

CHAPTER I

INTRODUCTION

1.1 Background of the study

The history of modern commercial banking industry dates back to 1937 AD in which Nepal Bank Limited was incorporated. The government owned 51 percent of the shares in the bank and controlled its operations to a large extent. It was headquartered in Kathmandu and had branches in other parts of the country as well.

In order to regulate the economy and the unregulated use of money Nepal Rastra Bank was created in 1956 as the central bank. Its function was to supervise commercial banks (CBs) and to guide the basic monetary policy of the nation. Its major aims were to regulate the issue of paper money; secure countrywide circulation of Nepalese currency and achieve stability in its exchange rates; mobilize capital for economic development and for trade and industry growth; develop the banking system in the country, thereby ensuring the existence of banking facilities; and maintain the economic interests of the general public. Nepal Rastra Bank also was to oversee foreign exchange rates and foreign exchange reserves

After almost 30 years another state owned commercial bank Rastriya Banijya Bank (National Commercial Bank) was established in 1966. The Land Reform Savings Corporation was also established in the same year to deal with finances related to land reforms. During 1967 AD the Agricultural Development Bank was also established. Almost 75 percent of the bank was state-owned; 21 percent was owned by the Nepal Rastra Bank and 5 percent by cooperatives and private individuals. Hence it is clear that since the 1960s; both commercial and specialized banks have expanded. More businesses and households had better access to the credit market although the credit market had not expanded.

However, the decade of 1980s can be considered as the landmark in the modern banking history. It was only in this decade government allowed the excess to foreign joint venture banks to be the part of the Nepalese banking business. During this period, three foreign CBs opened branches in Nepal. The first was Nepal Arab Bank established in 1984 AD. It was co-owned by the Emirates Bank International Limited

(Dubai), the Nepalese government, and the Nepalese public. After that in 1984 came Nepal Indosuez Bank (currently Nepal Investment Bank) which was jointly owned by the Credit Agricole Indosuez, Rastriya Banijya Bank, Rastriya Beema Sansthan (National Insurance Corporation), and the Nepalese public. Then Nepal Grindlays Bank was the third foreign joint venture to be established in Nepal which was co-owned by a British firm called Grindlays Bank, local financial interests, and the Nepalese public.

Although government had started the liberalization of financial sector during the decade of 80s but this process speeded up only in early 1990s. In fact private sector rushed into the banking and financial industry after the restoration of democracy in 1990. Many CBs like Himalayan Bank, Everest bank, etc were established during this decade. Since then there are twenty three CBs in Nepal.

Capital market in Nepal is in immaturity. Stock investment practices in Nepal enhanced after the establishment of Biratnagar Jute Mills Limited and Nepal Bank Limited in 1937. Till 1980s, the majority of the share issuing company would belong to the ownership of government. Initial public offering was hardly found in practice and funds were collected via the direct placement of bonds. The prime purpose of raising the funds would be the enhancement of the infrastructure and public welfare programs. It has helped flourishing the primary government bond market. On the other hand the shares of Nepal Bank Limited were in existence but limited to the ownership of Ranas. In 1962, government issued treasury bills for the first time to finance the infrastructure enhancement it is followed by the issuance of development bonds in 1964. Trading of government bonds have always felt a scarcity of capital market and in 1964, Industrial Policy was promulgated. This policy has opened the doors for the establishment of an institution named Security Market Centre (SMC) in 1977 with its primary aim of developing the capital market for government securities in the country under the joint effort of Nepal Rastra Bank (NRB) and Nepal Industrial Development Corporation (NIDC). It was converted into Security Exchange Center in 1976. Security Exchange Act (SEA) was approved by legislature and came into existence with effect from 13th April 1984. The former Securities Exchange Center was converted into Nepal Stock Exchange with the major objective to arrange marketability and liquidity to the government and corporate securities. Floor trading

through market intermediaries such as brokers and market makers has also evolved. Restoration of democracy following the political movement of 1990 has brought lots of reforms in the financial sector. Liberalization in the real sense was initiated. Nepal launched 'extended structural adjustment program' in 1992 by taking 'extended structural adjustment facility' (ESAF) through first amendment in the SEA. This has led to the establishment of Securities Board (SEBO) and it was given the responsibility of regulating and developing the transaction of securities whereas NEPSE to facilitate the transactions of stock and bonds in the floor through its member intermediaries. NEPSE presently has 23 brokers, 11 issue managers and 2 portfolio managers that is dealer in the secondary market. Currently there are 147 listed companies but this number is subject to change. Similarly NEPSE is planning to increase the share broker number by 27 to make 50 in total in near future. Similarly, Non Residence Nepalese (NRN) has declared to establish a multipurpose mutual fund investment company with the amount of Rs.10 billion in nearer future which help to grow the capital market in Nepal. In addition to this, various state-owned enterprises like Nepal Electricity Authority (NEA) has already issued bond and Nepal Telecom Corporation (NTC) planning to issue bonds. Thus market share to the general public which is encouraging for the capital market encouraging and becoming alternative investment sectors for the investors.

Investment is the sacrificed of existing resources to generate returns in future involving risk. It can be real as well as financial investment. Real investment involves kind tangible assets such as lands, machinery, factories, building etc. Where as financial investment involves contracts written in a piece of paper such as common stock, bond etc.

Everyday usage of the term investment can mean a variety of things, but to the general mass it usually refers to a money commitment of some sort. For example, a commitment of money in investment from an individual's point of view is very familiar since no rate of return is involved, nor is a financial return or capital growth expected.

All investment choices are made at the points of time in respect of personal investment ends and in consideration of an uncertain future. investment in securities are revocable as the investment ends of persons are transient and the environment is

fluid, as the reliable bases for reasoned expectations become more and more unclear as one imagines of the further distant future, investors in securities will from time to time reappraise and reevaluate their various investment commitments in the light of new information and (perhaps) changed expectations and ends.

Investment choices (decisions) are found to be outcomes of three different but related classes of factors. The first is factual or informational premises. The factual premises of investment decisions are provided by many streams of data which, taken together, represent to an investor the observable environment and the general and particular features of the securities and firms in which he may invest. The second class of factors entering into investment are as expectation premises.

Expectations relating to the outcomes of alternative investment are subjective and hypothetical in any case but their foundations are necessarily provided by the environmental and financial facts available to investors. These limit not only the range of investments, which may be undertaken, but also the expectations of outcomes that may legitimately be entertained. The third and final class of factors are valuable premises.

For investors generally these include the structure of subjective preferences for the size and regularity of the income to be received from, and for the safety and negotiability of, specific investments or combinations of investments, as these are appraised from time to time. When the analysis passes from the stage of description to the higher stage of security selection investor's frame of reference widens. Investor now considers not only securities but security holders as well.

Key to successful investment investing involves examination and analysis of three chronological segments of the business's operation – past performance, present condition and future prospects.

Adequate diversification means assortment of investment commitments in different ways. Those who are not familiar with the aggressive – defensive approach nevertheless often carry out the theory of hedging against inflation – deflation. Diversification may be geographical wherever possible because regional or local storms, floods, droughts etc. can cause extensive real estate damage. Vertical and horizontal diversification can also be opted for the same. Vertical diversification

occurs when securities of various companies engaged in different phases of production from raw material to finished goods are held in the portfolio.

On the other hand, horizontal diversification is the holding by an investor of various companies all of which carry out an activity in the same stage of production. Another way to diversify securities is to classify them according to bonds and stocks and reclassify according to types of bonds and types of stocks. Again, they can also be classified according to the issuers, according to the dividend or interest income dates, according to the products which are made by the firms represented by the securities. An investment is a liquid asset if it can be converted into cash without delay at full market value in any quantity.

The old adage, “If you don’t know where you’re going, any road will do” appropriately applies to investing. Either an investor is an individual or represents an institution, without a clear sense of why investment are being made and how long-run goals are to be achieved, he or she is likely to pursue inefficient approaches that lead to unsatisfactory results. An investor needs a plan that directs his or her efforts. That Plan is called an investment policy.

Investment policy is a combination of philosophy and planning. On the one hand, it expresses the investor’s attitudes towards important investment management issues such as, “why am I investing in the first place?” or “to what extent am I willing to accept the possibility of large losses?” The answers to those questions will vary among investors in accordance with their financial circumstances and temperaments.

1.2 Focus of the study

NEPSE is an organized stock exchange for trading stocks (shares) in secondary market. Although small investors can invest their money by purchasing shares of companies in primary market (during initial public offering) or in the secondary market, they (general public or investors) lack effective knowledge of capital market and its mechanism. Investing in stock is highly risky as being ownership capital. The share value of different CBs keeps on changing. So an investor can minimize the risk by investing in different shares of different companies. This study focuses on Analysis of risk and return of selected CBs in Nepal, focus on the investor can minimize its risk by evaluating common stock of different CBs, by calculating systematic risk

coefficient associated with different CBs, by identifying the Security prices of the sampled company are overpriced, under priced or equilibrium priced, by determining the effect of portfolio on risk and return and identify optimal portfolio

1.3 Statement of the Problem

Investments are made for positive returns; however, abundance of risk factors may turn returns to negative. Thus, prior to investments in stocks, a sensitive study on the potential investment is required. Price of stocks is market sensitive. Nominal degree of signaling effect will be playing freely in stock market causing a high degree of fluctuation in the stock price. Therefore, market sometimes turns to bullish and sometimes to bearish. Speculative motive of an individual is thus affected by such market characteristics. Apart from this, the dividend policy of the bank including the bonus issue, rights issue and the stock split too affects the price of share.

Due to the lack of information and poor knowledge, individual investor is manipulated or exploit by the financial institutions or other market intermediaries to such an extent that investing in common stock is intolerance hazardous. There is another problem for financial sector to earn goodwill among the public because some financial companies have collapsed due to improper use of public funds. Most of the rational investors hold portfolio of stocks and they are more concerned with the risk of portfolio than with the risk of individual securities.

At the same time there are no any separate institution which provides information required to rational decision that can accelerate the stock investment and market efficiency. Government policy is less encouraging in promoting common stock investment. The number of investors in stock market is still very few who are not confident to get appropriate return from the listed companies.

Returns on the stock are the summation of dividend yield and capital gain yield. However, most of the investors do feel that the higher the value of stock, higher is profitable in the stock investment and vice-versa and dividend at that time is ignored. Thus to make a rational decision on the investment in the assets, its dividend yield should also be considered. Dividend yield is the collective return realized as cash and/or bonus shares.

On the other hand, investment practices of stock investors are very limited in Nepal. Lack of information and knowledge has been the main constraints. Therefore, the chances of being manipulated and exploited by the financial institution and market intermediaries are in its peak. Thus they tend to avoid the risk and are often reluctant to tie their savings into the long-term commitment. Moreover, common stock investment can be hazardous in case of insufficient knowledge of its behavior. In the mean time there are no separate institutions providing required information to make rational decision that can accelerate the stock investment and market efficiency. Government policy in this regard is found less encouraging.

Combination of assets is the portfolio. Optimal portfolio is the combination which provide the highest possible return for any specified degree of risk or the lowest possible risk for any specified rate of return and the fundamental aspect of portfolio theory is the idea that the risk inherent in any single asset held in a portfolio is different from the risk of that asset held in isolation. But this theory actually may not be applicable in the capital market like Nepal where the market is inefficient.

Since studies on such subject matter are limited and available studies are also not sufficient enough especially in case of different listed CBs of NEPSE. The topic entitled: "Analysis of risk and return of selected CBs in Nepal" has, therefore, been identified as the key problem of the present study.

1.4 Theoretical Framework

Different tools and technique have been used in the study for analysis of financial performance of the four CBs considered for the study purpose. The main study methodology used for financial overview are Single period Rate of Return(R_j), Expected Rate of Return of Common Stock ($\overline{R_j}$), SD (σ_j), Correlation (ρ_{ij}), CV (CV_j), Covariance (Cov_{ij}), Beta Coefficient (β_j), Portfolio Return(R_p), Portfolio SD. The data has collected from SEBON, Web sites, Report of NYPSE, and Balance sheet of different CBs.

1.5 Objectives of the study

Due to lack of perfect knowledge and less information Nepalese investors are facing problems in the field of setting their investment policies, analyzing financial assets,

construction portfolio performances. The major objective of the study is to Analysis of risk and return of selected CBs in Nepal. However the objective has been subdivided into following specific objectives:

1. To evaluate common stocks of sampled listed CBs in terms of risk and return.
2. To evaluate the systematic risk of selected CBs.
3. To identify whether the Security prices of the sampled company are overpriced, under priced or equilibrium priced.
4. To compare the movement of selected CBs with overall NEPSE index

1.6 Limitations of the study

As every research has its own limitation, this study is not biased. Basically the research is done for the partial fulfillment of MBA. So this has some limitations, which are listed below:

- a) There are 25 CBs in Nepal that are in operation, among them 17 banks are listed in NEPSE. But the study does not include the entire listed CBs.
- b) The study concerns only with following companies from the random selection bases. i.e. State Bank of India Nepal, Bank of Kathmandu Ltd, Nepal Arab Bank Ltd, and Standard Chartered Bank Nepal Ltd.
- c) This study is limited to information available for last seven years from 1999/2000 to 2007/2008.
- d) Stocks or security refer to common stocks.
- e) Only selected financial and statistical tools are used.

1.7 Organization of the report

The whole study is organized in five different chapters. The titles of those chapters are named as follows:

Chapter-I

This chapter deals with the subject matter considering background of the study, focus of the study, statement of the problem, theoretical framework, objective of the study, limitations of the study and organization of the report.

Chapter-II

This chapter is devoted for the brief review of available literature. Reviews from books, journals, previous published and unpublished thesis, articles are included here. It includes review of major findings; conceptual framework about risk and return are briefly reviewed.

Chapter-III

Research methodology focuses on research design, population and samples for the study, sources of data, procedure of data collection and; Tools and techniques of Analysis.

Chapter –IV

The body part of these researches that include data analysis and interpretation. This chapter analysis the risk and return of each CBs's common stock and their comparison are also made, calculates systematic risk coefficient (Beta) associated with common stocks of sampled CBs, identify whether the Security prices of the sampled company are overpriced, under priced or equilibrium priced, determine the effect of portfolio on risk and return and identify optimal portfolio.

Chapter-V

This chapter covers summary, conclusion and recommendations and provides some valuable suggestions to the listed CBs.

CHAPTER - II

REVIEW OF LITERATURE

Review of literature means reviewing research studies or other relevant proposition in the related area of study so that all the past studies, their conclusion and deficiencies may be known and further research can be conducted. It is an integral and mandatory process of research work.

The purpose of reviewing the literature is to develop some expert in the one area and to see what new contribution can be made and to review some ideas of developing research design. Theoretical aspect of risk and return is explored in this chapter. Risk and return has got tremendous concentration in financial management. This chapter reviews some basic academic sources related to the risk and risk analysis from various textbooks, journals and related studies. Apart from this various masters degree thesis including independent studies carried out by renowned experts and others are also reviewed.

2.1 Conceptual Framework

Various books dealing with theoretical aspect of risk and return are taken into consideration. Major focus is on the Analysis of risk and return in listed CBs in Nepal Stock Exchange (NEPSE).

2.1.1 Investment

Investment is the employment of funds with the aim of achieving additional income or growth in value. It involves the commitment of resources that have been saved or put away from current consumption, in the hope that some benefits will accrue in the future. Investment involves the sacrifice of current dollars for future dollars. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain. (Shape, Alexander, Baily, 2003; 34)

Investment brings forth visions of profit, risk, speculation, and wealth. They have briefly described the categories and types of investment alternatives. They describe that the basic investment objectives, the expected rate of return, the expected risk,

taxes, and the investment horizon and investment strategies are the factors to be considered in choosing among investment alternatives.(Cheney and Moses, 1992;105)

Investment generally involves real assets and financial assets. Real investments involve some kind of tangible asset such as land, machinery, automobiles or factories. Financial investments are pieces of paper, such as common stocks and bonds representing an indirect claim to real assets held by someone else. Real assets are generally less liquid than financial assets. “Investment in the broadest sense means the sacrifice of current dollars for further dollars. Two different attributes are generally involved time and risk. The sacrifice takes place in the present and is certain. (Sharpe, 1995;98)

“Investment in any vehicle into which funds can be placed with the expectation that will preserve or increase in value and generated positive return”. (Gitman and Joehnk, 1990;98)

An investment is the current of funds for a period of time derive a future flow of funds that will compensate the investing unit for the time funds are committed for the expected rate of inflation and also for the uncertainty involved in the future flow of funds.

Investment or speculating in the stock market has all the characteristics of the game and the aim to win. Investors invest their funds on securities for the long future return.

Investment involves making decision whose outcome cannot be predicted and it is always associated with risk and returns a wide range of investment opportunity is available to investors. Investment can be made on common stock, preferred stock, bond, convertible, warrant, option etc. among various alternatives.

2.1.2 Return

Return is the income received on an investment plus any change in market price, usually expressed as a percent of beginning price if investment. The overall rate of return can be decomposed into two parts as capital appreciation and dividend. Capital appreciation is the difference between ending value and beginning value of an investment. Returns are dividend yields plus the capital gain or loss. The relationship between levels of return on their relative frequencies is called a probability distribution. We could formulate a probability distribution for the relative frequency of

the firm's annual return by analyzing its historical return over the previous period. But we know that history never repeats itself exactly. Hence after analyzing relative frequencies of the historical return for the individual company, we can form a probability distribution based on the historical data plus the analysis for the look for the economy and the outlook for the industry, the outlook for the firm in its industry and another factors.

For investors, return is considered as the main attraction to invest in a risky security a stock (equity share) accepting a varying degree of risk tolerance. The return from holding an investment over some period says a year is simply any cash payments received due to ownership plus the change in market price dividend by the beginning price. Thus the return comes from to sources, income and price appreciation.

2.1.2.1 Single Period Rate of Return

Single period return may be defined as the change in value plus any cash distributions expressed as a percentage of the beginning of period investment value. An investor can obtain two kinds of income from an investment in a share of stock or a bond. They are as follows:

-) Income from price appreciation. This quantity is denoted $P_t - P_{t-1}$
-) Cash flow income from cash dividend or coupon interest payments, represented by the convention D_t .

Symbolically,

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

Where,

P_{t-1} = Starting stock price

P_t = Ending stock price

D_t = Cash dividend for time t

2.1.2.2 Expected Rate of Return E(r)

The expected rate of return for any asset is the weighted average rate of return, using probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rates of return and their respective probabilities.

$$E(r) = \sum_{j=1}^n r_j p_j = r_1 p_1 + r_2 p_2 + \dots + r_n p_n$$

r_j = Rate of return on j^{th} outcome or event.

p_j = Probability of occurrence of j^{th} outcome or event.

Other methods for expressing the expected rate of return investment in common stock can be obtained by arithmetic mean of the past return.

Symbolically,

$$E(R_j) = \frac{\sum R_t}{n}$$

Where,

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

n = Number of year the return is taken

2.1.3 Risk

Risk can be defined as variability of possible return around the expected return of an investment. For some investment this variability can be quite small. Each investor has his or her own attitude about risk and how much he and she can tolerate. Since investment have different type of risk associated with them. The investors must determine which combination of alternative matches his or her particular risk tolerance. Risk is the product of all potential outcomes expressed with probability associated with each other its distribution of such outcomes.

Risk and uncertainty are treated separately in financial analysis. The practice is to translate uncertainty into a mathematical value, which represents the best estimate of all uncertain values. In other words uncertainty into a mathematical value, this represents the best estimate of all uncertain values. In the other words uncertainty is taken care of by calculating the expected value of all possible outcomes. But risk is treated differently. Although risk from uncertainty is its magnitude depends upon the degree of variability in uncertain cash flow and it is measured in terms of SD.

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

Risk play central role in the analysis of investment. There are various types of risk which an investor might have face like interest rate risk, financial risk, business risk, management risk, market risk, currency risk, assets class risk etc. risk is very much likely to occur in any type of investment but proper analysis will be able to help us to minimize the risk up to some extent. Risk defined most generally is the probability of occurrence of unfavorable outcomes. But risk has different meaning on different context. In our context two major developments from the probability distribution has been used as initial measure of return and risk.

“Risk defined most generally is the probability of the occurrence of unfavorable outcomes. But risk has different meaning in different context. In our context two major development form the probability distribution has been used as initial measure of return and risk. There are the mean and SD of the probability distribution”. (Weston and Brigham, 1992; 225) “Instead of measuring risk the probability of a number of different possible outcomes, the measure of risk should some how estimate the extent to which the actual outcomes are likely diverge form the expected outcome. SD is a measure that does this since it is an estimate of likely divergence of actual return from expected return”. (Shape, Alexander and Bailey, 1995; 432)

Risk is the unlocked for the unwanted event in the future; some one has said that risk was the sugar and salt of life. “Risk is defined in Webster’s Dictionary as a hazard, a peril, and exposure to the loss or injury. Thus or most risk refer to the change that unfavorable event will occur. If you invest in speculative stocks, or really any stock you are taking a risk in the hope of making an appreciable return”. (Weston, Besley and Brigham, 2001; 158)

2.1.4 Portfolio Management

Portfolio management is concerned with efficient management of portfolio investment in financial assets, including shares and debentures of companies. The management may be professionals, by others, or by individual themselves. A portfolio of an individual or a corporate unit is the holding of securities and investment in financial assets. These holdings were the result of individual preferences and decision regarding risk and return. The process of portfolio management is closely and directly linked with process of decision making, the correctness of which can not be ensured in all cases.

The basic problem of portfolio management is to established an investment objectives or goal and then decide the best to each the goal with the securities available. This has been stated as an attempted by the investor to obtain the maximum risk “portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also overtime appreciates in values and yield on adequate return consistent with level of risk assumed”. (Cohen, Zinbarg Zeikel, 1978; 221)

Investment in two or more than two assets is normally called portfolio. A portfolio is the combination of investment assets. Portfolio is holding of securities and investment in financial assets like bond, stock etc. Portfolio management is related to the efficient portfolio investment in financial assets. Investor’s rarely place their entire into a single assets or investment rather they construct a portfolio or group of investments. Therefore it is need to extend analysis of risk and return to include portfolio a combination of two or more securities or assets in portfolio. It has following two types of objectives.

1. Primary Objectives:
 - a. To minimize risk

b. To maximize return

2. Secondary Objectives

c. Regular returns

d. Stable income

e. Safety of investment

f. Tax benefit

g. Appreciation of capital

$$\overline{R_p} = \sum_{j=1}^n W_j \overline{R_j}$$

Where,

W_j = Proportion of total funds invested in security j

When $j=k$ the coefficient is 1 as variable movement correlate perfectly with itself.

2.1.4.1 Portfolio Return (R_p)

The expected return on the portfolio, $E(r_p)$ is simply a weighed average of expected returns on the individual assets in the portfolio with the weights being the fraction of the total portfolio invested in each assets.

Symbolically,

$$\begin{aligned} E(r_p) &= \sum_{i=1}^n W_i E(r_i) \\ &= W_1 E(r_1) + W_2 E(r_2) \dots\dots + W_n E(r_n) \end{aligned}$$

Where,

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

W_i = weight of stock i

$E(r_i)$ = Expected Return from i^{th} assets or stock

W_n = weight of n th stock

$E(r_n)$ = Expected Return of stock n

2.1.4.2 Portfolio Risk (SD)

Portfolio risk is measured by a statistical tool deviation and variance. It is a function of the proportions invested in the components. This risk is computed by using the following equations:

Symbolically,

$$\sigma_p = (w_A^2 \sigma_A^2 + w_B^2 \sigma_B^2 + w_C^2 \sigma_C^2 + 2 w_A w_B \rho_{AB} \sigma_A \sigma_B + 2 w_A w_C \rho_{AC} \sigma_A \sigma_C + 2 w_B w_C \rho_{BC} \sigma_B \sigma_C)^{1/2}$$

Where,

σ_p = SD of the portfolio returns

σ_A^2 = Variance of returns of stock A

σ_B^2 = Variance of returns of stock B

σ_C^2 = Variance of returns of stock C

ρ_{AB} = Correlation between returns of stock A and B

ρ_{BC} = Correlation between returns of stock B and C

ρ_{AC} = Correlation between returns of stock A and C

“The correlation coefficient which is significant in portfolio construction is standardized statistical measure of the linear relationship between two variables. It ranges from -1 (perfect negative correlation) to +1 (perfect positive correlation). Lesser the correlation higher is the reduction in portfolio risks”. (Ibid, 1996) the positive correlation coefficient shows that return from two securities generally moves in the same direction, while negative correlation coefficient shows that they move opposite direction and zero correlation coefficient shows that the returns from two securities are uncorrelated. They show no tendency to vary together in either a positive or negative in linear function.

2.1.4.3 Systematic Risk and Unsystematic Risk

Systematic and unsystematic risks are the terms frequently used in the portfolio context. Combining the securities that are not perfectly positively correlated helps to reduce the risk of portfolio to some extent.

Systematic risk has its source factors that affect all the marketable assets and thus cannot be diversified away. Systematic risk is due to the risk factor that affects the overall market such as changes in national economy, tax reform by the government or changes in the world energy situation. The sources of systematic risk are market pervasive. The measure of systematic risk permits an investor to evaluate an asset's required rate of return relative to the systematic risk of the stock. Unsystematic risk is unique to a particular company or industry. It is independent of economic, political and other factors that affect all securities in systematic manner. A wild cat risk may affect only one company a new competitor may be going to produce essentially the same product.

“For most stocks, unsystematic risk accounts for between 60 to 70 percent of stock total risk or SD”. (Van Horne & Wachowicz, 2001) This kind of risk can be reduced by diversification and even eliminated if diversification is efficient. Hence not all the risk involved in holding a stock is relevant since part of this risk can be diversified away. The relationship among systematic, unsystematic and total risk are shown below.

Total risk = Systematic risk + unsystematic risk

Where, systematic risk = $\rho_j \times \sigma_{jm}$ and unsystematic risk = $\sigma_j (1 - \rho_{jm})$ here ρ_{jm} is the correlation coefficient between the return of given stock (J) and return on market portfolio.

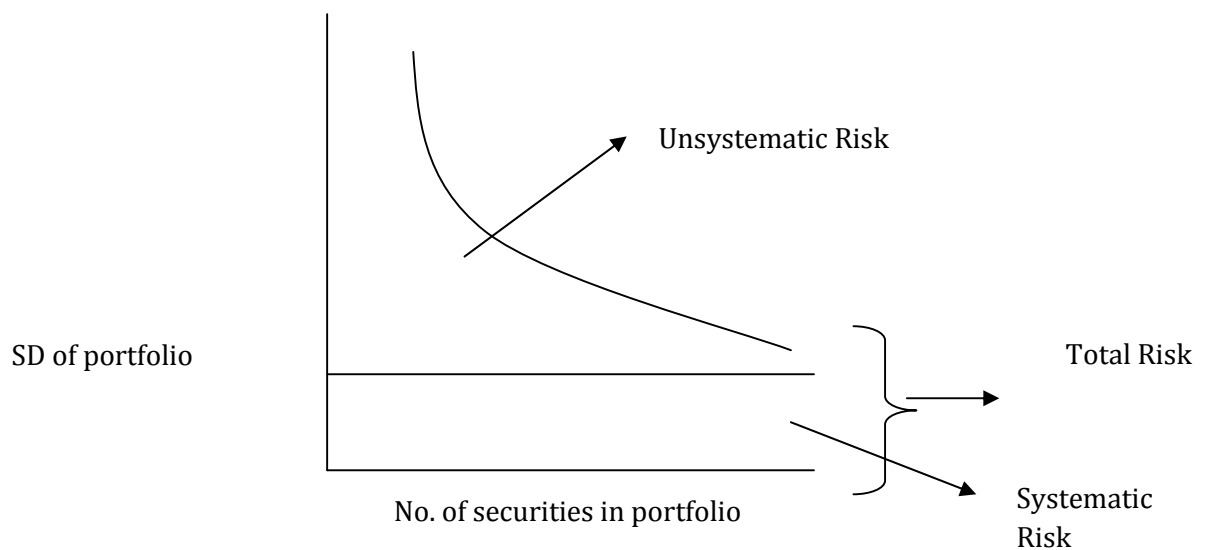


Figure 2.1

2.1.5 Capital Assets Pricing Model (CAPM)

The relationship between expected return and unavoidable risk and the valuation of securities that follows is the essence of Capital Assets Pricing Model (CAPM), this model was developed by Williams F Sharpe and John Linter in the 1960s and it has had important implication for finance ever since. Based on the behavior and expected return for each security. In market equilibrium, a security will be expected to provide a return commensurate with its unfavorable risk. This is simply the risk of a security the greater the return that investors will expect from the security. (Van Horne, 1997)

“CAPM is model that describes the relationship between risk and expected return. In this model a security expected (required) return is risk-free plus a premium based on the systematic risk of security. This model is expressed as:

$$E(R_j) = R_f + [E(R_m) - R_f] \cdot \beta_j$$

Where,

$E(R_j)$ = Expected return for an assets

R_f = Risk free rate

$E(R_m)$ = Expected return for market portfolio

β_j = an index of systematic risk of stock j the assets beta j (Beta coefficient)

“Beta measures the sensitivity of a stock’s return to change in the return on the market portfolio. The beta of portfolio is simply a weighed average of the individual stock betas in the portfolio”. (Van Horne, 1997; 231)

If beta is one (i.e. $\beta = 1$) then the required is simply the average return for all situation, that is the return on market portfolio, otherwise the higher the beta higher the risk premium and the total required return. However a relatively high beta does not guarantee a relatively high return. The actual return depends on the behavior of market, which acts as a proxy or general economic factor.

“The major implication of the CAPM is that the expected return of an asset will be related to a measure of risk for that asset known as beta (β). The exact manner in which expected return and beta are related is specified by the CAPM. The model provides the intellectual basis for a number of the current practices in the investment industry”. (Sharpe, 2001; 321)

The capital assets pricing mode states that the expected premium on each investment in proportional to its beta. This means that investment should lie on the slopping security market line connecting treasury bills and market portfolio. In mid 1960s three economists William Sharpe, John Linter and Jack Treynor created the CAPM a theory which began a quest to identify the tendency portfolio. CAPM is the predominant model used for estimating equity risk and return. It is useful tools for the investment portfolio and for estimating expected rate of return and required rate of return indicates whether the stock is under priced or over priced. And when these two returns are equal then it is said to be market equilibrium i.e. all the stock lies on the security market line (SML).

SML is the graphical representation of CAPM, which shows the relationship between risk and required rate of return. The SML clearly shows that returns are the increasing function, in fact a linearly increasing function or risk. Further it is only market risk that affects return. The investor receives no added return for bearing the diversifiable risk. If stocks are under priced it lie above the SML and if they are over priced it lie below SML. The following diagram shows the SML with over priced and the under priced stocks.

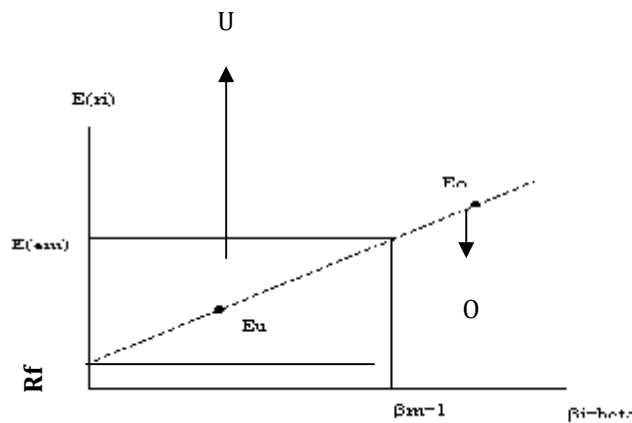


Figure 2.2: The CAPM or security Market Line (SML)

Above figure depicts two assets u and o which are not in equilibrium on the CAPM. An asset u is undervalued and therefore very desirable. As its price rises, its return falls. When its return becomes consistent with its beta on the SML, equilibrium is attained. The opposite takes place for asset o . It is overvalued, and investors attempt to sell it, putting downward pressure on its price. When its return increases to the rate consistent with its beta risk level given by the SML, equilibrium will be achieved and downward price pressure will cease. (Ibid, 1996)

Hence CAPM helps us to decide whether to purchase or sell the stock of a particular company. We decide by comparing the required rate with the expected rate of return. The Capital Assets Pricing Model provides us a means by which to estimate the required rate of return on a security. And on the basis of price and dividend data, the expected return can be calculated. With comparison of the two returns, investors can analyze whether the stock is underpriced or overpriced.

2.1.6 Over, under and fairly pricing of securities

Securities can be either underpriced or overpriced. It can be known by calculating through the required rate of return and the expected rate of return. When the expected rate of return exceeds the required rate of return, the security is underpriced and vice versa. The required rate of return can be used as a discounting factor to determine the

intrinsic value of stock. It means there is inverse relationship between required rate of return and intrinsic value of stock.

Expected Rate of Return > Required Rate of Return = under priced

Expected Rate of Return < Required Rate of Return = Overpriced

Expected Rate of Return = Required Rate of Return = Equilibrium priced

2.1.7 Investment Performance Evaluation

Methods of risk adjusted performance evaluation using mean variances criteria came in stage simultaneously with CAPM. Three great scholars namely Williams Sharpe, Jack Treynor and Michael Jensen recognized immediately the implication of the CAPM for rating the performance of investing portfolio. Investment performance evaluation provides the investor with a solution to select the stocks with high return at low degree of risk. In the present study, three such evaluation tools have been utilized to evaluate the stocks in terms of their performance, which are as follows:

2.1.7.1 Sharpe's Performance Measure:

Sharpe's performance measure defines a single parameter portfolio performance index that is calculated from both the risk and return statistics.

Symbolically,

$$S_i = \frac{\overline{r_i} - \overline{R_f}}{i}$$

Where,

S_p = Sharpe's index of portfolio performance

$\overline{r_i}$ = Average Return of portfolio 'i' during the specified time period

$\overline{R_f}$ = Average Risk-free Rate during the same time period

i = SD of portfolio 'i'

Here, numerator is the risk premium (i.e. excess of return of portfolio 'i' over the risk free rate) and denominator is the total risk of this portfolio. Hence, it is the risk premium return earned per unit of total risk. So, this rate is appropriately called reward-to-variability ratio. A higher value of S_i means a better performing portfolio as this indicates higher risk premium per unit of total risk.

2.1.7.2 Treynor's Performance Measure:

John Treynor's performance measure defines index of portfolio performance that is based on systematic risk, as measured by portfolios' beta coefficients.

Symbolically,

$$T_i = \frac{\overline{r_i} - \overline{R_f}}{\beta_i}$$

Where,

$\overline{r_i}$ = the average rate of return for portfolio 'i' during a special time period

$\overline{R_f}$ = the average rate of return on a risk free investment during the same time Period

β_i = the slope of the funds characteristic line during that time period (i.e. portfolio's beta coefficient)

Thus, treynor's measure gives excess return per unit of risk, but is uses systematic risk instead of total risk.

As noted a large T_i value indicates a larger slope and a better portfolio for all investors (regardless of their risk preferences). Because the numerator of this ratio ($R_i - R_f$) is the risk premium and the denominator is a measure of risk, the total expression indicates the portfolio's risk premium return per unit of risk. All risk averse investor would prefer to maximize this value. Note that the risk variable beta measures systematic risk and tells us nothing about the diversification of portfolio. It implicitly assumes a completely diversified portfolio, which means that systematic risk is relevant risk measures.

2.1.7.3 Jensen's Performance Measure:

Jensen's performance measure is modification in the characteristic regression line and it is a one-parameter investment performance measure. This measure is based on CAPM. The version of (CAPM which is used to compute securities or portfolio's expected rate of return is given by

$$E(r_i) = R_f + \beta_i (\overline{r_m} - R_f)$$

Where,

$E(r_i)$ = the expected return on security or portfolio 'i'

R_f = one period risk free rate of return

β_i = the systematic risk coefficient(beta) for securities or portfolio 'i'

$\overline{r_m}$ = the expected return on market portfolio.

Jensen's measure is the average realized return on the portfolio over the return predicted by the CAPM, given the portfolios

$$\text{Jensen's measure } (\alpha_p) = \overline{r_p} - [R_f + \beta_p (\overline{r_m} - R_f)]$$

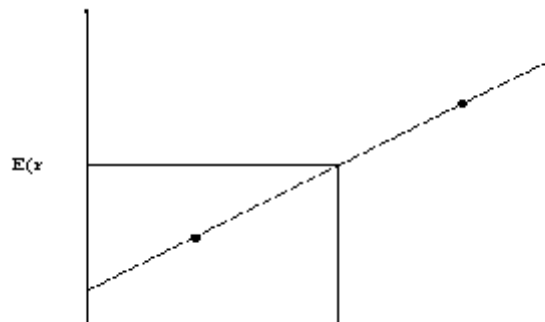
Hence Jensen's measure (α_p) represents how much of the rate of return on the portfolio is greater than the average returns adjusted for risk (or average return assigned by CAPM). A +ve α_p indicates the superior portfolio performance or selecting under valued portfolio's.

The Jensen's measure of portfolio performance has advantage over the Treynor and Sharpe. First it is easier to interpret in that an alpha value of 0.02 indicates that the portfolio generated a return of 2% per period more than what was expected given the portfolio's risk level. Second, it assists to know whether an asset is over or under valued.

If α_p is +ve asset (portfolio) is under valued.

If α_p is -ve asset (portfolio) is over valued.

For ranking the portfolio according to their performance, it is advisable to divide the ρ by ρ so as to achieve a relative measure and provide a reliable rank.



2.2 Review from previous study

Chandra Thapa (NRB-Journal Page 57, 2003), in his articles entitled “Managing banking Risks” presented different types of risks generally faced by CBs and accomplished the subsequent issues. Banking and financial services are among the fastest growing industries in the developed world and are also emerging as corner stones for other developing and underdeveloped nations as well.

According to Thapa, the primary function of a bank is to trade risk. Risk cannot be avoided by the bank but can only be managed. There exist different types of risks. Among them interest rate risk is one of the most common risk the banks face owing to the volatility of the interest rate in the market.

Another risk banks face commonly is the trading risk or market risk; Banks has to productively manage their excess liquidity by investing in various securities, in foreign currencies and in other assets for instance swaps option etc.

Credit risk is one of the most significant risks, which the banks face particularly in underdeveloped country like Nepal because our financial system is mostly depended on banks. Hence, it is crucial that the bankers should manage such risks prudently since it not only hampers the particular banks in concern but also badly affects the growth prospects of the entire economy. Credit risks are of two types: diversifiable risk and un-diversifiable risk.

Off balance risk owing to the creation of contingent liabilities, should be managed by a prudent analysis of the bank officials materializing such contingent contacts.

Similarly, technological changes are frequently faced by banks. Therefore, for the smooth operation banks should adopt technological up-gradation from time to time.

Maintaining proper liquidity is the most difficult problem as the demand of cash is uncertain. To avoid such risk, the central bank has initiated the regulation, whereby the banks need to maintain reserve in their vault and a certain specified percentage of the total deposit with central bank.

He concludes with that risk management of the banks is not only crucial for optimum trade off between risk and profitability but is also one of the deciding factors for the overall business investment leading to growth of the economy. Managing such risks not only needs sheer professionalism at the organizational level but an appropriate environment also needs to be developed. Some of the major environmental problems of Nepalese banking sector is undue government intervention(in state-owned banks), relatively weak regulatory frame, although significant improvement has been made in the last five year but still not competitive enough when we consider the international standard, meager corporate governance and the biggest of all is lack of professionalism (especially commitment). The only solution to mitigate the banking risk is to develop the badly needed commitment, eradication of corrupt environment, especially in disbursement of lending, and to formulate prudent and conductive regulatory framework.

Yogendra Timilshina (Mirmire, Page 27, 2002), has published an article on “managing investment Portfolio”. He is however, confronted with the problems of managing investment portfolio particularly in times of economic slowdown like ours. A rational investor would like to diversify his investment in different classes of assets to minimize risks and earn a reasonable rate of return.

CBs have continuously been reducing interest rates on deposits. Many depositors are exposed to the increasing risk of non-refund of their deposits because of the mismanagement in some of the banks and financial institutions and accumulation of huge non-performing assets with them.

Few depositors of cooperative societies lost their deposits because some these cooperatives were closed down because of their inability to refund public deposits. An

investor in days of crisis has to make an effort to minimize the risk and at least earn a reasonable rate of return on his aggregate investment.

An investment in equity share can earn dividend income as well as capital gain in the form of bonus share and right share until an investor holds it and capital profit when he sells it in the stock market. As returns from equity investments have fluctuated within a very wide range, investors feel it much difficult to balance risk and reward in their equity portfolio. In fact, investors in equity shares should invest for a reasonable long period in order to manage the risk.

Making investment in fixed deposits with CBs is a normal practice among the common people. Normally fixed deposits with banks are considered risk-less, but they also are not hundred percent free of risk. You should select a bank to put your deposit therein, which has sound financial health and high credibility in banking business. In times of crisis if you select a sick bank to deposit, your money there is high probability that your money could not be returned back.

An investor may have option of making investment in Government bonds or debentures. In history, we have examples that a government can nationalize the private property of its citizens, cancel out old currency notes, and can convert the new investment into some conditional instrument. However, in democracy there is no probability that the government would default to repay money back. This is comparatively risk free investment, but yields low return.

An investor has to evaluate the risk and return of each of the investment alternatives and select an alternative, which has lower degree of risk and offer at least reasonable rate of return. One can draw a safe side conclusion to invest all the money he has only in government securities, but this is not a rational decision. An investor who does not try to maximize return by minimizing the possible risk is not a rational investor. On the other hand, one can place over-confidence on equity investment and assume high risk by investing the whole money in equity shares. Stock market these days in much dwindling and notoriously unpredictable; therefore, this too is not a wise decision. Therefore, a portfolio, which consists of only one class of financial assets, is not a good portfolio.

Shiba Raj Shrestha (Page 85, 1998) has given a short glimpse on the “Portfolio Management in Commercial bank, Theory and Practice”. He emphasized on importance of portfolio management for both individual as well as institutional investors. According to him, investors would like to select a best mix of investment assets subject to following aspects:-

- a. Higher return which is comparable with alternative opportunities available according to the risk class of investor.
- b. Good liquidity with adequate safety of investment.
- c. Certain capital gains
- d. Maximum tax concession
- e. Flexible investment
- f. Economic, efficient and effective investment mix.

According to Shrestha, the above considerations are very useful for an effective investment decision. Similarly, for successful investments, he has concluded some strategies as follows:

- a. Do not hold single security. Do not rely on single investment alternative i.e. try to have a portfolio of different securities.
- b. Have a diversified investment i.e. make investment in different sectors.
- c. Always select such a portfolio of securities, which ensures maximum return with minimum risk with asserd objective of wealth maximization.

Similarly, the approaches to be adopted for designing a good portfolio and its management, pointed by Shrestha are:

- a. Find the investible assets having scope for better returns depending upon individual characteristics like age, health, need, and disposition Liquidity etc.
- b. Analyze the attitude of investment towards risk.

- c. Develop alternative investment strategies for selecting a better portfolio, which will ensure a trade off between risk and return to attach the primary objectives of wealth maximization at lower risk.
- d. Identify the securities for investment and risk from the investment.

He has mentioned short transitory view on portfolio management in Nepalese CBs. He pointed that the portfolio management activities of Nepalese CBs at present are in growing stage. However, on the other hand most of the banks are not doing such activities so far because of following reasons:

- a. Unawareness of the clients about the service available
- b. Hesitation of taking risk by the clients to use such facility
- c. Lack of proper techniques to run such activity in the best and successful manner
 - a. Less developed capital market and availability of few financial instruments in the financial market.

Because of above mentioned problems the CBs have very limited opportunity for exercising the portfolio management. Even considering the attraction of deposits joint venture banks are facing problems since most investors have not developed full confidence of putting money in fixed time deposit certificate of various maturing and sizes.

He has drawn following conclusion for smooth running and operation of banks and financial institutions:

- a. The survival of the banks depends upon its own financial health and various activities.
- b. In order to develop and expand the portfolio management activities successfully the investment management methodology of a portfolio manager should reflect high standards and give their clients the benefits of global strengths and product philosophy.

- c. With the discipline and systematic approval to the selection of appropriate countries, financial assets and the management of various risks, the portfolio manager could enhance the opportunity for each investor (client) to earn superior returns over times.
- d. The Nepalese Banks having greater network and access to national and international capital markets have to go for portfolio management activities for the increment of their fee based income as well as to enrich the client base and to contribute in national economy.

Shanker Bahadur Pradhan (1996) has presented a short glimpse on investment in different sectors and its problems and prospects through his article “Deposit Mobilization: Its problem and Prospects”. (Aarthik Sangalu, NRB-1996, page 45)

He quoted that deposit is the life-blood of any financial institution, be it commercial bank, finance company, co-operative or non-government organization. He further adds in consideration of most of banks and finance company, the latest figure does produce a strong feeling that a serious review joint venture banks, other organizations rely heavily on the business deposit and credit disbursement.

Pradhan has pointed out some problems for the prosperity of deposit mobilization in Nepalese context, they are:-

- a. Most of the Nepalese people do not save in institutional manner due to the lack of good knowledge. However, they are very much used of saving; be it in the form of cash or ornaments. Their reluctance to deal with institutional system is governed by the lower level of understanding about financial organization process, withdrawal system and availability of deposit facilities and so on.
- b. Unavailability of the institutional services in rural areas.
- c. Due to lesser office hours of banking system people prefer holding the cash in the personal possession.
- d. No more mobilization and improvement of the employment of deposits and the loan sectors.

Pradhan has also recommended for the prosperity of deposit mobilization, which are as follows:

- a. By providing sufficient institutional services in the rural areas
- b. By adding service hours system to bank
- c. NRB could also organize program to develop skilled manpower.
- d. By spreading co-operatives to the rural areas to develop mini branch services.

Sunita Shrestha (1995), in her study “portfolio Behaviour of CBs in Nepal” has made remarkable efforts to examine various portfolio behavior of commercial bank in Nepal such as investment portfolio, liability portfolio, assets portfolio etc. according to her, investment of CBs when analyzed individually, were observed that Nepalese domestic banks invest in government securities, national saving bond, debentures and company’s shares. Based on this study she found that the supply of bank credit was expected to depend on total deposit, lending rate, bank rate, lagged variables and dummy variables. Similarly, demand of bank credit was assumed to be affected by national income, lending rate, Treasury bill rate and other variables. The resources of CBs were expected to be relating with variables like total deposit, cash reserve requirement, bank rate and lending rate. Following are conclusions based on her finding: (Study of CBS, 1995, page 47)

- a. The relationship of banks portfolio variable as found to be best explained by log-linear equations.
- b. Demand of deposit for CBs in Nepal is positively affected by the GDP from non-agriculture and the deposit rate and lending rate of interest.
- c. The investment of CBs on Government securities has been observed to be affected by total deposit: cash reserve requirements, Treasury bill rates and lending rates.
- d. The investment of CBs in shares and securities are normal and not fund to have strategic decisions towards investment in shares and securities.

- e. The loan loss ration has been found to increase with low recovery of loan.

2.3. Reviews from Thesis

Several thesis works have been conducted by various students regarding the various aspects of CBs such as financial performance, leading policy, interest rate structure, resources mobilization, Capital structure etc. However some relevant thesis works have been reviewed here. They are presented below. **Bhandary Deepak Raj** (1998) on thesis entitled, “A study on impact of interest rate structure on investment portfolio of CBs (CBs) of Nepal”. The main objected of his study is to see the impact of interest rate on investment portfolio of CBs by analyzing their deposit, loan and advances, interest spread investment and bills purchased and discounted. He has concluded that the Deposit rates and lending rates of the CBs have been changing time to time. It is found that deposit rate and lending rates increased slightly immediately after liberalization of interest rate on August 31, 1998, after that rates started to decline. CBs investment in government securities dramatically increased which is due to lack of proper CBs invest a small part of their resources in non fund based areas such as purchase and discounts of bills. His recommendation was to attract more deposits CBs offer more incentive and government and NRB should not force the CBs to invest more in government and other low yield securities.

The main study objective of this study is “To analyze the risk and return of the common stock of CBs” Sapkota Jeet Bahadur (2000) found that banking industry is the biggest one in terms of market capitalization and turnover. Expected return on common stock of Nepal Ltd is found minimum. In this regard, common stock of SBI Bank Ltd is less risky. In the context of industries expected return of finance and insurance industry is found biggest. Expected return of the banking industry is 60.83% Mr. Sapkota also finds that the portfolio SD is less than each individual stock’s SD. Hence the portfolio approach of investment is better way to win stock market.

Prem Bahadur Shahi (1999) has conducted the research on the topic “Investment Policy of CBs in Nepal” in the year 1999. The main objective of the study was to compare the investment pattern of Joint Venture Banks. He has mainly compared the investment process of Nepal Bank Limited, a semi- government bank with more than

221 branches all over the country and other Joint Venture banks concentrated in urban areas.

He found that Nepal Bank Limited is affected by many Government interferences but Joint Venture Banks are operating efficiently with good investment policy. The growth rates of Joint Venture Bank are relatively more than that of Nepal Bank Limited but the profitability position of both are some.

He concluded that CBs must mobilize the funds in those sectors yielding optimal returns like purchases of shares, debentures of various institutions. The Joint Venture Banks have to venture in new sectors of investment with low level of risks. For the recovery of loans, the loan Recovery Act should be efficiently implemented as soon as possible. Therefore, his study is basically focused on the investment policy of the CBs of Nepal and not concerned about any factors like risk, return etc.

Pandey (Sijapati) Pramina (2000), has conducted a research entitled “Risk and Return Analysis of Common Stock Investment” which is some how related with this study. The main objective of her study is to analyze the risk, return and other relevant variables that help in making decisions about stock and investment in Insurance Companies. The other objectives of her study are to understand and identify the problems faced by individual investor and insurance companies; to calculate risk and return of common stocks and their companies and other relevant variables that should be considered while deciding investment in stocks.

Her analysis based on Market Capitalization, found that size of Nepal Insurance Company (NIC) is the biggest one. Expected return on the common stock of National Life and General Insurance Company Limited (NLGI) is maximum (i.e 65.39%). Expected return on common stock of Himalayan General Insurance Company Limited (HGI) is lowest with negative value. In overall industrial sector, expected return of Finance and Insurance sector is highest. Overall market expected return is over 50%. NLGI's expected return is highest which ultimate the SD (risk) to be the highest and Everest Insurance Company's risk and return is the lowest one. The stock of NLGI is highly sensitive with market due to its greater degree of beta coefficient. In addition, stock of United Insurance Company (UIC) moves opposite with market because of its negative beta coefficient. She also found no significance difference

between the portfolio return of insurance Companies stock and overall market portfolio.

She concluded that poor education and lack of adequate source of information are the major constraints for the development of stock market in Nepal. When risk and return of different industries are compared, the Finance companies and Insurance Companies are the best because they have highest expected return with higher degree of risk. However, most of trading industries have minimum return and maximum level of risk. Market sensitivity is measured by beta coefficient, which cannot be reduced by diversification. Due to the lack of specific knowledge of stock market general public invest their funds in different securities on the basis of expectation and assumption rather than analysis. The proper selection of portfolio approach is better way to get success in stock market.

Basnet, Jagdish (2000), in his Master Degree thesis entitled “Portfolio Management of Joint Venture Banks in Nepal” has made an effort to identify the situation of portfolio management of Joint Venture Banks in Nepal. The specific objectives of his research are: to analyze the risk and return ration of CBs; to evaluate the financial performance of Joint Venture Banks; to survey the existing situation of portfolio management and finally to provide the suggestive package based on the analysis of the data.

His analysis shows that the mean investment to total deposits ratio of Nepal Bangladesh Bank Limited is Lowest i.e.12.87% where as Everest Bank Limited has highest i.e. (29.36%) among four Joint Venture Banks. The mean liquidity fund balance to total deposits ratio shows standard chartered Bank Nepal Limited has good liquidity position among selected banks. The major finding of his study shows that the ratios of Everest Bank Limited are more consistent among four Joint Venture Banks. However, Everest Bank Limited is investing very high amount of fund on government securities. It also has the highest risky asset in comparison to the four banks.

He concluded that while allocating funds of Joint Venture Banks into different components of banking assets having different degree of risk and varied rate of return should be verified in such a way that would maximize return and minimize risk. So portfolio condition of Joint Venture Banks should carefully be examined from time as

far as possible. From his study, he found that those banks got better result that managed the portfolio properly.

Poudel Keshor (2000), conducted a research on the topic “Liquidity and Investment Position of Joint Venture CBs in Nepal”. The basic objective of his study was to evaluate liquidity and investment position of Joint Venture Banks with special reference to Everest Bank Limited (EBL) and NABIL Bank Limited. The secondary objectives of his study were to assess the factors affecting customers’ withdrawal and to examine invest-liquidity policy of both banks.

He found that liquidity position of EBL is comparatively better than that of NABIL. Nevertheless, EBL has not been successful for mobilization of funds on investment in comparison with NABIL. Growth rate of investment of EBL has been recorded significantly higher than NABIL’s however, significant difference in mobilization has not been found. Likewise, growth rate Liquid funds of EBL are significantly high while it is negative in case of NABIL. It means NABIL has given priority to profitability than liquidity. It has utilized funds to investment instead of holding liquid assets. Cash flow from operating activities of NABIL is sound as its profitability is higher than EBL’s. He further found that the banks do not have constant and consistent liquidity and investment policy. There is no standard and uniform rate or ratio for maintaining liquid assets by the CBs. A commercial bank at its own judgment may decide to maintain an appropriate level of liquid assets.

Shrestha, Prakash (2003), Conducted a research entitled “portfolio Analysis on investment of Nepalese CBs” by using 8 years data from FY 1994/95 to 2001/02. The main objective of his study was to analyze, examine and interpret portfolio technique followed by CBs on their investment in various sectors. The other specific objectives are: to evaluate comparative financial performance of selected CBs in terms of investment strategies; to analyze the way CBs manage their risk and return on investment in different sectors.

He found that almost CBs wanted to invest in short-term basis in which return is not fixed. They hesitate to invest in long-term government securities that provide regular constant return. The total investment to total deposit ratio of selected CBs shown that standard chartered bank Nepal limited (SCBNL) is the most successful in utilizing its resources on investment than other CBs. Similarly, on the basis of return on total

assets, SCBNL utilized its overall resources efficiently than other banks. To some extent, all CBs seem to be interested in using their deposits in purchasing government securities, even there is less return. The risk and return on share and debentures are higher than other assets. The annual rate of return on shares and debentures of CBs show wide fluctuations ranging from -23.78% to 104.50%. These fluctuations in returns are caused mainly by the volatility of capital yield.

He concluded based on the analysis and the findings of his study that CBs are not seemed to be capable of investing their funds in more profitable sectors. Most of the CBs are interested to invest their fund in more liquid and less risky sectors. CBs are fund unable to apply scientific approach for investment diversification and portfolio management.

Bhatta dipesh (2003) has conducted a research work on the topic, “portfolio Management of Listed Finance Companies in Nepal”. The main objective the study was to identify the present situation of portfolio management of finance companies in Nepal with the help of risk, return and other relevant variables. The other specific objectives of his study are to compare the risk and return of common stocks and their portfolio: to study the volatility of different stocks of finance companies and to recommend few key practical implications based on the analysis of the data.

Using capital Market Line, he found united Finance and Capital Market Limited (UFCML) has the highest expected portfolio return (11.27%) and risk (32.97%) but People Finance Limited (PFL) has the lowest expected portfolio return (5.43%) and risk (6.20%). Similarly, National Finance Company Limited (NFCL) has the great performance but Peoples Finance Limited Has lower performance. NFCL stock is highly correlated (0.971) with market than that of other finance companies. In most of cases coefficient of determinants of all these finance companies have greater than 0.50 (50%) means portion of systematic risk is higher than the unsystematic portion. It is also found that generally the portfolio management of listed finance companies in Nepal is not systematic organized. In the context of portfolio risk and return of finance companies, investors have to bear higher portfolio risk to increase little bit of portfolio return.

He concluded that the volatility of different securities in Nepalese capital market was the major problem to manage the portfolio. Since Nepalese stock market is in

developing stage, the fundamental analysis is more effective for the selection of portfolio than the technical analysis.. He further added, ‘To achieve better result, passive strategy is more suitable than the active strategy in Nepalese stock Market’. Due to the lack of specific knowledge of portfolio selection, majority of corporate investors’ selection conventional stock bond mix.

Sharma, Durgamani (2004) conducted a study on “Portfolio Management of listed CBs and insurance companies in Nepal” in the years 2004 is also related with the study. The main objective of his study was to analyze the risk and return of the common stock of CBs and Insurance companies. He has also analyzed the diversifiable and un-diversifiable risk of common stock as well as portfolio return and risk.

Based on risk and return, he found that the shares of all the CBs are attractive for investment compared to Insurance Companies. The conflicting political and economic scenario has the adverse impact on economic activities of the companies. Therefore, Insurance Companies are unable to effectively manage its portfolio. The researcher realized that the risk per unit of return of market is very high. So the overall market return can be regarded as attractive with respect to its risk. He also concluded that the unsystematic risk of all the companies was high in comparison to total risk.

Poudel Parsuram Prasad (2005), in his research entitled “A Comparative study on Investment Behavior Adopted by NABIL bank Limited and Himalayan Bank Limited” has a main objective to comparatively analyze, examine, interpret and evaluate the total investment behavior of NABIL Bank and Himalayan Bank. The study is mainly concentrated on whether both banks have been successfully operating their collected funds as investment in various sectors, various alternatives or not. The specific objectives of his study are to comparatively present the investment behavior of sample banks; to examine and interpret SWOT of both banks and to suggest for best performance in future based on finding.

He found that investment on share and debenture by both banks are lower in comparison with other alternatives. Similarly, both of the banks concentrated to invest on loan and advances and purchase of bills. Comparatively, the investment policy of NABIL seems to be aggressive than that of Himalayan Bank. Both of the banks have kept unnecessary cash and bank balance in comparison with total investment, which

they can invest in other productive alternatives. Based on current ratio analysis, Himalayan Bank Limited is in safe side. Because, NABIL has kept more liquidity. Comparatively, NABIL needs to increase deposit. Average total deposit position of NABIL is lower than Himalayan Bank Limited.

He concluded that investment aspects of both banks are satisfactory. As the established banks in Nepal, both should increase their investment in shares and debentures to motivate other firms too. Although there was more investment made by Himalayan Bank there is no growth in net profit. Because of effective management of investment made by NABIL bank, its investment seems to be highly yielding as compared to Himalayan Bank Limited.

Shrestha Natasha (2005) in her research entitled “Portfolio Analysis on Common Stock of CBs in Nepal” is related to this study. The main objective of the study was to find out the level of portfolio risk and return on investment of common stock of CBs. The other objectives were to find out the trend of NEPSE index, to analyze the risk and return of common stock of reviewed banks and to find out the best portfolio from NEPSE. The study was focused on portfolio analysis of four CBs.

She found that the expected return of HBL stock is highest i.e. 53.68% and NABIL is Lowest i.e. 32.72% among the banks. The risks of NBBL is highest i.e. 93% and SCBNL has a lowest risk i.e. 55.42%. The correlation of stock, return and market shows that all of the banks stocks are highly positive correlated with the market. The correlation values of common stock of all bank with the market is nearly equal to +1. The stock price of all four listed CBs was higher than NEPSE average price of stock. Similarly, the stock prices of four CBs were in fluctuating trend than NEPSE index.

She concluded that investment on common stock is a risky job. It does not guarantee both and principal. So, investor should be acquainted with associated risk and workout their attitude towards the risk ness of various investment strategies.

2.4. Research Gap

The review of above relevant literature has contributed to enhance the fundamental understanding and knowledge, which is required to make this study meaningful and purpose.

Looking at the above review, a slow trend on the study of respective topic can be found. Out of the previous studies, very few are only concerned on the in-depth analysis of selected sample organization. This study is aiming to bridge the lack of such previous studies and provide the avenue for the further researchers for the better analysis and study of selected organization. Same time study is not only tried to compare the selected organization but tried to compare the micro indices with the over all macro indices of respective movement, which can be additional coverage of the study.

Chapter III

RESEARCH METHODOLOGY

The research methodology is the systematic way of solving research problem. Research methodology refers to overall research processes, which a researcher conducts during, his/ her study. It includes all the procedures from theoretical foundation to the collection and analysis of the data. "Research is systematic and organized effort to investigation a specific problem that needs a solution". (Sekaran, 1992) As most of the data are quantitative the research is based on the scientific models, it is composed by both parts of technical aspect and logical aspect on the basis of historical data this process of investigation involves a series of well thought out activities of gathering, regarding and analyzing and interpreting the data with the purpose of finding answer to the problem. Hence the entire process by which we attempt to solve the problem is called research.

Research can be conducted on the basis of primary and secondary data. In this study, all the data are secondary and those data are analyzed using appropriate financial as well as statistical tools. Outcomes are presented in the simple way. In this study, the research design, data collection procedure and analysis are described serially.

3.1 Research Design

In order to make any type of research a well set of research design is necessary, which fulfills the objectives of the study. "Generally, research design is the structure and strategy of investigation conceived so as to obtain answer to research questions and to control the actually variance". (Kerling, 1992)

"A research design is the arrangement of condition for collection and analysis of the data in a manner that is a manner that aims to combine relevance to the research purpose with economy in procedure". (Kothari, 1989) Basically extraneous research design help the research to control the experimental extraneous and error variance of the particularly research problem, under study topic, it is control media for the collection is related to portfolio management of listed CBs. It is invented to enable the

researcher to answer research question and variedly, objectives, accurately and economically as possible. It set up the framework to test the relation among variables.

The research is based on the recent historical data, so simply it is a historical research. It covers the data from the fiscal year (1999/2000 to 2005/2006). It deals with Analysis of risk and return in listed CBs in Nepal Stock Exchange (NEPSE) on the basis of available information. As the title of the study suggests, it is more analytical and also quantitative and descriptive. This study also tries to analyze portfolio construction separate systematic and unsystematic risk, to find out proportion of diversified and undiversified risk.

3.2 Population and Sample

All Twenty Three listed Nepalese CBs will considers the total population out of them this study will be concern with five CBs as a sample, those bank are SBI bank Ltd. NABIL, Bank of Kathmandu, Bank Ltd. and Standard Chartered Bank Ltd.

Population size = 23

Sample size = 4

3.3 Data Collection techniques

The problem of study lies in the fact that to what the MPS of selected companies is correlated with various financial indicators like EPS,DPS etc. and what the degree of risk is not involves in the investment of common stock of the selected companies from the view point of investors. In order to achieve concrete answer to these questions it various information needed.

First of all the officials, web sites WWW.NEPALSTOCK.COM have been browsed in order to down load the financial reports of the concerned companies and other relevant information's.

On the other hand in order to review different books and previous studies frequent visits have been made Tribhuvan University Libraries, Shanker Dev Campus, Library, in order to collect relevant documents frequent visits are made to NEPSE office, SEBO office etc.

Source of data collection & procedure is summarized below:

- Financial documents provided by the companies
- Trading reports published by Nepal Stock Exchange Limited
- Related Websites
- Material published in papers and magazines
- Other related books, booklets and unpublished thesis

3.4 Data Analysis Tools

The collected data are analyzed by using various financial tools as well as statistical tools are given and define below:-

3.4.1 Market Price Stock (MPS)

As we follow the market price of share of companies we can get there type of process high, allow and closing. For the analysis we can take approaches either average price (i.e. high and low) or closing price. Here in closing price is taken as the market price of the stock.

3.4.2 Dividend per Share (DPS)

Dividend is the portion of earning which pays to its shareholder. As we have consider the total dividend paid to shareholders. Dividend per share is calculated by using the following model.

$$\text{DPS} = \text{Cash Div.} + \text{Stock Div.}$$

Incase of stock dividend,

$$\text{Total dividend amount} = \text{cash dividend} + \text{stock dividend\%} * \text{Next years MPS}$$

Where,

$$\text{MPS} = \text{Market Price per Share}$$

3.4.3 NEPSE Index (Lt)

NEPSE index is the market index of Nepal Stock Exchange. It is used for the calculation of expected return on market. Calculation of return on market, closing indeed of the particular year is considered.

3.4.4 Return on Market (R_m)

It is the percentage increase in NEPSE index. To Calculation of return on market we can use following relation.

$$R_m = \frac{(L_t - L_{t-1})}{L_{t-1}}$$

Where,

R_m = Market Return

L_t = NEPSE Index at Time Period t

L_{t-1} = NEPSE Index at Time Period t-1

3.4.5 Return on Common Stock Investment (R_j)

Return is the income received in an investment plus any change in market price usually expresses as a percent of the beginning price of the investment.

Symbolically,

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

Where,

R = Actual rate of return on common stock at time t.

P_t = Price of stock at a time Period t.

P_{t-1} = Price of stock at a time period t-1

D_t = Cash dividend Received at a time t

3.4.6 Expected Return (E(R_m))on Common Stock

One of the major aims of the study is to determine the E(R_m) on the investment in common stock. Generally, this rate is obtained by the arithmetic mean of the past years returns.

Symbolically,

$$\overline{R} = \frac{\sum R}{n}$$

Where,

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

\sum = Sign of Summation

R_j = Realizes rate of return on stock j.

N = Number of years.

3.4.7 Standard Deviation (SD)

It is statistical measure of the distribution of return its mean. It is the square root of the variance of the returns S.D is the measure of the total risk of the assets i.e. it means the dispersion of returns around the mean return S.D can be calculated by using following formula,

Symbolically,

$$s_j = \sqrt{\frac{\sum (R_j - \overline{R})^2}{n-1}}$$

Where,

s_j = SD of return on stock j.

3.4.8 Coefficient of variation (CV): Unitary risk measure

The risk we calculated using SD is the total risk on investment. If we needed to calculate risk per unit of expected return, we can use of CV. The formula to calculate CV is as follows:

Symbolically,

$$C.V = \frac{s_j}{\overline{R}}$$

$CV_j = CV$ on stock j.

σ_j = Standard of Variation on Stock j.

R_j = Expected Rate of Return on stock j.

CV is the unitary risk measure. It gives the result regarding the unit of risk to bear for earning 1 unit of return.

3.4.9 Beta Co-efficient (β_j)

"The SD is a measure of the total risk of the asset, i.e. it measures the dispersion of return around the mean return. Earlier it was suggested that rational investors should expect higher return at higher level of investment risk. Does it mean that the higher the SD of asset returns the higher the required return? The CAPM suggest that the total risk as measures by SD contain two parts, diversifiable and non-diversifiable risk and that total risk is equal to the sum of its parts".(Cheney & Moses, 2002)

Total risk = Unsystematic risk + Systematic risk.

Logically the systematic risk is the covariance between the return of an individual asset or portfolio and the returns of the returns of the market portfolio. The measure of systematic risk is represents by beta and can be calculated by following formula.

Symbolically,

$$\beta_j = \frac{\text{Cov}(R_j, R_m)}{\sigma_m^2}$$

Where,

β_j = Beta co efficient of stock j

$\text{Cov } R_m, R_j$ = Covariance between Return on Stock j

σ_m^2 = Variance of Market return

ρ_{jm} = Correlation between returns of stock j and stock m.

σ_j = SD of the portfolio returns of stock j

$$\text{Cov}(R_j, R_m) = \frac{(\overline{R_j} - \overline{R_j})(\overline{R_m} - \overline{R_m})}{n-1}$$

The beta coefficient is a measure of non-diversifiable or systematic risk. An asset or a portfolio with a beta greater than 1 is considered to be aggressive (more risk than the market). An asset or portfolio with a beta less than 1 is considered to be defensive (less risky than market).

3.4.10 Correlation Co-efficient

The correlation is also a measure of the relationship between two assets. The correlation coefficient can be taken on a value from -1 to +1, correlation coefficient and covariance are related by the following equation,

Symbolically,

$$r_{ij} = \frac{\text{Cov}_{ij}}{\sigma_i \sigma_j}$$

Where,

r_{ij} = correlation co-efficient for securities i and j.

Cov_{ij} = co-variance between Securities i and j

$\sigma_i \sigma_j$ = SD of Returns for Securities i and j.

3.4.11 Portfolio Risk and Return

A portfolio is a collection of investment securities. Portfolio theory deals with the selection of optimal portfolios, i.e. portfolios that provide the highest possible return of any specified degree of risk or the lowest possible risk for any specified rate of return. Calculating and analyzing portfolio risk is not straight forward as calculating portfolios expected return. We have to go through a long process for its calculation and analysis.

Portfolio risk (σ_p)

It is the measure of combined SD of stock held in the portfolio, with reference to individual stocks corresponding correlation contribution. The formula for the calculation of portfolio risk for two assets case given by:

$$p = \sqrt{W_A^2 \cdot \sigma_A^2 + W_B^2 \cdot \sigma_B^2 + 2W_A \cdot W_B \cdot \text{COV}(R_A, R_B)}$$

Where,

σ_p = SD of portfolio A and B

σ_A^2 = Variance of assets A, i.e. risk of assets A

σ_B^2 = Variance of assets B, i.e. risk of assets B

W_A = Weights of assets A

W_B = Weights of assets B

Portfolio Return

"While the portfolio expected return is straight forward weight average of return on the individual securities, the portfolio SD is not the weighted average of individual security's SD. To take a weighted average of individual security SD would be to ignore the relationship, or correlation however as no effect on the portfolio expected return. Correlation between securities return complicates our calculation of portfolio SD by pair wise combination of securities in the portfolio. But this dark cloud of mathematical complication contains a silver lining correlation between securities provides for the possibilities of eliminating some without reducing potential returns". (Van Horne, 1997)

Portfolio is the combination of two or more securities or asset and portfolio return is simply a weighted average of individual stock returns. The return on the portfolio, in case of only two assets portfolio is given by:

$$\overline{R}_p = W_A \overline{R}_A + W_B \overline{R}_B$$

Where,

$E(r_p)$ = Expected return on portfolio of stock A and B

W_A = Weighted of investment on stock A

W_B = Weighted of investment on stock B

$W_A + W_B = 1$

Risk minimizing portfolio:

It is the proportion of stock that minimizes the possible (unsystematic) risk.

Symbolically,

$$W_A = \frac{\sigma_B^2 - \text{Cov}(\mathbf{R}_A, \mathbf{R}_B)}{\sigma_A^2 + \sigma_B^2 - 2\text{Cov}(\mathbf{R}_A, \mathbf{R}_B)}$$

Where,

W_A = Weight of stock A that minimize the portfolio risk of stock A and stock B

σ_A = SD of stock A

σ_B = SD of stock B

$\text{Cov}(\mathbf{R}_A, \mathbf{R}_B)$ = Covariance of returns between stock A and B

3.4.12 Capital assets Pricing Model (CAPM)

CAPM is the model, which gives the required rate of common stock. Comparison Of required rate return and expected rate of return gives the result whether the stock is overpriced or under-price. For the analysis risk free rate of return is needed i.e. R_f . Here for the study the return on Treasury bill issued by Nepal Rastra Bank is taken as risk free return. NRB issue the T.B on each treasury of 91 and 364 days. On each issue the T.B has different rates set up as the bidders bid for it. Here as suggested by the Treasury bill section of NRB the rate of the interest T.B is taken, which is approximately 3.2947%. The CAMP equation is written as follows:

$$E(R_j) = (R_f + \overline{R}_m - R_f) \cdot j$$

Where,

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

R_j = Risk free rate of return.

\overline{R}_m = Market return.

β_j = Coefficient of beta of stock j.

CHAPTER – IV

DATA PRESENTATION AND ANALYSIS

This chapter is the main body of the study. In this chapter; effort has been made to analyze “Analysis of risk and return of selected CBs in Nepal.” Details data of MPS and dividend of each bank and NEPSE index of each sector and market is presented and their interpretation and analysis is done. With reference to the various study and literature review in the preceding chapter, effort is made to analyze and diagnose the recent Nepalese stock market movement, with a special reference to the listed CBs. The analysis of data consists of organizing, tabulating and assessing financial and statistical result. Different tables and diagrams are drawn to make the result simpler and easily understandable.

4.1 Analysis of selected CBs

As the study has taken a special reference to listed CBs, common stock of listed CBs is analyzed here separately. There are twenty five CBs are in operation till now, among them the study has focused on four CBs. Although data are coverage for last eight years, each bank is introduced and their common stocks risk and return are analyzed here.

4.1.1 Nepal SBI Bank Limited (SBI)

Holding period return (HPR) of SBI bank is represented below. Essential information like as year end price, amount of dividend are considered as major factors.

Table 4.1

Holding period return of SBI Bank

Fiscal Year	HPR

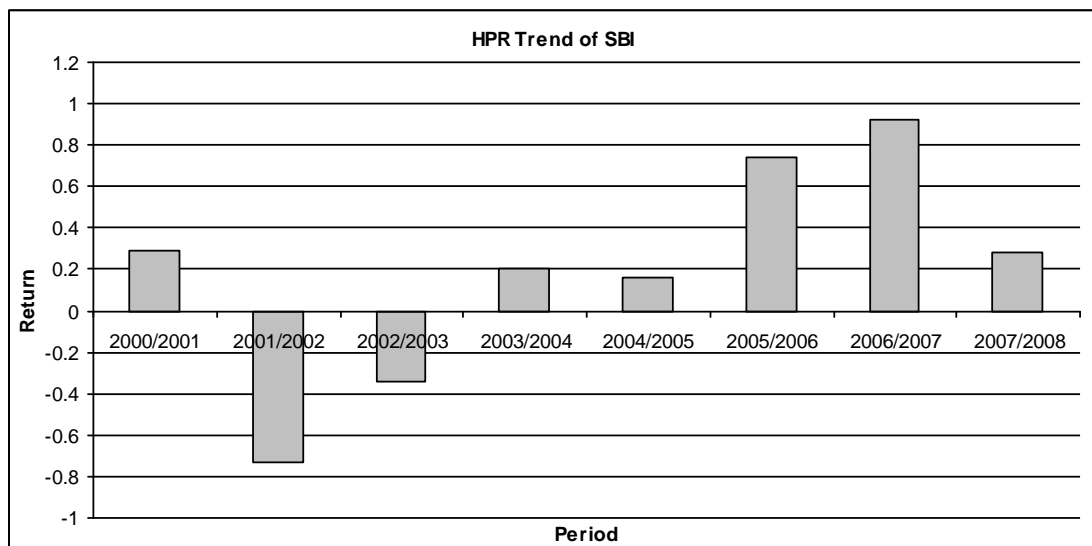
1999/2000	0
2000/2001	0.2875536
2001/2002	-0.732667
2002/2003	-0.34414
2003/2004	0.2039216
2004/2005	0.1563518
2005/2006	0.7380282
2006/2007	0.9215686
2007/2008	0.2848639

From Annex-1

For the further clarification of calculated data, above gist of calculations can be graphically represented as below;

Figure: 4.1

Presentation of HPR trend



Looking to the above graph, trend of HPR is infinitesimal or negative during the period of 2001 to 2003. However trend is boosted then after gradually. Year of

2006/2007 seems so fertile for the long stock holder's of SBI because significant increment of HPR. Looking to the over all indices, from the research it may be concluded that shareholder's of SBI are getting positive return as the return of their long holding or the scenarios of return is found to be increased significantly.

4.1.2 Nepal Arab Bank Limited (NABIL)

Holding period return (HPR) of NABIL Bank is represented below. Essential information like as year end price, amount of dividend are considered as major factors.

Table 4.2:

Holding period return of NABIL Bank

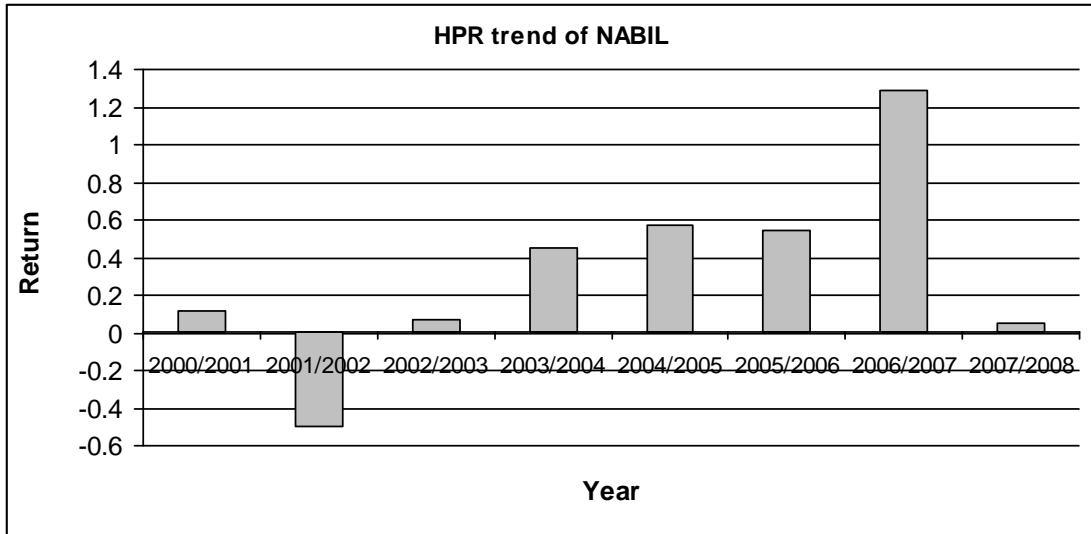
Fiscal Year	HPR
1999/2000	0
2000/2001	0.117857143
2001/2002	-0.496666667
2002/2003	0.068027211
2003/2004	0.448979592
2004/2005	0.575
2005/2006	0.544850498
2006/2007	1.292410714
2007/2008	0.051485149

From Annex-2

For the further clarification of calculated data, above gist of calculations can be graphically represented as below;

Figure: 4.2

Presentation of HPR trend



Looking to the above graph, trend of HPR is infinitesimal or negative during the period of 2001 to 2003. However trend is boosted than after gradually. Year of 2006/2007 seems so fertile for the long stock holder's of NABIL on account of significant increment of HPR. Looking to the over all indices, from the research it can be concluded that the shareholder's of NABIL are getting positive return as the return of their long holding or the scenarios of return is found to be increased significantly. Trend of NABIL seems far better than SBI.

4.1.3 Bank of Kathmandu Limited (BOK)

Holding period return (HPR) of BOK is represented below. Essential information like as year end price, amount of dividend are considered as major factors.

Table 4.3

Holding period return of BOK

Fiscal Year	HPR
1999/2000	0
2000/2001	0.270224644

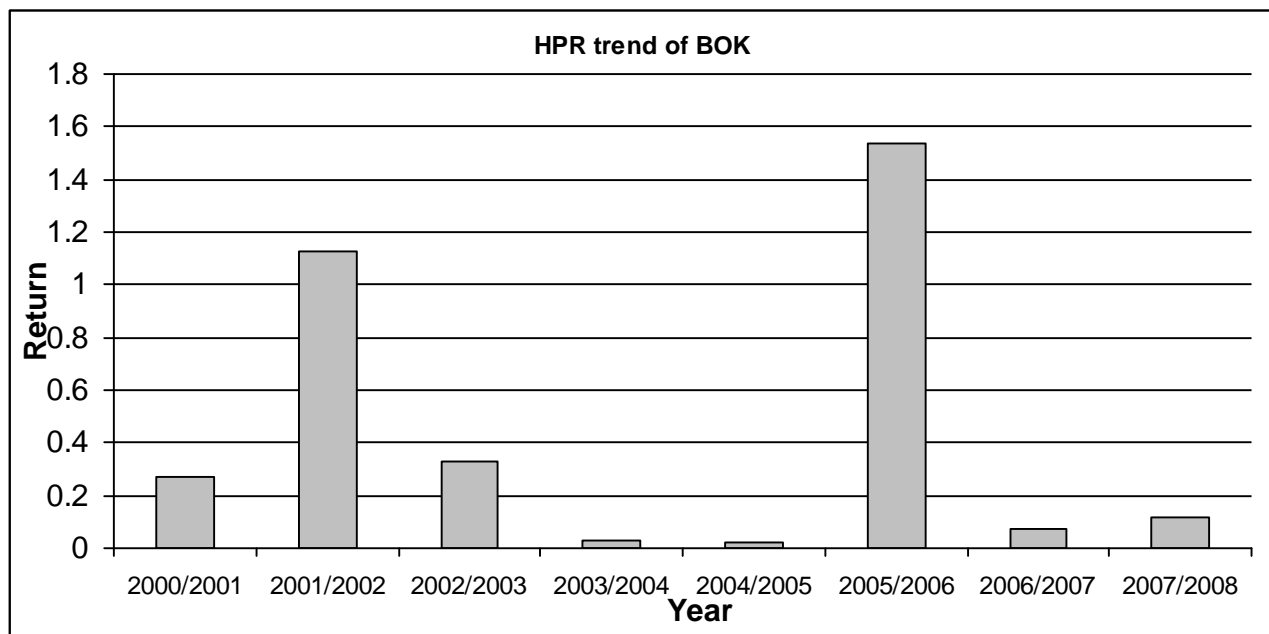
2001/2002	1.125607545
2002/2003	0.327552666
2003/2004	0.028516831
2004/2005	0.018752511
2005/2006	1.537830993
2006/2007	0.072706648
2007/2008	0.113944148

From Annex-3

For the further clarification of calculated data, above gist of calculations can be graphically represented as below;

Figure: 4.3

Presentation of HPR trend



Looking to the above graph, trend of HPR is positive during the entire period of study. However trend reflects the explosive nature because of the fluctuations of HPRs. Year of 2005/2006 seems so fertile for the long stock holder's of BOK on account of significant increment of HPR. Looking to the over all indices, from the

research it can be concluded that the shareholder's of BOK are getting positive return as the return of their long holding or the scenarios of return is found to be increased significantly. Trend of BOK seems better than SBI and NABIL.

4.1.4 Standard Chartered Bank Nepal Limited (SCBNL)

Holding period return (HPR) of SCBNL is represented below. Essential information like as year end price, amount of dividend are considered as major factors.

Table 4.4

Holding period return of SCBNL

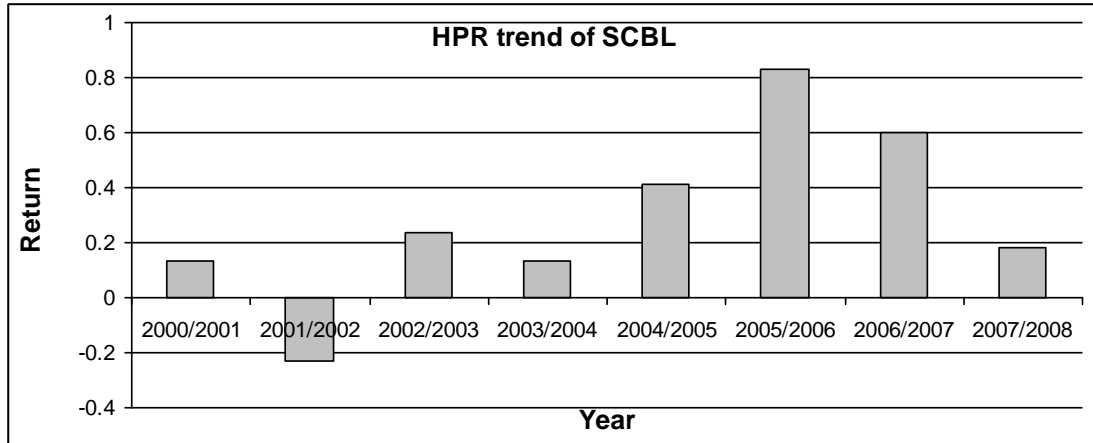
Fiscal Year	HPR
1999/2000	0
2000/2001	0.270224644
2001/2002	1.125607545
2002/2003	0.327552666
2003/2004	0.028516831
2004/2005	0.018752511
2005/2006	1.537830993
2006/2007	0.072706648
2007/2008	0.113944148

From Annex-4

For the further clarification of calculated data, above gist of calculations can be graphically represented as below;

Figure: 4.4

Presentation of HPR trend



Looking to the above graph, trend of HPR seems volatile during the study period. HPR of SCBNL during the period of 2001/2002 is negative so the respective shareholders have faced losses. However then after trend seems positive and 2005/2006 seems fertile as compared to other banks under study as far as rate of return is concerned.

4.2 Inter Bank comparisons

A comparative analysis of risk is performed here, expected return, standard deviation of return, coefficient of variation of each bank for the year 1999/2000 to 2007/2008 (Average for eight years) are given in table 4.11.

Table 4.5

Expected Return, S.D. and Coefficient of variation of each bank.

Banks	Expected Return(Avg. of 8 years)	Standard Deviation()	Co-efficient of variation	Remarks
SBI	0.189	0.533	2.822	
NABIL	0.325	0.524	1.612	
BOK	0.2704	0.707	2.615	Highest Return

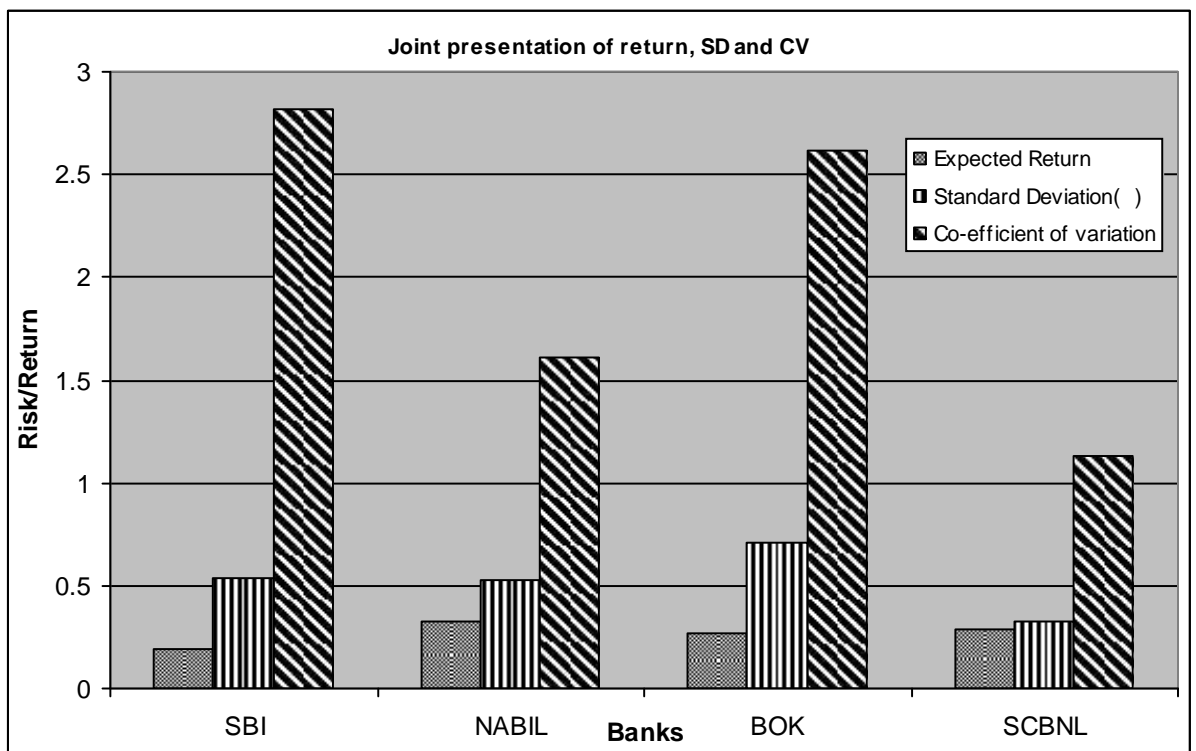
SCBNL	0.286	0.324	1.133	Lowest Return
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From annexes 1, 2, 3 and 4

Investors can get the highest return by investing in common stock of NABIL and the lowest return from investing in common stock of SBI. BOK has the highest standard deviation and SCBNL has the Lowest Standard deviation. To take an investment decision on a single common stock (security), co-efficient of variation (CV) is the most appropriate basis since common stock of SCBL is the best security for investment because of its minimum co-efficient of variation.

Figure 4.5

Expected Return, S.D and C.V. of each CBs



To take an investment decision on single common stock (Security) co-efficient of Variance (C.V.) is the most appropriate basic. Co-efficient of variation measures risk per unit return of stock so standard deviation and return are included in it. On the basis of CV, SCBNL common stock is the best security for investment because it has minimum coefficient of variation as mentioned in table 4.5.

4.3 Comparison with Market

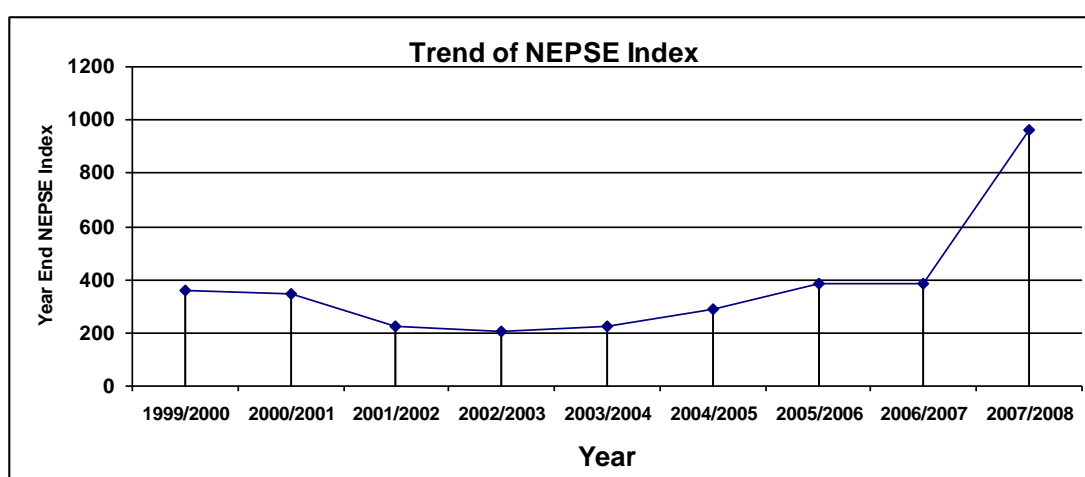
4.3.1 Market Risk and Return

As we know, there is only one stock exchange in Nepal on Market risk and return. The program has been initiated to reform capital converted securities. Stock Exchange Center Nepal 1993 has been working as a non-profit organization operating under securities exchange act, 1993. Overall market movement of the country is represented by market index or NEPSE index. NEPSE index and market is shown in diagram 4.6 and diagram 4.7, respectively.

Movement of NEPSE during the study period is represented accordingly. Year end closing price is taken in to consideration for the analysis and interpretation.

Figure 4.6

NEPSE Index Movement



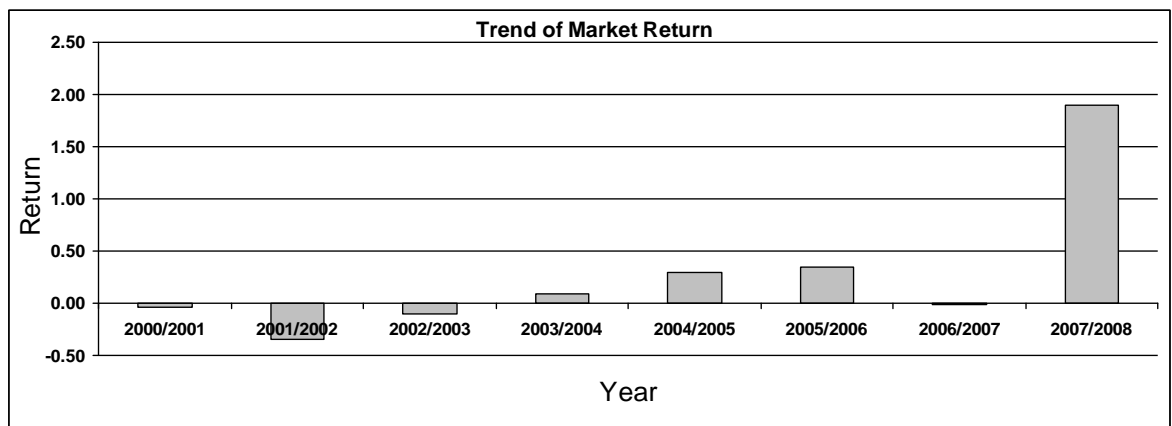
From Annex-5

From the above diagram, it is clear that the movement of NEPSE is in decreasing trend from the fiscal year 2000/2001 to 2002/2003 and then increasing in the year from 2003/2004 to 2005/2006. The highest NEPSE index is in the year 2007/2008, however index was more or less stable during the period of 2005/2006 to 2006/2007 then after it is increasing knife trend (sharp growth).

Similarly, holding return during the period of study on the NEPSE index is presented below. Main aim of this presentation is to compare the selected CBs with the entire industry.

Figure 4.7

Market Return Movement



From annex-5

The above diagram shows that the market return is found to be decreased from 2000/2001 to 2002/2003 significantly. Afterward, the market returns turn to increasing from the fiscal year 2003/2004 to 2005/2006. The maximum market return is in the fiscal year 2007/2008, and minimum market return is in the fiscal year 2001/2002.

4.4 Analysis of Market Sensitivity

Market sensitivity explains by its beta coefficient. Higher the beta coefficient, greater the sensitivity and higher the relation to the market movement and the percentage of risk that is correlated with market is said to be systematic portion of risk. As the market, which guides the portion of risk changes it is out of control. Thus beta is systematic risk which can't be eliminated through the way of diversification.

Table 4.6

Beta Coefficient of each Bank

S.N.	CBs	Beta coefficient(Bi)	Remarks
1	SBI	0.216	-
2	NABIL	-0.0126	Least aggressive
3	BOKL	0.4625	Most aggressive

4	SCBNL	0.0596	
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From annex-6

Looking at the above table, respective beta of CBs are less than one so all of the selected CBs have less risk than industry. In other words, all of the CBs are defensive in the concern of risk.

Required rate of return [E(Ri)], expected rate of return (\bar{R}) and price evaluation analysis:

Composition of required rate of return and expected rate of return gives the result, whether the stock is under priced or overpriced. If the required rate of return is less than expected rate of return, the stock is said to be under priced and investors tend to buy this type of stock and vice-versa. And if the required rate of return is more than expected rate of return the stock is overvalued and investors tend to sell this type of stock. For the analysis the risk free rate of return is needed, which is taken from the interest rate of Treasury bill issued by Nepal Rastra Bank.

Hence,

R_f = Risk free rate of return = 5 % =0.05

\bar{R}_m = Market rate of return = 0.267 (From annex-5)

Table 4.7

Required Rate of Return, Expected Rate of Return and Price Valuation

Banks	Beta	$E(R_i) = R_f + (\bar{R}_m - R_f) \beta_j$	Expected Rate of Return (ERR)	Price Situation
SBI	0.216	0.097	0.189	Under priced
NABIL	-0.0126	0.047	0.325	Under priced
BOKL	0.4625	0.150	0.372	Under priced
SCBNL	0.0596	0.063	0.286	Under priced

All CBs stock are under priced. When expected rate of return is higher than required rate of return then the banks stock are under priced and when expected rate of return is lower than required rate return than the bank's stocks are overpriced.

The stocks of SBI, NABIL, BOK and SCBNL are under priced. The investor should purchase these banks' share so that they will be benefited in future. These stocks are recommended to buy.

4.5 Portfolio Analysis

Portfolio theory was proposed by Harry M. Markwitz which gives the concept of diversification of risk by investing total funds in more than a single assets or single stock. Markowitz diversification helps the investors to attain a higher level of expected utility than with any other risk reduction technique. In a very simple way we can understand it as not keeping all the eggs in a single basket. By diversifying total fund in different securities the risk of individual security can be reduced without losing considerable return. The main objective of portfolio is reduction of unsystematic risk, from which investors can take more benefit by making efficient portfolio. Therefore, a brief analysis of risk and return is extended in portfolio context. The portfolio expected return is a straight forward weighted average of returns on the individual securities. The weights are equal to the proportions of total fund invested in each security. (The weights must sum to 100%)

Portfolio risk and return related information are analyzed and interpreted hereunder accordingly.

1. Covariance and Correlation

Table 4.8

Matrices showing covariance and correlation coefficient

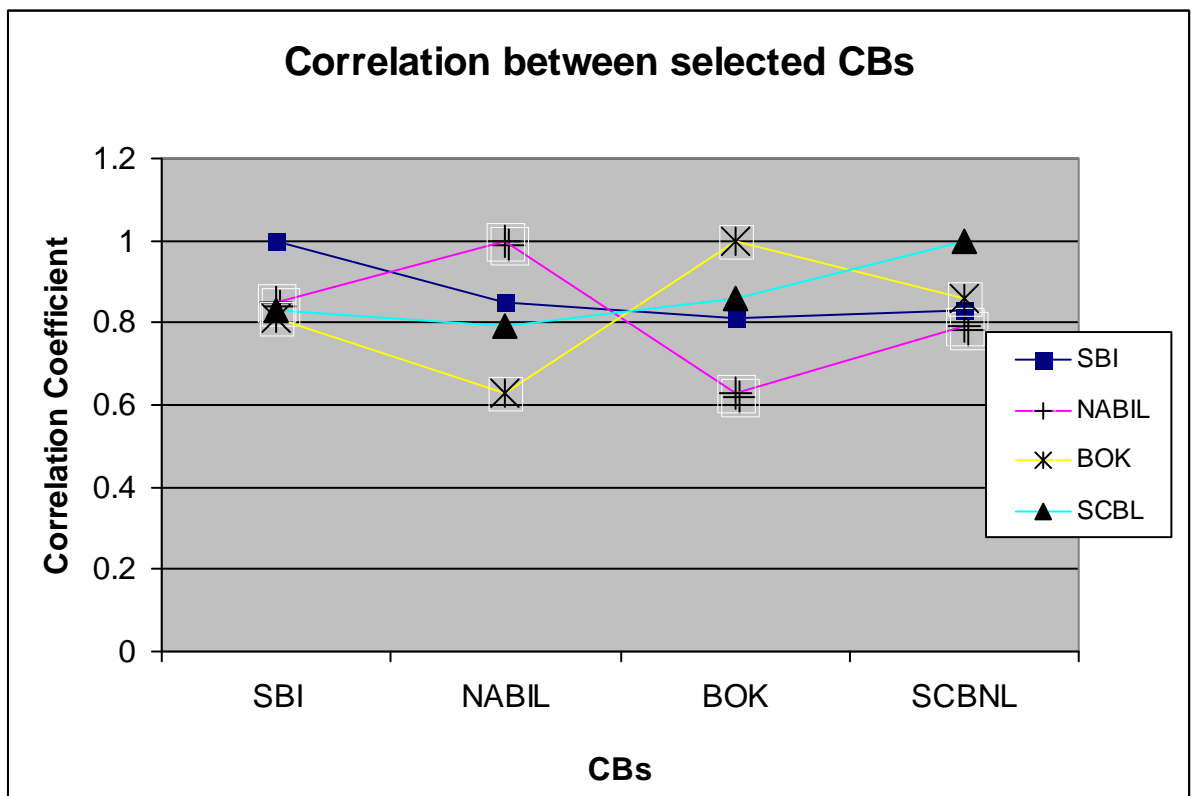
Covariance				
Banks	SBI	NABIL	BOK	SCBNL
SBI		0.238	0.306	0.143
NABIL	0.238		0.233	0.134

BOK	0.306	0.233		0.196
SCBL	0.143	0.134	0.196	
S.D	0.533	0.524	0.707	0.324
Correlation				
Banks	SBI	NABIL	BOK	SCBNL
SBI	1.00	0.85	0.81	0.83
NABIL	0.85	1.00	0.63	0.79
BOK	0.81	0.63	1.00	0.86
SCBL	0.83	0.79	0.86	1.00

From Annex-6

Figure 4.8

Correlation between selected CBs



Looking to the above graph, it can be said that the correlation of SCBNL is more or less equal with all selected security because of consistent movement of respective curve which is hovered around 0.80, however, coefficient is higher for BOK. So, certain risk diversification is possible with the joint investment of SCBNL, SBI, NABIL and BOK but risk can't be lowered to zero because of positive correlation

coefficient which is the indication of positive movement. Similarly, trend of SBI is same because of consistent relationship with others. Relationship between BOK and other seems volatile because of zigzag order of respective line. Relationship between BOK and NABIL is around 0.60 so there is huge chance of risk diversification but the joint investment of BOK can't diversify the risk as NABIL and BOK.

2. Required weight of investment to diversify the Risk (Minimum Weight of Portfolio)

Table 4.9

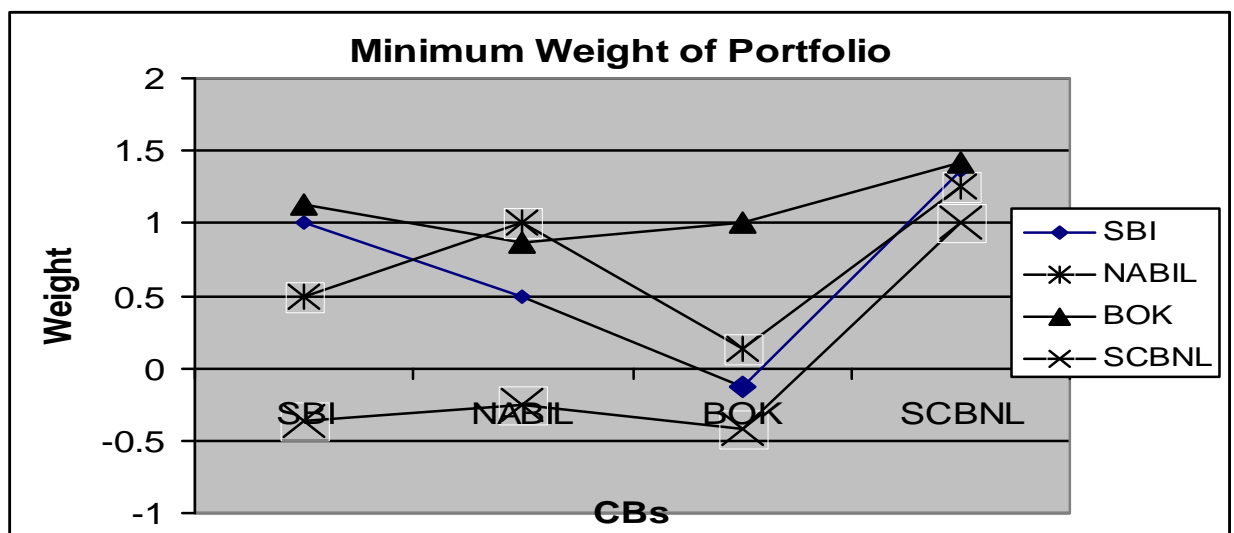
Matrices showing Minimum weight of portfolio

Banks	SBI	NABIL	BOK	SCBNL
SBI		0.50	-0.13	1.36
NABIL	0.50		0.134	1.256
BOK	1.13	0.866		1.426
SCBNL	(0.36)	-0.256	-0.426	

From Annex-6

Figure 4.9

Minimum Weight of Portfolio



Looking to the minimum weight movement of SBI, 50% of investable fund to NABIL and remaining to SBI seems higher returning portfolio. Similarly in the comparison of BOK, investors seems to short sell the holding of SBI to get the higher return because

of up swing, (more than one) weight curve. Similarly risk can be totally diversified in the investment of the stocks of SBI and SCBNL, where investors are recommended to short sell the stock of SBI and long purchase of the stock of SCBNL. Looking to the status of NABIL 50% on SBI, 13.4% on the stock of BOK investment can be made to reap the benefit. Investor can short sell the stock of NABIL and can swift the amount on the stock of SCBNL for the betterment.

3. Portfolio Risk and Return

Feasible options of selected CBs for investment are demonstrated on the basis of the trade off between risks and return as under.

Table 4.10

Matrices showing Portfolio Risk and Return

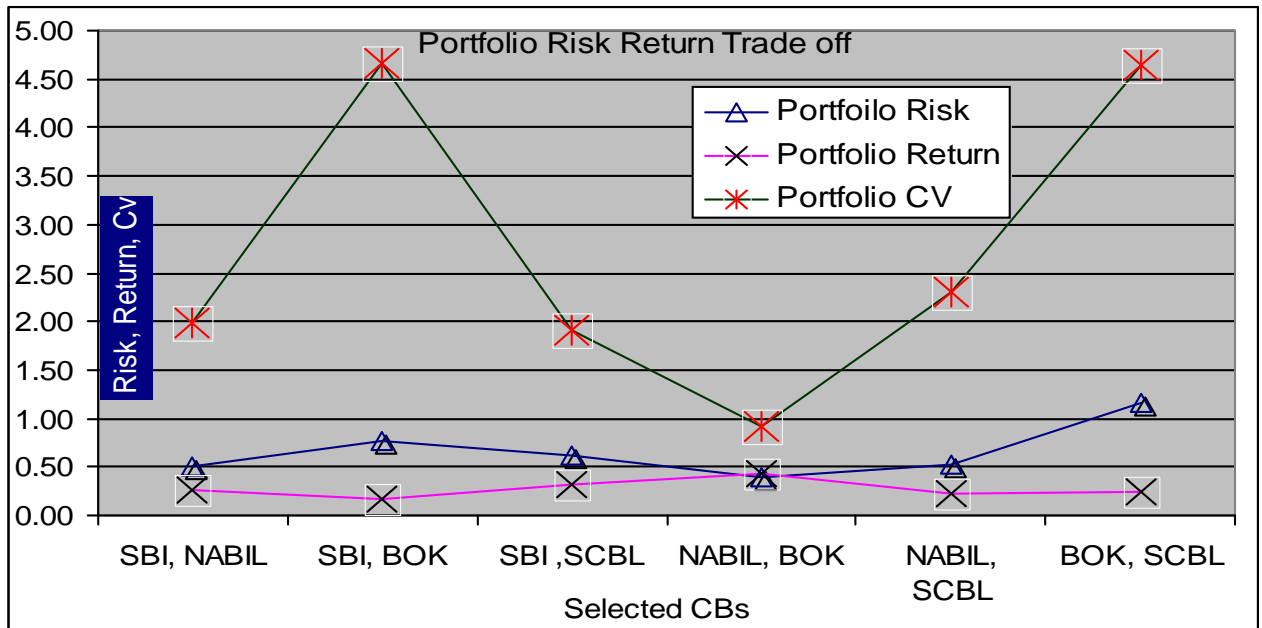
Portfolio Risk				
Banks	SBI	NABIL	BOK	SCBNL
SBI	0.53	0.51	0.77	0.612
NABIL	0.51	0.52	0.40	0.52
BOK	0.77	0.40	0.707	1.160
SCBNL	0.61	0.52	1.16	0.324
Portfolio Return				
Banks	SBI	NABIL	BOK	SCBNL
SBI	0.189	0.26	0.17	0.321
NABIL	0.26	0.325	0.43	0.23
BOK	0.17	0.43	0.372	0.249
SCBNL	0.32	0.23	0.25	0.286
Portfolio CV				
Option	Portfolio Risk	Portfolio Return	Portfolio CV	

SBI, NABIL	0.51	0.26	2.0
SBI, BOK	0.77	0.17	4.7
SBI ,SCBNL	0.61	0.32	1.9
NABIL, BOK	0.40	0.43	0.9
NABIL, SCBNL	0.52	0.23	2.3
BOK, SCBL	1.160	0.25	4.7

From Annex-6

Table 4.11

Presentation of Risk and Return Trade off



Looking to the graph, combination of NABIL and BOK seems efficient portfolio because of lower coefficient variation. Similarly portfolio of BOK and SCBNL appears to be aggressive in the concern of risk because of higher coefficient of variation and portfolio risk. So the portfolio that are made with the previously calculated minimum weight option of NABIL and BOK is perfect to diversify the risk, similarly portfolio of SBI and SCBNL is also found to be good where other combination of SBI and NABIL, NABIL and SCBNL also more or less same placing or priority for the investment. Portfolio of SBI, BOK and BOK, SCBNL appears to be risky for the investors.

4.6 Major Findings:

-) Market seems in increasing trend in the year of 2007/2008
-) Market return is decreased from 2000/2001 to 2002/2003 significantly afterward, the market return turn to increasing from the fiscal year 2003/2004 to 2005/2006. The maximum market return is in the fiscal year 2007/2008, and minimum market return is found to be in the fiscal year 2001/2002.
-) All CBs stock are under priced so investor can purchase the stock without any doubt because under priced stock may go up in future to met the real rate.
-) Certain risk diversification is possible with the joint investment of BOK and other SCBNL, SBI, NABIL but risk can't be lowered to zero because of positive correlation coefficient. Similarly trend of SBI is same because of consistent relationship with others. Relationship between BOK and other seems volatile because of zigzag order of respective line. Relationship between BOK and NABIL is around 0.60 so there is the huge chance of risk diversification but the joint investment of BOK can't diversify the risk as NABIL and BOK. In short more risk diversification is possible in the joint investment of BOK and NABIL.
-) Equal invest can be made on the investment of SBI and NABIL to lower the risk, for those who want to make the portfolio indicators indicate to short sell the stock of SBI and invest in the stock of BOK for the betterment. . Looking to the status of NABIL 50% on SBI, 13.4% on the stock of BOK investment can be made to reap the benefit. Similarly risk can be totally diversified in the investment of the stocks of SBI and SCBNL because of negative correlation.
-) Portfolio that is made up with the securities of NABIL and BOK has lower coefficient of variation. Similarly Portfolio of SBI, BOK and BOK, SCBNL seems risky for the investors.

CHAPTER V

SUMMARY, CONCLUSION AND RECOMMENDATION

The present study has been carried out with the objective of analysis the risk and return of selected CBs. Accordingly, relevant literature was reviewed and study was carried out following a suitable methodology, a brief explanation of all procedures and effects has been summarized in this chapter along with conclusions drawn and suggestion, recommended.

5.1 Summary

Risk and return is getting considerable attention in financial management being central focus of finance that is trade off between risk and return. Its major part is stock market which has got greatest glamour, not only for the professional or institutional investors but also for the individual and private investors. Development in the field of finance has led to the application of many new concepts and models to deal with various issues related to financial management.

The relationship between risk and return is described by investor's perception about risk and their demand for compensation. No investors will like to invest in risky assets unless he/she is assured of adequate compensation for the acceptance of risk. Hence, risk plays a central role in the analysis of investment. Investors often ask about an investment and like to know if the risk will command higher premium and trade-off between the two assumes a linear relationship between risk and premium.

It can be said that the rate of return on investment is dependent on many factors that include the real cost of money inflation risk, maturity risk, default risk etc. The investors offers more capital or higher rate of return, where users of capital always show their readiness to use more capital at lower rate.

Common stock is most risky security and lifeblood of stock market because of higher expected return, an investment in common stock of a corporate firm neither ensures an annual return nor ensures the return of principal. Therefore, investment in the common stock is very sensitive on the ground of risk. Dividends to common stock holders are

paid only if the firm makes an operating profit after tax after satisfying to all creditors and preferential shareholders. Common stock has attracted more investors in Nepal, rush in the primary market during the primary issues is one of the good example. Private common holders are the passive owners of the company. But private investors play a vital role in economic development of the nation by mobilizing the dispersed capital in different form in the society.

The main objectives of the study are to analyze the risk and return in common stock investment of Nepalese stock market. The study is focused on the common stock of listed CBs in Nepal. Hence, listed CBs are taken as reference to analyze the risk and return in common stock investment. While analyzing the risk and return, brief review of related studies has been performed. Scientific methods are used in data analysis. Table, graphs and diagrams are used which represents the data and result more clearly. Both qualitative and quantitative analyses have been performed by using statistical tools and financial tools. Secondary data are collected from NEPSE, NRB, SEBO/N, website and other related banks, other subjective types of information are collected through annual reports of different companies and officials of NRB, SEBON and NEPSE.

5.2 Conclusion

Most of the people considered stock market investment as a black art they have unrealistically optimistic or pessimistic expectations about stock market investment of perhaps a fear of the unknown. This study enables investors to put the returns they can expect and the risks they may take into better perspective. We know that Nepalese stock market is in emerging stage. Its development is accelerating since the political change in 1990 in effect of openness and liberalization in national economy. But, Nepalese individual investors cannot analyze the security as well as market properly because of lack of information and poor knowledge about security analysis for investment.

Findings are described below:

-) Market seems in increasing trend in the year of 2007/2008.
-) Market return is decreased from 2000/2001 to 2002/2003 significantly afterward, the market return turn to increasing from the fiscal year 2003/2004

to 2005/2006. The maximum market return is in the fiscal year 2007/2008, and minimum market return is in the fiscal year 2001/2002.

-) All CBs stock are under priced so investor can purchase the stock without any doubt because under priced stock may go up in future to meet the real rate.
-) Certain risk diversification is possible with the joint investment of BOK and other SCBNL, SBI, NABIL but risk can't be lowered to zero because of positive correlation coefficient. Similarly trend of SBI is same because of consistent relationship with others. Relationship between BOK and other seems volatile because of zigzag order of respective line. Relationship between BOK and NABIL is around 0.60 so there is the huge chance of risk diversification but the joint investment of BOK can't diversify the risk as NABIL and BOK. In short, more risk diversification is possible in the joint investment of BOK and NABIL.
-) Equal invest can be made on the investment of SBI and NABIL to lower the risk. For those who want to make the portfolio indicators indicate to short sell the stock of SBI and invest in the stock of BOK for the betterment. . Looking to the status of NABIL 50% on SBI, 13.4% on the stock of BOK investment can be made to reap the benefit. Similarly risk can be totally diversified in the investment of the stocks of SBI and SCBNL because of negative correlation.
-) Portfolio that is made up with the securities of NABIL and BOK has lower coefficient of variation. Similarly Portfolio of SBI, BOK and BOK, SCBNL seems risky for the investors.

Most of the investors invest only keeping the return in the mind but they are unable to calculate risk factor of the security. Most of the Nepalese investor invests in single securities. Some of the investor uses their fund in two or more securities. But it is found that they don't make any analysis of portfolio before selecting security for investment. They invest their fund in different securities on the basis of expectation and assumption of individual securities rather than analysis of the effect of portfolio. It seems that they don't have knowledge of the risk diversification by using portfolio of their investment.

5.3 Recommendations

Mainly this study is focused on individual investors other related components of stock market are also taken into account to some extent. The following recommendations and suggestions are made on the basis of entire research conducted:

1. Investors are recommended to select the NABIL and BOK to diversify the risk significantly.
2. The common stock returns of CBs are highly sensitive to market. They are highly positively correlated to the market. So, market should be further analyzed by the investors to balance the risk and return properly.
3. If investor is risk averter, it is recommended him or her to invest in SCBNL and if investor is risk seeker, then suggested to invest in BOK.
4. Comparison between the listed CBs, Standard Chartered Bank Nepal Ltd. (SCBNL) is the best bank among other banks. Therefore, the investors can get the appropriate return in minimum risk from the investment.
5. Investors need to diversify their fund to reduce risk. Proper construction of portfolio will reduce considerable potential loss, which can be defined in terms of risk. Among selected CBs investment in portfolio of NABIL and SBI is beneficial because portfolio return if NABIL and SBI is greater than in isolation and portfolio risk is less than risk in isolation.
6. Nepalese investors are requested to develop an appropriate basis for their investment on common stock as per the requirement. They are recommended to invest their fund by performing multiple analyses.
7. As risk and return are positively correlated Nepalese investors are requested to assess these factors as an important and recommended to analyze these factors with different financial tools and techniques.
8. Investment in common stock is a very risky job as there is no guarantee of the return than which is expected. On the other hand, there is also chance for a heavy loss. The stock market is undoubtedly risky in the starting term and investors need to be prepared for it. The investors should try and work out their attitude towards the risky-ness of various investment strategies.
9. Administration should be made so as to check the performance of individual company's flow of information and it should be more regular.

10. Risk and return analysis is completely untouched area in Nepalese context. It is strongly suggested that further study is required to be conducted on the topic and research should include maximum number of samples to get more realistic output.
11. Analysis of personal risk attitude, needs and requirement will be helpful before making an investment decision in stock market. Investors should make several decisions with stock broker before reaching at the decision. Investors should not invest only on imagination and rumors.

Annex-1**Data Sheet of SBI Bank**

Fiscal Year	Closing MPS	Cash Dividend	Stock Dividend	Total dividend	EPS
1999/2000	1165	-	-	-	-
2000/2001	1500	0	0	0	8.68
2001/2002	401	0	0	0	9.61
2002/2003	255	8	0	8	11.47
2003/2004	307	0	0	0	14.84
2004/2005	355	0	0	0	13.29
2005/2006	612	5	0	5	18.27
2006/2007	1176	0	0	0	
2007/2008	1511	0	0	0	

Source: SEBO, NEPSE (www.nepalstock.com)

Calculation of Holding period return, average return, standard deviation and coefficient of variation for SBI bank.

Fiscal Year	Year End Price	Total Dividend	$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$(R - \bar{R})^2$
1999/2000	1165	-	0	0
2000/2001	1500	0	0.2875536	0.00962723
2001/2002	401	0	-0.732667	0.85027181
2002/2003	255	8	-0.34414	0.2847021
2003/2004	307	0	0.2039216	0.00020986
2004/2005	355	0	0.1563518	0.00109451
2005/2006	612	5	0.7380282	0.30095427

2006/2007	1176	0	0.9215686	0.53601939
2007/2008	1511	0	0.2848639	0.00910665
		Total	1.515	1.992

We have,

$$\text{Expected Return } (\bar{R}) = \frac{\sum R}{n} = \frac{1.515}{8} = 0.189$$

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum (R - \bar{R})^2}{n-1}} = \sqrt{\frac{1.992}{8}} = 0.533$$

$$\text{Coefficient of Variation (C.V)} = \frac{\sigma}{\bar{R}} = \frac{0.533}{0.189} = 2.82$$

Annex-2

Data Sheet of NABIL

Fiscal Year	Closing MPS	Cash Dividend	Stock Dividend	Total dividend	EPS
1999/2000	1400	-	-	-	-
2000/2001	1500	40	25	65	59.26
2001/2002	735	20	0	20	55.25
2002/2003	735	50	0	50	84.66
2003/2004	1000	65	0	65	92.61
2004/2005	1505	70	0	70	103.45
2005/2006	2240	85	0	85	129.21
2006/2007	5050	85	0	85	
2007/2008	5220	90	0	90	

Source: SEBO, NEPSE (www.nepalstock.com)

Calculation of Holding period return, average return, standard deviation and coefficient of variation for NABIL bank.

Fiscal Year	Year End Price	Total Dividend	$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$(R - \bar{R})^2$
1999/2000	1400	-	0	0
2000/2001	1500	65	0.117857143	0.043008875
2001/2002	735	20	-0.496666667	0.675535426
2002/2003	735	50	0.068027211	0.066159939
2003/2004	1000	65	0.448979592	0.015310755
2004/2005	1505	70	0.575	0.062378582
2005/2006	2240	85	0.544850498	0.048227473
2006/2007	5050	85	1.292410714	0.935413475
2007/2008	5220	90	0.051485149	0.074943337
Total			2.602	1.921

$$\text{Expected Return (R)} = \frac{R}{n} = \frac{2.602}{8} = 0.325$$

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum(R - \bar{R})^2}{n-1}} = \sqrt{\frac{1.921}{8}} = 0.524$$

$$\text{Coefficient of Variation (C.V)} = \frac{\sigma}{R} = \frac{0.524}{0.325} = 1.612$$

Annex-3

Data Sheet of BOK

Fiscal Year	Closing MPS	Cash Dividend	Stock Dividend	Total dividend	EPS
1999/2000	998	-	-	-	-
2000/2001	850	0	0	0	27.97
2001/2002	254	10	0	10	20
2002/2003	198	5	0	5	17.72
2003/2004	295	10	0	10	27.40

2004/2005	430	15	0	15	30.10
2005/2006	850	18	255	273	43.67
2006/2007	1375	20	0	20	
2007/2008	2350	0	0	0	

Source: SEBO, NEPSE (www.nepalstock.com)

Calculation of Holding period return, average return, standard deviation and coefficient of variation for BOK bank.

Fiscal Year	Year End Price	Total Dividend	$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$(R - \bar{R})^2$
1999/2000	998	-	0	0
2000/2001	850	0	-0.148296593	0.270224644
2001/2002	254	10	-0.689411765	1.125607545
2002/2003	198	5	-0.200787402	0.327552666
2003/2004	295	10	0.54040404	0.028516831
2004/2005	430	15	0.508474576	0.018752511
2005/2006	850	273	1.611627907	1.537830993
2006/2007	1375	20	0.641176471	0.072706648
2007/2008	2350	0	0.709090909	0.113944148
Total			2.972	3.495

$$\text{Expected Return (R)} = \frac{\bar{R}}{n} = \frac{2.972}{8} = 0.372$$

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum (R - \bar{R})^2}{n-1}} = \sqrt{\frac{3.495}{8-1}} = 0.707$$

$$\text{Coefficient of Variation (C.V)} = \frac{\sigma}{\bar{R}} = \frac{0.707}{0.372} = 1.899$$

Annex-4

Data Sheet of SCBL

Fiscal Year	Closing MPS	DPS	Stock Dividend	Total dividend	EPS
1999/2000	1985	-	-	-	-
2000/2001	2144	100	0	100	126.89
2001/2002	1550	100	0	100	141.13
2002/2003	1640	110	164	274	149.30
2003/2004	1745	110	0	110	143.55
2004/2005	2345	120	0	120	143.55
2005/2006	3775	130	381.28	511.28	143.55
2006/2007	5900	140	0	140	
2007/2008	6830	150	0	150	

Source: SEBO, NEPSE (www.nepalstock.com)

Calculation of Holding period return, average return, standard deviation and coefficient of variation for SCBL bank.

Fiscal Year	Year End Price	Total Dividend	$R = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$(R - \bar{R})^2$
1999/2000	1985	-	0	0
2000/2001	2144	100	0.130478589	0.024245291
2001/2002	1550	100	-0.230410448	0.266873525
2002/2003	1640	274	0.23483871	0.002636707
2003/2004	1745	110	0.131097561	0.024052915
2004/2005	2345	120	0.41260745	0.015981983
2005/2006	3775	511.28	0.827837953	0.293385124
2006/2007	5900	140	0.6	0.098478233
2007/2008	6830	150	0.183050847	0.010637186
Total			2.290	0.736

$$\text{Expected Return (R)} = \frac{R}{n} = \frac{2.90}{8} = 0.286$$

$$\text{Standard deviation } (\sigma) = \sqrt{\frac{\sum(R - \bar{R})^2}{n-1}} = \sqrt{\frac{0.736}{8 \times 1}} = 0.324$$

$$\text{Coefficient of Variation (C.V)} = \frac{\sigma}{\bar{R}} = \frac{0.324}{0.286} = 1.133$$

Annex-5

Data Sheet of NEPSE

Fiscal Year	NEPSE Index
1999/2000	360.70
2000/2001	348.43
2001/2002	227.54
2002/2003	204.86
2003/2004	222.04
2004/2005	286.67
2005/2006	386.63
2006/2007	383.95
2007/2008	963.36

Source: SEBO, NEPSE (www.nepalstock.com)

Calculation of average return, standard deviation and coefficient of variation for Market (NEPSE) bank.

Fiscal Year	NEPSE Index	$R_m = \frac{(L_t - L_{t-1})}{L_{t-1}}$	$(R_m - \bar{R}_m)$	$(R_m - \bar{R}_m)^2$
1999/2000	360.70	-	-	-
2000/2001	348.43	0.00	-0.30	0.0906
2001/2002	227.54	-0.03	-0.61	0.3769
2002/2003	204.86	-0.35	-0.37	0.1344
2003/2004	222.04	-0.10	-0.18	0.0335
2004/2005	286.67	0.08	0.02	0.0006
2005/2006	386.63	0.29	0.08	0.0067
2006/2007	383.95	0.35	-0.27	0.0750

2007/2008	963.36	-0.01	1.63	2.6660
Total		2.136		3.384

$$\text{Expected Return (R}_m) = \frac{E(r_M)}{n} = \frac{2.136}{8} = 0.267$$

$$\text{Variance } (\sigma^2_m) = \frac{\{(R_m - E(R_M))\}^2}{n - 1} = \frac{3.384}{7} = 0.483$$

$$\text{Standard deviation } (\sigma_m) = \sqrt{\frac{\{(R_m - E(R_M))\}^2}{n - 1}} = \sqrt{\frac{3.384}{7}} = 0.695$$

$$\text{Coefficient of Variation (C.V}_m) = \frac{\sigma_m}{E(R_m)} = \frac{0.695}{0.267} = 2.604$$

Annex-6

	1	2	3	4	5
Fy	(R _m -E(r _m))	R _{sbi} -E(R _{sbi})	R _{nabil} -E(R _{nabil})	R _{bok} -E(R _{bok})	R _{scbl} -E(R _{scbl})
1999/2000	-	-	-	-	-
2000/2001	-0.3	0.098	-0.2230	-0.5198	-0.1557
2001/2002	-0.61	-0.922	-0.8197	-1.0609	-0.5166
2002/2003	-0.37	-0.534	-0.2550	-0.5723	-0.0513
2003/2004	-0.18	0.014	0.1260	0.1689	-0.1551
2004/2005	0.02	-0.033	0.2520	0.1369	0.1264
2005/2006	0.08	0.549	0.2218	1.2401	0.5417
2006/2007	-0.27	0.732	0.9694	0.2696	0.3138
2007/2008	1.63	0.095	-0.2715	0.3376	-0.1031
Fy	1 x 1	1 x 2	1 x 3	1x4	1x5
1999/2000	0	0	0	0	0
2000/2001	0.09	-0.0294	0.0669	0.1559	0.04671
2001/2002	0.3721	0.5625	0.5000	0.6472	0.31512
2002/2003	0.1369	0.1974	0.0943	0.2118	0.01900
2003/2004	0.0324	-0.0026	-0.0227	-0.0304	0.02792
2004/2005	0.0004	-0.0007	0.0050	0.0027	0.00253
2005/2006	0.0064	0.0439	0.0177	0.0992	0.04333
2006/2007	0.0729	-0.1977	-0.2617	-0.0728	-0.08473
2007/2008	2.6569	0.1555	-0.4426	0.5502	-0.16811
Sum	3.368	0.7290	-0.0430	1.5638	0.2018
Cov		0.1041	-0.0061	0.2234	0.0288
Analysis of Covariance					
COV			SBI, NABIL	SBI, BOK	SBI, SCBL
2000/2001			-0.0219	-0.0510	-0.0153
2001/2002			0.7558	0.9783	0.4764

2002/2003		0.1361	0.3054	0.0274
2003/2004		0.0018	0.0024	-0.0022
2004/2005		-0.0083	-0.0045	-0.0042
2005/2006		0.1217	0.6803	0.2971
2006/2007		0.7097	0.1974	0.2298
2007/2008		-0.0259	0.0322	-0.0098
	SUM	1.6690	2.1405	0.9991
	COV	0.2384	0.3058	0.1427
Year			NABIL, BOK	NABIL, SCBL
2000/2001			0.1159	0.0347
2001/2002			0.8696	0.4234
2002/2003			0.1459	0.0131
2003/2004			0.0213	-0.0195
2004/2005			0.0345	0.0319
2005/2006			0.2751	0.1202
2006/2007			0.2614	0.3042
2007/2008			-0.0917	0.0280
	SUM		1.6321	0.9360
	COV		0.2332	0.1337
Year				BOK, SCBL
2000/2001				0.0809
2001/2002				0.5481
2002/2003				0.0294
2003/2004				-0.0262
2004/2005				0.0173
2005/2006				0.6717
2006/2007				0.0846
2007/2008				-0.0348
		SUM		1.3710
		COV		0.1959

$$\text{Minimum Weight Portfoli } W_1 = \frac{\Gamma_2^2 Z \text{Cov}(1,2)}{\Gamma_1^2 \Gamma_2^2 Z^2 x \text{Cov}(1,2)} \circ$$

Banks	SBI	NABII	BOK	SCBL
SBI		0.50	-0.13	1.36
NABII	0.50		0.134	1.256
BOK	1.13	0.866		1.426
SCBL	(0.36)	-0.256	-0.426	

Portfolio Risk

$$\sigma_p = \sqrt{w_1^2 \Gamma_1^2 + w_2^2 \Gamma_2^2 + 2 w_1 w_2 \text{Cov}(1,2)}$$

Banks	SBI	NABII	BOK	SCBL
SBI	0.53	0.51	0.77	0.612
NABII	0.51	0.52	0.40	0.52

BOK	0.77	0.40	0.707	1.160
SCBL	0.61	0.52	1.16	0.324

Return of portfolio

$$R_p = W_1 \times \bar{R}_1 + W_2 \times \bar{R}_2$$

Banks	SBI	NABII	BOK	SCBL
SBI	0.189	0.26	0.17	0.321
NABII	0.26	0.325	0.43	0.23
BOK	0.17	0.43	0.372	0.249
SCBL	0.32	0.23	0.25	0.286

Portfolio CV

$$CV(p) = \frac{\sigma_p}{R_p}$$

Option	Portfolio Risk	Portfolio Return	Portfolio CV
SBI, NABIL	0.51	0.26	2.0
SBI, BOK	0.77	0.17	4.7
SBI, SCBL	0.61	0.32	1.9
NABIL, BOK	0.40	0.43	0.9
NABIL, SCBL	0.52	0.23	2.3
BOK, SCBL	1.160	0.25	4.7

Where,

$$\text{Cov}(R_j, R_M) = \frac{\sum (R_j - \bar{R}_j) \sum (R_M - \bar{R}_M)}{n \sum 1}$$

$$j = \frac{\text{COV}(j, M)}{\sigma_M^2}$$

For SBI

$$\text{Cov}(M, \text{SBI}) = \frac{0.7290}{8 \sum 1} = 0.1041$$

$$\text{SBI} = \frac{0.1041}{0.483} = 0.216$$

For NABIL

$$\text{Cov}(M, \text{NABIL}) = \frac{0.0430}{8 \sum 1} = -0.0061$$

$$\text{Nabil} = \frac{0.0061}{0.483} = -0.0126$$

For BOK

$$\text{Cov (M, BOK)} = \frac{1.5638}{8 Z1} = 0.2234$$

$$\text{bok} = = \frac{0.2234}{0.483} = 0.4625$$

For SCBL

$$\text{Cov (M, SCBL)} = \frac{0.2018}{8 Z1} = 0.0288$$

$$\text{bok} = = \frac{0.0288}{0.483} = 0.0596$$

Similarly COV between selected banks is calculated by using following tool

$$*\text{Cov (1,2)} = \frac{\sum R_1 Z E(R_1 j) \sum R_2 Z E(R_2) A}{n Z1}$$

Where 1 and 2 are respective banks

Calculation of Correlation coefficient

$$\dots_{1,2} X \quad \frac{\text{Cov}(1,2)}{\uparrow_1 x \uparrow_2}$$

Where 1 and 2 are respective banks $W_{\text{NABIL}} =$

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