Risk and return are two most important criteria for investment decision. Normally an investor prefers a higher return from a lower risk. But we all know the fact that higher return has higher risk associated with it. To make a trade of between risks and return the risk relating to investment project is determined by using statistical tools viz., profitability ratio, trend analysis, mean standard deviation coefficient of variation, Karl’s person’s coefficient of correlation.

In context of Nepal, the capital market is growing very slowly, the market is not sufficient. Here are lack of magazines and related documents of capital market without any proper knowledge and information. This study will give information about Nepalese capital market by analyzing risk and return and will definitely contribute to increase the analytical power of the investor in capital market. The study may be the matter of interest for academicians; student, teacher and researcher in the field of finance because study is not only fulfill the

requirement of Master degree, in business but also provide some knowledge about the Nepalese stock market development. It is suggested to the policy makers to make necessary policies to attract private sector investment in the productive sector and reforms in policies related to stock trade. It is believed that this study will help many investors to know how they should use their money while investing in financial securities.

Thus, it is cleared that study is focused on risk and return analysis of commercial banks viz., Everest Bank Ltd (EBL), Himalayan Bank Ltd. (HBL), Nepal SBI Bank Ltd (SBI), Nepal Arab Bank Ltd. (NABIL) and Standard Chartered Bank Ltd (SCBNL).

1.3. STATEMENT OF THE PROBLEM

Several commercial banks have been established in the country within a short span of time. Due to high competition in the market, these banks are providing more loan and advances against their client's insufficient deposit. Unsecured loan and investment may cause the liquidation of the commercial banks. Most of people of Nepal do not know about share debenture and other securities because capital market is not so developed in Nepal. On the other hand there are no any strong commitments or policy made by the government towards increasing public investment in policy market. Mainly some private and joint venture commercial banks are main root for many of such investment in financial securities. Limited options exist in financial securities. Stockbroker and financial institutions have no effective program to develop investor’s knowledge. So, moreover people are unfamiliar with the stock investment. It is believed that people have money for investment but the investment sector is limited except than a bank deposit or real estate. They would rather prefer to invest in unproductive sector e.g. buildings, gold and other unproductive item.

The attitude and perception of investor play (Main) chief role in investment decision, which is influenced by the information and access to the data, required for analysis. So lack of information and lean knowledge is chief problem faced by investor. Investor invests their wealth on the basis of guess and hunches because they do not have appropriate information about the financial asset and also lack of idea to reach to ideal decision. Investor purchases stock merely looking past trends of stock prices and sometimes they have to bear heavily loss due to inadequate knowledge and information related to field of stock investment.

In efficient market condition stock price is equal to the intrinsic value of stock. When require rate of return and expected rate of return are equal, it is also assumed that all the stock remain in security market line (SML). If case is not so, they strive towards this line. But practical and theoretical concept may not always much each other's.

Thus in Nepalese context, the investment decision is rarely taken after the analyzing the performance of stock. So the risk and return analysis of selected commercial bank in Nepal is faced many problems. Some research problems are as following:

- What are the criteria for evaluation of the stock, which will give favorable decisions?
- What are the sources of risk?
- How do they know about the magnitude of risk?
- What is the meaning of return and expected return?
- How the returns are calculated?
- What are the rates of return of each commercial bank?
- How can one make higher return through lower risk?
- What are correlations among the return of commercial bank?
- What are the determinants of the shares of selected commercial bank?
- What are the comparative risk and return position of these sectors?

This study is attempt to answer such questions and also attempt to give suggestions for a rational investor.

1.4. OBJECTIVE OF THE STUDY

The main objective of the study is to analyze the risk, return and other relevant variables of common stock investment of commercial banks that help in making decisions about investment on securities of the banks. The specified objectives of the study are as follows:

- To evaluate risk, return and other relevant variables that directly effect the investment in common stock.
- To find out the rate of return of various common stock.
- To find out the standard deviation and coefficient of variation of commercial bank.
- To analyze the correlation among the return of commercial banks.

- To analyze comparative risk and return position of these sectors.
- To know the permanent risk of stock.
- To know the required rate of return (SML equation) of a stock.
- To provide suggestions, some practical ideas and recommendations based on analysis of data for investment on common stock of commercial banks.

1.5. SIGNIFICANCE OF THE STUDY

This study will provide practical importance to commercial bank to making their financial decision. Most of the investors have sufficient funds for investment but they don't have the knowledge to analyze the risk- return and construct optimum portfolio in order to make investment in the common stock of commercial banks. It is one of the most important topics for the entire stakeholders who are interested to know the risk and return position of common stock invested of commercial banks. People are curious to know risk and return of common stock investment of commercial bank that helps to minimize their risk position. As all the financial institutions are the bases for economic growth of nation. The study has significance to various people in various ways e.g. Management, Shareholders, the businessman and entrepreneur, the government and the individuals.

The managers are always interested to know the financial condition of the organization. It helps them to find the degree of tolerance of the risk under a given return. In the same way the shareholders are the real owners of the institution. They have keen interest to know about the risk ness of their investment. The commercial banks that perform well is always regarded, appreciated and preferred by the businessman and entrepreneur for their financial transaction. They prefer the bank having low risk and high return. Similarly, it helps to the government commercial banks play a vital role for the economic growth and development of nation. The government has always interest to know the risk ness of commercial banks because the study helps to formulate the appropriate plan and policy for the country and also create conductive investment environment. In addition from above mentioned parties, the study is also important to other individuals that comprise of customers, investors, competitors, stockbrokers, student economist statistician and other rational individuals.

1.6. RESEARCH HYPOTHESIS

Simply, Hypothesis is a statement about the population. Hypothesis is an assumption made about the population parameter for which the test is carried out. It is an assumption made on the basis for reasoning "a hypothesis in statistics is simply a quantitative, statement about a population". (GUPTA, 1995:32). Hypothesis is a statement which, if proved becomes a theory. Each test contains two hypothesis, are begin null hypothesis and other is being alternative hypothesis. Since there are only one tests carried out in the study, there are two hypothesis which are presented as under.

Hypothesis Applied For The Test

H_0: there is no significant relationship between expected return and beta coefficient of selected commercial banks under study.

H_1: there is no significant relationship between expected return and beta coefficient of commercial banks under study.

Test Of Statistics F-Test

$$\mathbf{F} = \frac{ExplainedVariance}{UnexplainedVariation}$$

$$= \frac{ExplainedVariance/d.f.}{UnExplainedVariance/d.f.}$$

Where d.f. = Degree of freedom.

If calculated value of F is less than its critical value i.e., H0 or null hypothesis accepted otherwise H1 is accepted.

1.7 METHODOLOGY

The research methodology's the systematic way of solving research problem "research methodology refers to the various sequential steps to be adopted by a researcher in studying in view ". (Kothari, 2000:2). Thus the main purpose of this study is to stress on the different research methods and conditions, which are used in this study.

Research is systematic and organized effort to investigate specific problem that needs a solution. This process of investigation involves a series of well though activities of gathering, recording analyzing and interpreting the data with the purpose of finding of problem is called research.

It consists of research design, nature and source of data, population and sampling method statistical tool and method of data analysis.

Research Design:

Research design is defined as a framework plan and structure for collecting analyzing and evaluating data. It is a procedure and technique, which provide ways for research validity. As research is based on the recent historical data so simply it is a historical research. The research belongs to risk and return analysis; the research is based on historical data, which covers the six-year period from 2001/02 to 2006/07. It deals with the common stocks of commercial banks on the basis of available information.

Nature and Sources of Data1

The study is primarily based on the secondary sources of data. The data are obtained form Nepal stock exchange (NEPSE). Security board of Nepal, Data's related to market prices of stock, market capitalization, movement of NEPSE index is taken from the trading report published by NEPSE and website of Nepal stock exchange. Annual report of commercial banks and financial statement are also taken for respective banks. During the study informal opinion survey has also been taken with individual investor and bank officer.

Population and sampling method

The study is based on the commercial banks listed in the Nepal stock exchange. Since, study is concentrated in listed commercial banks only. The commercial banks listed in Nepal stock-exchange; for the purpose of study only 5 commercial banks are taken as sample.

Statistical tools and method

Before analysis data are presented systematically in the formats of table, charts and graphs. For analysis purpose, following factors and statistical and financial tools are used.

Mean:

It is the simplest statistical tool, which may be defined as the average value of distribution.

$$\overline{X} = \frac{\sum x}{N}$$

Standard deviation: It is an important statistical tool commonly used to measure the dispersion in the distribution. It is square root of variance. It is expressed as:

S.D.(σ) $= \sqrt{1/N \sum f\left(X - \overline{X}\right)^2}$. Similarly, correlation coefficient, regression analysis, co-efficient of variation, DPS, MPS is used for data analysis.

1.8. ORGANIZATION OF THE STUDY

The study has been divided into five chapters. The titles of the chapters are as follows:

Chapter- One: - Introduction

The first introduction chapter deals with subject matter of the study. This chapter consists of Introduction, objective of the study, focus of the study, significance of the study, limitation of the study and organization of the study etc.

Chapter - Two: - Review of the literature

It includes review of available literature related to area of this study. It is directed towards the review of conceptual framework and review of major related studies.

Chapter -Three: - Research Methodology

This unit presents research methodology used in the study, which includes various tools and techniques. It consists of research method as library research and field research, sources of data, population and sample research design, methods of data analysis etc.

Chapter – Four: - Presentation and Data Analysis

In this part of the study all the data are presented in the tabular and graphical from as per the requirement of the study. After this the interpretation and analysis are done.

Chapter – Five: - Summary, Conclusion and Recommendation

It includes the summary, conclusion and recommendation of the research and finally suggestion and recommendation are given.

1.9. LIMITATION OF THE STUDY

This study has been undertaken for the partial fulfillment of the requirement for Master's degree in Business studies. The major limitations and constraints of this study are as follows.

- The study covers the relevant data only for Six year i.e., from fiscal year 2001/02 to 2006/07.
- Altogether commercial bank i.e. Nepal Everest bank Ltd., Himalayan bank Ltd., Nepal SBI bank Ltd., Nepal Arab bank Ltd. and Standard Chartered bank Nepal Ltd. Have been taken into consideration for the study purpose listed in NEPSE.
- The risk is measure by the standard deviation of the return of banks.
- Major portion of analysis and interpretation have been done on the basis of available secondary data and information. So the consistency of finding and conclusion strictly depends on the reliability of secondary data and information.
- The study is limited from the point of view submission in partial fulfillment of the requirement of master degree.
- Variation in data published from different sources e.g. Figures published by NEPSE and companies differ to some degree.
- The study is fully based on student, financial resources and is to be completed with in the limited time. So these are the major limitations of the study.

CHAPTER-II
REVIEW OF LITERATURE

The review of literature is a crucial aspect of planning of the study. Basically it is a stock taking of available literature is one's field of research. "The purpose of reviewing the literature is to develop some expertise in one's area to see what new contribution can be made, and to receive some ideas for developing a research designs. The previous study cannot be ignored because they provide the foundation to the present study. The present study is simply the continuity in the research design" (Wolf and Panta ; 1999;30) .

Financial institutions are the life hood of the economy and serve as the barometer of the economy prosperity. However in order to serve as a barometer of economic prosperity, the financial condition of these institutions needs to be in proper condition. The risk and return aspect of institutions needs to be evaluated properly. In this context, the study attempts to review the literature. The review of literature is most important part of all study. Review of literature is the chapter where a researcher reviews the books, journals, magazines or any other types of studies, which are related to his/her field of study. Research is the continuous process in never ends. The review of literature is a way to discover what other research in the area of our problem has uncovered. It provides the foundation for developing a comprehensive theoretical framework from which hypothesis can be developed for testing. "The purpose of review of literature is to find out what the research studies have been conducted in ones chosen field of study and what remains to be deserve" (Wolf and Panta ; 2003;35). Thus the previous study cannot be ignored because they provide foundation to the present study.

In this chapter for our study is classified into three sessions. The first session begins with a definition. The second session follows with the theoretical review of risk – return and finally reviews the previous related study in the field. Topics from basic academic courses of book, different studies published in magazines, thesis of seniors and journals related to study are reviewed below.

2.1 DEFINITIONS AND THEORETICAL FRAMEWORK

The definitions of the terminologies used in the study needs to be described properly. It helps to clear the vision of the study. This makes the study more meaningful and easy to understand the problem of the

study. The objective of this session is to know how the various writers have defined the risk and return.

1. Common stock

"Common stock represents equity or an ownership position in a corporation. It is a residual claim, in the sense that creditors and preferred shareholders must be paid as scheduled before common stock holders can receive any payment. In bankruptcy, common stock holders are in the principal entitled only to any value remaining after all claim haven been satisfied. Thus, risk is the highest with common stock and so must be in expected return, when investors buy common stock they receive certificate of their being part of owners of the company. The certificate states the number of shares purchased and their par value" (Bhalla; 2000; 154).

As owner, common stock holders are entitled to certain rights and privilege. There are controls, preemptive rights, liquidation rights and right to income and distribution of additional shares. Similarly, the common stock values are quite different. In some cases, the donor amount of these values is not related for an individual stock. The common stock value includes par value, book value and market value.

Return:

Return is the prime factor in the financial investment decision. Every investors wants sufficient return from the investment. It is the return that encourages accepting the challenge. It strengths will power to assume risk. The term return is often used in our daily life also. But still the conceptual meaning of return differs from one person to another. Some consider it as revenue, other consider it as a reward while the other consider it as a profit and so on.

However in finance return means the return from the investment on single assets or portfolio assets. Return is rewarded received from investment for sacrifice of present certain amount of assets. Return is motivational factors encourages investors to sacrifice some certain amount of assets for uncertain benefit in future. The term return from capital investment is a concept that has different meaning to different investors. Some investors regard it as short term cash inflow while others perceives it a high growth rate and higher growth rate of return in the long run. Still other measures it in term of financial ratio such as return on investment or return on equity.

The investment may make of more than one sources of income. There are two kinds of return that investors receive from common stock. They are current yields and capital gain yields. Current yield is the cash

flow divided by the beginning price and capital gain means increment in the value of investment. Cash flow refers to the cash received in the regular interval (dividend for stock holder and interest for debt holder). Capital gain means the value of increment in the investment however sometime there may be loss in the value of investment known as capital loss.

Investment may be done only one project or assets, known as single asset or portfolio assets. Investment may be one or more than one asset is known as single asset investments and the investment done on more than one assets at a time is known as portfolio assets. Return can be classified and studied in various terminologies as that are as follows:

A. Single period return

The return carried for a single period is known as single period return. It measures the increment or decrement of the investor's wealth. “The single period return is simply a cash payment receipt due to ownership, plus the change in the market price divided by beginning price”. (Van Horne and John; 1995;09). “an investment’s single period rate of return is simply the total rate of return, an investors would receive during the investment period or holding period stated as a percent of investment’s at start of the holding period” (Francis,1993;1). The holding period return measure is useful with an investment horizon of one year or less. “The rat e of return achieved is the composite of dividend yield and change in price.”(Fisher and Jordan,1993; 6)

Investors can obtain two kinds of income from investments in assets. They are

i. Cash inflow income (cash dividend for stock holder, coupon interest payment for debt holder)
ii. Income from price appreciation or loser from price depreciation turned as capital gain or loss.

Notationally,

Single period return is expressed as

$$\text{Return} = \frac{\text{cash inflow(if any)} + \text{change in price of assets}}{\text{Beginning price of assets}}$$

$$R = \frac{CF_t + (P_t - P_{t-1})}{P_{t-1}}$$

Where,

R = Actual (or expected) return when 't' refers to a particular time period in the past (or future)

CF_t = Cash dividend (or coupon interest) at the end of time period 't'

P_t = Ending market price of investment at 't' time.

P_{t-1}= Beginning market price of invest at 't-1' time.

From the above formula we can say that single period rate of return is the composite of current yield and capital gain yield.

Single period rate of return = Current field + capital gain yield.

This above formula can be utilized to determine single period rate of return when the figures are based on historical data as well as expected single period return when the investment is based on future cash flow (dividend) and price.

Annualized rate of return are several period can be calculated in two ways. The first one is simply to take the arithmetic average of the annual holding period return over a given period and the second one, which also takes into account the compounding effects of each cash receipts over different time intervals, is the geometric means rate of return.

Arithmetic Mean of holding period returns ($\overline{HPR}$)

$$\text{HPR (A.M.)} = \left[\frac{\sum_{t=1}^{n} HPR}{n} \right]$$

Here,

HPR_t = Holding period return for 't' time

t = Time period *1,2,3,* ..... n

n = no. of period.

Geometric mean holding period return (HPR)

$$\text{HPR(G.M.)} = \prod_{t=1}^{n} [1 + HPR]^{\frac{1}{n}} - 1$$

Where,

® = product (multiply)

B. Expected Rate of Return

The rate of return that is expected in the future is known as expected rate of return. The expected rate of return is the weighted average possible return with the weights being the probabilities of occurrence. The expected rate of return is based, upon the future cash receipts. "The expected rate of return is a weighted average of the possible outcomes with each outcomes weight being equal to its probability of occurrence " (Brigham, 1980 : 98) Generally, the expected rate of return is applied one stock to earn over a future period because the interest rate on debt is mostly fixed.

The expected rate of return expresses what investors expect to receive from the stock as a rate of return in the course of next period. Many investment decisions are based on future exceptions. If the investors can describe the possible variables that will influence each of the possible rates of return and assign probabilities to these outcomes, the expected rate of return will be equal to the weighted average of the various probability distributions are used to describe possible outcomes. They are used to assign individual probabilities from zero to one, to each possible outcome, not exceeding the total probability to be one.

The expected rate of return is calculated by adding all the product of expected value under each situation with their expected probability of occurrence.

Notationally,

$$\bar{R} \text{ or } E(R) = \sum_{i=1}^{n} P_i R_i$$

Or

$$\bar{R} \text{ or } E(R) = P_iR_i+P_2R_2+P_3R_3+.....+P_nR_n$$

Where,

E(R) or $\bar{R}$ = Expected rate of return

R_i = Return on it possibility

P_i = Probability that the return R_i will occur

P_n = Total no. of possibilities of future outcome.

The above formulae are based on the probability distribution. The probability of occurrence serves as the foundation for the expected return. However the future events are uncertain. So, the assignment of probabilities to the future event is a very difficult task.

If the probability of possible outcomes is uncertain the expected rate of return may be wrong or it may make confusion to the stockholder or investors. So another method is applied to obtain the expected rate of return known as average rate of return under this method, the historical or past date are used and they are assumed to have equal probability distribution to calculate the average rate of return.

The expected rate of return is obtained by dividing the total rate of return for the period by total no of year.

$$\bar{R} \text{ or } E(R) = \frac{\sum_{i=1}^{n} R_i}{n} = \frac{R_1 + R_2 + R_2 + ...R_n}{n}$$

The average rate of return is considered as expected rate of return for the period on the assumption that same rate of return will be prevalent in future time. Since the world is dynamic expected rate of return is net always remaining same. So the expected rate of return may lose its accuracy. The expected rate of return on the past average rate of return may not be regarded as a proper indicator of expected rate of return.

C. Required Rate of Return

Required rate of return is that rate of return an investor must earn on their investment. It is the minimum rate of return that an investor must earn. The required rate of return when compared to the expected rate of return must be equal or less than the expected rate of return. If the expected rate of return, the investor will to purchase the investment and this will drive the price upward and vice versa. When the expected rate of

return is equal to be the require rate of return it is said to be equilibrium price or correctly price. Equilibrium price generally exist for a given investment because securities price adjust rapidly to new developments changes in equilibrium price can be brought about

i. By a change in risk aversion.

ii. By a change in risk free rate.

iii. By a change in the stock's beta co-efficient value.

iv. By a change in the stock's growth rate.

D. Return on Single Asset

When an investor invests only in on asset, the return generated from the single asset is known as return on single asset. The return on single asset may be on the basis of holding period return. The rate of return on single asset under this method is based upon the total return realized in the form of cash receipt and capital gain divided by the initially investment amount. The return on single asset may be on the basis of expected return where the different probabilities of outcomes are multiplied to their respective expected return and after then added together.

E. Return on Portfolio Assets

Portfolio is the combination of two or more than two assets. Since the investment on only one asset is risky, the investor prefers to diversify their investment into different assets. This activity of diversifying the investment in more than one asset is known as portfolio. The portfolio is act of keeping eggs in different baskets. When the portfolio asset means the combination of two or more than two assets return on portfolio means comes from portfolio investment.

Investors have different investment opportunity but they have limited resources, so the investor have to select that opportunity which maximize the return and for a given level of risk. Therefore it is needed to extent the analysis of risk and return through portfolio. There are two objectives of portfolio primary objective and secondary objective. The primary objective is to maximize return and to minimize the risk. The secondary objectives are to earn regular and stable return, safety of investment, appreciation of capital, even liquidity and tax benefits etc.

"The expected return on portfolio may be defined as weighted return on the assets, which comprise the portfolio. The weights reflect the proportion of the portfolio or wealth invested in each asset. "(Joshi, 2004: 134)

The general formulae for the expected return on portfolio are a follows:

$$\overline{R} = \sum_{i=1}^{n} W_j R_j$$

Where,

W_j = The proportion or weights of the total funds invested in security j

R_j = Expected return for the security j

n = Total no. of different securities existing in the portfolio

$$\text{Weight} = \frac{\text{Amount of rupees invested in on asset}}{\text{Total investment on the portfolio}}$$

The expected return on portfolio for two assets is given as under.

$$R_p = W_A \overline{R_A} + W_B \overline{R_B}$$

Where,

W_A = The fraction of the total value of the portfolio invested in the asset A or $(1 - W_B)$

W_B = The fraction of the total value of the portfolio invested in asset B or $(1 - W_A)$

$\overline{R_A}$ = Expected rate of return of asset A

$\overline{R_B}$ = Expected rate of return of asset B

F. Return on the basis of Risk ness

Return can be assigned on the basis of risk. On the basis of risk ness of an asset, return can be divided into two parts

1. Risk free rate of return
2. Market rate of return

1. Risk free rate of return

Risk free rate of return is that rate of return which is sure to be received. Generally Government issues Treasury note and interest provided on this security is known as risk free rate of return. Generally the risk free rate is lower than market rate of return.

2. Market rate of return

The market rate of return is based on the risk free rate of return. But since there is a tough competition in the market, the risk is also prevailing in the market. So, the market rate of return gives higher rate of return than risk-free rate of return. Generally, market rate of return constitutes of risk free rate and market risk premium.

3. Risk

Risk is one of the most important criteria for investment decision. Risk present virtually in every decision. Although the term risk is used in our daily life and is felt by every individual, no one has been able to give the universal acceptance definition of risk. Different person perceives the risk in different way and they define according to their own experience and perception. Some perceive it as a fluctuation in market price of the investment while other considers it as an uncertainty of return. View of the most people risk is defined as chance of loss. In reality, risk occurs when we can not be sure about the outcome, i.e. investment can produce more than one outcome in future.

In real world, we cannot predict or forecast the future. Therefore every investment has some degree of risk. Risk exists because of disability of the decision maker to make perfect forecast. Forecast cannot be made with the perception or certainty. Since the future events on which they depend are uncertain in this dynamic world. Some investor compares it as variable of the return from those they are expected.

Thus, the risk is defined as chance of receiving an actual return other than expected, which simply means there is variability in the return or outcomes from the investment. (Weston & Basely, 1996: 182, 183)

Thus, the risk can also be defined as a financial loss or more formally the variability of returns associated with a given stock.

"The risk ness of an asset is defined in terms of likely variability of future return from the assets"(*Sharma,* 2001 : 290)

In Webster's dictionary, Risk is defined as a hazard; a peril; express to loss or injury.

Risk is the fate of life, which is a product of uncertainty and its magnitude depends upon the variability in uncertain cash flow. Risk, in fact is an indication of loosing investment value. Therefore risk is defined as the like-hood that the actual return and investment will be less then the forecast return stated differently, it is the variability of return from an investment.(*Hampton,* 1996: 343)

In this way, risk is defined as in different ways. Some express it as loss, injury or damage, uncertainty, return validity, variability of return, outcomes variation, and dispersion of return and so on. Only the term used by the people is different. Though the different people perceive or express the risk accordingly to their own perception or experiences, the risk is what the risk bearer and investor believes and experiences.

3. a Measurement of Risk

The measurement of risk has always been subject for debate in the investment industry. Risk is sometimes distinguished from uncertain. Risk is referred to the situation where the probability distribution or the cash flow on investment proposal, on the other hand, there is no information to formulate a probability distribution of the cash flows, the situation is knows as uncertainty.

Probability assignment

Probability may be defined as a measure of some one's about the likelihood that on event will occur. If the event is certain to occur, we say that it has probability of occurring. If an event is certain not to occur, we say that its probability of occurring is zero; probabilities can be used to assess more precisely. Risk involved in an asset, probability, distribution may be defined as a set of possible values that a random variable can assume their associated probabilities of occurrence. Probability distribution may consists of only a few estimates one commonly used from employs only the high, low and best guess estimates, or optimistic, most likely and pessimistic estimates. Probabilities can also be the possible outcomes form an investment. The higher the probability distribution of expected future returns the smaller risk of a given investor. Risk can be measured in the following terms

a. Standard Deviation
b. Variance
c. Coefficient of Variation

A. Standard Deviation

Risk is defined as variability of return from an investment. Various factor play important role to bring such variability or deviation. Such variability is stability measured by standard deviation. Standard deviation is the absolute measure of degree of risk of common stock. We can measure the risk by examining the tightness of probability distribution associated with the possible outcomes. It is widely used to measure risk from holding a single assets. The smaller the standard deviation, higher

the probability distribution and accordingly lower will be the risk ness of an investment,

Standard deviation is the square root of variance and it is denoted by

$$¢ = \sqrt{Var(r)}$$

In statistical term, standard deviation is defined as square root of sum of products of the required deviation of each possible rate of return from the expected rate of return and multiplied by the probability that the rate of return occurs. The greater is the standard deviation of a probability distribution, the greater is dispersion of outcome around the expected values. Standard deviation is measure that indicates the degree of uncertainty of return and is one important measure of risk. Smaller the standard deviation, lower the risk, higher the standard deviation, higher the risk.

Symbolically,

$$¢ = \sqrt{\sum (R - \overline{R}\ )^2 \times P_i}$$

Where,

$\overline{R}$ = Expected rate of return

R = Rate of return

P_i = Probability occurring /?, return

B. Variance

Variance means the variation of return from the expected return. It measures the volatility of return. The concept of variance is highly important in advanced work where it is possible to split the total into several parts, each attributable to one of the factor causing variance in their original series. The variance is well known among statisticians, several hand calculator and computer are programmed to calculate it. The variance of an assets of return equals the sum of products of the required deviation of each possible rate of return from the expected rate of return and multiplied by the probability that rate of return occurs

Symbolically,

$$Var\ (R) = \sum_{i=1}^{n} p_i \left[R_i - E(R_i)\right]^2$$

Where,

$Var(R)$ = Variance of return

R_i = Rate of return for the it possibility

$E(R_i)$ = Expected rate of return

P_i = Probability occurring R_i return

n = Total no. of possibilities

C. Coefficient of Variation

The standard deviation and variance are equally acceptable and conceptually equivalent quantitative measure of an asset of total risk. The standard deviation can sometimes be misleading in comparing the risk of uncertainty surrounding alternative if they differ in size. To adjust for the size or scale problem, the standard deviation is divided by the expected rate of return, is called coefficient of variation. Coefficient of variation is a relative measure of risk.

Coefficient of variation measure per unit risk.

$$CV = {}^{¢}\!/_{E(R)} \; or \; {}^{¢}\!/_{\bar{R}}$$

Where,

$E(R)$ = Expected rate of

$\bar{R}$ = Average rate of return

¢ = Standard deviation of return

CV = Coefficient of variation

Since CV shows the risk per unit, it provides more meaningful basis for comparison when the expected returns on two alternatives are not same. It is useful measure of risk to compare the projects which have same standard deviation, different expected value or same expected return but different standard deviation. Higher the coefficient of variation indicates that coefficient has more volatility of return, which signifies the higher risk and lower the coefficient of variation indicates the less volatility of return, which signifies the lower risk.

3.b Types of Risk

Risk can be defined on the basis of its avoidance. Total risk is measured by the standard deviation. Total risk is composition of systematic risk and unsystematic risk.

Systematic Risk

Systematic risk is risk caused by the different factor that effect over all market economy such in the nation's economy, tax reforms made by the government or state of change in world energy situation, interest rate, gross domestic product and investor's expectations. More over it cause of

external environment. Since it can not be diversified, it also called non diversifiable risk. "Systematic risk is variability of return on stocks or portfolios associated with change in return on market as whole.*"(Van Home, John,* 1997: 100) The beta coefficient is an index of systematic risk. This is a modern scientific technique of measuring a security's risk. It is an indicator of relationship between an individual investment return and general market return.

Beta coefficient of a stock will be less than, equal to or more than 1 but the beta of a market will be always 1. An investment which has a beta supposes 1.5 indicates that the stock has greater fluctuation than the market portfolio. In the simple word, we can say that if the return on portfolio is expected to increase by 10%. The return on security with beta of 1.5 is expected to increase by (10% x 1.5) on the other hand; a security has the beta of suppose 0.9 indicates that fluctuates less than market portfolio. If the market portfolio is expected to rise by 10%, the return on the stock with beta of 0.9 is expected to rise by 9 percent (0.9 x 10%). Individual security's beta generally falls between the ranges of 0.60 to 1.80 and rarely, if ever, assumes a negative value.

In this way, beta indicates the relation between an individual investment return and market return. Statistically, beta is defined as their stock with the market proxy portfolio return divided by the variance of market proxy return.

Mathematically,

$$_i = \frac{COV(R_j, R_m)}{¢^2 m} + \frac{COV(R_j, R_m)}{Var(R_m)}$$

Where,

$_j$ = Beta coefficient of security j

$COV(R_j,R_m)$ = Covariance between the return of security j and market portfolio.

$¢^2$ *or* $Var(R_m)$ = Variance of return on market portfolio.

Unsystematic Risk

Unsystematic risk is the part of the total risk which can be diversified and usually arises due to the managerial inefficiency. This type of risk is unique to the organization and can be largely eliminated by holding a diversified portfolio of investment. So this type of risk is also known as diversifiable risk. Diversifiable risk creates through events like labor strikes, management errors, invention, advertising campaigns, lack of availability of raw materials etc. unsystematic risk is the variability of return on stock or portfolios not explained by general market movements.

It is avoidable through diversification. "For most stocks unsystematic risk accounts for between 60 to 70 percent of the stock total risk or standard deviation."(*Van Hone & Wachowitz :* 1997 : 100)

The unsystematic risk comprises of business risk and financial risk. Business risk is related with the asset efficiency. Financial risk is related with financial aspect of the company

Unsystematic risk = Financial risk + Business risk

Unsystematic risk $\rightarrow$ arises due to the company or industry

Financial risk $\rightarrow$ arises due to financial leverage

Business risk $\rightarrow$ arises due to assets operational problem

Relationship between systematic & unsystematic risk.

Total risk = systematic risk + unsystematic risk.

(Non-diversifiable + Diversifiable)

Unavoidable Avoidable risk

$$Var(R_i) = b^2_i \times Var(R_m) + Var(e)$$

Where,

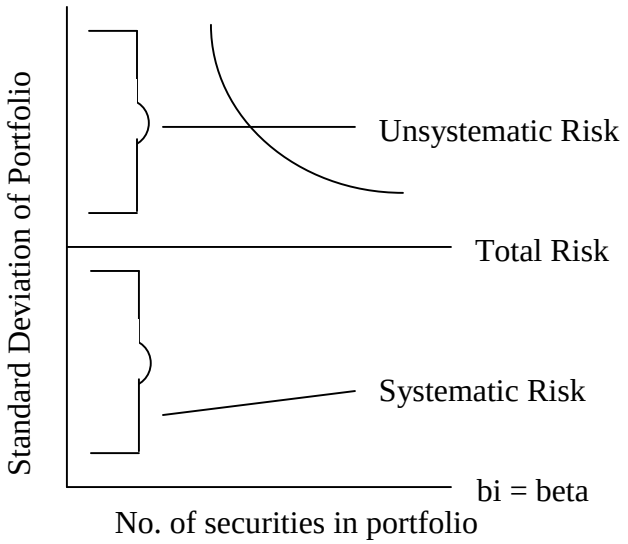
$Var(r_i)$ = Variance of returns on 'i' security

b_i = Beta coefficient of security

$Var(R_m)$ = Variance returns in the market

Var(e) = Residual variance or unsystematic risk

Diagram No.: 2.1



Investor invests in only one stock of the company composed of total risk that includes both systematic risk and unsystematic risk. The portion of unsystematic risk can be eliminated by diversification of investment in many companies. If the number of security in the portfolio increases, the total risk occur will be decreased and finally reached to the level of systematic risk.

3.C Theories of Risk and Return:

The theories, which are based on the concept of risk and return, are known as risk and return portfolio theory. CAPM (Capital Assets Pricing Model) and APT (Arbitrage Pricing Theory) are most common and important theories of risk and return. The theories are described under given below.

A. Portfolio Theory

The process of selecting an optimum portfolio is known as portfolio theory. As discussed earlier portfolio is combination of individual or a group of assets. They are two objectives of portfolio; is primary objective and secondary objective. Primary objective of portfolio is minimize the risk and maximize the return and secondary objective is regular and stable return, safety of investment, appreciation of capital, tax benefits etc.

- Risk aversion: Investors are risk averse. They prefer higher risk to lower risk and higher return to lower return
- Return: The return expected from any asset or portfolio is the mean value of probability distribution of future return.
- Risk: The variability of return from the expected return is the risk that is to be tolerated by an investor.
- Utility: The determinant factor of risk and return is the utility curve or indifference curve that states the investor bearing high risk requires more return than low risk hearing investor.
- Principle of dominance: The investor follows the principle of dominance i.e. if there is same level of return, lower risk is preferred and their level of risk, higher return is preferred.

A.1 Portfolio Return:

Portfolio is the combination of two or more then two assets. The return gained from the investment in two or more then two assets of investment is known as Portfolio Return. Portfolio return means weighted average of return and proportion of investment on assets. Portfolio return always depends upon the individual rate of return and the ratio of investment in those assets. The expected return on a portfolio may be

defined as the weighted average of the expected return on the assets. Which comprise the portfolio? The weight reflects the proportion of the portfolio or wealth invested in each asset.

$$E(R_p) = \sum_{i=1}^{n} W_{ij}\, E(R_{ij})$$

For two assets

$$E(R_p) = WiE(Ri) + Wj\ E(Rj)$$

For more than two assets

$$E(R_p) = WiE(Ri) + Wj\ E(Rj) + \text{----------} + Wn\ E(Rn$$

Where.

E(Rp) = Expected return for portfolio

Wi = Weight Investment in 'i' asset

Wj = Weight Investment in 'j ' asset

E(Ri) = Expected return for T asset

E(Rj) = Expected return for 'j' asset

n = Total number of assets containing in portfolio.

A. 2. Portfolio risk

The risk arise from the investment in more than one asset is known as portfolio risk. In other words, the variation in expected return from investing in two or more than two assets is known as portfolio risk. Thus the portfolio risk depends upon the three basic factors. The first one being individual risk of an asset, second one being the proportion or weight of investment in each assets and third is the relation between the co-movement return of assets among the portfolio known as Covariance or correlation. Portfolio return means only the weighted average of the return and proportion investment but portfolio risk means combination of individual assets risk proportion of investment and nature of return of those assets forming portfolio. Portfolio risk is the variance of portfolio return. The variance of portfolio reflects not only the variance of the asset that make up the portfolio but also how the returns of the assets that comprise of the portfolio, vary or more together. The nature of such co-movement of return is called co-variance.

Mathematically,

$$Var\ (R_p) = Wi^2 ¢_i^2 + 2\sum_{i=1}^{n-1} WiWj¢i¢j\ell_{ij}$$

Portfolio risk for two assets

$$¢p = Wi^2¢i^2 + Wj^2¢j^2 + 2WiWjCov(Ri, Rj)$$

Where,

Wi = Weight Investment in 'i' asset

Wj = Weight Investment in 'j' asset

$¢ij$ = Correlation co-efficient between assets 'i' and 'j'

$Cov(i,j)$ = Covariance of return of assets 'i' and 'j'

$¢i$ = Standard deviation of return for 'i' assets

$¢j$ = Standard deviation of return for 'j' assets

$¢p$ = Standard deviation for portfolio

n = Number of securities containing in portfolio

A. 3. Risk minimized portfolio

It is a difficult task to determine the amount of money investment to a portfolio, the ratio of investment on each asset that minimizes the risk to its lowest form is known as risk minimizing portfolio. The ratio of investment is known as optimum weight.

In Case of two assets, the percentage of weight of fund investment in each asset is obtained by the following formula.

Weight of investment in assets A

$$W_A = \frac{(¢_B)^2 - r_{AB}¢_A¢_B}{(¢_A)^2 + (¢_B)^2 - 2r_{AB}¢_A¢_B} \text{ OR } \frac{(¢_B)^2 - Cov_{AB}}{(¢_A)^2 + (¢_B)^2 - 2Cov_{AB}}$$

or $W_A = (1\text{-}W_B)$

Weight of investment in assets A

$$W_B = \frac{(¢_B)^2 - r_{AB}¢_A¢_B}{(¢_A)^2 + (¢_B)^2 - 2r_{AB}¢_A¢_B} \text{ OR } \frac{(¢_B)^2 - Cov_{AB}}{(¢_A)^2 + (¢_B)^2 - 2Cov_{AB}}$$

or $W_B = (1\text{-}W_A)$

Where,

$¢_A$ = Standard deviation of assets A

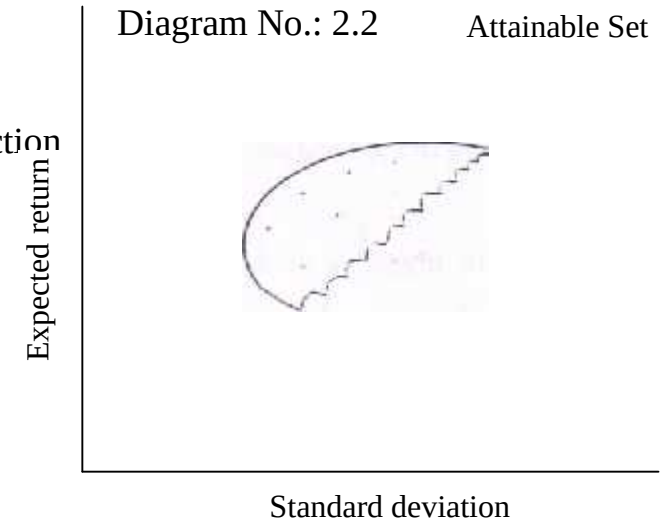
$¢_B$ = Standard deviation of assets B

ℓ_{AB} = Correlation co-efficient between the returns of assets A and B

Cov_{AB} = Covariance between the returns of assets A and B

The weight of fund in each (assets A or B) calculated from the above formulae helps to identify the optimum weight for the risk minimizing portfolio in case of two assets.

Diagram No.: 2.2



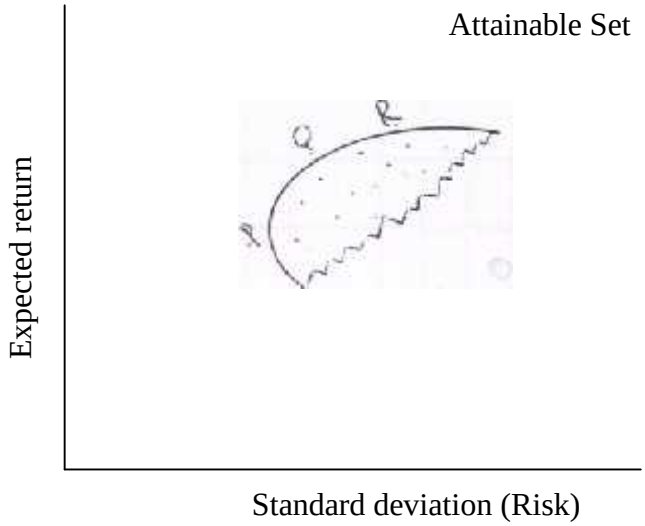
A.4. Portfolio Selection

When it is cleared that the portfolio helps to minimize the risk, the investor's looks for the assets combination that can be attainable. From the available assets, the limitless number of portfolio can be performs. Each possible portfolio will have on expected rate of return and risk. The hypothetical set of all possible portfolios is called the portfolio opportunity set or attainable set as shown in above diagram.

A.5. Determination of efficient frontier or portfolio

In the portfolio theory, the principle of dominance exits and the portfolio which has the highest expected return for a given level of risk and the minimum risk for a given level of return is called an efficient portfolio.

Diagram No.: 2.3



From the figure the three portfolios (P Q and R) are recognized as the dominant assets. In the figure, line PR is the efficient frontier and it represent the locus of all portfolios, which has the highest return for a given level of risk. Portfolios that lie below the efficient frontiers are the dominated portfolios. Portfolios that lie to the left side of the efficient frontier are not possible because they lie outside of the attainable set. Portfolio to the right side of the efficient frontier are inefficient because some other portfolios could provide either a higher return with the some degree of risk or lower risk the same level of return.

Comparing among the efficient frontier P, Q and R portfolio has low risk and low return. Portfolio Q has high risk and high return. Similarly, portfolios R have high risk and low return as compared to portfolio Q. So portfolio Q dominates portfolio R. In the figure the line PR is the efficient frontier and represents the locus of all portfolios that has the highest return for a given level of risk.

Thus in the above figure, both portfolio P and Q are efficient portfolios. A portfolio has low and high return.

B. CAPM (Capital Assets Pricing Model)

CAPM is a model that describes the relationship between risk and expected return. It explains the behavior of a 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 return (Expected return) is the risk free rate plus a premium based on the systematic risk of the security, where the risk is measured by the beta co-efficient.

Harry M. Markowitz laid down the foundation of modern portfolio theory in 1952. Capital assets are the long term financial assets as well as real assets and CAPM is based on the pricing of assets. Modern portfolio theory of Markowitz suggests that investment decision should base on the total risk. And price of assets should also be determined on the basis of total risk. But the CAPM suggest that any investors can create a portfolio of asset that will eliminate virtually all diversifiable risk, the only relevant risk is non diversifiable risk. Therefore, the investment decision and pricing of asset should be based on the un-diversifiable risk. This is the primary importance of selecting assets with the most desired risk return characteristics. The CAPM further suggests that price of capital assets should determine in way to compensate the systematic risk.

Based on the behavior of risk adverse investor, there is an implied equilibrium relationship between risk and expected return for each security. In market equilibrium, a compensation for systemic risk is

provided to expected return. The relationship states greater the systemic risk, greater will an investor expected from an investor.

"The major implication of the CAPM model is that the expected return of an asset will be related to a measure of risk for that asset known as beta. The exact manner, in which expected return and beta are related, is specified by the CAPM. It provides the intellectual basis for a number of current practices in the investment industry.*"(Sharpe, Alexander & Bailey*, 2000)

William Sharpe developed this CAPM model in 1960's. The model is simple in concept and has real world applicability. Like any model, this one is a simplification of reality. It allows drawing certain implications about risk and size of risk premium required as compensation for bearing risk.

CAPM is based on a number of assumptions. They are:

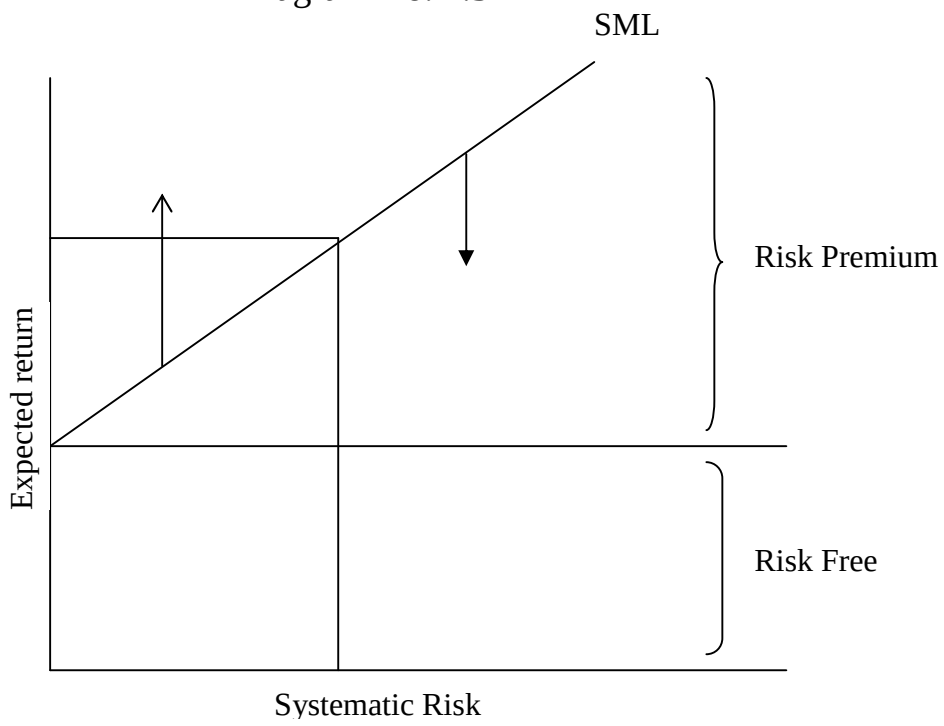
1. Market efficiency: It is assumed that capital market is efficient.
2. Risk aversion: Investors are risk averse. They evaluate a security's return and risk in terms of the expected return and variance or standard deviation respectively. They prefer the highest expected return for a given level of risk.
3. All the investors have the same expectation about the expected return and risk of securities.
4. All the investor's decisions are based on single time period.
5. All investors can lend or borrow at a risk free rate of interest.(*Pandey*, 1997:355)

C. The Security Market line (SML)

SML is the graphical representation of the CAPM. It shows the relationship between risk and required rate of return. "SML is the line that shows the relationship between risk as measured by beta and the required rate of return for individual securities.*"(Western and Brigham* P 208) The CAPM is an equilibrium model for measuring the risk and return trade off for all assets including both efficient and inefficient portfolios. The SML clearly shows that returns are the increasing function; in fact a linear increasing function of risk line shows that if risk increase, the return should also increase proportionally, the risk affecting the return is market risk.

A figure for CAMP is presented

Diagram No. 2.3



In the figure, the expected one year return is shown on vertical axis. Beta, an index of systematic risk, is on the horizontal axis. At zero risk, the SML has intercept on the vertical axis equal to the risk free rate. The return is presented even in the situation of zero risk, for the compensation to the time value of money. As risk, increases the require rate of return also increases in the manner as shown figure.

The figure of CAPM describes two assets A and B that are not in equilibrium. Asset A is .undervalued and therefore very desirable assets to invest. Assets A price will rise in the market, as more investors are attracted to purchase it. However as A's price goes up its return falls. When A's return falls to certain consistent with its beta on the SML, equilibrium is attained. In case B, just the opposite situation takes place. Investors will attempt to sell B, because of its overvalued and therefore, this put down pressure on its price. When the return on assets B increases to the rate, that is, consistent with the beta risk level given by SML, equilibrium will be achieved and down world price will lose its existence.

The expected rate of return on SML can be presented in following equation.

$$E(R_i) = R_f + (R_m - R)_i$$

$E(R_i)$ = Expected return for an (ith) assets

R_f = Risk-free rate of return

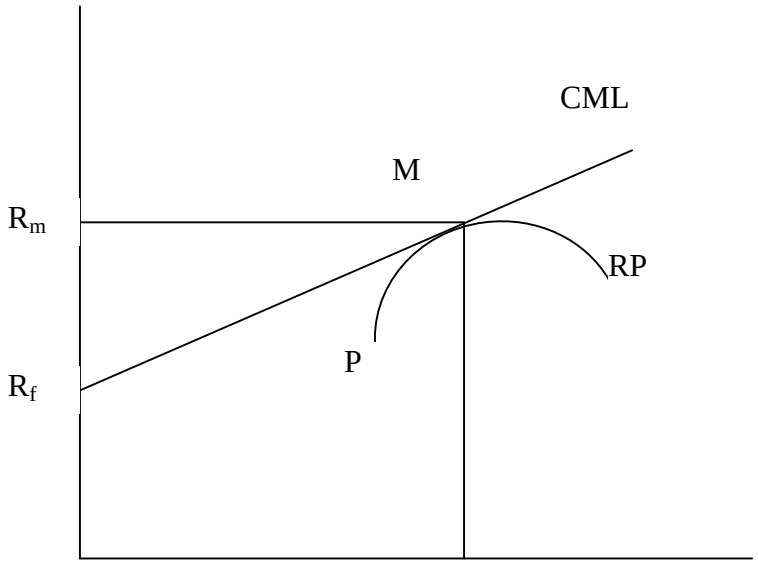
R_m = Expected Market return

$_i$ = Systematic risk of assets

D. Capital Market Theory (CML)

CML represents the equilibrium relationship between the risk ( ) and return (expected) for the efficient portfolios. CML is the theory of risk and return used to describe the relationship between the risk and return in a market portfolio and the risk free rate of return. Thereby defining widely held conception of the price of risk and the price of immediate consumption. The theory describes the price as a reward to the seller, in fact, when a risk free asset is introduced into Markotwitz portfolio analysis, the efficient frontier change from a curve to a straight line. This new efficient frontier is called capital market line (CML).

Diagram No. 2.4



The CML starts with the risk free asset (R_f) that is tangent to a risky portfolio (M) on **the** market efficient frontier. In the above figure portfolio M is the only risky portfolio. To the left side of M present on CML will hold both the risk free asset and risky portfolio.

The slope of CML can be represent as follows

$$\text{Slope of CML} = \frac{\overline{R_m} - R_f}{¢m} \times ¢p$$

Where,

$\overline{R}_p$ = Required rate of return on any efficient portfolio on the CML

$\overline{R_m}$ = Expected rate of return on market portfolio

R_f = Risk-free rate of return

$¢_m$ = Standard deviation of return on market portfolio

$¢_p$ = Standard deviation of return on efficient portfolio

This equation states that the required return on only efficient portfolio in equilibrium equals to the risk free rate plus the market price of risk, multiplied by the amount of risk on the portfolio being considered.

E. Relationship of SML and CML

After the study of SML and CML, the relationship between SML and CML can be established. SML and CML are only the different drawings of the same market equilibrium. SML is used to explain the required rate of return of all securities, whether they are efficient and presents a unique relationship between systematic risk and expected return. On the other hand, CML is used to explain the required return only for those efficient portfolios that are perfectly corrected with the market portfolio because those assets fall on the CML.

The relationship between SML and CML are expressed as:

Equation of CML $= E(R_p) = R_f \frac{\lfloor E(R_m) - R_f \rfloor}{¢_m} \times ¢(R_p)$

Equation of CML $= E(R_i) = R_f + [E(R_m) - R_f]$ $_i$

Considering the definition of beta

$$_i = \frac{Cov(R_i, R_m)}{Var(R_m)}$$

SML equation can be expressed as

$$\text{SML} = E(R_i) = R_f + \frac{\lfloor E(R_m) - R_f \rfloor}{¢_m} \frac{Cov(R_i, R_f)}{¢_m}$$

Where,

$E(R_i)$ = Expected rate of return of 'i' asset

$\overline{R_p}$ = Required rate of return on any efficient portfolio on the CML

$E(R_m)$ = Expected rate of return on market portfolio

R_f = Risk-free rate of return

S_m = Standard deviation of return on market portfolio

$COV(R_i,R_m)$ = Covariance of return between individual assets and market return

2.2. REVIEW FROM RELATED STUDIES

The objective of this section is to show, how the relationship between risk and return is defined, described and measured by different studies. In this section, we will review the previous study which is related to this topic, which is published in journals, thesis and independents.

2.2.1 Review from Journal

There are very few books and research based on journals in the field of finance in Nepalese context. Almost no any articles about the risk and return analysis on common stock investment can be found. Now a day's information highway or the internet has become the most easily accessible medium to gain information in any subject matter. So some foreign journals have taken into account to review risk and return topics.

There is an article "The theoretical relationship between systematic risk and financial variable" by Robert G. Bownna. The purpose of the study was examining the relationship between risk, financial variability and market risk. Systematic risk is directly related to the accountancy. There is no theoretical basis for relationship of dividend payout and beta. There is not only theoretical relationship between dividends and systematic risk and 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 to beta. This function is not only the function of earning variability, dividends and policies but also size and growth of firm" *(Bowmon,* 1979:617-628)

The monthly journal of finance, published by American finance association for many decades, is considered. In August 1999, an article entitled "Local return factors and turnover is emerging stock markets" by K. Greet Rawan horst was published, which is reviewed here. "The performance of Hedge funds: Risk, return and incentives" by Carl Ackermann, Richard MC. Enally and David Revenscazft has been reviewed here.

These 'hedge funds concluded that the flexible investment options, employed by hedge funds, make it difficult to classify hedge funds, identify the correct bench mark and this measure the relative performance. Standard deviation of returns measure of total risk may not fully capture the complex risk taking from hedge funds dynamic, highly

reversed strategic monthly incentive fees. Therefore contain unknown reporting bias that may be as important as depreciation rates, common cost allocation and transfer pricing issues in accounting profits. "((*lark. Richard and croft* 1999:850-873).

2.2.2 Review from related studies

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

Narayan Prasad Poudel study carried in the topic of investing shows of "Return and Risk Elements" in 2001 which was based on the data collected from eight banks from mid July of 2001. The main objective of the study was to determine whether shows of commercial banks in Nepal are over or under priced by analyzing risk and return characteristics of individual shares.

Mr. Paudel has given the following finding:

- From the study we get Nepal Arab Bank Ltd. Indosuez Bank Ltd. and Himalayan Bank Ltd Were overpriced and others were under priced.
- Most of the individual shows appear to be defensive as beta coefficient were less than one. Low beta shares were less volatile than market as whole only the return of shares of bank of Kathmandu had beta coefficient of greater than one indicating that share was more risky than the market.
- Nepal Arab Bank Ltd, Nepal Indosuez (Now Investment Bank) Bank Ltd, Himalayan Bank Ltd. Had higher expected equilibrium return than expected rate of return and standard chartered Bank Ltd. Nepal SBI Bank Ltd, Nepal Bangladesh Bank Ltd, Bank of Kathmandu had lower equilibrium return than expected rate of return.

Another independent study carried out by pro. Dr. Radhe shyam pradhan in 1993 carried out a study entitled "Stock market behavior an smell capital market & case study in Nepal" *(Pradhan* 1993: (23-49). This study was based on data collected .from seventeen enterprises from 1986 to 1990. One of the major objectives which are related to this study was "to assess the stock market behavior in Nepal".

Mr. Radhe Shyam Pradhan has given the following findings.

- ❖ Dividend per share and market price per share was positively correlated.
- ❖ There are positive relationship between dividend payout and liquidity.
- ❖ Higher the earning on stock larger the ratio of dividend per share to market price per share.

2.2.3 Review from Thesis:

There are some studies related to topic "Risk and Return" had been conducted as a thesis for the partial fulfillment of Master's Degree in Tribhuvan University which are reviewed here. These are the some studies related to this topic such as the study conducted by Mr. Pasuram Neupane in 2003 entitled, "Risk and Return analysis with reference listed commercial Banks". By Mr. Jeet Bdr. Sapkota in 2000 entitled, "Risk and return Analysis in common stock investment". By Mr. Durga Bhattrai in 2004 entitled "Risk and Return Analysis of common stock investment with special reference to commercial banks" is review hare.

The study conducted by Mr. Durga Hari Bhattarai was included seven listed commercial bank with data from 1998/99 to 2002/2003, the main objective of the study was "Risk and return analysis of common stock investment with special reference to commercial bank" *(Bhattarai*, 2002). There is deep relationship between risk and return. It plays vital role in the process of investment. However, the relation ship between risk and return is described by investor's perception about risk and their demand for compensation. The investors will invest in risky assets only when he is assured of adequate compensation for risk bearing.

On the basis of finding, Mr. Bhattarai derived following conclusion.

- ❖ Price of share is determines by economic condition, policy of government, peace and political situation of nation.
- ❖ Investor can invest in such companies whose coefficient of variation of return of common stock is lowest.
- ❖ To minimize the risk, investors should invest their fund in various companies.
- ❖ The under priced common stock should be purchased and over priced common stock should be sold.
- ❖ NEPSE should improved information technology and expand many branches in other main cities around country.
- ❖ Real financial statement should be provided by financial institution

- ❖ Government should also monitor the activities of financial institution.

From the study of Mr. Bhattarai research, it can be said that the focus has given the analysis of risk and return in common stock investment. Due to various other aspects of analysis investor cannot easily assess the result. The study has not focused the view point of investor and concentrated on the companies and stock market. However this study has explored some dimension for further research in this subject.

Another thesis submitted by Mr. Passuram Neupane in 2003 entitled Risk and Return Analysis with reference to listed commercial banks" is also related to this study.

In this study he has taken six listed commercial banks in account and has given the following conclusion. "The return is the income received on stock investment, which is usually expressed in percentage. Expected return on the common stock of SCBNL is maximum (i.e.) 60%, which is very high rate of return. In reality this rate exists only due to the effect of unrealistic annual return because issue of bonus share increase in share price. Similarly expected rate of return of common stock of Himalayan Bank Ltd. is found minimum i.e. (28.94%). About the risk he has concluded, "Risk is the variability of return which is measured in terms of standard deviation. On the basis of S.D, Common stock of NBBL is most risky since it has high S.D and common stock of HBL is least risky because of its lowest S.D. On the other hand, we know that C.V is more national basis of investment decision, which measure the risk per unit of return on the basis of C.V. common stock of NABIL is the best among all banks. NABIL has 0.86 unit of risk per unit of return. But common stock of NBBL has the highest risk per unit of return (i.e. 1.2729) (Neupane, 2003)

Another study by Mr. Jeet Bahadur Sapkota in 2000, entitled "Risk and Return Analysis in common stock investment" is a very closely related to this study. Researcher's main objective of the study is to analyze the risk and return of common stock in Nepalese stock market. This study is focused on the common stock of commercials banks.

Mr. Sapkota in the study has concluded that, "Common stock is the most risky security and lifeblood of stock market because of high expected return. Common stock attracts the more investor. Private common stock holders are passive owners of the company. But the private investor's play vital role in the economic development of nation

by mobilizing the dispersed capital remained in different form in the society. As over all economy, Nepalese stock market is in emerging state. Its development is accelerating since the political change in 1990 effects the openers and liberalization in national economy. But the lack of information and poor knowledge, Nepalese private investor cannot analyze the security as well as market properly, (Sapkota. 2000:89)

Above Journal, independent studies and thesis by different author are presented here in this chapter knowledge relating to the topic has been achieved and those studies provided crucial cases for the research purpose.

CHAPTER-III
RESEARCH METHODOLOGY

"Research Methodology is a way to systematically solve the research problem" Kothari, 2000: 10). It may be understood as a science of studying how research is done scientifically. Research methodology refers to the overall research processes, which a research conducts during his/her study. This chapter describes about the research design, population and sample, sources of data, data collection techniques, data analysis tools and limitations of the methodology.

3.1Research Deign

The research is based on the recent historical data, so simply it is historical research. Research deign may be defined as from work, plan and structure for collecting, analyzing and evaluating data. The research design focuses on the data collection methods, the tools utilized for the research and sampling plan to be followed. It is also an integrated system that guides the research in formulating implementing and controlling the study.

Thus the research design is an integrated from that guides the researcher to plan and execute the research work. The research design is the plan and structure supported by the strategy of investigation conceived in order to obtain answers to the research queries and to control the variance.

The research study attempts to analyze the position of risk and return of the selected commercial banks. For the analysis, data are obtained from Nepal stock exchange website www.nepalstockexchange.com. As research is based on historical data it covers the six year data from fiscal year.

The pattern of return and volatility (risk) are analyzed in the study. The trend of return of each commercial bank is also studied. More than that, the relationship between mean, return, standard deviation and the coefficient of variation are examined to find whether the relationship between these variables in the study is positive or negative. The test of correlation and analysis of variance are also done in this study. Therefore, the research design used in the study is basically descriptive analytical in nature.

3.2.Population and Sample

Population is the combination of each unit. It is also known as universe of the study. "The word 'universe' is used in statistics denotes the aggregate from which the sample is to be taken" Gupta; 1995: E-42) Population may be finite or infinite. A finite population is one in which the number of the items is determinable. An infinite is that in, which the number of items is not determined. Our study has finite population. In many cases, the study of the whole population is neither feasible nor desirable. In this case, Samples are taken for the study. Sample is the representative of the population. It is the part of universe, which the researcher selects for the purpose of investigation. The sample should exhibit the characteristics of the population. It should be a small population. Sample is a subject of population units and the process of choosing a sample from the population to learn about the population on the basis of sample is known as sampling. For our purpose, the financial statements of commercial banks are regarded as population.

Among the commercial banks, only five commercial banks are taken as example for the study namely EBL, HBL, SBI, NABIL and SCBNL. These samples are selected according to the judgmental and convenience sampling.

3.3Nature and sources of Data

It is the data on which the analysis is done, evaluated and the results are obtained. Data is the foundation on which the research is performed.

There are two sources from, which the data can be collected, namely the primary source of data and secondary source of data. A primary source is one that itself collects the data; primary data are those, which are collected at fresh and for first time and those happen to be original in nature. The researcher directly goes to the field and collects necessary information for the study by observation interview with he concerned one.

Secondary data source is one that makes available data that were collected by some other agency. Secondary data are those, which have already been passed through statistical process. They are collected from various published and unpublished sources and were already been used by researcher.

The study is mainly based on his data tabulated from financial statement of selected banks for the study for the period of six years i.e. 2001/02 to 2006/07. Which have been derived from NEPSE website

(www.nepalstock.com). Also the annual reports of concerned bank, data related to the market price of stock market capitalization, movement of NEPSE index etc is taken from trading report published by NEPSE and the website of Nepal stock Exchange. Therefore, data for the study have been primarily secondary in nature. During the study informal opinion survey has also been taken with the individual related persons.

3.4Techniques of Analysis

For this study descriptive and inferential techniques are applied as techniques of analysis. Descriptive analysis is based a profitability ratio, standard deviations and co-efficient of variation. The trends of return, trend equation with their predicted values are also computed. Apart from this Karl person's coefficient of correlation is also calculated to describe the nature of relationship between risk and return.

For the inferential analysis, null and alternative hypothesis were formulated and tested in ANOVA. If critical value of F ratio were than the calculated value of 5% level of significance with (N-K, K-1) degree of freedom, the null hypothesis will be accepted and alternative hypothesis will be rejected otherwise vice versa.

3.5Analytical Tools:

For the analysis of data, appropriate tools are to be unutilized in order to secure the required findings of the study. All those tools, which are used for the analysis and interpretation of the data's knows as analytical tools, there are two types of analytical tools applied in the study. They are:

Statistical tools

Financial tools

3.5.1Statistical tools:

Statistical tools include Arithmetic mean (Return on common stock), standard deviation and coefficient of variation, Karl person's trend analysis, coefficient of variation, correlation regression and (ANOVA).

a. **Arithmetic Mean:** Arithmetic Mean is the most popular and widely used measure for representing the entire data by one value and which is also known as average. Adding all the items together and then dividing this total by number of items added, the value of mean is determined. Mean is used find out the expected rate of return of common stock.

It is denoted by

$$E(R_j) = \frac{R_1 + R_2 + R_3 + \text{---------- } R_n}{n} = \frac{\sum R_j}{N}$$

Where

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

R = Return on Stock

n = no. Of years that the return is taken

$\sum$ = Sign of summation

b. **Returns on market**: - It is the percentage increase in NEPSE index. Market return is the average return of market as whole. It is calculated is

$$R_m = \frac{Nl_1 - NL_{t-1}}{NL_{t-1}}$$

Where

R_m = Return on market

Nl_t = NEPSE index of 't' time

Nl_{t-1} = NEPSE index it '$t-1$' time

Expected Return on Market [E(R_m)]: It is average return for future expectation. It is calculated by summing up the past return and dividing by number of samples of period.

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

ER_m = Expected return on Market

$\sum(R_m)$ = Summation of market return

n = Number of sample period

d. **Standard deviation:** Standard deviation is the absolute measure of dispersion. Absolute measure of dispersion means that dispersion or variation of items around their expected value i.e. arithmetic

mean. Standard deviation is also regarded as root mean square of deviation. Because it is the squared root of the mean of the squared deviation. It is derived from the arithmetic mean. The standard deviation is derived so that high S.D. represents a large dispersion of return and high risk and vice versa.

Symbolically,

$$\sum \sigma_j = \sqrt{\frac{\sum[R_i - E(R_i)]}{n-1}}$$

Where

$\sum \sigma_j$ = Standard deviation of stock.

R_j = Single period rate of return on stock j

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

n = No. of years that the returns are taken.

If probability is given

$\pm_j = \sum_{t-1}^{n}[Rj - E(Rj)]^2 P_j$ Where Pj = Probability distribution of observation.

e. **Coefficient of Variation (C.V.):** Coefficient of variation in the relative measure of dispersion, Relative measure of dispersion is the ratio of measure of absolute dispersion to an appropriate average. It measures the risk per unit of return. It provides more meaningful basis for comparison when the expected returns on two alternatives are same the higher the coefficient of variation, the higher the risk and vice versa.

Symbolically, it can be expressed as

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

C.V. = Co- efficient of variation of stock j.

$\pm_j$ = standard deviation of return as stock j.

$E(R_j)$ = Expected return on stock j

The series for which the coefficient of variation is greater is said to be more variable or more risky, less consistent, less uniform or less homogeneous and vice versa.

f. **Beta co- efficient:** Beta coefficient is an index that measures the systematic (un-diversifiable) risk of any stock. More specifically speaking, beta coefficient of any security tells, how sensitive is that securities return with respect to the return in the market. Beta coefficient of particular stock will be less than, equal or more than one. But beta coefficient of market will be always one. If beta of stock is less than one, then the stock is defensive and if the beta coefficient of stock is more than one then stock is aggressive.

Mathematically,

Beta coefficient of any security i.

$B_j = \frac{(R_j, R_m)}{\pm^2_m}$ or $B_j = \frac{Cov(R_j, R_m)}{Var(R_m)}$

Where B_j =

Cov (R_j,R_m) =Covariance of return security

'J ' and the market portfolio.

g. **Portfolio Return:** The return gained from the investment in two or more then two assets an investment is known as portfolio return. The expected return on portfolio may be defined as weighted average of expected return on the assets, which comprise the portfolio. The weight reflects the proportion of the portfolio or wealth invested in each asset.

$E(R_p) = W_i E(R_j) + W_j E(R_j)$

Where,

$E(R_p)$ = Expected return on portfolio

W_i = Weight or proportion of fund invested in the security 'i '

W_j = Weight or proportion of fund invested in Jrt security 'J '

$E(R_i)$ =Expected return on " i ' assets

$E(R_j)$ = Expected return on 'j ' assets.

h. Trend Analysis: Observing the past behavior of return over a period of time, the analysis of risk and return can be done. Trend analysis depicts the trends in the operation of bank. The trend analysis is indicates that the direction of change that help in studying the bank position and change other. Of overtime and determine whether there

has been an improvement or deterioration in the financial condition and performance over time.

There are various method that can be used for determining trend such as trend percentage, method of least square, graphical method and like that. However the method used in this study is the method of least squares and to make the study simple and easy to understand. Graphical method is also used.

h. a. Method of Least Squares: The method of least square is widely used in practice with the help of this method; a trend line is fitted to the data in such a manner that the following two conditions are fulfilled.

i. $\sum (Y-Y_n) = 0$

Where,

Y = actual dependent variable value.

Y_n = Computes value for different n periods

N = 1, 2, 3, 4…….,n.

ii. $\sum (Y-Y_n)^2$ = are least i.e sum of the deviations of the actual and computed value is least from this line and hence the name is given the method of least square.

The method of least square may be use either to fit a straight-line trend or parabolic trend. The straight-line trend is represented by the equation.

$$Y_n = a + bx$$

Where,

Y_n – is used to designate the trend values to distinguish from the Y values.

a – is the Y intercept.

b - is the slope of the trend line

x – is the independent variable that represents time taking mid point as origin.

Symbolically

$$a = \sum Y / N$$

$$b = \sum XY / \sum Y^2$$

Where,

$\sum Y =$ Sum of the values of dependent variable Y

N = No. of observation

$\sum XY =$ Sum of the variable X and Y multiplied

$\sum X^2$ = Sum of the squares value of variable.

The constant ' a ' is equal to mean of Y value and the constant 'b' gives the rate of change.

h. b. Graphical Method

Graphical method used in the study shares the calculated or predicted value for different five years derived from the trend equation. The graphical method used in the study is presented with a view of supporting the tabulated values of trend equation and trend values of selected commercial banks- on the X-axis of the graph fiscal years are presented and on Y-axis the banks with their predicted values are shown.

i. **Analysis of Variance**

Analysis of variance or ANOVA is statistical technique developed by R.A. Fisher designed specially to test whether the mean value is more than two quantitative population or equal. It tests the null hypothesis that two or more sample come from population with equal mean and i.e. different only due to sampling error.

The F- test mechanism is used in analysis of variance. This technique is used in present study to test the null hypothesis that mean value of various parameters of six years of selected banks are equal and come from the sample or similar population.

The ANOVA test can be completed by applying following step.

Step 1 – Formulate the null and alternative hypothesis.

Step2- Compute Variance between the samples sing following

Procedure:

Compute the mean of each sample i.e. X

1. Compute the deviation of the sample mean from the grand means and square these deviations and multiply by the sample size. This will give sum of squares in column (SSR).
2. Compute the mean square between the samples (MSR)

$$MSR = \frac{SSR}{k-1}$$

Where

k = No. of sample

k-1 = Degrees of freedom.

Step – 3 Compute variance within the samples using following

Procedure

1) Compute the mean value of each sample
2) Sum the squares of deviation values sample items from their mean.
3) Repeat (2) for all sample and obtain the total of sum squares of deviation of various samples from their respective means (SSR)
4) Calculate the mean square within the sample (MSR)

$$MSR = \frac{SSR}{N - K}$$

5) Calculate the total sum of squares of variations

SST =SSR + SSE

Step – **4 prepare the ANOVA table**

Sources of variation	SS	df	Ms	F-ratio	Result
Explained variance	SSR	K-1	MRS=SSC/K-1		
Unexplained variance	SSE	N-K	MSE=SSE/N-K		
Total	SST	N-1			

Where,

SS = Sum of square

df = degree of freedom

MS = Mean square

$$F - Ratio = \frac{\text{exp}lained\ \text{var}iation}{Un\,\text{exp}lained\ \text{var}iation}$$

Step – **5 Make Decision**

If the compute value of F is less than the critical value says at 5Ü level of significance, H_0 is accepted otherwise, H_1 is accepted.

j. **Karl Pearson's coefficient of correlation**

Correlation is an analysis of co-variation between two or more variables. If two or more quantities vary in such a way that movement in the other accompany movement in one these quantities are said to be correlated. It is statistical device that helps to analyze the co-movement between two or more variables. The correlation Co-efficient however only helps to determine the extent to which two variables are correlated but does not full us about the case and effect of the relationship. Even there is high degree of correlation between two which one is the cause and which one is the effect.

Correlation may be positive or negative. It return on two securities one negatively correlation which combined in portfolio reduce the risk. If securities are positively correlated risk can not be reduce.

The person's coefficient of correlation is mathematically expressed as

$$r = \frac{N\sum XY - \sum X.\sum Y}{\sqrt{N\sum X^2 - \left(\sum X\right)^2} \times \sqrt{N\sum Y^2 - \left(\sum Y\right)^2}}$$

Where, r = Karl Pearson's coefficient of correlation.

N = No. of observation

$\sum X$ =Sum of the values of variables

$\sum Y$ = Sum of the values of variable Y

$\sum XY$ = Sum of the multiplied variable of X and Y.

$\sum X^2$ = Sum of the square values of variable

$\sum Y^2$ = Sum of the squared values of variable Y

The value of correlation co-efficient always lies between +1 to -1.

1. Regression Analysis

Regression analysis is the statistical tool, which is used to determine the statistical relationship between two (or more) Variable. It is simple a relationship between dependent variable and independent variable. This analysis helps to identity sensitivity of return on various the financial variables. In this model, we study following two relationships:

(i) Simple regression model.

(ii) Multiple regression models.

i. Simple Regression Model

In this model one dependent variable and one independent variable is used to measure the regression. If Y is the linear function of X, Y on X can be express as

$$Y = a + bX$$

Where,

Y = Dependent variable

X = Independent variable

a,b = Regression parameters

ii. Multiple Regression Model

Multiple regression equation describes the average relationship between one dependent and two or more independent variables and this relationship is used to predict (or control) the dependent variable.

The multiple regression equation of dependent variables Y on X independent variables X_1 X_2 X_3 ----------X_n can generally be expressed as:

$$Y = a + b_1x_1 + b_2x_2 + \text{----------}b_nx_n$$

To test the significance of model as well as its validity following test should be done.

(i) Coefficient of determination

(ii) F – Statistics

3.5.2 Financial Tools

Financial tools are applied to find out rate of return

1. Market price of stock (MPS)

If the market prices of share of companies are followed then it can be found that there are three types of prices, high, low and closing. For the analysis single one is needed, so average price (that of high and low) or closing approaches can be used. Here in the study, the closing price is taken as market price of stock, which has specific time of span of one year and the study has focused in annual basis. To get the real average volume and price of each transaction in the whole year are essential, which is tedious and impossible to consider the data availability and maintenance. Hence the closing price is used as the market price of stock.

2. Dividend Per share (DPS)

Dividend is relevant during the computation of rate of return, which is a reward to shareholder's for their investment. If a company declares only the cash dividend, there is no problem to take the dividend amount. But the company declares stick dividend (bonus share), it is difficult to obtain the amount that really shareholder's has gained. In this case they get extra numbers of shares as dividend and simultaneously price of stock declines as a result of increased number of stock. To get the real amount of dividend following model has been used.

Total dividend amount = cash dividend + % of stock dividend/ X next year MPS.

Sometime the company issued right issued at par. In this situation we can calculate total dividend amount by

Total dividend = cash dividend + Right share % x (Next Years MPS – Price of right share.)

3. **Return on Common Stock**

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 dividing by the market price of previous year.

Symbolically,

$$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$$

Where,

R_j = annual rate of return at time.

P_t = Price of security at 't' time

P_{t-1} = Price of security at 't-1' time.

D_t = Cash dividend received during the t^{th} period.

CHAPTER - IV
PRESENTATION AND AALYSIS OF DATA

In this chapter the effort has been made to analyze risk and return on common stock investment which includes, detail data of market price of share and dividend of each selected commercial banks, 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 listed commercial banks.

In this chapter the data are presented in tabular and graphical form to analyze and interpret systematically. The data are diagnosed, selected formatted and calculated before giving the tabular and graphical shape. After presenting the data in a tabular and graphical form, they are analyzed and interpreted. The data applied for the study are of six fiscal years (2001/02 to 2006/07) in order to asses the risk and return position of common stock investment in commercial bank.

For the purpose the data are analyzed and interpreted in two ways, descriptively and inferentially. Descriptive analysis is carried out to determine the risk and return position of selected commercial banks using different statistical tools Viz, arithmetic mean, standard deviation and coefficient of variation Karl's Person's coefficient of correlation. The time series analysis (trend analysis) is devoted to examine the trend and trend equation of return of each institution under study.

The inferential analysis is applied to make inter-bank analysis on risk and return position based on analysis of variance (ANOVA) including regression analysis based on expected return as dependent beta and correlation coefficient with the market as independent.

4.1. ANALYSIS OF INDIVIDUAL COMMERCIAL BANKS

As the study considered special reference to listed commercial banks. Among commercial banks operating in Nepal, only 5 commercial banks have taken as sample. These are Everest Bank Ltd. (EBL), Himalayan Bank Ltd. (HBL), Nepal SBI Bank Ltd. (SBI), Nepal Arab Bank Ltd (NABIL) and Standard Charted Bank Ltd. (SCBNL).

4.1.1 Everest Bank Limited:

Everest bank limited was established in 1994 AD under the company act 1964 with an objective of carrying out commercial banking activities under the commercial bank act 1974. United bank of India limited under the technical service agreement signed between it and Nepalese promoters. Nepalese promoters were managing the bank till November 1996. Later on it holds over the management of Punjab National bank limited, India, which holds 20% equity shares, 50% equity hold by Nepalese promoters and 30% hold by general public investors.

4.1.1.1. Following table No. 4.1 represents the market price of the share (MPS) and dividend per share (DPS) of EBL bank for purpose of risk and return analysis.

Table No.4.1

MPS and DPS data of EBL

Fiscal Year	Market price per share			Dividend per share		
	High	Low	Closing	Cash	Stock%	Total
2000/01	1850	670	750	-	100	-
01/02	740	325	430	0	-	0
02/03	490	349	445	20	22	169.60
03/04	723	400	680	20	-	20
04/05	905	625	870	0	20	275.80
05/06	1410	800	1379	25	-	25
06/07	2430	1100	2430	10	-	10

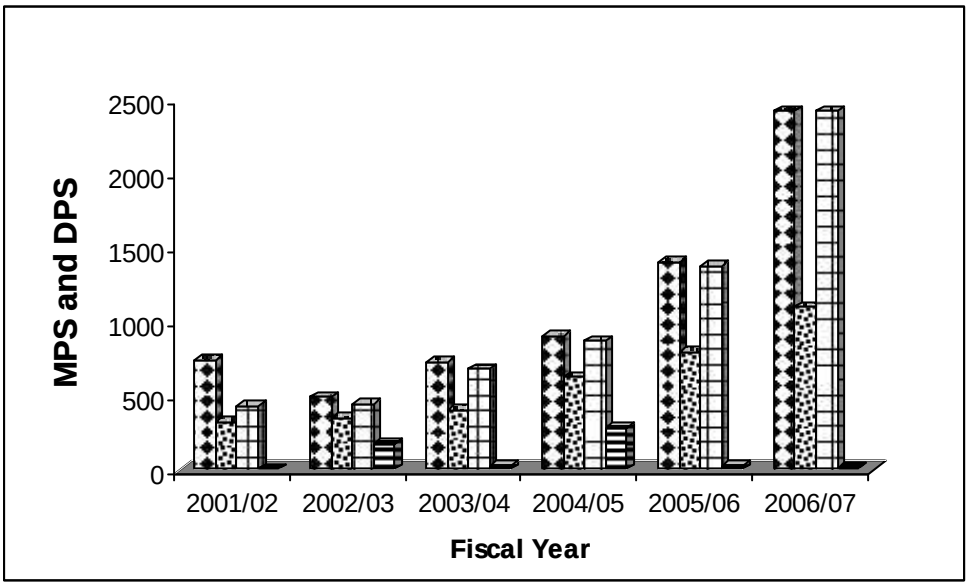
Source: NEPSE index and AGM report of EBL [Appendix-1(A)]

* 20+22% of 680=169.60

** 0+20% of 1379 = 275.80

Diagram NO. 4.1

MPS and DPS shown below



Market price per share is maximum in F/Y 2006/07 and lowest in F/Y 2002/03.

4.1.1.2 Calculation of rate of return, expected return, stander deviation and coefficient of variation of common stock of EBL.

Table No.: 4.2

Fiscal Year	Closing price (P)	Divided (D)	$R = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2000/01	750				
01/02	430	0	-0.43	-0.872	0.7604
02/03	445	169.60	0.43	-0.012	0.0001
03/04	680	20	0.57	0.128	0.0164
04/05	870	275.80	0.69	0.248	0.0615
05/06	1379	25	0.61	0.168	0.0282
06/07	2430	10	0.78	0.338	0.1142
Total			2.65		0.9808

Source: Table No. 4.1

We have,

Expected Return E(R) = $\sum R/n = 2.65/6 = 0.442 = 44.2\%$

Standard deviation (¢) = $\sqrt{\frac{[R - E(R)]^2}{n-1}} = \sqrt{\frac{0.9808}{6-1}} = \sqrt{0.19616} = 0.4429$

Coefficient of variation (C.V) = $¢/E(R) = \frac{0.4429}{0.4420} = 1.002$

4.1.1.3. Trend values for each year are calculated on the base rate of return on common stock of EBL respective year by using least square methods as follows. Table No. 4.3 shows the calculation of trend value of common stock of EBL.

Table No.4.3

Fiscal Year	Rate of return (Y)	Definition from F/Y 2003/04 (X)	XY	X^2	Trend Value
2001/02	-0.43	-2.5	1.075	6.25	-0.037
02/03	0.43	-1.5	-0.645	2.25	0.154
03/04	0.57	-0.5	-0.285	0.25	0.346
04/05	0.69	0.5	0.345	0.25	0.538
05/06	0.61	1.5	0.915	2.25	0.730
06/07	0.78	2.5	1.95	6.25	0.921
	2.65	0	3.355	17.5	

Source: Table No. 4.2

We have,

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

$\sum X = 0,$ $\quad a = \sum Y / n = \frac{2.65}{6} = 0.442$

$b = \sum XY / X^2 = \frac{3.355}{17.5} = 0.1917$

Now,

Trend line equation is $Y_c = a+bx$

When

X = -2.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (-2.5) = -0.037$

X = -1.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (-1.5) = 0.154$

X = -0.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (-0.5) = 0.346$

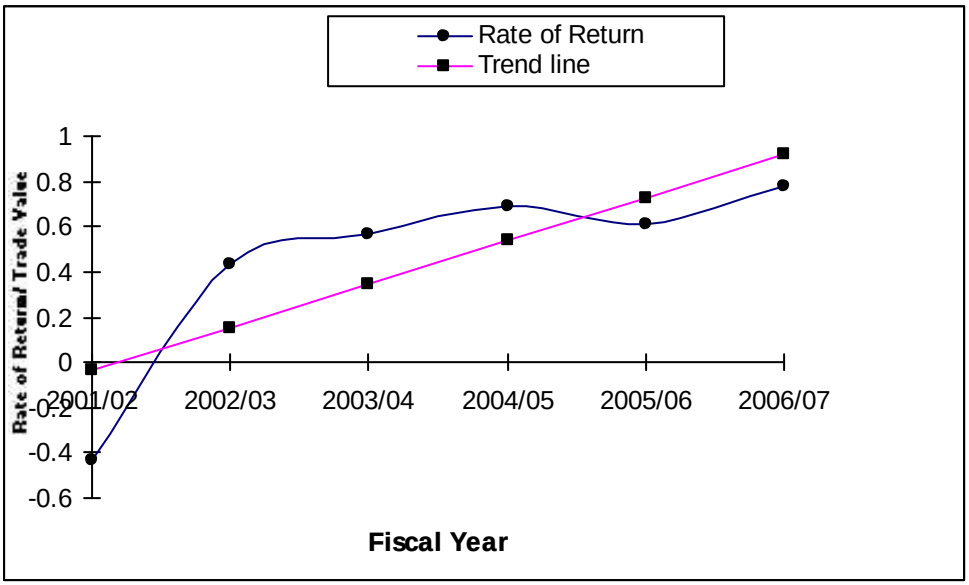
X = 0.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (0.5) = 0.538$

X = 1.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (1.5) = 0.730$

X = 2.5 $\quad Y_c = 0.442 + 0.1917 \text{ x } (2.5) = 0.921$

Movement of Stock Rate of Return and Trend Line of EBL

Diagram No. 4.2



Source: Table No. 4.3

Above diagram shows that movement of stock's rate of return and tend line of EBL bank. In the begin rate of return in F/Y 2001/02 is negative and firstly move upwards and becomes positive in 2002/03 and highest in F/Y 2006/07. Similarly, Trend value is negative in F/Y 2001/02 and gradually moves upward and becomes positive in F/Y 2002/03.

4.1.2 Himalayan Bank limited

Himalayan bank limited was established in 1992. The main objective of the bank is to provide modern banking facilities like tale banking to business man industrialists other profession and to provide loans agriculture and industrial sector. Himalayan bank limited is joint venture commercial bank with Habib Bank limited of Pakistan. Now its 20% share is hold by Habik bank of Pakistan and 80% equity hold by Nepalese promoters, financial institutions, organized institutions, general public and others.

4.1.2.1 The following table no. 4.4 shows the market price per share (MPS) and dividend price per share (DPS) of HBL for the purpose of risk and return analysis.

Table No. 4.4

MPS & DPS data of HBL

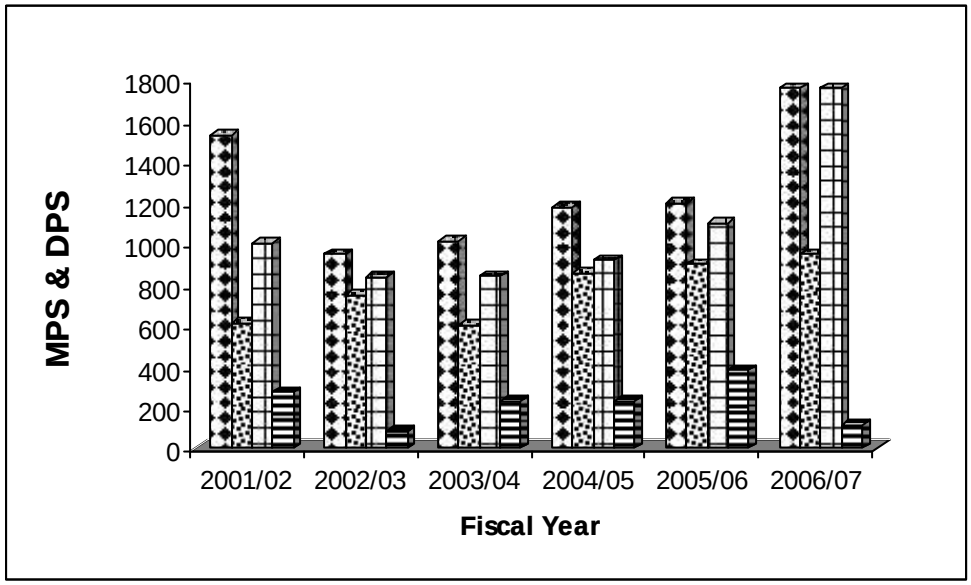
Fiscal Year	Market price per share			Dividend per share		
	High (Rs)	Low (Rs.)	Closing (Rs.)	Cash	Stock%	Total (Rs.)
2000/01	2726	1325	1500	27.5	25	
01/02	1530	610	1000	25	30	275.80
02/03	950	750	836	1.31	10	85.31
03/04	1010	600	840	0	25	230
04/05	1181	855	920	11.58	20	231.58
05/06	1200	900	1100	30	20	382
06/07	1760	950	1760	15	5	114
07/08			1980			

Sources: NEPSE index and AGM report of HBL [Appendix-II (A)]

Total dividend = Cash + % of stock dividend x next year MPS

* 25 + 30% of 836 = 275.80
** 1.31 + 10% of 840 = 85.31
*** 0 + 25% of 920 = 230
**** 11.58 + 20% of 1100 = 231.58
***** 30 + 20% of 1760 = 382
****** 15 + 5% of 1980 = 114

Diagram No. 4.3



Market price per share is highest in F/Y year 2006/07.

4.1.2.2 Calculation of rate of return, expected return, stander deviation and coefficient variation of common stock of HBL.

Table No. 4.5

Fiscal Year	Closing Price (P)	Dividend (D)	$R = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2000/01	1500				
01/02	1000	275.80	-0.1495	-0.439	0.1927
02/03	836	85.31	-0.0787	-0.3682	0.1356
03/04	840	230	0.2799	-0.0096	0.0001
04/05	920	231.58	0.3709	0.0814	0.0066
05/06	1100	282	0.6109	0.3214	0.1033
06/07	1760	114	0.7036	0.4141	0.1715
			1.7371		0.6098

Source: Table No. 4.4

We have,

Expects return E(R) = $\sum R/n = \frac{1.7371}{6} = 0.2895$

Standard deviation (¢) = $\sqrt{\frac{[R-E(R)]^2}{n-1}} = \sqrt{\frac{0.6098}{6-1}} = \sqrt{0.1220} = 0.3493$

Coefficient of variation = $¢/E(R) = \frac{0.3493}{0.2895} = 1.2066$

4.1.2.3 Trend value for each year is calculated on the base rate of return on common stock of HBL respective year by using least square methods as follows. Table No. 4.6 shows the calculation of trend value of common stock of HBL.

Table No. 4.6

Fiscal Year	Rate of return (Y)	Deviation from F/Y 2003/04 (X)	XY	X^2	Trend Value (Y_c)
2001/02	-0.1495	-2.5	0.3738	6.25	-0.1695
02/03	-0.0787	-1.5	0.1181	2.25	0.0141
03/04	0.2799	-0.5	-0.1400	0.25	0.1977
04/05	0.3709	0.5	0.1855	0.25	0.3813
05/06	0.6109	1.5	0.9164	2.25	0.5649
06/07	0.7036	2.5	1.7590	6.25	0.7485
	1.7372	0	3.2128	17.5	

Sources: Table No. 4.2

We have,

The equation of trend line is,

$Y_c = a+bx$

$\sum X = 0,$ $\quad a = \sum Y / n = 1.7371 / 6 = 0.2895$

$b = \sum XY / X^2 = \frac{3.2128}{17.5} = 0.1836$

Now,

Trend line equation $Y_c = a+bx$

When, X = -2.5 $\quad Y_c = 0.2895 + 0.1836 \times (-2.5) = -0.1695$

X = -1.5 $\quad Y_c = 0.2895 + 0.1836 \times (-1.5) = 0.0141$

X = -0.5 $\quad Y_c = 0.2895 + 0.1836 \times (-0.5) = 0.1977$

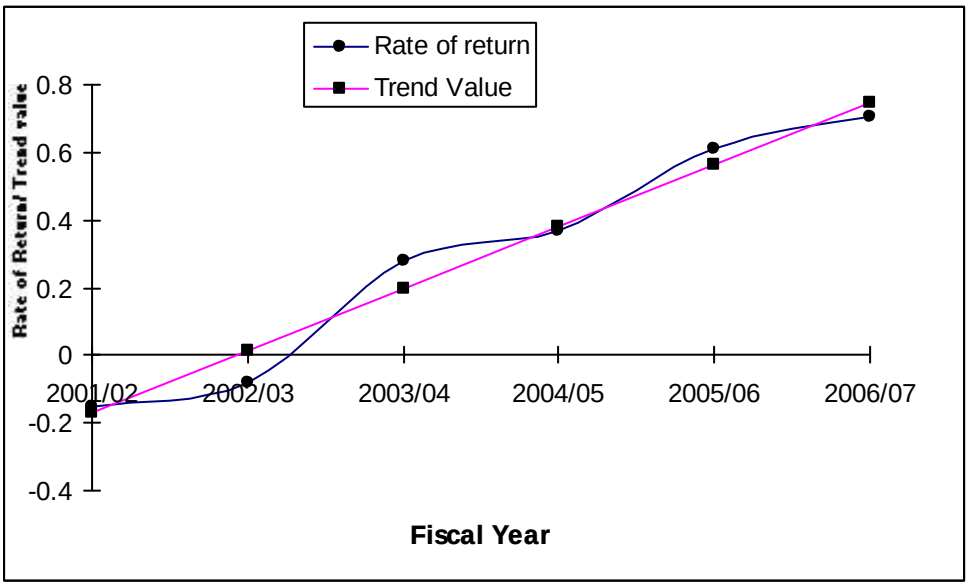
X = 0.5 $\quad Y_c = 0.2895 + 0.1836 \times (0.5) = 0.3813$

X = 1.5 $\quad Y_c = 0.2895 + 0.1836 \times (1.5) = 0.5649$

X = 2.5 $\quad Y_c = 0.2895 + 0.1836 \times (2.5) = 0.7485$

Diagram No. 4.4

Movement of stock rate of return and trend line of HBL



Sources: Table No.4.6

Above diagram shows that movement of stock's of HBL bank rate of return and trend line. In the beginning rate of return and trend line both are negative in F/Y 2001/02. Then both moves upward and become positive in F/Y 2002/03, F/Y 2003/04 trend line and rate of return respectively.

4.1.3 Nepal SBI Bank limited

Nepal SBI Bank limited is fifth joint venture of state bank of India and Nepalese promoters. It was established in 1993 AD under the company act 1964. The bank is managed by state bank of India. The main objective of the bank is carried out modern banking business in the country under the commercial act 1974. The State bank of India holding 50.60% equity and 49.40% equity hold by Nepalese promoters, general public investors and others. The bank has authorized issued and paid up capital of 1 arab, 50 crores, 42.68 crores respectively.

4.1.3.1 Following table no.4.7 shows market price per share (MPS) and dividend per share (DPS) of stock of NSBI for the purpose of risk and return analysis.

Table No. 4.7

MPS and DPS data of NSBI

Fiscal Year	Market Price per share			Dividend per share		
	High (Rs.)	Low (Rs.)	Closing (Rs.)	Cash (Rs.)	Stock%	Total (Rs.)
2000/01	2699	1150	1500			
01/02	1600	300	401	0	200	510
02/03	410	255	255	8	-	8
03/04	307	231	307	0	-	0
04/05	480	315	365	0	-	0
05/06	689	335	612	5	5	63.80
06/07	1176	505	1176	12.59	47.59	731.67
07/08			1511			

Source: NEPSE index and AGM report of NSBI [Appendix-III(A)]

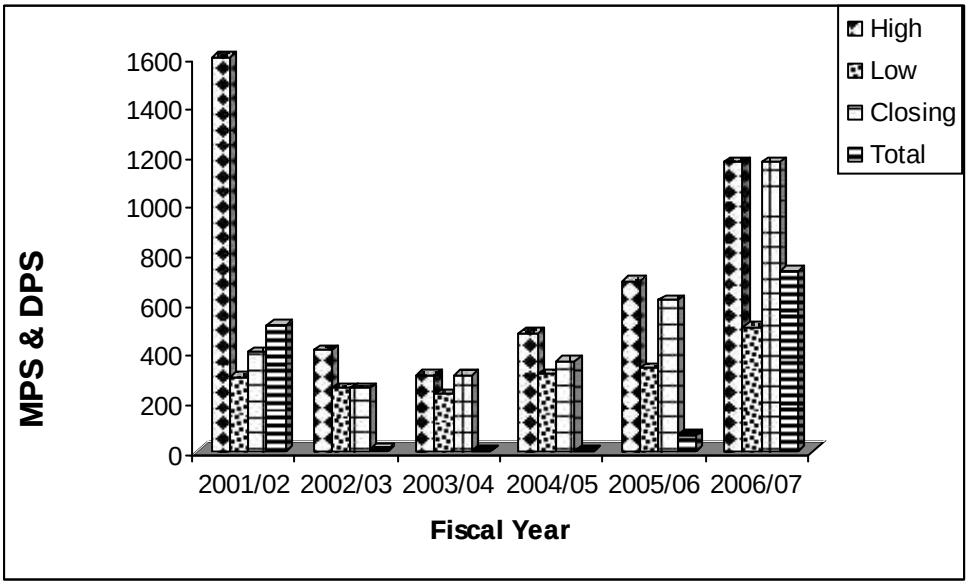
* 0 + 200% of 255 = 510

** 5 + 5% of 1176 = 63.80

*** 12.59 + 47.59% of 1511 = 731.67

Diagram No. 4.5

MPS and DPS are shown below



Market price per share is highest in F/Y 2006/07 and lowest in 2002/03.

4.1.3.2 Calculation of rate of return, expected return, stander deviation and coefficient variation of common stock of NSBI.

Table No. 4.8

Fiscal Year	Closing Price (P)	Dividend (D)	$R = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2000/01	1500				
01/02	401	510	-0.3927	-0.8302	0.6892
02/03	255	8	-0.3441	-0.7816	0.6109
03/04	307	0	0.2039	-0.2336	0.0546
04/05	365	0	0.1890	-0.2485	0.0618
05/06	612	63.80	0.8515	0.414	0.1714
06/07	1176	731.67	2.1171	1.6796	2.8211
			2.6247		4.4090

Source: Table No. 4.7

We have,

Expects return E(R) = $\sum R/n = \frac{2.6247}{6} = 0.4375$

Standard deviation (¢) = $\sqrt{\frac{[R - E(R)]^2}{n-1}} = \sqrt{\frac{4.4090}{6-1}} = \sqrt{0.8818} = 0.9390$

Coefficient of variation = $¢/E(R) = \frac{0.9390}{0.4375} = 2.1463$

4.1.3.3 Trend value for each year is calculated on the base rate of return on common stock of NSBI respective year by using least square methods as follows. Table no. 4.9 shows the calculation of trend value of common stock of NSBI.

Table No. 4.9

Fiscal Year	Rate of return (Y)	Deviation from F/Y 2003/04 (X)	XY	X^2	Trend Value (Y_c)
2001/02	-0.3927	-2.5	0.9818	6.25	-0.7143
02/03	-0.3441	-1.5	0.5162	2.25	-0.2536
03/04	0.2039	-0.5	-0.1020	0.25	0.2072
04/05	0.1890	0.5	0.0945	0.25	0.6679
05/06	0.8515	1.5	1.2773	2.25	1.1286
06/07	2.1171	2.5	5.2938	6.25	1.5893
	2.6247	0	8.0616	17.5	

Sources: Table No. 4.8

We have,

The equation of trend line is,

$Y_c = a+bx$

$\sum X = 0,$ $\quad a = \sum Y / n = 2.6247 / 6 = 0.4375$

$$b = \sum XY / X^2 = \frac{8.0616}{17.5} = 0.4607$$

Now,

Trend line equation $Y_c = a+bx$

When, X = -2.5 $\quad Y_c = 0.4375 + 0.4607 \times (-2.5) = -0.7143$

X = -1.5 $\quad Y_c = 0.4375 + 0.4607 \times (-1.5) = -0.2536$

X = -0.5 $\quad Y_c = 0.4375 + 0.4607 \times (-0.5) = 0.2072$

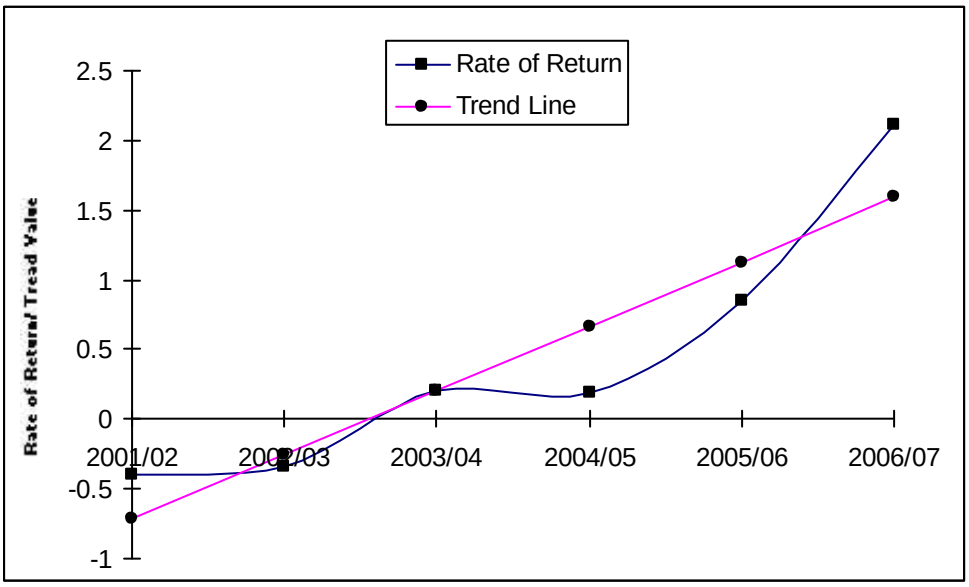
X = 0.5 $\quad Y_c = 0.4375 + 0.4607 \times (0.5) = 0.6679$

X = 1.5 $\quad Y_c = 0.4375 + 0.4607 \times (1.5) = 1.1286$

X = 2.5 $\quad Y_c = 0.4375 + 0.4607 \times (2.5) = 1.5893$

Diagram No. 4.6

Movement of stock rate of return and trend line of SBI.



Sources: Table No. 4.9

Above diagram shows that movement of stocks of NSBI bank Ltd. rate of returns and trend line. In the beginning trend value of NSBI in F/Y 2001/02 is low and gradually moves upward. And rate of return is in positive in 2003/04 and again slightly moves downward and than moves gradually upward.

4.1.4 Nepal Arab Bank Limited

Nepal Arab Bank limited is the first joint venture commercial bank in Nepal. It is the joint ventures of Nepalese promoters and Emirates Bank international (Dubai) and established in 1984AD. Its 50% of equity shares hold by Emirates Bank International, 20% equity hold by Nepalese promoters and financial institutions and remaining 30% have issued to general public of Nepal. The authorized capital is 50crores .The issued capital 49.16 crores and the paid up capital is 49.10 crores.

4.1.4.1 Following table no. 10 shows market price per share (MPS) and dividend per share (DPS) of stock of NABIL for the purpose of risk and return analysis.

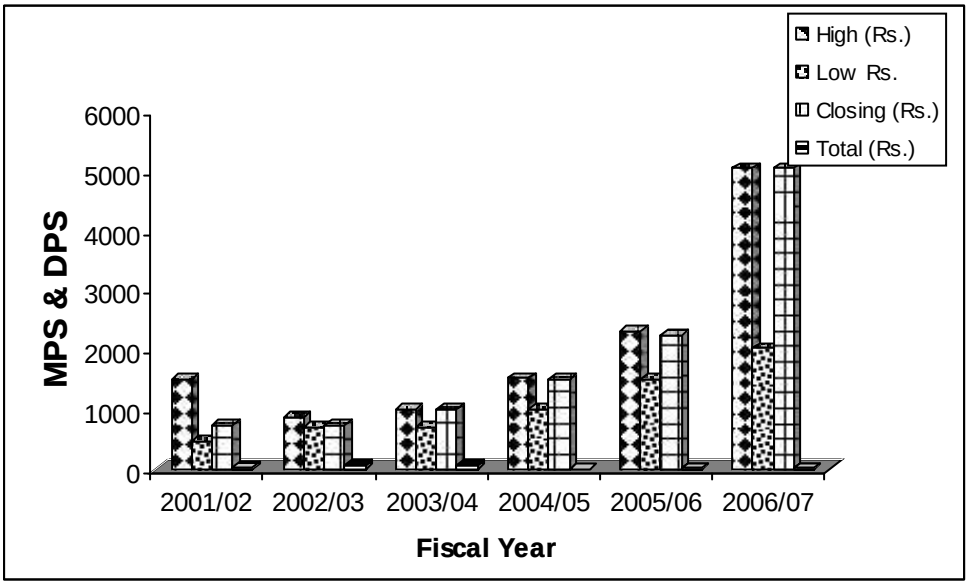
Table No. 10

MPS and DPS data of NABIL

Fiscal Year	Market Price per share			Dividend per share		
	High (Rs.)	Low (Rs.)	Closing (Rs.)	Cash (Rs.)	Stock%	Total (Rs.)
2000/01	2301	1310	1500			
01/02	1500	465	735	30	-	30
02/03	875	700	735	50	-	50
03/04	1005	705	1000	65	-	65
04/05	1515	1000	1505	0	-	0
05/06	2300	1500	2240	5	-	5
06/07	5050	2025	5050	12.59	-	12.59

Source: NEPSE index and AGM report of NABIL [Appendix-IV(A)]

Diagram No. 4.7



Market price per share is highest in F/Y 2006/07 and lowers in 2002/03.

4.1.4.2 Calculation of rate of return, expected return, stander deviation and coefficient variation of common stock of NABIL.

Table No. 4.11

Fiscal Year	Closing Price (P)	Dividend (D)	$R = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2000/01	1400				
01/02	735	30	-0.45	-0.91	0.8281
02/03	735	50	0.07	-0.39	0.1521
03/04	1000	65	0.45	-0.01	0.0001
04/05	1505	0	0.51	0.05	0.0025
05/06	2240	5	0.49	0.03	0.0009
06/07	5050	12.59	1.26	0.80	0.6400
			2.78		1.6237

Source: Table No. 4.10

We have,

Expects return E(R) = $\sum R/n = \frac{2.78}{6} = 0.4633$

Standard deviation (¢) = $\sqrt{\frac{[R-E(R)]^2}{n-1}} = \sqrt{\frac{1.6237}{6-1}} = \sqrt{0.32474} = 0.5699$

Coefficient of variation = $¢/E(R) = \frac{0.5699}{0.4633} = 1.23$

4.1.4.3. Trend value for each year is calculated on the base rate of return on common stock of NABIL respective year by using least square methods as follows. Table no. 4.12 shows the calculation of trend value of common stock of NABIL.

Table No. 4.12

Fiscal Year	Rate of return (Y)	Deviation from F/Y 2003/04 (X)	XY	X^2	Trend Value (Y_c)
2001/02	-0.45	-2.5	1.125	6.25	-0.24
02/03	0.07	-1.5	-0.105	2.25	0.04
03/04	0.45	-0.5	-0.225	0.25	0.32
04/05	0.51	0.5	0.255	0.25	0.60
05/06	0.49	1.5	0.735	2.25	0.88
06/07	1.26	2.5	3.15	6.25	1.16
	2.78	0	4.395	17.5	2.76

Sources: Table No. 4.11

We have,

The equation of trend line is,

$Y_c = a+bx$

$\sum X = 0,$ $\quad a = \sum Y / n = 2.78/6 = 0.4633$

$$b = \sum XY / X^2 = \frac{4.935}{17.5} = 0.28$$

Now,

Trend line equation $Y_c = a+bx$

When, X = -2.5 $\quad Y_c = 0.46 + 0.28 \times (-2.5) = -0.24$

X = -1.5 $\quad Y_c = 0.46 + 0.28 \times (-1.5) = 0.04$

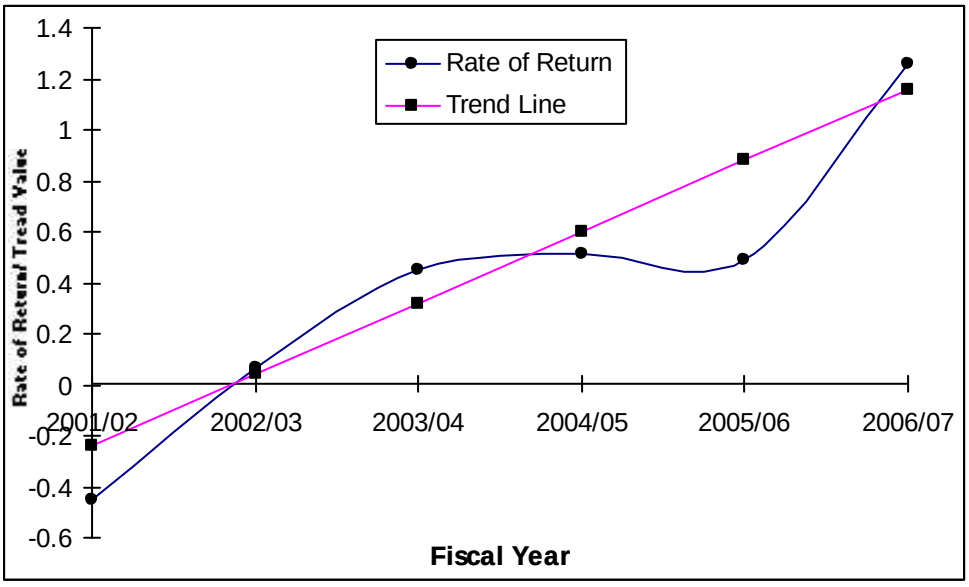
X = -0.5 $\quad Y_c = 0.46 + 0.28 \times (-0.5) = 0.32$

X = 0.5 $\quad Y_c = 0.46 + 0.28 \times (0.5) = 0.60$

X = 1.5 $\quad Y_c = 0.46 + 0.28 \times (1.5) = 0.88$

X = 2.5 $\quad Y_c = 0.46 + 0.28 \times (2.5) = 1.16$

Diagram No. 4.8



Sources: Table No. 4.12

Above diagram shows that movement of stock's of NABIL bank rate of return and trend line in the beginning both are negative in F/Y 2001/02 and become positive in F/Y 2002/03 and then trend line gradually moves upward. The rate of return slowly moves downward from F/Y 2003/04 to nearly 2005/06 and then fast moves upward.

4.1.5 Standard Chartered Bank limited

Standard chartered Bank limited was formerly named as Grind lays Bank Limited. It was established in 1985 AD as foreign joint venture under the company act 1964. Nepal Grindlays bank was amalgamated in Standard Charter banking group and the fifty present shares was transferred to it by the virtue of amalgamation in 2000.

4.1.5.1 Following table no.4.13 shows market price per share (MPS) and dividend per share (DPS) of stock of SCBNL for the purpose of risk and return analysis.

Table No. 4.13

MPS and DPS data of SCBNL

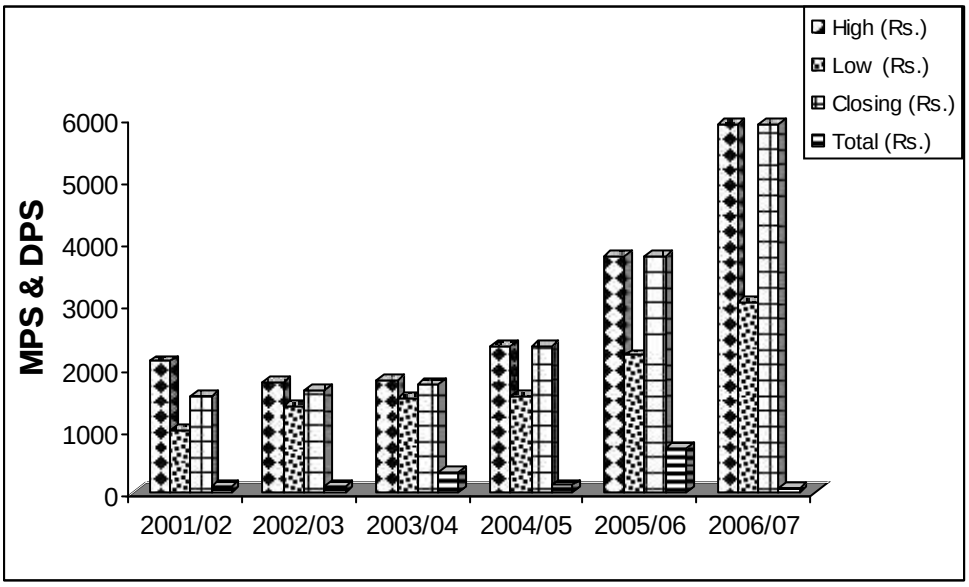
Fiscal Year	Market Price per share			Dividend per share		
	High (Rs.)	Low (Rs.)	Closing (Rs.)	Cash (Rs.)	Stock%	Total (Rs.)
2000/01	3111	1860	2144	100	-	
01/02	2100	1000	1550	100	-	100
02/03	1760	1380	1640	110	-	110
03/04	1800	1520	1745	100	10	334.5
04/05	2350	1553	2345	120	-	120
05/06	3775	2200	3775	120	10	710
06/07	5900	3058	5900	80	-	80

Source: NEPSE index and AGM report of SCBNL [Appendix-V(A)]

* 100 + 10% of 2345 = 334.5

** 120 + 10% of 5900 = 710

Diagram No. 4.9



Market price per share is maximum in F/Y 2006/07 and lowest in F/Y 2002/03.

4.1.5.2 Calculation of rate of return, expected return, stander deviation and coefficient variation of common stock of SCBNL.

Table No. 4.14

Fiscal Year	Closing Price (P)	Dividend (D)	$R = \frac{P_t - P_{t-1} + D_t}{P_{t-1}}$	[R-E(R)]	$[R-E(R)]^2$
2000/01	2144				
01/02	1550	100	-0.23	-0.58	0.3364
02/03	1640	110	0.13	-0.22	0.0484
03/04	1745	334.5	0.27	0.08	0.0064
04/05	2345	120	0.41	0.06	0.0036
05/06	3775	710	0.91	0.56	0.3136
06/07	5900	80	0.58	0.23	0.0529
			2.07		0.7613

Source: Table No. 4.13

We have,

Expects return E(R) = $\sum R/n = \frac{2.07}{6} = 0.345$

Standard deviation (¢) = $\sqrt{\frac{[R-E(R)]^2}{n-1}} = \sqrt{\frac{0.7613}{6-1}} = \sqrt{0.15226} = 0.3902$

Coefficient of variation = $¢/E(R) = \frac{0.3902}{0.345} = 1.1310$

4.1.5.3 Trend value for each year is calculated on the base rate of return on common stock of SCBNL respective year by using least square methods as follows. Table no. 4.15 shows the calculation of trend value of common stock of SCBNL.

Table No. 4.15

Fiscal Year	Rate of return (Y)	Deviation from F/Y 2003/04 (X)	XY	X^2	Trend Value (Y_c)
2001/02	-0.23	-2.5	0.575	6.25	-0.1215
02/03	0.13	-1.5	-0.195	2.25	0.0651
03/04	0.27	-0.5	-0.135	0.25	0.2517
04/05	0.41	0.5	0.205	0.25	0.4383
05/06	0.91	1.5	1.365	2.25	0.6249
06/07	0.58	2.5	1.450	6.25	0.8115
	2.07	0	3.265	17.5	

Sources: Table No. 4.14

We have,

The equation of trend line is,

$Y_c = a+bx$

$\sum X = 0,$ $\quad a = \sum Y / n = 2.07/6 = 0.345$

$b = \sum XY / X^2 = \frac{3.265}{17.5} = 0.1866$

Now,

Trend line equation $Y_c = a+bx$

When, X = -2.5 $\quad Y_c = 0.345 + 0.1866 \times (-2.5) = -0.1215$

X = -1.5 $\quad Y_c = 0.345 + 0.1866 \times (-1.5) = 0.0651$

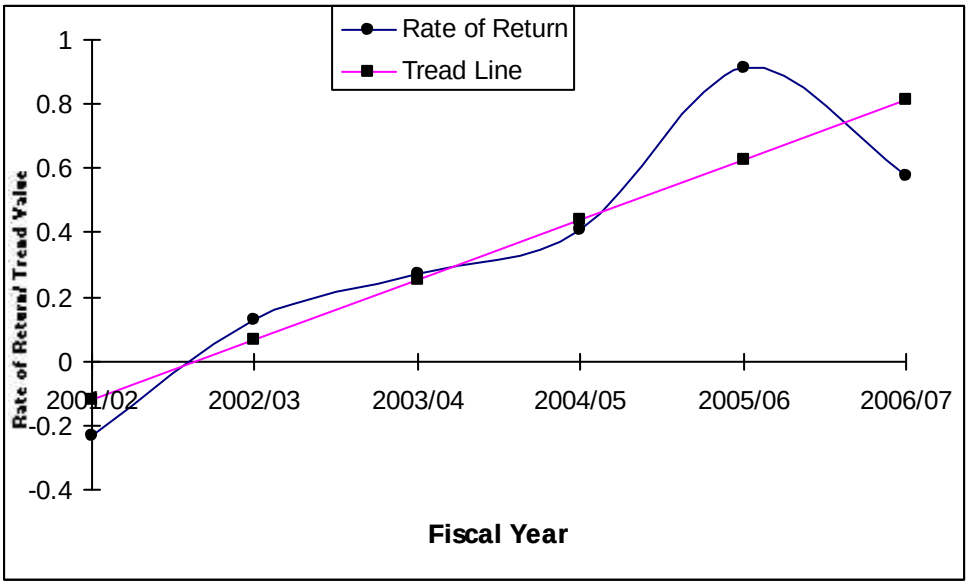
X = -0.5 $\quad Y_c = 0.345 + 0.1866 \times (-0.5) = 0.2517$

X = 0.5 $\quad Y_c = 0.345 + 0.1866 \times (0.5) = 0.4383$

X = 1.5 $\quad Y_c = 0.345 + 0.1866 \times (1.5) = 0.6249$

X = 2.5 $\quad Y_c = 0.345 + 0.1866 \times (2.5) = 1.8115$

Diagram No. 4.10



Sources: Table No. 4.15

Above diagram shoes movement of stock's of SCBNL bank rate of return and trend line in the beginning both are negative in F/Y 2001/02 and gradually moves upward. The rate of return is highest in F/Y 2005/06 and then slowly moves downward.

4.2 Analysis of Market Risk and Return:

When talking about the stock market in Nepal, there is only one market that is NEPSE. Country's overall market movement is represented by market index i.e. NEPSE index. Calculation of annual return, expected return, standard deviation and coefficient of variation of market is presented below in table.

4.2.1 Calculation of Rate of return, expected return, Standard deviation & coefficient of variation.

Table No.4.16

Fiscal Years	NEPSE INDEX (NI)	$R_m = \frac{NI_t - NI_{t-1}}{N_{t-1}}$	$[R_m\text{-}E(R_m)]$	$[R_m\text{-}E(R_m)]^2$
2000/01	348.43			
01/02	227.54	-0.3470	-0.5561	0.3092
02/03	204.80	-0.0999	-0.3090	0.0955
03/04	222.04	0.0842	-0.1249	0.0156
04/05	286.67	0.2911	0.0820	0.0067
05/06	300.05	0.0467	-0.1624	0.0264
06/07	683.95	1.2795	1.0704	1.1458
		1.2546		1.5992

Source: NEPSE index

We have,

Expected return $E(R_m) = \frac{\sum R_m}{n} = \frac{1.2546}{6} = 0.2091$

Standard Deviation ($¢_m$) $= \sqrt{\frac{[R_m - E(R_m)]^2}{n-1}} = \sqrt{\frac{1.5992}{6-1}} = \sqrt{0.31984} = 0.5655$

Coefficient of variation (CV) $= \frac{¢}{E(R_m)} = \frac{0.5655}{0.2091} = 2.7044$

4.2.2 Trend values for each year are calculated on the basis of rate of return on market index respective year by using least square method. The following table shows the calculation of year wise expected return (trend value) of NEPSE index.

Table No. 4.17

Fiscal year	Rate of return (Y)	Deviation from FY 2003/04 (X)	XY	X^2	Trend value (Y_c)
2001/02	-0.3470	-2.5	0.8675	6.25	-0.9407
02/03	-0.0999	-1.5	0.1499	2.25	-0.1671
03/04	0.0842	-0.5	-0.0421	0.25	0.0837
04/05	0.2911	0.5	0.1456	0.25	0.3345
05/06	0.0467	1.5	0.0701	2.25	0.5853
06/07	1.2795	2.5	3.1988	6.25	0.8361
	1.2546	0	4.3898	17.5	

Source: Table No. 4.16

We have,

The equation of trend line is

$Y_c = a+bx$

$\sum X = 0, \qquad a = \sum Y / n = 1.2546 / 6 = 0.2091$

$b = \sum XY / X^2 = \frac{4.3898}{17.5} = 0.2508$

Here,

Trend line $Y_c = a+bx$

When X = -2.5 $Y_c = 0.2091+0.2508 \times (-2.5) = -0.9407$

When X = -1.5 $Y_c = 0.2091 + 0.2508 \times (-1.5) = -0.1671$

When X = -0.5 $Y_c = 0.2091 + 0.2508 \times (-0.5) = 0.0837$

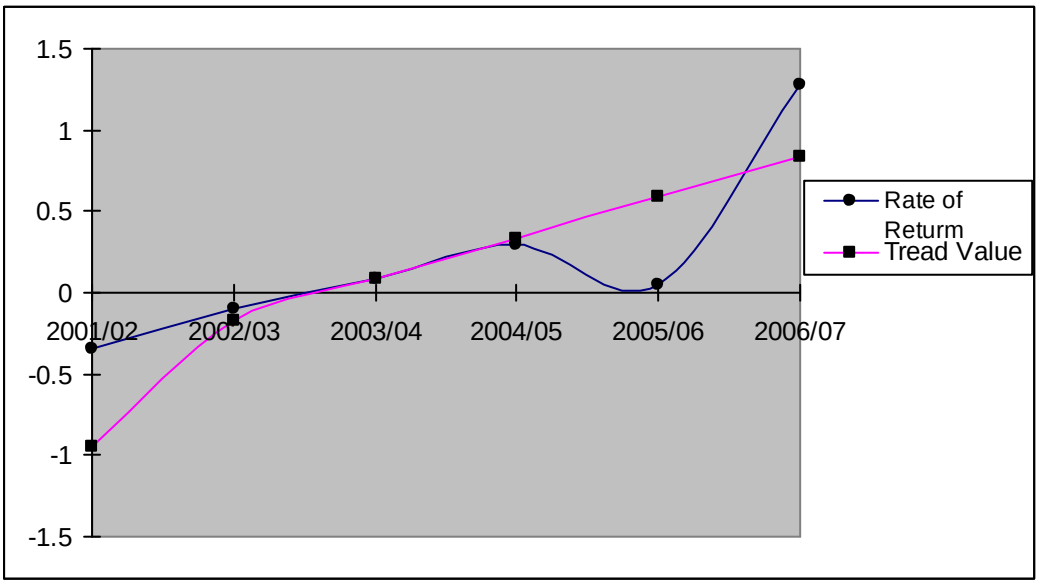
When X = 0.5 $Y_c = 0.2091 + 0.2508 \times (0.5) = 0.3345$

When X = 1.5 $Y_c = 0.2091 + 0.2508 \times (1.5) = 0.5853$

When X = 2.5 $Y_c = 0.2091 + 0.2508 \times (2.5) = 0.8361$

Diagram No. 4.11

Movement of the stock rate of return and trend line of Market



Sources: Table No. 4.17

Above diagram shows that movement of stock's rate of returns and trend line of market. In the beginning trend line and rate of return both are negative. Trend line gradually moves upward and becomes positive in F/Y 2003/04. The rate of return also fatly moves upward and become positive in F/Y 2003/04.

4.3 Inter Bank Comparison:

4.3.1 On the Basic of Risk and Return Analysis:

After analyzing the expected return, standard deviation, coefficient of variation of each bank for the fiscal year 2001/02 to 2006/07 results are given in the following table.

Table No. 4.18

S.No.	Sample Bank	Expected Return E(R)	Stander Deviation (¢)	Coefficient of Variation (CV)	Remarks		
					E(R)	¢	CV
1.	EBL	0.4420	0.4429	1.0020			Lowest
2.	HBL	0.2895	0.3493	1.2066	Lowest	Lowest	
3.	SBI	0.4375	0.9390	2.1463		Highest	Highest
4.	NABIL	0.4633	0.5699	1.2300	Highest		
5.	SCBNL	0.3450	0.3902	1.1310			

The table shows that the investors can get the highest return from investing in common stock of NABIL and lowest in investing in HBL. HBL has the lowest standard deviation and SBI bank has highest standard deviation but the coefficient of variation is the best way to make investment decision in common stock when two or more investment has different result and risk. Coefficient of variation measures the risk per unit. Nepal SBI bank has highest CV and Everest bank Ltd. has lowest CV. To earn one unit of return the investor has to bear 1.0020 unit of risk in EBL. So by considering the fact, the best decision would be investing in share of Everest bank Ltd.

4.3.2 On the basic market capitalization:

Market capitalization of sample commercial bank at the end of fiscal year 2006/07 is presented in table no.4.19 market capitalization is the total market value at specific time period of the company.

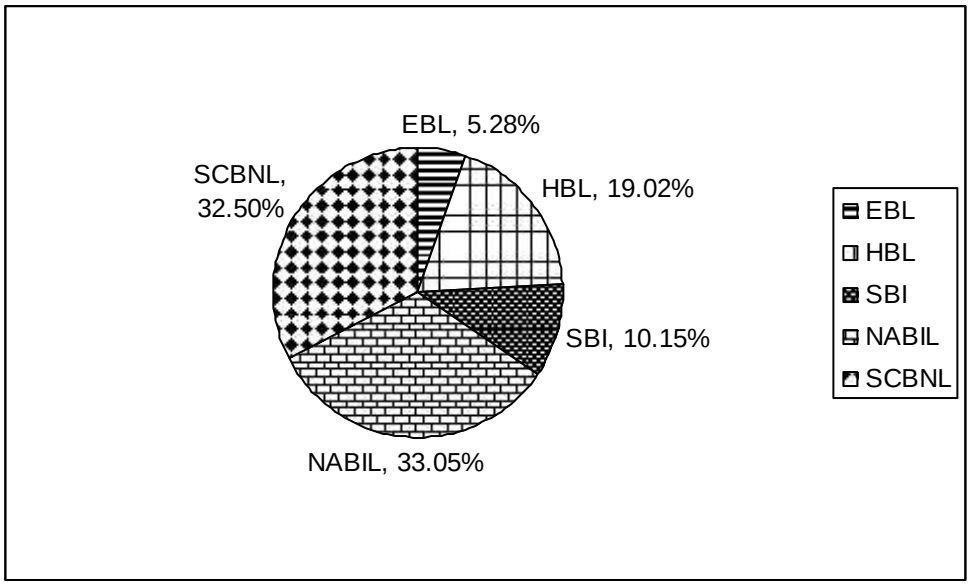
Table No. 4.19

S. No	Sample Bank	Market Capitalization (Rs. in million)	Percentage of market	Remarks
1.	EBL	3959.59	5.28	Smallest
2.	HBL	14270.26	19.02	
3.	SBI	7618.17	10.15	
4.	NABIL	24795.25	33.05	Biggest
5.	SCBNL	24382.03	32.50	
		75025.30	100	

Sources: NEPSE index

Diagram No. 4.12

Market Capitalization of Selected Bank



Sources: Table No. 4.19

The comparison is made on the movement of market capitalization. Here only five commercial banks are taken into consideration as their data cover the entire study period on the basis of market capitalization NABIL is the biggest and EBL is the smallest among the sample banks.

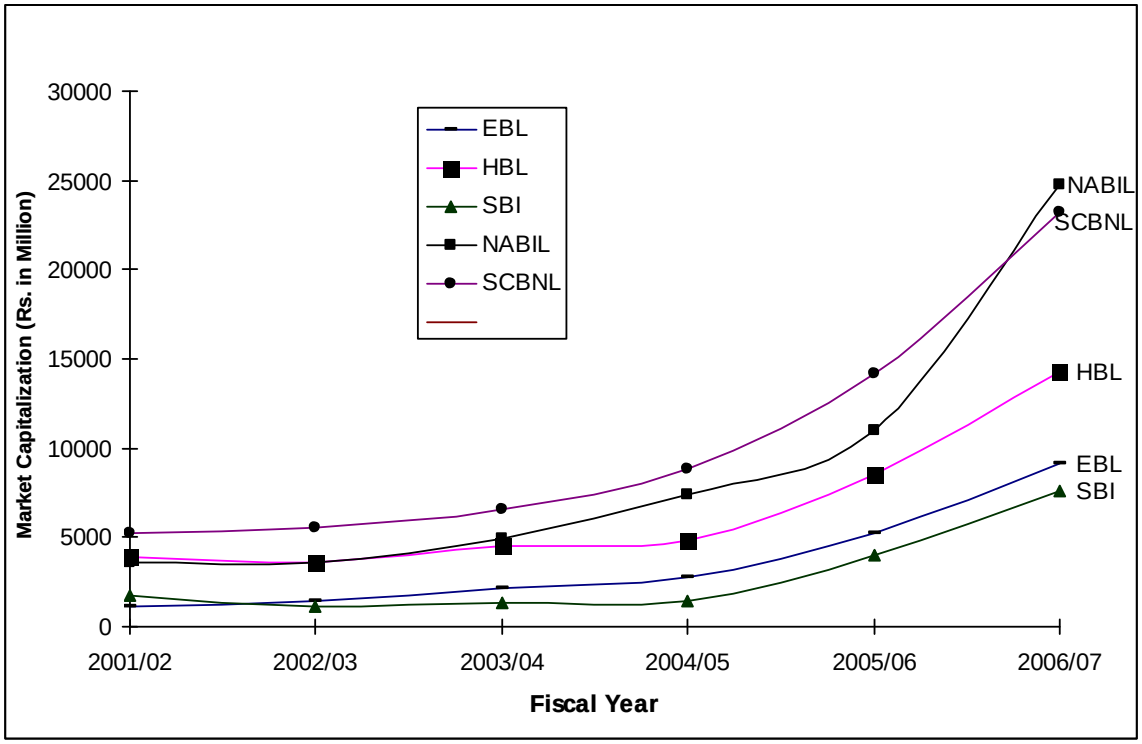
Table No. 4.20

Year wise comparative movement of market capitalization (in million)

Bank	Year					
	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
EBL	1115.08	1401.75	2142.00	2740.50	5212.62	9185.40
HBL	3900.00	3586.44	4504.50	4830.00	8494.20	14270.26
SBI	1703.81	1084.16	1310.52	1446.04	3964.56	7618.17
NABIL	3613.63	3613.63	4916.50	7389.47	10998.29	24795.25
SCBNL	5263.03	5568.62	6537.47	8785.32	14142.68	24382.03

Sources: NEPSE index

Diagram No. 4.13



Source: Table No. 4.20

Table No. 4.21

SUMMARY OF RISK AND RETURN FOR SAMPLE BANKS.

Statistics	EBL	HBL	SBI	NABIL	SCBNL
E(R)	0.442	0.2895	0.4375	0.4633	0.345
¢	0.4429	0.3493	0.9390	0.5699	0.3902
¢ ^{2}	0.1962	0.1220	0.8818	0.3247	0.15226
CV	1.002	1.2066	2.1463	1.23	1.1310
$^2¢_m^2$	0.0856	0.0775	0.7461	0.0635	0.0393
ℓ^2	0.1106	0.0445	0.1357	0.2612	0.1130
	0.5174	0.4921	1.5273	0.4456	0.3505
~	0.4363	0.6352	0.8461	0.1956	0.2581
r	0.5637	0.3648	0.1539	0.8044	0.7419
p^2	0.6607	0.7970	0.9200	0.4422	0.5080
$1\text{-}P^2$	0.3338	0.1866	0.1181	0.3701	0.2717

Source: Table No. 4.18 and Appendix I (B) to V (B)

4.4 Price Evaluation of Selected Banks:

CAPM is model that assumes stock's reburied rate of return is equal to risk free rate plus risk premium where risk is measured by beta coefficient for this analysis, risk free rate is measured, which is taken from interest rate of Treasury Bill issued by Nepal Rastra Bank.

Calculations of required rate of return and price evaluation by CAPM model.

Table No. 4.22

Sample bank	Beta	$R_j = R_f + (R_m - R_f)_j$	E(R)	Price situation
EBL	0.5174	0.0212	0.4420	Under priced
HBL	0.4921	0.0270	0.2895	Under priced
SBI	1.5273	0.0311	0.4375	Under priced
NABIL	0.4456	0.0268	0.4633	Under priced
SCBNL	0.3505	0.0264	0.3450	Under priced

Source: Quarterly economic bulletin, mid July 2007.

Where,

E(R) = Expected rate of return

R_f = Risk free rate (0.025)

$E(R_m)$ = Market price of return (0.0290)

= Beta of individual sample bank

All the stock of commercial banks are under priced because required rate of return is less than expected rate of return. As the stocks are under priced, investor can gain from buying the stock. The investor, who is holding the stock, should not sell the stock.

4.5 Comparison of sample banks with market

4.5.1 Nepal Everest Bank Limited (EBL)

Table No. 4.23

Summary of risk and return for EBL and Market

Statistics	EBL	Market
Expected Return E(R)	0.442	0.2091
Standard Deviation (¢)	0.4429	0.5655
Variance (¢ ^{2})	0.1962	0.31984
Coefficient of variation (CV)	1.002	2.7044
Systematic risk ($^2¢_m^2$)	0.0856	
Un-systematic risk (ℓ^2)	0.1106	
Index of systematic risk ( )	0.5174	
Alpha (~) = intercept	0.4363	
Correlation with market (*r)*	0.5637	
Proportion of systematic risk (p^2*)*	0.6607	
Proportion of un-systematic risk (*1-*P^2*)*	0.3338	

Sources: Table No. 4.17, 4.18 and Appendix I (B)

Expected return of stock of EBL is more than expected return of market which means 2.1138 (0.4420/0.2091) times higher than market return.

Standard deviation of EBL is lower than standard deviation of market i.e. (0.4429< 0.5655).

Coefficient of variation is better measure of risk because it measure risk per unit. CV of EBL is less than the CV of market i.e. 1.002 < 2.7044 which means EBL has less risk per unit than market.

Beta of EBL is 0.5174 based on the yearly return during the F/Y 2001/02 to 2006/07. A beta of (B<1) means stock of EBL is less volatile than market. So it is called defensive assets.

The proportion of systematic risk is 0.4363. This risk is portion of total variability changed by the market. Thus 43.63% risk of EBL is changed by the market .It is non diversifiable.

The 0.5637 (1-p^2) residual variance is specific risk of the firm. It is called unsystematic risk and it is diversifiable.

The correlation with market is 0.6607. The positive correlation indicates that market return goes up and EBL return also goes up or vice versa.

The intercept (~) is 0.3338 shows the EBL'S return when market return is zero. Expected return of EBL is 33.38% when market return earns nothing.

4.5.2 Himalayan Bank Limited (HBL)

Table No. 4.24

Summary of risk and return for HBL and Market

Statistics	HBL	Market
Expected Return E(R)	0.2895	0.2091
Standard Deviation (¢)	0.3493	0.5655
Variance (¢ ^{2})	0.1220	0.31984
Coefficient of variation (CV)	1.2066	2.7044
Systematic risk ($^2¢_m^2$)	0.0775	
Un-systematic risk (ℓ^2)	0.0445	
Index of systematic risk ( )	0.4921	
Alpha (~) = intercept	0.6352	
Correlation with market (*r)*	0.3648	
Proportion of systematic risk (p^2*)*	0.7970	
Proportion of un-systematic risk (*1-*P^2*)*	0.1866	

Sources: Table No. 4.17, 4.18 and Appendix II (B)

Expected return of stock of HBL is more than expected return of market which means 1.3845 (0.2895/0.2091) times higher than market return.

Standard deviation of HBL is lower than standard deviation of market i.e. (0.3493< 0.5655).

Coefficient of variation is better measure of risk because it measure risk per unit. CV of HBL is less than the CV of market i.e. 1.2066 < 2.7044 which means HBL has less risk per unit than market.

Beta of HBL is 0.4921 based on the yearly return during the F/Y 2001/02 to 2006/07. A beta of (B<1) means stock of HBL is less volatile than market. So it is called defensive assets.

The proportion of systematic risk is 0.6352. This risk is portion of total variability changed by the market. Thus 63.52% risk of HBL is changed by the market .It is non diversifiable.

The 0.3648 ($1-p^2$) residual variance is specific risk of the firm. It is called unsystematic risk and it is diversifiable.

The correlation with market is 0.7970. The positive correlation indicates that market return goes up and HBL return also goes up or vice versa.

The intercept (~) is 0.1866 shows the HBL'S return when market return is zero. Expected return of HBL is 18.66% when market return earns nothing.

4.5.3 Nepal SBI Bank Limited (SBI)

Table No. 4.25

Summary of risk and return for SBI and Market

Statistics	SBI	Market
Expected Return E(R)	0.4375	0.2091
Standard Deviation (¢)	0.9390	0.5655
Variance (¢ ^{2})	0.8818	0.31984
Coefficient of variation (CV)	2.1463	2.7044
Systematic risk ($^2¢_m^2$)	0.7461	
Un-systematic risk (ℓ^2)	0.1357	
Index of systematic risk ( )	1.5273	
Alpha (~) = intercept	0.8461	
Correlation with market (*r)*	0.1539	
Proportion of systematic risk (p^2*)*	0.9200	
Proportion of un-systematic risk (*1-*P^2*)*	0.1181	

Sources: Table No. 4.17, 4.18 and Appendix III (B)

Expected return of stock of SBI is more than expected return of market which means 2.0930 (0.4375/0.2091) times higher than market return.

Similarly, standard deviation of SBI is higher than standard deviation of market i.e. 1.6605 (0.9390/0.5655) times higher than standard deviation of market which means total risk on SBI is more risky than market.

Coefficient is better measure of risk because it measure risk per unit. CV of SBI is less than the CV of market i.e. 1.23< 2.7044 which means SBI has less risk per unit.

Beta of SBI is 1.5273 bared on the yearly return during the F/Y 2001/02 to 2006/07. A beta of (B>1) means stock of SBI is more volatile than market. So it is aggressive assets.

The proportion of systematic risk is 0.9200. This risk is portion of total variability changed by the market. Thus 92% risk of SBI is changed by the market .It is non diversifiable.

The 0.1181 ($1-p^2$) residual variance is specific risk of the firm .It is called unsystematic risk and it is diversifiable.

The correlation with market is 0.1539. The positive correlation indicates that market return goes up and SBI return also goes up or vice versa.

The intercept (~) is 0.1181. It shows the SBI return when market return is zero. Expected return of SBI is 11.81% when market return earns nothing.

4.5.4 Nepal Arab Bank Limited (NABIL)

Table No. 4.26

Summary of risk and return for NABIL and Market

Statistics	NABIL	Market
Expected Return E(R)	0.4633	0.2091
Standard Deviation (¢)	0.5699	0.5655
Variance (¢ ^{2})	0.3247	0.31984
Coefficient of variation (CV)	1.23	2.7044
Systematic risk ($^2¢_m^2$)	0.0635	
Un-systematic risk (ℓ^2)	0.2612	
Index of systematic risk ( )	0.4456	
Alpha (~) = intercept	0.1956	
Correlation with market (*r)*	0.8044	
Proportion of systematic risk (p^2*)*	0.4422	
Proportion of un-systematic risk (*1-*P^2*)*	0.3701	

Sources: Table No. 4.17, 4.18 and Appendix IV (B)

Expected return of stock of NABIL is more than expected return of market which means 2.2157 (0.4633/0.2091) times higher than market return.

Similarly, standard deviation of NABIL is higher than standard deviation of market i.e. 1.0078(0.5699/0.5655) times higher than standard deviation of market which means total risk on NABIL is more risky than market.

Coefficient is better measure of risk because it measure risk per unit. CV of NABIL is less than the CV of market i.e. 1.23< 2.7044 which means NABIL has less risk per unit.

Beta of NABIL is 0.4456 based on the yearly return during the F/Y 2001/02 to 2006/07. A beta of (B<1) means stock of NABIL is less volatile than market. So it is called defensive assets.

The proportion of systematic risk is 0.1956. This risk is portion of total variability changed by the market. Thus 19.56% risk of NABIL is changed by the market .It is non diversifiable.

The 0.8044(1-p^2)residual variance is specific risk of the firm .It is called unsystematic risk and it is diversifiable the correlation with market is 0.4422.The positive correlation indicates that market return goes up and NABIL'S return also goes up or vs.

The intercept (~)is 0.3701.It shows the NABIL'S return when market return is zero. Expected return of NABIL is 37.01% when market return earns nothing.

4.5.5 Standard Chartered Bank Limited (SCBNL)

Table No.4.27

Summary of risk and return for SCBNL and Market

Statistics	SCBNL	Market
Expected Return E(R)	0.345	0.2091
Standard Deviation (¢)	0.3902	0.5655
Variance (¢ ^{2})	0.15226	0.31984
Coefficient of variation (CV)	1.1310	2.7044
Systematic risk (^{2}¢ $_m^2$)	0.0393	
Un-systematic risk (ℓ^2)	0.1130	
Index of systematic risk ( )	0.3505	
Alpha (~) = intercept	0.2581	
Correlation with market (*r)*	0.7419	
Proportion of systematic risk (p^2*)*	0.5080	
Proportion of un-systematic risk (*1-P^2)*	0.2717	

Sources: Table No. 4.17, 4.18 and Appendix V (B)

Expected return of stock of SCBNL is more than expected return of market which means 1.650 (0.3450/0.2091) times higher than market return.

Standard deviation of SCBNL is lower than standard deviation of market i.e. (0.3902< 0.5655).

Coefficient of variation is better measure of risk because it measure risk per unit. CV of SCBNL is less than the CV of market i.e. 1.1310< 2.7044 which means SCBNL has less risk per unit than market.

Beta of SCBNL is 0.3505 based on the yearly return during the F/Y 2001/02 to 2006/07. A beta of (B<1) means stock of SCBNL is less volatile than market. So it is called defensive assets.

The proportion of systematic risk is 0.2581. This risk is portion of total variability changed by the market. Thus 25.81% risk of SCBNL is changed by the market .It is non diversifiable.

The 0.7419 ($1-p^2$) residual variance is specific risk of the firm. It is called unsystematic risk and it is diversifiable.

The correlation with market is 0.5080. The positive correlation indicates that market return goes up and SCBNL return also goes up or vice versa.

The intercept (~) is 0.2717. It shows the SCBNL'S return when market return is zero. Expected return of SCBNL is 27.17% when market return earns nothing.

4.6 Correlation Between Banks:

The correlation coefficient always lies between +1 and -1. Returns of securities are very perfectly together when the correlation coefficient is +1 and is perfectly opposite direction when it is -1. A zero correlation coefficient implies that there is no relation between the returns of securities correlation between returns of securities plays a significant role in the risk reduce by portfolio construction.

4.6.1 Correlation coefficient between EBL & HBL bank.

The table no.4.28 shows the calculation of correlation coefficient between EBL and HBL

Let Stock of EBL is X

Stock of HBL is Y

Table No. 4.28

Year	X-E(X)	Y-E(Y)	[X-E(X)] [Y-E(Y)]
2001/02	-0.872	-0.439	0.3828
02/03	-0.012	-0.3682	0.0044
03/04	0.128	-0.0096	-0.0012
04/05	0.248	0.0814	0.0202
05/06	0.168	0.3214	0.0540
06/07	0.338	0.4141	0.1400
			0.6002

Source: Table No. 4.2 & 4.5

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{0.6002}{6-1} = 0.1200$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.1200}{0.4429 \times 0.3496} = \frac{0.1200}{0.1547} = 0.7757$

4.6.2 Correlation coefficient between EBL & SBI bank.

The table no. 4.29 shows the calculation of correlation coefficient between EBL and SBI

Let Stock of EBL is X

Stock of SBI is Y

Table No. 4.29

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.872	-0.8302	0.7239
02/03	-0.012	-0.7816	0.0094
03/04	0.128	-0.2336	-0.0299
04/05	0.248	-0.2485	-0.0616
05/06	0.168	0.414	0.0696
06/07	0.338	1.6796	0.5680
			1.2794

Sources: Table No. 4.2 & 4.8

We have,

Covariance (XY) = $\frac{\sum[X-E(X)][Y-E(Y)]}{n-1} = \frac{1.2794}{6-1} = \frac{1.2794}{5} = 0.2560$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.2560}{0.4429 \times 0.9390} = \frac{0.2560}{0.4159} = 0.6155$

4.6.3 Correlation coefficient between EBL & NABIL bank.

The table no. 4.30 shows the calculation of correlation coefficient between EBL and NABIL

Let Stock of EBL is X

Stock of NABIL is Y

Table No. 4.30

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.872	-0.91	0.7935
02/03	-0.012	-0.39	0.0047
03/04	0.128	-0.01	-0.0013
04/05	0.248	0.05	0.0124
05/06	0.168	0.03	0.0050
06/07	0.338	0.80	0.2704
			1.0847

Sources: Table No. 4.2 & 4.11

We have,

Covariance (XY) = $\frac{\sum[X-E(X)][Y-E(Y)]}{n-1} = \frac{1.0847}{6-1} = \frac{1.0847}{5} = 0.2169$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.2169}{0.4429 \times 0.5699}$

$= \frac{0.2169}{0.2524} = 0.8594$

4.6.4 Correlation coefficient between EBL & SCBNL bank.

The table no. 4.31 shows the calculation of correlation coefficient between EBL and SCBNL

Let Stock of EBL is X

Stock of SCBNL is Y

Table No. 4.31

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.872	-0.58	0.5058
02/03	-0.012	-0.22	0.0026
03/04	0.128	-0.08	-0.0102
04/05	0.248	0.06	0.0149
05/06	0.168	0.56	0.0941
06/07	0.338	0.23	0.0777
			0.6849

Sources: Table No. 4.2 & 4.14

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{0.6849}{6-1} = \frac{0.6849}{5} = 0.1370$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.1370}{0.4429 \times 0.3902} = \frac{0.1370}{0.1728} = 0.7928$

4.6.5 Correlation coefficient between HBL & SBI bank.

The table no. 4.32 shows the calculation of correlation coefficient between HBL & SBI

Let Stock of HBL is X

Stock of SBI is Y

Table No. 4.32

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.439	-0.8302	0.3645
02/03	-0.3682	-0.7816	0.2878
03/04	-0.0096	-0.2336	0.0022
04/05	0.0814	-0.2485	-0.0202
05/06	0.3214	0.414	0.1313
06/07	0.4141	1.6796	0.6955
			1.4629

Sources: Table No. 4.5 & 4.8

We have,

Covariance (XY) = $\frac{\sum[X-E(X)][Y-E(Y)]}{n-1} = \frac{1.4629}{6-1} = \frac{1.4629}{5} = 0.2926$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.2926}{0.3493 \times 0.9390} = \frac{0.2926}{0.3280} = 0.8921$

4.6.6 Correlation coefficient between HBL & NABIL bank.

The table no. 4.33 shows the calculation of correlation coefficient between HBL & NABIL

Let Stock of HBL is X

Stock of NABIL is Y

Table No. 4.33

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.439	-0.91	0.3995
02/03	-0.3682	-0.39	0.1436
03/04	-0.0096	-0.01	0.0001
04/05	0.0814	0.05	0.0041
05/06	0.3214	0.03	0.0096
06/07	0.4141	0.8	0.3313
			0.8882

Sources: Table No. 4.5 & 4.11

We have,

Covariance (XY) = $\frac{\sum[X-E(X)][Y-E(Y)]}{n-1} = \frac{0.8882}{6-1} = \frac{0.8882}{5} = 0.1776$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.1776}{0.3493 \times 0.5699}$

$= \frac{0.1776}{0.1991} = 0.8920$

4.6.7 Correlation coefficient between HBL & SCBNL bank.

The table no. 4.34 shows the calculation of correlation coefficient between HBL & SCBNL

Let Stock of HBL is X

Stock of SCBNL is Y

Table No. 4.34

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.439	-0.58	0.2546
02/03	-0.3682	-0.22	0.0810
03/04	-0.0096	-0.08	0.0008
04/05	0.0814	0.06	0.0049
05/06	0.3214	0.56	0.1800
06/07	0.4141	0.23	0.9524
			1.4737

Sources: Table No. 4.5 & 4.14

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{1.4734}{6-1} = \frac{1.4737}{5} = 0.2947$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.2947}{0.3493 \times 0.3902} = \frac{0.2947}{0.1363} = 0.2.1621$

4.6.8 Correlation coefficient between SBI & NABIL bank.

The table no. 4.35 shows the calculation of correlation coefficient between SBI & NABIL

Let Stock of SBI is X

Stock of NABIL is Y

Table No. 4.35

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.8302	-0.91	0.7555
02/03	-0.7816	-0.39	0.3048
03/04	-0.2336	-0.01	0.0023
04/05	-0.2485	0.05	-0.0124
05/06	0.4141	0.03	0.0124
06/07	1.6796	0.80	1.3437
			2.4063

Sources: Table No. 4.8 & 4.11

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{2.4060}{6-1} = \frac{2.4060}{5} = 0.4813$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.4813}{0.9390 \times 0.5699}$

$= \frac{0.4813}{0.5351} = 0.8995$

4.6.9 Correlation coefficient between SBI & SCBNL bank.

The table no. 4.36 shows the calculation of correlation coefficient between SBI & SCBNL

Let Stock of SBI is X

Stock of SCBNL is Y

Table No. 4.36

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.8302	-0.58	0.4815
02/03	-0.7816	-0.22	0.1720
03/04	-0.2336	-0.08	0.0187
04/05	-0.2485	0.06	-0.0149
05/06	0.4141	0.56	0.2318
06/07	1.6796	0.23	0.3863
			1.2754

Sources: Table No. 4.8 & 4.14

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{1.2754}{6-1} = \frac{1.2754}{5} = 0.2551$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.2551}{0.9390 \times 0.3902}$

$= \frac{0.2551}{0.3664} = 0.6962$

4.6.10 Correlation coefficient between NABIL & SCBNL bank.

The table no. 4.37 shows the calculation of correlation coefficient between NABIL & SCBNL

Let Stock of NABIL is X

Stock of SCBNL is Y

Table No. 4.37

Year	[X-E(X)]	[Y-E(Y)]	[X-E(X)] [Y-E(Y)]
2001/02	-0.91	-0.58	0.5278
02/03	-0.39	-0.22	0.0858
03/04	-0.01	-0.08	0.0008
04/05	0.05	0.06	0.0030
05/06	0.03	0.56	0.0168
06/07	0.80	0.23	0.1840
			0.8182

Sources: Table No. 4.11 & 4.14

We have,

Covariance (XY) = $\frac{\sum[X - E(X)][Y - E(Y)]}{n-1} = \frac{0.8182}{6-1} = \frac{0.8182}{5} = 0.1636$

Correlation Coefficient (r) = $\frac{Cov(XY)}{¢_x ¢_Y} = \frac{0.1636}{0.5699 \times 0.3902} = \frac{0.1636}{0.2224} = 0.7356$

The table no. 4.38 shows the various correlations between each sample bank.

Table No. 4.38

Correlation Matrix

Sample Banks	EBL	HBL	SBI	NABIL	SCBNL
EBL	1	0.7757	0.6155	0.8594	0.7928
HBL		1	0.8921	0.8920	2.1621
SBI			1	0.8995	0.6962
NABIL				1	0.7356
SCBNL					1

Source: Table No. 4.28 to 4.37

Above table no. 4.38 shows that the correlation between sample bank's stock. There are positive correlations between various banks. As correlation between stock of banks are positive than any part of risk can not be reduced by diversification.

4.7 Presentation and analysis of data according to inferential analysis based on ANOVA or F-test.

The presentation and analysis of data according to inferential analysis includes the study of regression analysis. Analysis of regression is designed to ascertain if there is some kind of relationship between the average return and variance fundamental variables of banks. In this context, we are using only linear relationship. For the analysis, expected return of sample banks are taken as dependent variable and beta coefficient and correlation coefficient with market are chosen as independent variables.

4.7.1 Presentation and analysis of data according to inferential analysis based on ANOVA or F-test. The hypothesis is set out and the calculated value of F is compared with critical value of F at 5% level of significance with (N-l, K-l) degree of freedom.

The test is carried out on the basis of simple regression analysis.

Simple regression analysis is applied as expected return E(R) as dependent and beta coefficient as independent variable.

The model is,

$$Y = a + bx$$

Where,

Y = Expected return

a = Intercept

X = Beta coefficient

The regression equation is $E(R) = a + bx$

Regression as expected return E(R) depends on beta (B)

Table No. 4.39

S. No.	Sample Bank	Dependent (Y)	Independent (X)	XY	X^2
1.	EBL	0.4420	0.5174	0.2287	0.2677
2.	HBL	0.2895	0.4921	0.1425	0.2422
3.	SBI	0.4375	1.5273	0.6682	2.3326
4.	NABIL	0.4633	0.4456	0.2064	0.1986
5.	SCBNL	0.3450	0.3505	0.1209	0.1229
		1.9773	3.3329	1.1667	3.1640

Sources: Table No. 4.21

The regression equation Y on X is

$Y = a + bx$

Now,

Required nominal equation can be written as

$\sum Y = na + bx$ 1

$\sum XY = a \sum X + b \sum x^2$.....2

Substituting the value in normal equation (1) & (2)

$1.9773 = 5a + 3.3329b$ 3

$1.3667 = 3.3329\ a + 3.1640b$ 4

By solving equation (3) & (4), we get

$a = 0.3610$

$b = 0.0517$

Hence,

The regression equation Y on X is

$Y = 0.3610 + 0.0517X$

It can also be written as,

$\hat{Y} = 0.3610 + 0.0517X$

Now,

Analysis of variance of regression line (ANOVA)

Table No. 4.40

Sample Banks	Y	$(Y-\bar{Y})$	$(Y-\bar{Y})^2$	$\hat{Y}$	$(\hat{Y}-\bar{Y})$	$(\hat{Y}-\bar{Y})^2$
EBL	0.4420	0.0465	0.0022	0.3877	-0.0078	0.0001
HBL	0.2895	0.1060	0.0112	0.3864	-0.0091	0.0001
SBI	0.4375	0.0420	0.0018	0.4400	0.0445	0.0020
NABIL	0.4633	0.0678	0.0046	0.3840	-0.0115	0.0001
SCBNL	0.3450	0.0505	0.0026	0.3792	-0.0163	0.0003
	1.9773		0.0224			0.0026

Now,

$$\bar{Y} = \frac{\sum Y}{N} = \frac{1.9773}{5} = 0.3955$$

Here,

Total variation (SST) = $\sum(Y-\bar{Y})^2 = 0.0224$

Explained variation (SSR) = $\sum(\hat{Y}-\bar{Y})^2 = 0.0026$

Unexplained variation (SSE) = SST-SSR

= 0.0224 - 0.0026

= 0.0198

Hypothesis Formulation:

H_0 : $b_0 = 0$ i.e. the regression equation Y on X is not significant. In other word, there is no relationship between dependent variable Y and independent variable X.

H_1 : $b \neq 0$ i.e. the regression equation Y on X is significant. In other word, there is relationship between independent variable X and independent variable Y.

Test statistics:

Under H_0, the test statistic is $F = \frac{MSR}{MSE}$

ANOVA Table

Table No. 4.41

Source of variation	Sum of square	Degree of freedom	Mean sum of square	F-ratio
Explained variation	SSR = 0.0026	K - 1 = 2-1=1	MSR = SSR/K-1 = 0.0026/2-1 =0.0026	MSR/MSE = 0.0026/0.0009 = 2.8889
Unexplained variation	SSE = 0.0198	N-K = 5-2 = 3	MSE = SSR/N-k = 0.0026/5-2 = 0.0009	
Total variance	0.0224	N-1 = 5-1 =4		

The critical value of F at 5% level of significance for degree of freedom (1,3) is 10.1. Hence calculated value of F is less than critical value of F at 5% level of significance.

Coefficient of determination (R^2) = $\frac{SSR}{SST} = \frac{0.0026}{0.0224} = 0.1161$

Table No. 4.42

Regression of Expected returns on beta coefficient

Dependent Variable	Intercept (a)	Regression coefficient of Beta (b)	R^2	Calculation F	Tabulated F
E(R)	0.3610	0.0517	0.1161	2.8889	10.1

Source: Table No. 4.41

The result presented in above table shows that the regression result which is positive relationship between expected return and beta one rupee increase in beta leads 0.0517 rupee increase in E(R) keeping other variable constant. The coefficient of determination R^2 is 0.1161, which indicate that 11.61% of total variation in expected return. It can be explained by beta. Calculated value of F is less than tabulated value of F at 5% level of significance. Which means accept H_0 : i.e. regression

equation Y on X is not significant. In other word there is no relationship between independent variable X and dependent variable Y.

4.7.2 The presentation and analysis of data according to inferential analysis based on ANOVA or F test. The hypothesis is set out and the calculated value of F is compared with tabulated value of F at 5% level of significance with (N-1, N-K) degree of freedom.

The test is carried out on the basis of multiple regressions.

Multiple regression analysis is applied as expected return as dependent and coefficient of beta and correlation with market as independent variable for this purpose. Following model is applied.

The model is,

$$Y = a + b_1 X_1 + b_2 X_2$$

Where,

Y = Expected return E(R)

a = Intercept

X_1 = Beta coefficient

X_2 = Correlation with market

b_1 = Regression coefficient

b_2 = Regression coefficient

Table No. 4.43

Regression as expected return E(R), depends on Beta ( ) and correlation with market (r).

S.No.	Sample Banks	Y	X_1	X_2	YX_1	YX_2	X_1X_2	X_1^2	X_2^2
1.	EBL	0.4420	0.5174	0.5637	0.2287	0.2492	0.2917	0.2677	0.3178
2.	HBL	0.2895	0.4921	0.3648	0.1425	0.1056	0.0520	0.2422	0.1331
3.	SBI	0.4375	1.5273	0.1539	0.6682	0.0673	0.1028	2.3326	0.0237
4.	NABIL	0.4633	0.4456	0.8044	0.2064	0.3727	0.1661	0.1986	0.6471
5.	SCBNL	0.3450	0.3505	0.7419	0.1209	0.2560	0.0897	0.1229	0.5504
		1.9773	3.3329	2.6287	1.1667	1.0508	0.7023	3.1640	1.6721

Sources: 4.18 & 4.21

The regression equation Y on X is,

$Y = a + b_1X_1 + b_2X_2$

The required nominal equation can be written as,

$$\sum Y = Na + b_1 \sum X_1 + b_2 \sum X_2$$

$$\sum YX_1 = a \sum X_1 + b_1 \sum X_1^2 + b_2 \sum X_1X_2$$

$$\sum YX_2 = a \sum X_2 + b_1 \sum X_1X_2 + b_2 \sum X_2$$

Substituting the value in nominal equation,

$1.9773 = 5a + 3.3329b_1 + 2.6287b_2$ I

$1.1667 = 3.3329a + 3.1640b_1 + 0.7023b_2$.....ii

$1.0508 = 2.6287a + 0.7023b_1 + 1.6721b_2$.....iii

Solving the equation (i, ii & iii) we get

$a = 0.2756$

$b_1 = 0.0387$

$b_2 = 0.1789$

Hence,

The regression equation Y on X_1X_2

$Y = 0.2756 + 0.0387X_1 + 0.1789X_2$

It can also be written as,

$\hat{Y} = 0.2756X_1 + 0.1789X_2$

Now,

Analysis of variance of regression line (ANOVA)

Table No. 4.44

Sample Banks	Y	$(Y-\bar{Y})$	$(Y-\bar{Y})^2$	$\hat{Y}$	$(\hat{Y}-\bar{Y})$	$(\hat{Y}-\bar{Y})^2$
EBL	0.4420	0.0465	0.0022	0.3965	0.0010	0.0000
HBL	0.2895	0.1060	0.0112	0.3600	-0.0355	0.0013
SBI	0.4375	0.0420	0.0018	0.3622	-0.0333	0.0011
NABIL	0.4633	0.0678	0.0046	0.4368	0.0413	0.0017
SCBNL	0.3450	0.0505	0.0026	0.4219	0.0264	0.0007
	1.9773		0.0224			0.0048

We have,

$$\bar{Y} = \frac{\sum Y}{N} = \frac{1.9773}{5} = 0.3955$$

Here,

Total variation (SST) = $\sum(Y-\bar{Y})^2 = 0.0224$

Explained variable (SSR) = $\sum(\hat{Y}-\bar{Y})^2 = 0.0048$

Unexplained variation (SSE) = SST-SSR = 0.0224-0.0.0048 = 0.0176

Hypothesis Formulation:

H_0 : $b_1 = b_2 = 0$ is the regression equation on Y on X_1 and X_2 is not significant. In other word, there is not relationship between dependent variable Y and independent variable X_1 and X_2.

H_0 : $b_1 \neq b_2 \neq 0$ i.e. the regression equation Y on X_1 and X_2 is significant. In other word, there is relationship between dependent variable Y and two independents variable X_1 and X_2.

Test statistics,

Under H_0, the test statistic is $F = \frac{MSR}{MSE}$

ANOVA Table

Table No. 4.45

Source of variation	Sum of square	Degree of freedom	Mean sum of square	F-ratio
Explained variation	SSR = 0.0048	K - 1 = 2-1=1	MSR = SSR/K-1 = 0.0048/2-1 =0.0048	MSR/MSE = 0.0048/0.0016 = 3
Unexplained variation	SSE = 0.0176	N-K = 5-2 = 3	MSE = SSR/N-k = 0.0048/5-2 = 0.0016	
Total variance	0.0224	N-1 = 5-1 =4		

The critical value of F at 5% level of significance for (2,2) degree of freedom is 19. Hence calculated value of F is less than critical value of F at 5% level of significance.

Coefficient of determination (R^2) = $\frac{SSR}{SST} = \frac{0.0048}{0.0224} = 0.2143$

The result of multiple regression is presented in table no. .....

Regression of expected returns on beta and correlation coefficient.

Table No. 4.46

Regression of Expected returns on beta coefficient

Dependent Variable	Intercept (a)	Regression coefficient of Beta		R^2	Calculation F	Tabulated F
		b_1	b_2			
E(R)	0.2756	0.0387	0.1789	0.2143	3	19

Sources: Table No. 4.43 & 4.45

The above result presented in above taste shows that multiple linear relationship between E(R), beta ( ) and correlation with market (r). One present increase in beta 0.0387 present increases in E(R), holding other variable constant. Expected return and coefficient of market shows the positive relation, which makes increase in expected return. The value of multiple coefficient determination (R^2) in 0.2143, which indicates that 21.43 percent of total variations in average return, can be explained by independent variable.

F-statistics shows the regression equation is significant i.e. there is not significant i.e. there is no relationship between dependent variable and independent variable since calculated value of F is less than tabulated value of F at 5% level of significance. So regression model cannot explain.

CHAPTER-V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter deals with three heading Summary, conclusion and Recommendations. Summary of the study describes the contents and format of the study. The conclusion from the whole study is presented in the conclusion heading. Researcher feels free to express their own conclusion and make generalization. Lastly the recommendation heading is death with. The recommendation' are largely based upon the interpretation presented in the previous section of the study. Justification for this recommendation are related to theory structure and finding.

5.1 Summary

Financial institutions play important role for the economic growth and development of the country. They promote and facilitate the trade and industry. They provide the loan to various sectors likely industrial sector, agricultural sector, service sector and government sector. The investment in such sector helps to create the employment opportunity and helps to alleviate the poverty. Regarding the fact, it is considered that development of the financial institutions is the development of the country. But the development of the financial institutions depends upon the efficient financial management. Various decisions are taken for the financial management relating to different aspect of the finance. Risk and return is the one of the most important aspects of the financial decision. The stakeholders are interested to know about the risk and return of common stock investment in financial institutions. 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 acceptance of risk. Hence risk plays a central role for the analysis of investment.

The term return and investment are always associated with risk. It is the return that motivates to accept the challenge. It strengthens the will power to assume risk. Each and every kinds of return is associated with some degree of risk. Generally investor invests their current cash only to those areas where there is high return and low risk. An investor looking for the common stock investment

Pays the price for stock based on his estimation about future dividends and growth in stock price. This study occupies an important role in the development of stock market. Besides commercial bank development banks are investing their performance in Nepalese banking sector. Thus the study is dedicated on the study of risk and return on common stock of selected commercial banks which has been divided into five chapter starting with introduction, review of literature, research methodology, presentation, interpretation and analysis of data and finally summary, conclusions, and recommendation. Various financial and statistical tools are applied for the study; e.g. rate of return, expected return, standard deviation and coefficient of variation, beta, correlation coefficient, coefficient of determination, least square method, regression equation etc. Analysis of the variance also examined in the study. The hypothesis is set out to confirm the study and so on.

Different diagram, tables, graph are used to present the result. All the data are collected from the secondary sources. Secondary sources of data are NEPSE, AGM reports of various banks, trading report of SEBO website of NRB etc.

5.2 **Conclusion**

In conclusion, from the analysis of this study the-major results on risk and return analysis of common stock investment in Nepalese commercial banks are summarized as under

- On the basis of dividend paying Standard Chartered Bank Nepal is the highest and continuous dividend payer where as Nepal SBI Bank is lowest dividend payer among the sample of banks during sample period. Those people or investors who want to have a continuous return. Thus SCBNL is the best sample bank on the basis of dividend paying.
- Expected return on common stock of NABIL is the highest among five sample banks whereas HBL has lowest expected return.
- On the basis of standard deviation, Standard deviation measures total risk. On the basis of S.D, common stock of SBI bank ltd is more risky and HBL is least risky.
- Coefficient of variation measures risk per unit. So coefficient of variance is more rational basis for investment decision. On the basis of CV, common- stock of EBL has lowest CV. So common stock of EBL is least risky among sample of banks where as CV of SBI in highest, so common stock of SBI is more risky.

- Calculation of trend value by using least square method on the basis of rate of return is presented and trend line is graphically shown. Movement of trend line has increasing trend.
- According to inter bank Market capitalization, NABIL is in the highest position and EBL bank is in the lowest position.
- Beta coefficient measures the systematic risk and explains the sensitivity or volatility of stock with market. In this contest, common stock of SBI is the most and common stock of SCBNL is the least volatile. Common stock of SBI is aggressive because it has beta more than beta coefficient of market i.e. (B>1). Similarly, common stock of EBL, HBL, NABIL and SCBNL are defensive because of less beta than beta of market i.e. (B<1).
- Alpha is the intercept, where the characteristics line intercepts the vertical axis. Alpha is the estimate of the asset's return when market return is zero. NABIL has the highest alpha and SBI has lowest alpha among the sample of banks. On the basis of alpha analysis. NABIL is the best.
- The correlation coefficient lies between (+1) and (-1). Ail the sample banks have positive correlation with market. The positive correlation indicates that when the market return goes up, return on common stock also goes up and vice versa. Correlation coefficient of SBI is highest and NABIL is lowest.
- Correlation coefficient between the banks is shown in correlation matrix table no. 4.38. There is positive correlation between the various banks. If correlation between stocks's of banks are positive, then any part of risk can not be reduced.
- Common stock of SBI has the highest proportion of systematic risk which can not be minimized through diversification where as common stock of NABIL has lowest proportion of systematic risk.
- Lower the coefficient of determination or proportion of systematic risk means higher the proportion of unsystematic risk. That means common stock of NABIL has highly diversifiable risk while common stock of SBI has less diversifiable risk. Unsystematic risk can be avoided through diversification. From above analysis, investors are recommended to purchase there stock which has highest expected return and with low proportion of un-diversifiable risk to make portfolio investment.
- Capital assets pricing Model describes that the relationship between risk and return. Stock is identifies as overpriced or under priced by comparison between expected rate of return and required rate of

return. If required rate of return is less than expected rate of return, than the stock is under priced and should buy it. If required of return is more than expected rate of return, the stock is over priced and should sell it. This study shows that all the stocks are under priced and investors should buy it.

- ❖ Regressions results suggest that beta coefficient of have positive effect upon expected return. It means when beta increases, the risk ness of the firm will also increase and vice versa.
- ❖ F- Statistics in simple and multiple regression analysis shows that regression equation is not significant at 5% level of significance. So the model cannot best explain the variation. This implies to investors that the dependent variables unable to best explain the dependent variable and there should be increase in independent variable so as to better explanation of dependent variable.

5.3 Recommendation and suggestions

Investors are determinant for capital market development. Investors are guided by most of the factors. Capital market is dynamic. The level of understanding of investors cause movement in capital market accordingly sharp fall of 1994 is evidence. The more an investor understands the market, the more sustainable market will be.

Common stock is more risky security among all the marketable securities. Therefore, an investor must have proper knowledge and information to 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 and return attitude, needs and requirements. Make several discussions with stock brokers and make your decision on the basis of reliable information rather than rumor and imaginations. Investors can join to investors groups and share experience, ideas and expertise to each other.

Basically the study has focused on individual investors. Moreover other components of stock market also considered to some extent Based on the analysis of data and major finding of this research, following recommendation and suggestions are prescribed.

1. Since the return of NABIL for given sample period is the highest, investors can get more benefit if they invest in the common stock of NABIL.
2. Expected return on common stock of NABIL is lowest for given sample period So investors can not get more benefit if they invest

in common stock of HBL

3. Beta of SCBNL bank is 0.3505 which is defensive; investor can use stock of SCBNL bank to minimize the risk portfolio.
4. If the investor is risk averter, then he/she can choose the stock of EBL if the investor is risk seeker he/she can choose stock of SCBNL Bank Ltd.
5. To assess the profitable investment, it is better to measure the coefficient of variation. CV is measures of relative dispersion, it measures risk per unit and more useful than standard derivation of a given security.
6. Correlation coefficient between all the sample banks has positive correlation.
7. The proportion of unsystematic or diversifiable risk on common stock of NABIL bank is 0.3701 investors are suggested to invest into stock of NABIL bank to minimize the risk of portfolio. Since the correlation coefficient both market and stock of NABIL is least, it could help to construct the optimal portfolio.
8. This study find out that the stock in sampling has higher return than market return Under CAPM approach All the stocks are under priced new investors are suggested to purchase and *who* are holding the stocks of commercial banks, they do not sell the stock.
9. The commercial banks should communicate the real financial statements. Value of assets and liabilities should not be manipulated to report under or over profitability. Every decision of the banks should be made to maximize the value of the firm and value per share.

However, this study is done under the certain limitation both methodological as well as scope limitation, further researcher in this field will give more information to investors, marketers and so on. For further study some recommendations are outlined.

1. Risk and return analysis is completely untouched area in Nepalese context It is strongly suggested that further study should be conducted on this topic, and research should include maximum number of sample of bank and long period of data
2. It is recommended to use latest tools and technique for analysis of risk and return.
3. Administration should be made further efficient to check the performance of individual commercial banks and flow of information should be more regular.

4. Lack of information with regard to trading procedure in NEPSE, is also cause for volume of trading.
5. NEPSE needs to initiate to develop different programs for private investor such as meeting and seminar in different subject matter like trading rules and regulation.
6. Government needs to make rule and regulation regarding the stock market and make policy that protect the individual investor's rights.

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Appendix-I (A)

Everest Bank Limited

Year	High	Low	Closing	EPS	DPS	Stock Dividend %
2001/02	740	325	430	32.91	0	--
2002/03	490	349	445	29.90	20	22
2003/04	723	400	680	45.58	20	--
2004/05	905	625	870	32.47	0	20
2005/06	1410	800	1379	45.81	25	--
2006/07	2430	1100	2430	57.22	10	--

Appendix-II(A)

Himalayan Bank Nepal Limited

Year	High	Low	Closing	EPS	DPS	Stock Dividend %
2001/02	1530	610	1000	60.26	25	30
2002/03	950	750	836	39.45	1.31	10
2003/04	1010	600	840	49.05	0	25
2004/05	1181	855	920	47.91	11.58	20
2005/06	1200	900	1100	59.24	30	20
2006/07	1760	950	1760	60.66	15	5

Appendix-III(A)

SBI Nepal Bank limited

Year	High	Low	Closing	EPS	DPS	Stock Dividend %
2001/02	1600	300	401	9.61	0	200
2002/03	410	255	255	11.47	8	--
2003/04	307	231	307	14.26	0	--
2004/05	480	315	365	13.29	0	--
2005/06	689	335	612	18.27	5	5
2006/07	1176	505	1176	39.35	12.59	47.59

Appendix-IV(A)

Nepal Arab Bank limited

Year	High	Low	Closing	EPS	DPS	Stock Dividend %
2001/02	1500	465	735	55.25	30	--
2002/03	875	700	735	84.66	50	--
2003/04	1005	705	1000	92.61	65	--
2004/05	1515	1000	1505	105.79	0	--
2005/06	2300	1500	2240	129.21	5	--
2006/07	5050	2025	5050	137.08	12.59	--

Appendix-V(A)

Standard Chartered Bank Nepal Limited

Year	High	Low	Closing	EPS	DPS	Stock Dividend %
2001/02	2100	1000	1550	141.13	100	--
2002/03	1760	1380	1640	149.30	110	--
2003/04	1800	1520	1745	143.55	100	10
2004/05	2350	1553	2345	143.14	120	--
2005/06	3775	2200	3775	175.84	120	10
2006/07	5900	3058	5900	167.37	80	--

Appendix-I(B)

Beta Coefficient of Common Stock of EBL

Year	[R-E(R)]	$[R_m-E(R_m)]$	[R-E(R)] $[R_m-E(R_m)]$
2001/02	-0.872	-0.5561	0.4849
2002/03	-0.012	-0.3090	0.0037
2003/04	0.128	-0.1249	-0.0160
2004/05	0.248	0.0820	0.0203
2005/06	0.168	-0.1624	-0.0273
2006/07	0.338	1.0704	0.3618
			0.8274

We have,

$$\text{Cor } R_j, R_m = \frac{[R-E(R)]\,[R_m-E(R_m)]}{n-1} = \frac{0.8274}{6-1} = 0.1655$$

$$\beta_j = \frac{\text{Cor } R_j, R_m}{\delta_m} = \frac{0.1655}{0.31984} = 0.5174$$

Systematic Risk = β^2 x δ_m^2 = $(0.5174)^2$ x 0.31984 =0.0856

Unsystematic Risk = Total Risk- Systematic Risk

= 0.1962-0.0856

= 0.1106

Proportion of systemic Risk $\ell^2 = \frac{{}^2¢_m^2}{¢^2} = \frac{0.0856}{0.1962} = 0.4363$

Proportion of Unsystemic Risk = *1*- ℓ^2 = 1-0.4363 = 0.5637

~ – intercept = $E(R_m)$ x

= 0.442-0.2091 x 0.5174

= 0.3338

Correlation coefficient (r) = $\frac{\text{Cor (Rj, Rm)}}{¢_m ¢_j} = \frac{0.1655}{0.5655 \times 0.4429} = \frac{0.1655}{0.2505} = 0.6607$

Appendix-II(B)

Beta Coefficient of Common Stock of HBL

Year	[R-E(R)]	[R_m-E(R_m)]	[R-E(R)] [R_m-E(R_m)]
2001/02	-0.493	-0.5561	0.2742
2002/03	-0.3682	-0.3090	0.1138
2003/04	-0.0096	-0.1249	0.0012
2004/05	0.0814	0.0820	0.0067
2005/06	0.3214	-0.1624	-0.0522
2006/07	0.4141	1.0704	0.4433
			0.7870

We have,

$$\text{Cor } R_j, R_m = \frac{\text{[R-E(R)] [R}_m\text{-E(R}_m\text{)]}}{\text{n-1}} = \frac{0.7870}{6\text{-}1} = 0.1574$$

$$\beta_j = \frac{\text{Cor } R_j, R_m}{\delta_m} = \frac{0.1574}{0.31984} = 0.4921$$

Systematic Risk = β^2 x δ_m^2 = $(0.4921)^2$ x 0.31984 = 0.0775

Unsystematic Risk = Total Risk- Systematic Risk

= 0.1220-0.0775

= 0.0445

Proportion of systemic Risk $\ell^2 = \frac{^2¢_m^2}{¢^2} = \frac{0.0775}{0.1220} = 0.6352$

Proportion of Unsystemic Risk = *1*- ℓ^2 = 1- 0.6352 = 0.3648

~ – intercept = E(R_m) x

= 0.2895-0.0.2091 x 0.4921

= 0.2895- 0.1029

= 0.1866

Correlation coefficient (r) = $\frac{\text{Cor (Rj, Rm)}}{¢_m ¢_j} = \frac{0.1574}{0.5655 \times 0.3493} = \frac{0.1574}{0.1975} = 0.7970$

Appendix-III(B)

Beta Coefficient of Common Stock of SBI

Year	[R-E(R)]	$[R_m-E(R_m)]$	[R-E(R)] $[R_m-E(R_m)]$
2001/02	-0.8302	-0.5561	0.4617
2002/03	-0.7816	-0.3090	0.2415
2003/04	-0.2336	-0.1249	0.0292
2004/05	-0.2485	0.0820	-0.0204
2005/06	0.414	-0.1624	-0.0672
2006/07	1.6796	1.0704	1.7978
			2.4426

We have,

$$\text{Cor } R_j, R_m = \frac{[R-E(R)]\,[R_m-E(R_m)]}{n-1} = \frac{2.4426}{6-1} = 0.4885$$

$$\beta_j = \frac{\text{Cor } R_j, R_m}{\delta_m} = \frac{0.4885}{0.31984} = 1.5273$$

Systematic Risk = β^2 x δ_m^2 = $(1.5273)^2$ x 0.31984 =0.7461

Unsystematic Risk = Total Risk- Systematic Risk

= 0.8818-0.7461

= 0.1375

Proportion of systemic Risk $\ell^2 = \frac{^2¢_m^2}{¢^2} = \frac{0.7461}{0.8818} = 0.8461$

Proportion of Unsystemic Risk = *1*- ℓ^2 = 1-0.8461 = 0.1539

~ – intercept = $E(R_m)$ x

= 0.4375-0.2091 x 1.5273

= 0.4375- 0.3194

= 0.1181

Correlation coefficient (r) = $\frac{\text{Cor (Rj, Rm)}}{¢_m ¢_j} = \frac{0.4885}{0.5655 \times 0.9390} = \frac{0.4885}{0.5310} = 0.9200$

Appendix-IV(B)

Beta Coefficient of Common Stock of NABIL

Year	[R-E(R)]	$[R_m-E(R_m)]$	$[R-E(R)]\ [R_m-E(R_m)]$
2001/02	-0.91	-0.5561	0.5061
2002/03	-0.39	-0.3090	0.1205
2003/04	-0.01	-0.1249	0.0012
2004/05	0.05	0.0820	0.0041
2005/06	0.03	-0.1624	-0.0049
2006/07	0.08	1.0704	0.0856
			0.7126

We have,

$$\text{Cor } R_j, R_m = \frac{[R-E(R)]\ [R_m-E(R_m)]}{n-1} = \frac{0.7126}{6-1} = 0.14252$$

$$\beta_j = \frac{\text{Cor } R_j, R_m}{\delta_m} = \frac{0.14252}{0.31984} = 0.4456$$

Systematic Risk = β^2 x δ_m^2 = $(0.4456)^2$ x 0.31984 =0.0635

Unsystematic Risk = Total Risk- Systematic Risk

= 0.3247 - 0.0635

= 0.2612

Proportion of systemic Risk $\ell^2 = \frac{^2¢_m^2}{¢^2} = \frac{0.0635}{0.3247} = 0.1956$

Proportion of Unsystemic Risk = *1*- ℓ^2 = 1-0.1956 = 0.8044

~ – intercept = $E(R_m)$ x

= 0.4633 - 0.2091 x 0.4456

= 0.3701

Correlation coefficient (r) = $\frac{\text{Cor (Rj, Rm)}}{¢_m ¢_j} = \frac{0.14252}{0.5655 \times 0.5699} = 0.4422$

Appendix-V(B)

Beta Coefficient of Common Stock of SCBNL

Year	[R-E(R)]	$[R_m-E(R_m)]$	[R-E(R)] $[R_m-E(R_m)]$
2001/02	-0.58	-0.5561	0.3225
2002/03	-0.22	-0.3090	0.0680
2003/04	-0.08	-0.1249	0.0100
2004/05	0.06	0.0820	0.0049
2005/06	0.56	-0.1624	-0.0909
2006/07	0.23	1.0704	0.2462
			0.5607

We have,

$$\text{Cor } R_j, R_m = \frac{\text{[R-E(R)] } [R_m-E(R_m)]}{n-1} = \frac{0.5607}{6-1} = 0.1121$$

$$\beta_j = \frac{\text{Cor } R_j, R_m}{\delta_m} = \frac{0.1121}{0.31984} = 0.3505$$

Systematic Risk = β^2 x δ_m^2 = $(0.3505)^2$ x 0.31984 =0.0393

Unsystematic Risk = Total Risk- Systematic Risk

= 0.15226 - 0.0393

= 0.1130

Proportion of systemic Risk $\ell^2 = \frac{{}^2¢_m^2}{¢^2} = \frac{0.0393}{0.15226} = 0.2581$

Proportion of Unsystemic Risk = *1*- ℓ^2 = 1-0.2581 = 0.7419

~ – intercept = $E(R_m)$ x

= 0.3450 - 0.2091 x 0.3505

= 0.2717

Correlation coefficient (r) = $\frac{\text{Cor (Rj, Rm)}}{¢_m ¢_j} = \frac{0.1121}{0.5655 \times 0.3902} = 0.5080$