

Chapter-I

INTRODUCTION

1.1- General Background:

Investment means the sacrifice of current money to increase future money. Generally when cash is needed, investment can be retired. In investment, two attributes are generally involved: time and risk. Risk is the fluctuation of actual returns and expected return. The sacrifice takes place in the present and is certain. The reward comes later and is uncertain. Investor always tries to minimize the risk by investing two or more securities. A set of two or more security is called portfolio.

Portfolio investment refers to an investment that combines several securities. It is the collection of security. Nobody is ready to bear risk without any return but to have return, one must ready to face some risk. To minimize the risk at given rate of return, the concept of portfolio diversification is necessary. It is one such tool that helps for proper utilization of resources. Investor always tries to achieve their investment goal. To fulfill the goal they gathered different security. These securities diversify the risk. Most investors hope that if they have several securities then even one goes bad, the others will provide protection from loss.

According to Oxford Advanced Learners Dictionary "A set of investment owned by person, bank etc." (Oxford Advanced Learners Dictionary 1996)

According to Weston & Brigham "A portfolio simply represents the practice among the investor of having their fund in more than one asset. The combination of investment assets is called portfolio."(Weston & Brigham; 1992)

"A systematic investment process should be followed to win the stock market. Investment process describes how an investor should go about making decision with regard to what marketable to invest in, how extensive the investment should be and when the investors should be made. A five step procedure for making these decision forms the basis of investment process:

1. Set investment policy
2. Perform security analysis
3. Construct a portfolio
4. Revise the portfolio
5. Evaluate the performance of portfolio." (Sharpe, Gordon & Bailey 1995)

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

"The term 'portfolio' simply means collection of investment for an investor through the stock exchange, the portfolio will be a collection of shareholdings in different companies. For a property investor has portfolio will be collection of buildings. To a financial manager within an industrial company has portfolio will be a collection of a real capital projects. It will be apparent that the actual nature of the components of a portfolio depends on the population of opportunities from which the selection has been made." (Brookingston; 1990)

It is the process of selecting a bundle of securities that provides the investing person or organization a maximum yield for a given level of risk. It can be also taken as risk and return management. It aims to determine an appropriate assets mix which attains optimal level of risk and return.

1.2- Commercial Banks & Nepal Stock Exchange:

Commercial banks are those financial institutions that deal with accepting deposits of persons and institutions and provide loans. It also provide technical and administrative assistance to industries, trade and business enterprises. The commercial banks play an important role in the development of the modern economy. The level of overall development of a country is it's social cultural, political and economic is characterized by the level of economic growth lies in the development of well-managed banking system. Hence banks can be considered as backbone of country's overall development. By mobilizing its deposits and other funds to profitable, secured, stable and marketable sector, banks contributing overall economic growth.

The history of commercial bank in Nepal starts from the establishment of Nepal Bank Ltd. in 1994 B.S. The existence of only one commercial bank was not sufficient for the growth of country, so to supports the economic growth, Rastriya Banijya Bank established in 2023 B.S. by the government.

Financial scenario change after establishment of Nepal Arab Bank Ltd in 2041 B.S. under commercial bank act 2031. It is the first joint venture banks introduce in Nepal. Since the joint venture banks introduce in Nepal, the set up of joint venture banks are increasing day by day. At present 23 commercial banks are in Nepal. There is cut throat competition among these banks, which

is healthy sign for the economic development of the country. In this competitive and market oriented open economy, each and every commercial bank and financial institution has to play a determining role by widening various opportunities for the shake of expanding provision of best service to their customers and by making themselves as a strong and potential financial intermediaries as per countries need of present scenario to obtain the desired level of economic development of nation.

Nepal Stock Exchange, in short NEPSE is a non profit organization operating under Securities Exchange Act, 2040. The former Securities Exchange Center was converted into NEPSE under the program initiated to reform the capital market. The authorized and issued capital of the exchange is Rs. 50 million. Of this Rs. 30.41 million is subscribed by Govt. of Nepal, Nepal Rastra Bank, Nepal Industrial Development Corporation and licensed members. The basic objectives of NEPSE is to impart free marketability and liquidity to the government and corporate securities by facilitating transactions in its trading floor through market intermediaries such as brokers, market makers and others. Before conversion into stock exchange centre, it was only the capital market institution undertaking the job of brokering, undertaking, managing public issue, market making for government bonds and other financial services.

In the words of James H. Lorie and Peter Dodd "Stock market is the financial market which probably has the greatest glamour and it perhaps the least understood. Some observer considers it has legalized heaven for gambling and many investors consider stock market investing as a game in which sole purpose is picking winners."

Organizational Structure:

NEPSE is working under Security Board of Nepal (SEBON). It has its own board of directors (BOD) to direct to formulate the policy matter and to run the security transaction business in the country. The BOD is responsible to form the policy for the development of capital market. The BOD consist nine members. Ministry of Finance, Govt. of Nepal nominates Chairman, NRB nominates two directors, two director represents from licensed member through election and securities and exchange board of Nepal can nominates two directors.

Members:

At present there are 23 member brokers, 11 sales & issue manager and 2 portfolio manager i.e. dealer secondary market..

Listing:

Trading on the floor of the NEPSE is restricted to listed corporate securities and government bonds. At present NEPSE has 147 companies have listed their securities to make them eligible for trading. Among these, 15 are commercial bank, 56 finance co., 21 manufacturing, 16 insurance, 5 trading, 23 development bank, and other. The listing fee and annual fee to be paid by the listed company are based on the capital of the company.

Trading System:

NEPSE has adopted an "Open out Cry" system. It means transaction of securities is conducted on the open action principle in the trading floor. The buying broker with the highest bid will port the price and code number of the selling columns on the quotation bid. The market maker quote they are bid and offer price of the own board before the floor starts. Once the bid and offer price

match, contracts between the buying and selling brokers or between the broker and market makers are the conducted on the floor. (NEPSE 2007)

1.3- Focus of the Study:

Harry M. Markowitz originally proposed portfolio theory in 1952. Markowitz diversification is the combining of assets, which are less than perfectly correlated in order to reduce portfolio's risk. It can sometimes reduce risk below the un-diversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets correlation. Risk adverse investors select efficient portfolio that maximizes return at a given level of risk or minimizes risk at a given level of return. With the collection of those efficient portfolios the optimal portfolios can be obtained for given investors. By combining securities of low risk with securities of high risk, success can be achieved by an investor in making a choice of investment outlets.

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

The research focuses on the empirical study of those stocks trading at Nepal Stock Exchange, which is secondary market in Nepal. This study mainly tries

to find out a profitable portfolio alternative with the effective use of available liquidity of public. People have liquidity but they are unproductive. So they try to find out available best alternative and best portfolio, which will increase wealth position of the investor and indirectly contribute to the economic growth of the nation.

1.4- Statement of the Problem:

The major problem in almost all under development countries is capital formation and proper utilization. Mostly people are unknown about the risk and reward associated with stocks. They even do not know the stocks can be the best alternative to maximize their wealth. They are investing their funds in unproductive sector. This is because of lack of knowledge of investment opportunities available in financial market. NEPSE is the only market of providing information; it is not sufficient and reliable for making investment decision. In general each investor wants to increase the level of return and decrease the level of risk. To avoid these problems CB's has more responsibilities. Various CB's have played vital economic role by accepting deposits and providing various types of loans, that means invest them in productive field. The development of the country is directly related to the volume of investment in productive sector.

Portfolio management is relatively new concept in Nepalese context. Many institutions still have less awareness while investing in productive sector. They have no consideration towards portfolio optimization. They just rely upon the instruction and guidelines of Nepal Rastra Bank. They still have less clear vision towards investment portfolio. They do not try to pay due attention towards proper matching of deposit and investment portfolio, which creates financial problem enforcing commercial banks to take wrong decisions. In this

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

The study has examined about the condition of portfolio management in financial institutions whether the institutions have maintained portfolio management or not? If they have portfolio management then what is the rate of risk in their institutions and their associated risk of the securities listed in NEPSE? And for bearing that what risk is the rate of return they are having? But if the institutions are careless about the portfolio management how much profit they are having and how they are maintaining their earning? What is the different between the earning per share (EPS) of the institutions that portfolio management and do not have portfolio management. The study also tried to find out the relationship between earning per share (EPS) and market price per share (MPS) of financial institutions and which is the optimum portfolio in NEPSE to invest?

1.5- Objective of the Study:

The main objective of the study is to analyze, examine and interpret portfolio technique followed by investor on their investment in various securities. This study focuses whether the investor properly followed portfolio concept to take investment decisions or not. The specific objectives of the study are as follows:

- a) To find out the portfolio of commercial banks for an investor.
- b) To analyze risk and return of investment securities.
- c) To find out the optimum portfolio of security trading in NEPSE.

1.6- Significance of the Study:

Nepal being listed among least developed countries, the commercial banks and other financial institution plays vital economic development of the country. The main objective of commercial banks is to earn profit by proper mobilization of resources. The research actually held in the fact of today's situation of Nepal. People are looking for investment alternatives.

In Nepalese commercial banks, they do not have clear vision towards effective investment. They are found to be making investment only on short-term basis. There is hesitation to invest in long-term projects because they are much more safety minded. Even there are various ways to minimize risk, they are not aware and do not take any attention towards such field i.e. they do not think about portfolio management. Hence the main significance of this study of investment portfolio analysis of Nepalese commercial banks is to help how to minimize risk on investment and maximize return through portfolio analysis. This research is important to acknowledge them how important risk and return

calculation and motivate them for rational investment. They can compare market risk and individual risk to conclusion whether the security is as risky as market risk and individual risk to conclusion whether the security is as risky as market or not. This type of research provides filtered information. This research will inform them about valuation of stock is over-priced or under-priced.

So this research helps to increase analytical skill, communicative skill and decision-making on investment and suggestions for its improvement.

1.7-Scopes and Limitation of the Study:

Some of the limitations are as follows:

- 1) The Study mainly based on secondary data collected from the different sources.
- 2) The study has only covered the listed commercial banks in Nepal stock exchange.
- 3) The problem of non-availability of required data and information regarding portfolio management may limit the scope of the study.
- 4) Risk and return measurement is taken as the tools of the methodology.
- 5) The study is simply a partial study for the fulfillment of MBS degree. So the study cannot cover all the dimension of the subject matter and time period is also limited.

1.8-Organization of Study:

A major part of writing a good thesis is good organization. To complete this thesis conveniently and efficiently, it is organized into following five major parts.

Introduction:-

The first chapter includes introduction, commercial banks and Nepal stock Exchange, focus of the study, statement of the problem, and objective of the study, significance of the study and scope and limitation of the study.

Review of literature:-

The second chapter includes theoretical review, review of related studies and review of thesis.

Research methodology:-

The third chapter includes research design, data collection procedure, sample, tools and techniques for analysis.

Analysis and presentation of data:-

The fourth chapter includes data of banks, analysis of market risk and return, analysis of market sensibility, analysis of systematic and unsystematic risk, analysis of required and expected return, analysis of portfolio risk and return, calculation of optimal portfolio composition.

Summary, conclusion and recommendation:-

The fifth chapter includes summary, conclusion, recommendations and suggestions.

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Finance** ,9th edition, Chicago: The Dryden Press.

Chapter- II

REVIEW OF LITERATURE

This chapter deals with the theoretical aspect of the topics on investment portfolio in more detail and comprehensive review of recent and relevant literature. For this study, basic academic course books, journals, articles, annual reports and some research paper related with this topic have been reviewed. Therefore this chapter is arranged into the following order:

- 1) Theoretical Framework
- 2) Review of Related Studies.

2.1 Theoretical Framework:

It provides the fundamental theoretical framework and foundation on the present study.

2.1.1- Investment:

An investment involves the sacrifice of current rupees for future rupees. The sacrifice takes place in the present and certain while the reward comes later and uncertain. Investment involves long-term commitment and waiting for a reward. It involves the commitment of resources that have been saved or put away from current consumption in the hope that some benefit will occur in future.

Investment brings forth vision of profit, risk, speculation and wealth. They have briefly describes the categories and types of investment alternatives. They describes that the basic investment objectives, the expected rate of return, the expected risk, taxes, the investment horizon and investment strategies are the factors to be considered in choosing among investment alternatives. (Cheney and Moses, 1992)

According to Gitman J.Lawrence(2000), "Investment in any vehicle into which funds can be placed with the expectation that will preserve or increase in value and generated positive return."

In The words Frank and Reilly "An investment is the current commitment of funds for a period of time to 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 the funds."

2.1.2- Investment process

The investment process describes how an investor makes decision about what securities to invest in, how extensive this investment should be and when they should be made. The investment process involves these steps:

- 1) Set Investment Policy:** The first step of the investment process is to set the investment policy. It determines the objectives and the amount of his/her investment fund. Investor objective should be stated in terms of both risk and return. This step involves the identification of the potential categories of financial assets for consideration in the ultimate portfolio. This identification will be

based on the investment objectives, amount of investable wealth and tax status of the investor.

2) Perform Securities Analysis: In this step, securities analysis involves examining a number of individual securities/group of securities within the broad categories of financial assets. The investor will evaluate them in term of their price whether they are under priced or overpriced, risk associated with that specific security; his/her expected return and real return and so on. There are two main securities:

- i) Technical analysis
- ii) Fundamental analysis

3) Construct a portfolio: Construction of portfolio involves identification of specific securities in which to invest, along with the proportion of invest able wealth to be put into each security. The investor may construct portfolio according to his/her interest either he/she wants active or passive strategy to manage his/her investment. There should be clear vision of strategy, risk bearing capacity and required rate of return before deciding the alternatives of investment.

4) Revise the Portfolio: This step involves both realizing that the currently held portfolio is not optimal and specifying another portfolio to hold with superior risk-return characteristic. The investor must balance the cost of moving to the new portfolio against the benefit of the revision.

5) Evaluation Portfolio Performance: Evaluation of portfolio performance involves determination of the actual performance of a portfolio in terms of risk and return and compares the performance with that of an appropriate “benchmark” portfolio.

2.1. 3- Investment alternatives:

A wide range of investment alternative is available to individual investors and institutional investors. (Cheney and Moses, 1992)

The financial manager decides on a suitable maturity pattern for the holdings on the basis of how long the funds are to be held. If the funds are wrongly invested without any financial risk, business risk and other various types of risk and facts, the bank cannot obtain profitable return as well as it should sometimes lose its principle. Therefore the suitable alternative can be selected and balanced in such a way those maturities and risk appropriate to the financial situation of the firm is obtained. There are various alternatives, which are as follows:

1) Equity Securities:

Equity securities represent ownership shares in a corporation. Equity securities are traded in organized exchanges OTC market.

) **Common Stock:** Common stock is an ownership share in a corporation

) **Preferred Stock:** Preferred stock is a fixed income security. Preference shareholder does not have voting rights. It is suitable for that investor who does not want to bear high risk but wants fixed return.

2) Debt Securities:

Debt securities are those on which interest has to pay and they have certain maturity period. Debt securities can be divided into two parts. They are as follows:

a) Short Term Debt Securities: It is the obligation that matures in one year or less. Short term debt securities are traded in to money market. They are as follows:

-) Negotiable certificates of deposit
-) Commercial paper
-) Bankers acceptance
-) Treasury bills

b) Intermediate and long-term debt securities: It is the obligation that matures in more than one year. Intermediate and long-term debt securities are traded in OTC market. They are as follows:

) **Government Securities:** Government securities are fixed income securities issued by the government. These securities are among the safest of all investment as the government is unlikely to default on interest or on principle repayments.

They are as follows:

- i Treasury Notes
- ii Treasury Bonds
- iii Saving Bonds

) **Agency Securities:** Agency securities are traded in the OTC market.

i . Government national mortgage association

ii. Federal home loan mortgage corporation

iii. Federal National mortgage association

) **Municipal Securities:** Municipal bonds are debt obligation issued by state or local government and agency.

i. Revenue Bonds

ii. General obligation Bonds

) **Corporate Bonds:** It is traded in organized exchanges and the OTC market.

3) **Hybrid Securities:**

Securities that have characteristics of both equity and debt are called hybrid securities.

) Convertible preferred stock

) Convertible bonds

4) **Derivative securities:**

Securities that derive their value from the value of an underlying assets.

) Option

) Commodity futures

) Financial futures

) Option on futures

) Rights

) Warrant

5) Real assets:

Real assets are the non-financial assets

-) Precious Metal
-) Real Estate
-) Collectibles

6) International Investment:

International investments are the investment by individual in debt or equity securities issued by organizations outside country of residence of the investor.

-) Multinational corporations
-) Foreign stocks traded on a local exchange
-) American depository receipts

7) Other Investment Alternatives:

-) Pension funds
-) Mutual funds
-) Closed-end companies.

2.1.4 -Risk and Return

A major purpose of investment is to get a return or income on the funds invested. Each assets expected return and risk, along with the expected return and risk for other assets and their inter relationships, are important inputs in portfolio selection. In order to construct efficient portfolios the investor must be able to quantity the portfolio's expected return and risk.

Risk:

Risk and uncertainty are real in life. Everyone encounters uncertainty in every day's life. Risk and uncertainty are an integral part of an investment decision. Risk can be defined as a situation where the possible consequence of the decision that is to be taken is known 'Uncertainty' is generally defined to apply to situations where the probabilities cannot be estimated. (Cheney and Moses, 1992)

Risk is uncertainty of whether the money investors lend will be returned. They have regarded such risk as bankruptcy risk. They said that stockholders of the firm should not only consider bankruptcy risk but also the risk that the firm will yield a rate of return below some targeted rate. They have given range, variance, standard deviation, coefficient of variation and beta as parameters for the measurement of risk. They describe beta as a parameter for the measurement of the systematic risk. Systematic risk has been defined as undiversifiable risk, which is beyond the control of the organization. Apart from this they describe unsystematic risk as diversifiable risk, which can be reduced through the portfolio effect. Further beta values for assets generally range between +0.5 and 2.0.

Segregation of Risk**i) Systematic Risk**

Systematic risk is that part of total risk, which cannot be eliminated. Systematic risk or undiversifiable risk is a function of its covariance with market portfolio of all assets divided by the variance of the market portfolio.

The portions of the total risk of an individual security caused by market factors that simultaneously affect the prices of all securities. It can't be diversified away. Systematic risk is the market risk, which could not be avoidable. It is also called market risk or unavoidable or non-diversifiable risk or beta risk. The beta of the stocks is the slope of the characteristics line between return for the stock and those for the market. Beta depict the sensitivity of the security's excess return to that of the market portfolio. This type of stock often called aggressive stock and slope less than 1 called defensive stock.

Thus un-diversifiable risk is caused by such factors, which systematically affect all firm such as:

-) War
-) Inflation
-) Recession
-) Interest rates policy
-) Corporate tax rate policy

Since all securities will tend to be negatively affected by these factors systematic risk cannot be eliminated by diversification therefore, and investor will expect a compensation for bearing this risk.

ii) Unsystematic risk

The portion of the total risk that can be diversified away. It is also called non-market risk or avoidable or company-specific risk or diversifiable risk. Such unsystematic risk can be totally reduced through costless diversification. This risk is related at a decreasing rate toward zero as more randomly selected securities are added to the portfolio. Various

studies suggest that 15-20 stocks selected randomly are sufficient to eliminate most of the unsystematic risk of portfolio.(Van Horne, 2002). It is caused by events particular to the firm. Event such as labour strikes, management errors, inventories, advertising campaigns, shift in consumer taste and lawsuits cause unsystematic variability in the value of market assets. Since unsystematic changes affect one form, or at most few firm, they must be forecasted separately for each firm and for each individual incident. Unsystematic security prices movement are statistically dependent from each other.

Some sources of unsystematic risk are:

-) Labor strike
-) Management errors
-) Inventions
-) Advertising campaigns
-) Shift in consumer taste
-) Successful and unsuccessful marketing programs
-) The winning and losing of major contracts
-) Other events those are unique to a particular firm.

Since these events are essentially random, their effects on a portfolio can be eliminated by diversification i.e. bad events in one firm will be offset by good events in another.

Risk and diversification

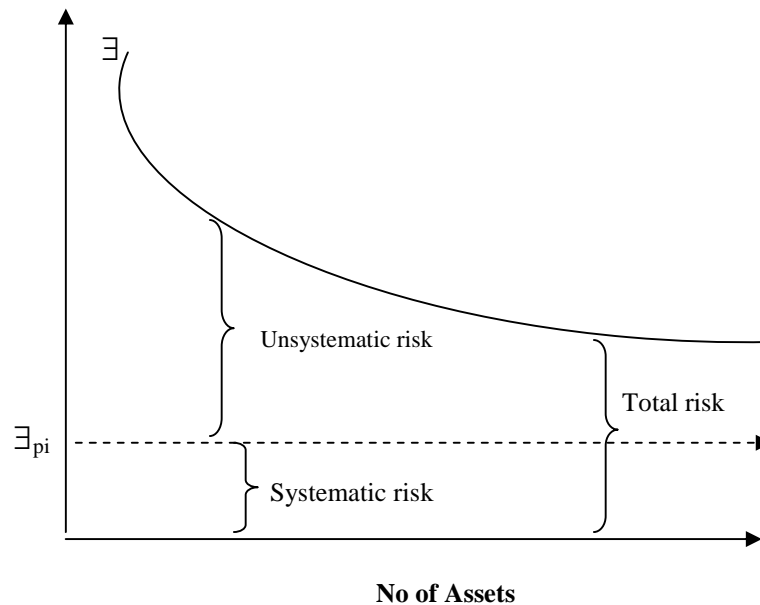


Figure No. 1

Source: James c. Van Horne, financial management policy; 11th edition.
(New Delhi, prentice hall of India private Limited 2000)

Measurement of Risk

Standard Deviation: Standard deviation is a statistically concept and is widely used to measure risk from holding a single assets. A high standard deviation represents a large dispersion of return and is a high risk, a low deviation is a small dispersion and represents low risk. It provides more information about the risk of the assets.

Coefficient of variation: Risk is measured by the standard deviation, and then risk per unit of expected return can be measured by the coefficient of variation (c.v.). High c.v. represents the higher risk of the investment. The c.v. shows the risk per unit of return and it provides a

more meaningful basis for comparison when the expected return and risk on two alternatives is not the same. (Weston and Brigham, 1993).

Beta: "The beta is simply the slope of the characteristic line. It depicts the sensitivity of the security's excess return to that of the market portfolio if the slope is one, it means that excess return for the stock vary proportionally with excess return for the market portfolio. In other words, the stock has the same unavoidable or systematic risk as the market as a whole. A slope steeper than one means that the stock's excess return varies more than proportionally with the excess return of the market portfolio." (Van Horne and Wachowicz , 1997)

"Beta measures non diversifiable risk. Beta shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta is calculated by relating the returns on a security with the returns for the market. Beta can be positive or negative. But nearby all betas are positive". (Fisher and Jordan, 6th edition)

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

The CAPM states that the expected risk premium on each investment is proportional to its beta, this mean that each investment should lie on the

sloping security market line connecting treasury bills and market portfolio. (Brealey and Myers, 2000).

Return

Return is reward for investment. A major purpose of investment is to get a return or income on the invested. On a bond an investor expect to receive interest and on a stock dividends may be anticipated. So return from investment has different meaning to different investors. Some companies seek near term cash inflow and give less value to more distant returns. Other investors are concerned primarily with growth. Still others measure return using financial ratios. They might seek to invest in a company that has a high return on investment.

All the investor wants to maximize expected returns subject to their tolerance for risk. Return is the motivating force and it is the key method available to investors in comparing alternative investments. Realized return and expected returns are two terms which is often used in the language of investment. Realized return is after the fact return, return that was earned or it is history. Expected return is the return from an asset that investor will earn over some future period. It is a predicted return, which may not occur.

2.1.5-Portfolio Analysis

In Nepalese context many Nepalese private investors placed their entire wealth in a single investment. It is because of proper awareness about portfolio. A portfolio is a bundle of or combination of individual assets or securities (Pandey, 1997).

If investor holds a well-diversified portfolio, then his concern should be the expected return and risk of portfolio rather than individual assets or securities. The portfolio theory provides a normative approach to the investor decision to investment in assets or securities under risk. The main objective of the portfolio analysis is to develop a portfolio that has the maximum return at specified degree of risk. Therefore analyzing risk and return on portfolio context is necessary.

Harry M. Markowitz originally proposed portfolio theory in 1952 (Markowitz, 1952). It is concerned with selecting optimal portfolio by risk averse investors. Risk averse investors selects efficient portfolio that maximizes return at a given level of risk or maximizes risk at a given level of return.

"While the portfolio expected return is a straight forward weighted average of return on the individual securities, the portfolio standard deviation is not the simple weighted average of individual security standard deviation. To take a weighted average of individual security, standard deviation would be to ignore the relationship or covariance between the return on securities. This covariance however doesn't affect the portfolio expected return". (Van Horne et. al, 1995)

2.1.6- Portfolio Analysis and Diversification

Investment risk can be reduced by including more than one alternative of assets in the portfolios and by including more than one asset from each category. Hence diversification is essential to creation of an efficient investment because it can reduce the Variability of returns around the expected return. This diversification may significantly reduce risk without a corresponding reduction in the expected rate of return on the portfolio". (Francis, 2000).

Diversification is the one important means that control portfolio risk. Investments are made in a wide variety of assets so that exposure to the risk of any particular security is limited. By placing one's eggs in many baskets, overall portfolio risk actually may be less than the risk of any component security considered in isolation.(Bodie et. al, 2002)

If the investors diversify funds into many more securities that continue to spread out firm specific factor and portfolio volatility should continue to fall. Ultimately, however even with a large number of stocks investors cannot avoid risk altogether. Since all securities are factors when all risk is firm specific diversification can reduce risk to a negligible level. When common sources of risk affect all firms however even extensive diversification cannot eliminate risk that is due to market risk or systematic risk on average portfolio risk does fall with diversification to reduce risk is limited by systematic or common sources of risk.

Here are some different diversification techniques for reducing a portfolio's risk:

❖ **Simple Diversification:**

Simple diversification can be defined as "not putting all the eggs in one basket" or spreading a risk. They made the portfolio from randomly selected securities and allocated equal weights. "Spreading the portfolio's assets randomly over two or three times as many stocks cannot be expected to reduce risk any further". It is the random selection of securities that are to be added to portfolio. Simple diversification reduces a portfolio's total diversification risk to zero and only the un-diversification risk remains.

❖ **Diversification Across Industries:**

Some investment counselors advocate selecting securities from different industries to achieve better diversification. It is certainly better to follow this advice than select all the securities in a portfolio from one industry. Since all the industries are highly correlated with one another, diversification across industries is not much better than simply selecting securities randomly.

❖ **Superfluous Diversification:**

Such portfolio diversification that has excess no. of assets (more than 15) known as superfluous diversification. It refers to the investors spreading himself in so many investments on his portfolio. It may lower the net return to the portfolios owners after the portfolio's management expenses are deducted even though there will most likely be no concurrent improvement in the portfolio's performance. In this context, Clarke's adds that superfluous diversification usually result in the following portfolio management problems:

-) Impossibility of good portfolio management
-) Purchase of lackluster performers
-) High transactions costs
-) High search costs

He describes that although more money is spent to manage a superfluous diversified portfolio; there will most likely be no concurrent improvement in the portfolio's performance. Thus superfluous diversification may lower the net return to the portfolios owners after the portfolios management expenses are deducted.

❖ **Markowitz Diversification:**

Markowitz diversification may be defined as combining assets that are less than perfectly positive risk correlated in order to reduce portfolio risk without sacrificing portfolios returns. It can some times reduce risk below the non-diversification level.

Markowitz diversification is more analytical than simple diversification and considers assets correlation. The lower correlation between assets the more that Markowitz diversification will be able to reduce the portfolio's risk. Markowitz diversification can lower risk below undiversification level if the securities analyst find securities, whose rates of return have low enough correlations. Unfortunately there are only a few securities that have low correlation. Therefore, using Markowitz diversification requires a data bank of financial statistics for many securities a computer and some economic analysis.

Markowitz paper is the first mathematical formalization of the idea of diversification of investment; the financial version of "the whole is greater than the sum of its parts" through diversification, risk can be reduced without changing expected portfolio return. The decision to hold a security should not be made simply comparing its expected return and variance to others, but rather the decision to hold any security would depend on what other securities the investors wants to hold. Securities could be properly evaluated in isolation, but only as a group.

2.1.7- Portfolio Selection

There are three steps to select a portfolio by an investor.

1) Determination of portfolio opportunities or attainable set of portfolio.

It is the first step to select the optimum portfolio. From the various securities we can combine limitless no. of portfolios. Each possible portfolio will have an expected rate of return and risk.

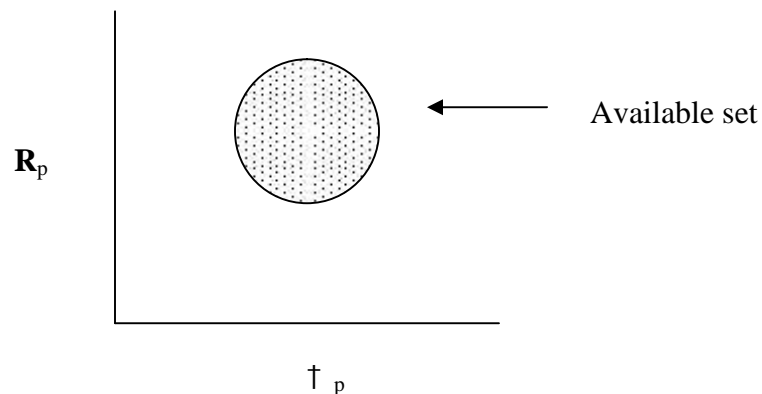


Figure No.2

The hypothetical set of all possible portfolios called the portfolio opportunity set or attainable set.

2) Determination of Efficient set

Efficient set is the collective form or set of portfolio. Efficient set theorem explains low investor will choose their portfolios from the set of efficient portfolio. If we consider the infinite number of portfolios that could be formed from two or more securities and plotted portfolios expected return

and risk, we would create a graph like the one in the figure. The efficient frontier is represented by the line from E to F. Portfolios along curve. EF dominate all other investment possibilities.

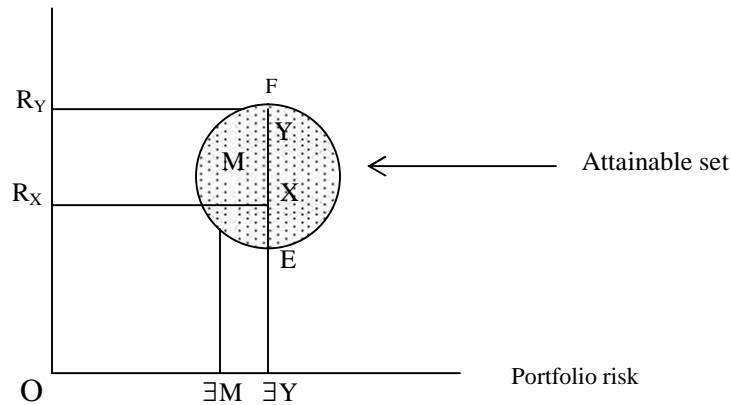


Figure No.3

An efficient frontier or portfolio is a portfolio that provides the highest possible expected return for varying level of risk or the lowest possible degree of risk for varying level of expected return. Portfolio to the left of the efficient frontier are not possible, they lie outside the attainable set. Portfolio to the right of the efficient frontier are inefficient because some other portfolio could provide either a higher return with same degree of risk or a lower risk for the same rate of return. In figure x is a portfolio which provides R_x return with $\uparrow Y$ risk and y is the portfolio which provides R_Y return with same level of risk of $\uparrow Y$ and portfolio M provides same return of R_x as portfolio x with less than that of portfolio x. Because of both portfolios Y and M lies in efficient frontier.

3. Selection of optimal portfolio

After finding the efficient frontier, select the optimal portfolio, which maximizes the utility of investors with the help of indifference curve.

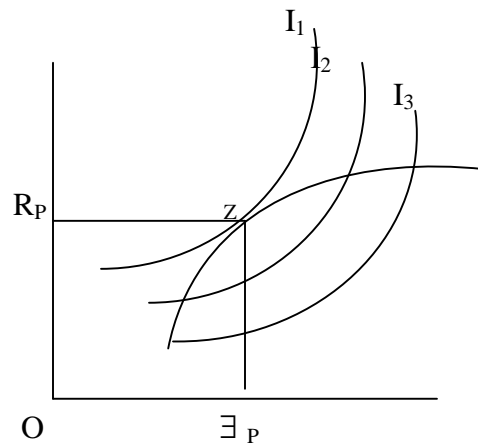


Figure No. 4

In the above figure, Indifference curve I_1 has higher utility than that of I_2 and I_3 . An investor selects that portfolio which lies in the efficient frontier of the opportunity set which is tangent to the indifference curve of the investor and the portfolio becomes optimal for him. The indifference curve I_1 tangent with efficient frontier at the point Z. Here investor's optimal portfolio is z . Therefore, this point z makes a higher level of satisfaction an investor can achieve.

2.1.8 - Review of popular Model of Portfolio:

2.1.8.1-Harry M. Markowitz and portfolio selection Model

Harry M. Markowitz originally proposed portfolio theory "portfolio selection" in 1952. Markowitz diversification is the combining of assets, which are less than perfectly correlated in order to reduce portfolio's risk. It can sometimes reduce risk below the un-diversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets correlation. Risk averse investors select efficient portfolio that maximizes return at a given level of risk or minimizes risk at a given level of return. With the collection of those efficient portfolios the optimal portfolios can be obtained for given investors. A theory, which evolved into a foundation for further research in financial economics Markowitz, showed that under certain given conditions, an investor's portfolio choice reduced to balancing two dimensions, i.e. the expected return of the portfolio and its variance. Portfolio is the combination of the various securities. To choose the combination of the securities, it is really a challenge to the investor to choose the combination. By combining securities of low risk with securities of high risk, success can be achieved by an investor in making a choice of investment outlets.

Markowitz diversification may be defined as combining assets, which are less than perfectly correlated in order to reduce portfolio risk without sacrificing portfolio return. It is more analytical than simple diversification and considers assets correlation or covariance in portfolio formation it shows that lower the correlation between assets. More no. of security will be able to reduce the portfolio risk. Markowitz

used the variance of return as the measure of risk. The portfolio model developed by Markowitz is based on the following assumption:

- This theory assumes for the same holding period return for all securities.
- The risk of an individual assets or portfolio is based in the variability of returns.
- Investor prefers high return to lower return for a given level of risk. Similarly, for a given level of expected return, investor prefers less risk. (Cheney and Moses, 1992)
- Investor makes investment rationally.

2.1.8.2-Capital Assets Pricing Model

The relevant risk for an individual asset is systematic risk because undiversifiable risk can be eliminated by diversification. The relationship between an assets return and its systematic risk can be expressed by the CAPM, which is also called the security market line (SML). "It is the model that describes the relationship between risk and expected return. The CAPM provides a framework for basis risk and return offs in portfolio management. It explains the behavior of security prices and provides a mechanism to assets the impact a proposed security investment on investor's overall portfolio risk and return. It enables drawing certain implications about risk and the size of risk premium necessary to compensate for bearing risk. (Khan and Jain, 1992)

The equation for the CAPM is

$$E(R_j) = R_f + [E(R_m) - R_f] S_j$$

Where,

$E(R_j)$ = the expected return on the J^{th} risky assets.

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

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

S_j = $\text{cov}(R_j, R_m) / \text{var } R_m$

The CAPM based on the following assumption:

-) Individuals are risk reverse.
-) Individuals have homogeneous expectations; they have identical subjective estimates of the means, variance, and covariance among the returns.
-) Individual can borrow and lend freely at a risk less rate of interest.
-) The market is perfect there are no taxes; there are no transaction costs; securities are completely divisible; the market is competitive.
-) The quantity of risky securities in the market is given.

2.1.8.3 The single index model

The simplification of Markowitz model has come to be known as the market model of single index model (Valla, 1994). The single index model provides that the desirability of any stock is directly related to its excess return to beta ratio. Single index model for optimal portfolio enable to find out the no. of security to be in optimal portfolio. In this case the desirability of including a stock directly related to its excess return to beta ratio. If stocks ranked by excess return to beta for highest to lowest, the ranking represents the desirability of any stocks inclusion

in a portfolio. The number of stocks with selected depends on a unique cut of rate such that all stocks with higher ratios will be included and all stocks with lower ratios excluded.

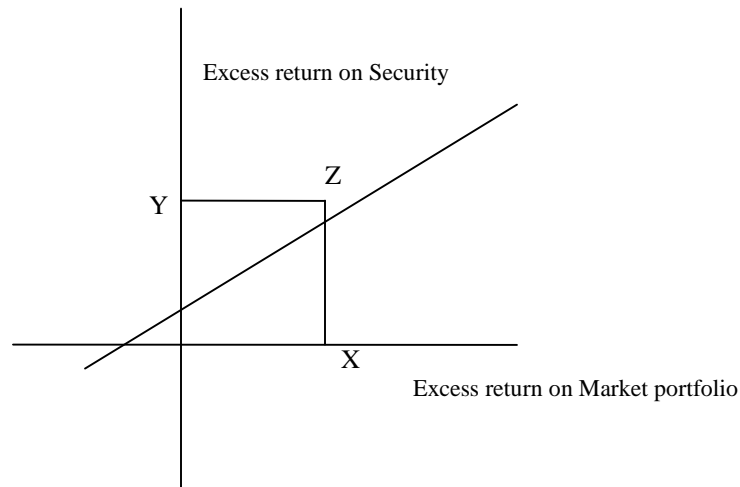


Figure No. 5

The beta of security represents the market linearity of the stock. The market influences each stock. Negative beta defines that security is not linear to market. The security having negative beta coefficient is rejected as investment alternatives. In the same way security that provides lower rate of return than risk free rate of return rejected as investment alternatives. To determine which securities are to be included in the optimum portfolio, investors have to find out cut off rate. We can calculate c_j using following formula:-

$$C_j = \frac{\sigma_m^2 \beta_j (R_j - R_f) S_j}{1 + \Gamma \sigma_m^2 \beta_j \frac{S_j^2}{\sigma_{ei}^2}}$$

Where,

σ_m^2 = Variance of the market index.

R_j = Expected return of stock j.

R_f = Risk free rate of return.

σ_{ei}^2 = Unsystematic risk of stock j

β_j = Beta of stock j.

Investor selects highest C_j value; that is C^* (selected cut of rate). The value of C^* is used in calculation of Z_j .

$$\text{Weight of security (Z)} = \frac{Z_j}{N}$$

$$\text{Where, } (Z) = \frac{S}{\sigma_{ei}^2} \frac{R_j - R_f}{S_j} Z C^*$$

Where,

C^* = Selected Cut of rate.

R_j = Expected return of Stock J

R_f = Risk free rate of Return.

S_j = Beta of stock J.

σ_{ei}^2 = Unsystematic risk of stock J.

2.2 Review of Related studies:

2. 2. 1- Review of journals and articles:

"International portfolio investment flows" by **Michael J. Brednan and H. Henry Cao**. This article develops a model of International equity portfolio investment flows based on differences in informational endowments between foreign and domestic investors. It is shown that when domestic investors possess a cumulative information advantage over investors about their domestic market, investors tend to purchase foreign assets in periods when the return on foreign assets is high and to sell when the return is low.

Followings are the conclusions from the article:

-) The article has developed a model of international equity portfolio flows that relies on informational differences between foreign and domestic investors.
-) The model predicts that if foreign and domestic investors are differentially informed then portfolio flows between two countries will be a linear function of the contemporaneous returns on all national market indices: and if domestic investors have a cumulative information advantage over foreign investors about
-) Domestic securities, the co-efficient of the host market return will be positive.
-) Portfolio flows are associated with returns on national market indices as the symmetric information hypothesis implies.
-) The examination of U.S. portfolio investment in emerging markets shows the strong evidence that U.S. purchases are positively associated with local market returns in many countries.

) This model is able to explain only a small proportion of the variance of international equity portfolio flows.

The Edward J. Kane and Stephen A Buser in the title "Portfolio diversification at commercial banks" (Kane and Buser, 1979) deals with how a firm performs a useful function by holding a portfolio of efficiently priced securities.

According to them, it is rational for a firm to engage in prior found of assets diversification of behalf of its shareholder even when all assets are priced efficiently and available for direct purchase by shareholders. As a way of testing their perceptive empirically, they estimated regression model designed to explain the no. of distinct of U.S. treasury and federal agency debt held in a time series of cross section of large US commercial banks. They interpret the systematic pattern of diversification observed for large US commercial banks as evidence that bank stockholder for a relatively uniform diversification clientele. For firm, marginal benefits from diversification take reductions in the cost equity funds offered by its specific clientele of stockholders. To maximize the value of the firm, these benefits must be weighted against the explicit and implicit marginal cost of diversification.

The Edward J. Kane and Stephen A Buser drown following concluding remarks:

- ❖ Even wealthy investors should be sensitive to administrative costs associated with selection, evaluation, managing, and continually keeping track of a large number of securities.

- ❖ Either homemade or firm produced diversification, reduces the variance of shareholders portfolio return. If homemade diversification bears in ordinary high levels of information risk, some benefit of firm-produced diversification might not be reproduce able by individual investors acting on their own.
- ❖ Investors with even modest resources, the stock of financial institutions should be relatively less attractive than the stock of that avoided extensive diversification costs by engaging in specialized activities.

Edwin J. Elton in their study named "**Expected return, realized return and asset pricing tests**", one of the fundamental issues in finance is what the factors are that affect expected return on assets, the sensitivity of expected return to those factors, and the reward for bearing this sensitivity. The data set covers the period from July 1, 1991 through December 31, 1997. The history shows almost all the testing are done taking realized return as a proxy for expected return. Using realized return, as a proxy for expected return is that the unexpected returns are independent, so that as the observation interval increases they tend to a mean of zero.

The purpose of this article is to convince the reader there is a distinction and worth to find out alternative ways to estimate expected returns.

Following preliminary tests are done in the study:

-) A constant risk premium
-) forward rates and risk premium
-) Factors analysis
-) Changing risk premiums

According to the researcher "*realized returns are a very poor measure of expected return and that information surprises highly influence a number of factors in asset pricing model*". The empirical use of judgment and factor dependability can be used to draw implication which will govern to the great extent the pricing decision fix and accurate.

"Regulations of Bank Capital and Portfolio Risk" by Michael Koehn and Anthony M. Santomero in their study examined the portfolio allocation that flows from the portfolio decision of the firm and the effects on bank portfolio risk of a regulatory increase in the minimum capital assets ratio that is acceptable to the supervisory agency. The allocation across assets becomes the choice variable deriving the optimal mean rate of return per unit of the capital and the variance of that return. Therefore, the analysis will be developed in terms of risk and return per unit of capital with no loss in generality. According to them, an explicit relationship between the risk of the bank portfolio, the amount of bank capital held and the chance of bankruptcy must, therefore, be obtained to evaluate the result of bank capital regulation.

Mr. Shiva Raj Shrestha, Deputy Chief Officer of Nepal Rastra Bank, in his study "*Portfolio management in commercial bank, theory and practice*". According to him, the portfolio management becomes very important for both individuals as well as institutional investors. Investors would like to select a best mix of investment assets subject to select mix of investment assets subject to following aspects:

- ❖ Higher return which is comparable with alternative opportunities available according to the risk class of investors.
- ❖ Certain capital gain.
- ❖ Flexible investment.

- ❖ Good liquidity with adequate safety of investment.
- ❖ Maximum tax concession.
- ❖ Economic, efficient & effective investment mix.

Following findings have been point out from the research:

- ❖ To find out the investible assets having some for better returns depending upon individual characteristics like age, health, need, disposition etc.
- ❖ To find out the risk of the securities depending upon the attitude of investors towards risk.
- ❖ To develop alternative investment strategies for selecting a better portfolio.
- ❖ To identify securities for investment to refuse volatility of return and risk.

Mr. Shrestha has expressed his view that the portfolio management activities of Nepalese commercial bank at present are in growing stage. However most of the banks are not doing such activities so far because of following reason:

- ❖ Unawareness of the clients about the service available.
- ❖ Hesitation of taking risk
- ❖ Lack of proper technique to run such activities in the best and successful manner
- ❖ Less developed capital market and availability of few financial instruments the financial market.

Conclusion:

The survival of the banks depends upon its own financial health and various activities.

- ❖ The portfolio manager could enhance the opportunity for each investor to each superior return over times.
- ❖ Do not hold any single security.
- ❖ Try to have a diversified investment.
- ❖ Choose such type of portfolio securities, which ensure maximum return with minimum risk.

Sunity Shrestha conducted the study in the title "*Portfolio behavior of commercial banks in Nepal*". In this research five commercial banks are taken under study. They are Nepal bank Ltd., Rastriya Banijjya Bank, Nabil bank ltd., Nepal Indosuez bank and Nepal Grindlays Bank. Data are collected from various sources from 1975 to 1990 A.D. The objective of the research was to evaluate the financial performance of the commercial banks, to analyze the investment pattern of commercial banks on securities and loans, to observe the relationship of bank portfolio variables with national income and other fiscal variables. Among these objectives financial performances of the commercial banks and observe bank portfolio variables is somehow related to this research.

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

- ❖ The general trend of commercial banks asset holding is growing.
- ❖ Spread of foreign banks is relatively higher than that of Nepalese banks.
- ❖ The relationship of banks portfolio variables is found to be best explained by log linear equations.

- ❖ Borrowing of commercial banks from the central bank has been found to be positively affected by the cash reserve requirement, bank rate and Treasury bill rate.

Following suggestions have been point out from the research:

- ❖ The evaluation of the performance of the commercial banks can be made only with reference to the government policy and regulation framework of the central bank.
- ❖ Some of the problems of resource mobilization and resource deployment by the commercial banks in Nepal can be directly traced to the fiscal policy of the government and heavy regulatory procedures of the central bank.

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

The article in web page www.Investopedia.com "Are you over diversified" mentioned that many individual investors could not tolerate the short-term fluctuations in the stock market. Diversifying your portfolio is the best way to smooth out the ride. Diversification is a risk management technique that mixes a wide variety of investments within a portfolio in order to minimize the impact that any one security will have on the overall performance of the portfolio. Diversification lowers the risk of your portfolio. Academics have complex formulas to demonstrate how this works.

2.2.2-Review of Thesis:

Gopal P. Bhatta's (1995) study on "*Assessment of the performance of listed companies in Nepal*", this research is based on the data of ten listed companies from 1990 to 1995. One of the major objectives of this study is to analyze the performance of listed companies in terms of risk and return and internal rate of return, systematic risk and diversification of risk through portfolio context. The objectives of the research were to analyze the performance of listed companies in the terms of expected return and company specific risk, required rate of return, systematic risk and diversification of risk through portfolio concept. His research methodology was descriptive and analytical. Mr. Bhatta concluded that Nepali investors had not yet practiced to invest in portfolio of securities. An analysis of the two securities portfolio shows that the risk can be totally minimizes if the correlation is perfectly negative. In the situation, the risk can totally be diversified, but when there is perfectly positive correlation ship between the returns of the two securities, the risk is not diversifiable. The analysis shows some has negative correlation and some has positive. Negative correlation between securities returns is preferred for diversification of risk. Nepalese capital market is not efficient one. So the stock price doesn't contain all the information relating to market and company itself. Neither investor analyzes the overall relevant information of the stock nor the member of stock exchange tries to disseminate the information. Today's market trend has changed from bull market to bear market. Investors are being rational.

Mr. Jagdish Basnet's (2002) research entitled "*Portfolio management of joint venture banks in Nepal*" is try to presented data of eight years from 1994-2001 A.D. The objective of the research was to find out the situation of the portfolio management of joint venture banks in Nepal. To evaluate the investment and advances portfolio of joint venture banks, to evaluate the

financial performance of joint venture bank. To analyze the risk and ratio of commercial banks. Mr. Basnet summarized the findings as NBBL, HBL, SCB, and EBL was investing very high amount of its fund in government securities. It has providing very high amount of its loan and advances to the private sector in increasing trend. It has also given the priority to foreign bills purchase and discount. He analyzed portfolio by only banking industries using secondary data provided by bank. According to him banks are very strong in investment in comparison to individual investors.

Roopak Joshi's study on (2003) "*Investors problem in choice of optimum portfolio of stock in Nepal stock exchange*", Mr. Joshi used data of twelve months, fiscal year 2000/2001 . The study is based on secondary data published in NEPSE trading report and bank. The objectives of the research were to find out and analyze the major problems of investor facing in the selection of optimum portfolio of security trading in NEPSE. He try to suggest the major for the improvement of the stock market as well as for better meet of investors and try to find out the best portfolio of NEPSE. He found that portfolio is new concept in Nepal. The stock market is only in growth stage. The only one stock exchange located in Katmandu. Limited no of security broker, lack of opportunity to invest, traditional cry system, which is acting as barrier of development of NEPSE. Researcher had taken data of only one fiscal year. He has taken selected and short-listed all companies which are categories in "grade A" by NEPSE as his sample size. Due to a lack of financial tools, only three stock portfolios were constructed and analyzed researcher took only three assets portfolio. Mr. Joshi mentioned that due to the lack of sufficient information proper investment was not possible. Proper investment needed huge information internal as well as external. So investor does not know which stock to invest, how to portfolio constructed. Many stockholders do not give

the information to the investors; in the pressure of broker investors are purchasing and selling their stock. Small change in stock investment may change the risk and return in very large scale. So investor should have special knowledge and adequate skills. The researcher conclusion is valid only for risk averter investors rather than risk lover investor.

In the words **Kalpana Khania**, (2003) entitled "*Investment portfolio Analysis of Joint venture banks*". The study is based on five joint venture banks and they are NABIL, SCBNL, HBL, NBBL and EBL. The general study of the present study is to identify the current situation of investment portfolio of joint venture banks in Nepal. The objective is to analyze the risk and return ratio of commercial banks, to evaluate the financial performance of joint venture banks and portfolio structure of Nabil bank for investment between loan investment, investment in real fixed assets and investment in financial assets. The major finding of the analysis is Nabil is investing the highest amount of funds on NRB bond as compare to other joint venture banks i.e. 3% beta coefficient HBL is lowest among all the banks so the systematic risk of HBL is low. The coefficient of correlation between loans and advances in private sector and portfolio return of joint venture banks come out to be $r_{xy} = -0.6$ therefore it indicates that there is negative correlation between loans and advances in private sector and portfolio return of five joint venture bank in Nepal.

Hari Pati Lal Shrestha's (2004) study on "*Optimum portfolio investment in Nepal*", the main theme of the study is to analyze rationalities of portfolio theory in context Nepalese security market. Always investor tries best to make sure return, return is not cent percent sure or investment will not ruin. The study mainly focused on the specific sector of market i.e. currently listing in NEPSE for last 6 years and this study mainly based on the companies listed in

NEPSE and applies the different categories. His analysis is based on secondary data as well as primary data of 6 years collected by small survey of 25 investors main objectives of this study are to find out and analyze the major problem of investor regarding selection of optimal portfolio. He try to analyze the risk and return, market sensitivity, composition of risk and pricing status of securities. And to suggest the measure for the improvement of investment rationalities. Investor should be aware of risk and return. This research helps them to find out the degree of risk associated with the stock, systematic and unsystematic risk estimation of stock.

2.3-Justifications:

The research on portfolio management which shows the risk and return analysis of commercial bank identified by the review of literature has justified the need of study. Previous research is not able to find out the risk and return analysis by using cross sectional data of previous years. This research is fully try to show the real optimal portfolio management of sampled commercial bank with the help of simple Sharpe portfolio optimization.

Chapter-III

RESEARCH METHODOLOGY

Research methodology is the process of arriving to the solution of the problem through planned and systematic dealing with the collection analysis and interpretation of fact and figure. Research is a systematic method of finding out solution to a problem where as research methodology refers to the various sequential steps to adopt by a researcher in studying problems with certain objectives in view. To find out such solution of problems various statistical and financial tools and techniques are applied according to the nature of phenomena.

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done systematically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them(Kothari; 1990).

3.1- Research Design:

This research is based on recent historical data of last seven years. The study range is from 2058/59 to 2063/2064. The research is mainly focused expected risk and return and portfolio risk and return management of the listed commercial banks in NEPSE. To achieve objective of the study, descriptive cum analytical research design has been adopted.

3.2- Data Collection Procedure:

In this study, data used in the research are secondary sources i.e. published /unpublished written document, e.g. books, journals and annual reports of selected banks, trading reports of NEPSE, website of NEPSE, NRB and other banks are used as a secondary data.

3.3- Sample:

Only listed and specific commercial banks in Nepal stock exchange are selected sample bank for the analysis. They are:

1. Nabil Bank Ltd.
2. Nepal Investment Bank Ltd.
3. Standard Chartered Bank Nepal Ltd.
4. Nepal SBI Bank Ltd.
5. Everest Bank Ltd.
6. Bank of Kathmandu Ltd.

1) Nabil Bank Ltd.

Nabil bank is the first joint venture commercial banks in Nepal, established in 1984 A. D. under a technical service agreement with Dubai Bank Ltd., which later merged with Emirates Bank Ltd., Dubai. At present, authorized capital and paid up capital is Rs. 500 and Rs. 492 million respectively and listed in NEPSE 1986 A.D. 50% of its stock hold by NB(International) Limited , 10% NIDC , 9.67% Rastriya Beema Sansthan , 0.33% Nepal stock Exchange and 30% by general public. 16 branches providing the banking facility to the public.

2) Standard Chartered Bank Ltd.

Standard Chartered Bank Ltd. is the second joint venture bank in Nepal, established in the year 1985 A.D. and listed in NEPSE at 1988 A.D. as a Grindlays Bank Ltd. Later ownership transfer to Standard Chartered bank of England, in 2001 A.D. name changed from Grindlays Bank Ltd. to Standard Chartered Bank Nepal Ltd., initially started as a joint venture and the status of the bank was changed to subsidiary of SCB in 2004. 75% of its share holds by Standard Chartered Group and 25% of share by Nepalese public. 10 branches are providing the banking facility to the public.

3) Nepal Investment Bank Ltd.

Nepal investment Bank Ltd., previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners and later Nepalese group of companies holding its 50% stake. It is listed in NEPSE in 1987 A.D. Its paid up capital is 590.59million. 50% of its share held by Nepalese group, 15% Rastriya Banijjya bank, 15% Rastriya Beema Sansthan and remaining 20% by the general public. 14 branches providing the facility to the public.

4) Nepal SBI Bank Ltd.

Nepal SBI Bank Ltd. is the joint venture bank with State Bank of India and it was incorporated in 1993 A.D. SBI listed in NEPSE in 1994 A.D. Its paid up capital is 640000000 million. 50% share hold by State bank of India, 5% ADB,N , 15% by EPF and remaining 30% by public. 17 business unit providing the facility to the general public.

5) Everest Bank Ltd.

Everest bank Ltd. was established in 1994. Panjab National Bank, India is its joint venture bank. It was listed in NEPSE in 1995. The bank's paid up capital is 518000000 and authorized capital is 1000000000. The Nepalese promoters hold 50% of stake in the bank's equity, 20% of equity is contributed by joint venture partner Panjab National bank, India and remaining 30% is held by the public. 18 branches providing the banking facility to the public.

6) Bank of Kathmandu.

Bank of Kathmandu started its operation in 1995. It was listed in NEPSE. In 1998, Its paid up capital 463.58 million. 58% share is holding by the promoter and 42% by the general public. It has 12 branches are operating around the country.

3.4 Tools and Techniques for analysis:

3.4.1 Market Price of Stock (MPS):

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

3.4.2 Dividend (D):

Dividend can be given in the form of cash or shares. If the company declare dividend in cash then there is no difficulty in calculation. But if the company declares stock dividend or bonus share then shareholders get shares as dividend instead of cash. So there is little difficult to

calculate the exact amount in cash. In case of stock dividend the formula for total dividend amount is considered as follows:

$$\text{Total dividend} = \text{DPS} + \text{next year's closing price} * \text{stock dividend\%}$$

3. 4. 3- Single Period Rate of Return(R):

This is the annual realized return received on an investment and any change in market price, usually expressed in a percent at the beginning price of the investment. It is the summation of the dividend yield and the capital gain yield.

Symbolically,

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

Where,

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

D_t= Cash dividend received at time t.

P_t = Price of a stock at time t.

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

3.4.4- Expected rate of return on common stock:

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

Symbolically,

$$\bar{R} = \frac{R_j}{N}$$

Where,

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

N = No. of years.

3.4.5-Standard Deviation (†):

Standard Deviation is a statistical measure and is widely used to measure risk from holding a single asset. The standard deviation represents a large dispersion of return and is a high risk and vice versa.

Symbolically,

$$\dagger_j = \sqrt{\frac{(R_j - \bar{R}_j)^2}{n}}$$

3.4.5- Coefficient of Variation (C.V.):

Coefficient of variation is the ratio of the standard deviation of a distribution to the mean of that distribution. It is a measure of relative risk.

Symbolically,

$$\text{Coefficient of variance (C.V.)} = \frac{\dagger}{R}$$

3.4.6-Covariance (cov.):

Covariance is the joint variance of two securities. It measures how two random variables, such as the return on security A and B move together. A positive value of covariance indicates that the securities returns tend to move in the same direction. A negative value of covariance indicates the return of securities move in the opposite direction and the zero value of covariance indicates no relationship between the securities return. It is the product of two different deviation divided by the number of observations.

Symbolically,

$$\text{Cov}_{j m} = \frac{(R_j - \bar{R}_j) * (R_m - \bar{R}_m)}{n}$$

Where,

$\text{Cov}_{j m}$ = covariance between security j and m.

3. 4.7- Beta coefficient (β_j):

Beta is an index of systematic risk. It measures how much systematic risk a stock j has relative to market portfolio.

Symbolically,

$$\beta_j = \frac{\text{Cov}(R_j, R_m)}{\text{Var}(R_m)}$$

where,

β_j = Beta coefficient of stock j.

$\text{Cov}(R_j, R_m)$ = covariance between stock j and market return.

Beta of market return equals to 1. If beta is greater than 1, then the assets is more volatile then market and is called aggressive beta. If the beta is less than 1, the asset is called defensive beta and its price fluctuation is less volatile then market.

3. 4. 8- Capital Assets Pricing Model (CAPM):

Capital assets pricing model describes the relationship between risk and required return. A security's expected return is the risk free rate plus a premium based on the systematic risk of the security.

Symbolically,

$$\bar{R}_j = R_f + [\beta_j (R_m - R_f)]$$

Where,

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

R_m = the expected return on the market portfolio.

$$s_j = \text{cov}(R_j, R_m) / \text{Var } R_m$$

3. 4.9- Systematic Risk:

Systematic risk is known as the undiversifiable risk. This risk is those portions of total variability in return caused by market factor that simultaneously affect the price of all securities.

Symbolically,

$$\text{Systematic risk} = s_{jm}^2 | t_m^2$$

Where,

s_{jm}^2 = Beta coefficient of security.

t_m^2 = Variance of market.

3.4.10-Unsystematic Risk:

Unsystematic risk is also called diversifiable. This type of risk is unique to an organization and can be largely eliminated by holding a diversified portfolio of investment.

Symbolically,

Unsystematic risk = Total risk – Systematic risk

or

$$\text{Var}(e) = t_j^2 Z S_{jm}^2 t_m^2$$

where,

Var(e) = variance of standard error.

3.4.11- Portfolio Return (R_p)

It is the weighted average returns of the stocks in the portfolio of two or more securities.

Symbolically,

$$R_p = W_1 \bar{R}_1 + \dots + W_n \bar{R}_n$$

Where,

\bar{R} = return of the portfolio

W_1 = weight of stock 1

\bar{R}_1 = Expected return of stock 1

W_n = weight of stock n

R_n = expected return of stock n.

3.4.12- Portfolio Standard Deviation (σ_p)

It is the combined standard deviation of the individual stocks return in the portfolio of two or more securities.

Symbolically,

$$\sigma_p^2 = W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2W_1W_2Cov_{12}$$

Where,

σ_p^2 = variance of the portfolio returns of stock.

W_1^2 = weight of return of stock 1.

σ_1^2 = variance of return of stock 1.

$W_2^2 =$ weight of return of stock 2.

$\sigma_2^2 =$ variance of return of stock.

$Cov_{12} =$ covariance between returns of stock 1 and 2.

3.4.13- Cut of Rate

The cut of rate gives the number of securities that can be added to construct the optimal portfolio.

Symbolically,

$$C_j = \frac{\sigma_m^2 \frac{(R_j - R_f) S_j}{\sigma_{ei}^2}}{1 + \sigma_m^2 \sum_{j=1}^n \frac{S_j^2}{\sigma_{ei}^2}}$$

Where,

$\sigma_m^2 =$ variance of the market index.

$R_j =$ expected return of stock j.

$R_f =$ risk free rate of return.

$\sigma_{ei}^2 =$ unsystematic risk of stock j.

$S_j =$ beta of stock j.

Chapter- IV

ANALYSIS AND PRESENTATION OF DATA

This chapter includes analysis of data and their presentation. Detail data of each bank and data of NEPSE index is presented and their interpretation and

analysis. Most of the data are presented in a tabular form with appropriate figures where necessary.

4.1- Risk and Return Analysis:

A major purpose of investment is to get a return or income on the funds invested. The expected rate of return or holding period return is based upon the expected cash receipts over the holding period and the expected ending or selling price. The possible rates of return estimated by the investor are summarized in an expected rate of return. The expected rate of return must be equal or greater to the required rate of return.

Standard deviation is used to measure an associated risk of the securities. The high standard deviation represents high risk and low standard deviation represents a low risk.

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

Table- 1

Expected Return(\bar{R}), Standard Deviation (\uparrow), Coefficient of Variance (C.V.) of Banks.

Fiscal Year	Nabil	NIBL	EBL	NSCBL	NSBI	BOK	Total	\bar{R}	\uparrow	C.V.
059/60	0.07	0.07	0.08	0.13	-0.34	-0.20	-0.19	-0.03	0.19	6.33
060/61	0.44	0.20	0.57	0.13	0.20	0.54	2.08	0.35	0.19	0.54
061/62	0.57.	-0.14	0.690	0.41	0.10	0.51	2.14	0.36	0.32	0.88

062/63	0.55	1.37	0.61	0.92	0.84	1.98	6.26	1.04	0.54	0.52
063/64	1.32	0.86	1.45	1.49	1.81	0.64	7.57	1.26	0.43	0.34
Total	2.95	2.36	3.4	3.08	2.6	3.47				
\bar{R}	0.59	0.47	0.68	0.62	0.52	0.69				
†	0.45	0.63	0.49	0.59	0.84	0.79				
C.V.	0.35	1.34	0.72	0.95	1.5	1.14				

According to above table the expected rate of return of banks Nabil, NIBL, EBL, SCB, SBI and BOK were 0.59, 0.47, 0.68, 0.62, 0.52 and 0.69 respectively. Investors expect to get highest return from BOK(i.e. 69%) and lowest return form NIBL (i.e.47%). BOK stock is profitable among the stock. Standard deviation of NSBI is highest and standard deviation of Nabil is lowest

Coefficient of variation (c.v.) reveals risk per unit of return and provides better possible values for risk. It is computed to measure risk in relative term. Higher C.V. exposes higher risk and lower C.V. exposes lower risk. C.V. defines that one unit change in risk will change 0.35, 1.34, 0.72, 0.95, 1.5, and 1.14 unit change in the return of Nabil, NIBL, EBL, NSCBL, NSBI and BOK respectively. Nabil is the best security on the base of coefficient of variation.

Figure-6
Expected Risk and Return of Banks

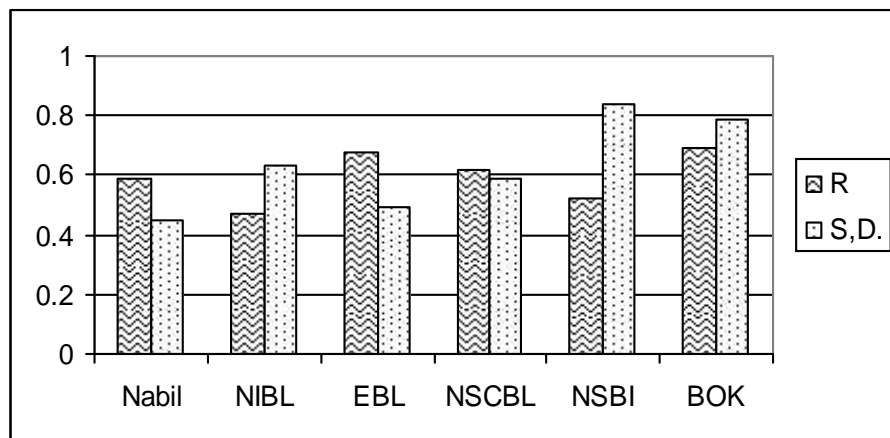
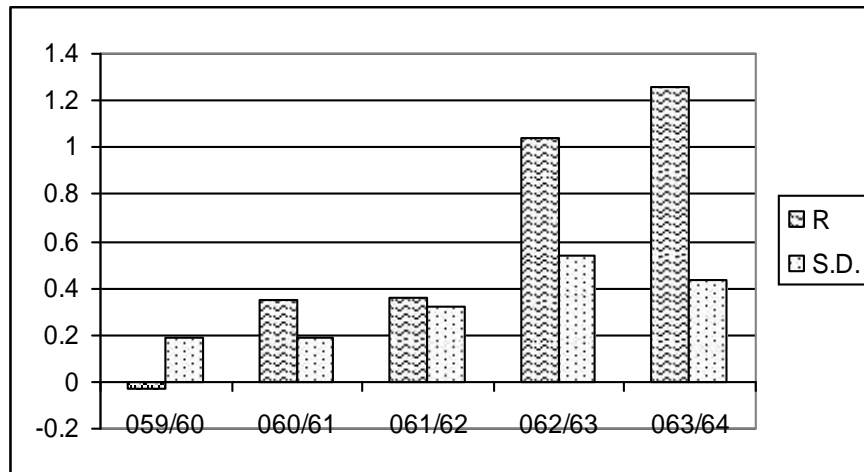


Figure-7
Expected Risk and Return of the year



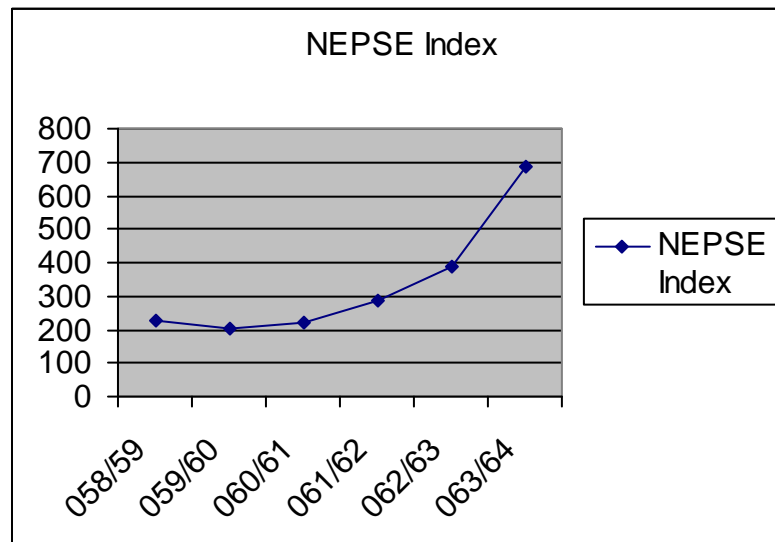
In the comparison of fiscal year, the expected rate of return ranged from -0.03 to 1.26. Above the graph presents that highest expected rate of return (1.26) in the year 063/64. In year 059/60 it has negative return. On the base of return 063/64 year is the best year. 062/63 is the highest risky year in comparison of other year.

4.2- Analysis of Market Risk and Return:

Nepal Stock Exchange (NEPSE) is the only secondary stock market in Nepal and overall market index is represented by NEPSE. Market risk and return are the most important factors to analyze the risk and return of individual stocks.

Following is the calculation of market return, standard deviation and coefficient of variation of NEPSE from 059/60 to 063/64.

Figure-8
NEPSE index

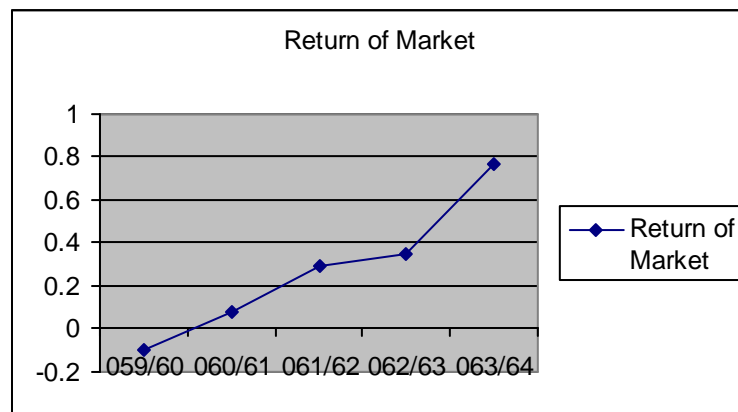


NEPSE index ranged from 205 to 687 during the research period. The index is increasing year by year.

Table- 2
Calculation of NEPSE return

Fiscal Year	NEPSE Index	$R_m = \frac{NI_t Z NI_{tZ}}{NI_{tZ}}$	$R_m - \bar{R}_m$	$(R_m - \bar{R}_m)^2$
058/59	228			
059/60	205	-0.10	0.38	0.1444
060/61	222	0.08	-0.2	0.04
061/62	287	0.29	0.01	0.0001
062/63	387	0.35	0.07	0.0049
063/64	686	0.77	0.49	0.2401
Total		1.39		0.4295
\bar{R}_m		0.28		
†	0.33			
† ²	0.11			
C.V.	1.18			

Figure-9
Return of Market



The return of market is negative in first year. The rate of return is increasing year by year up to 77%. The table shows expected return is 28% and it's standard deviation is 33% and coefficient of variation is 1.18 times.

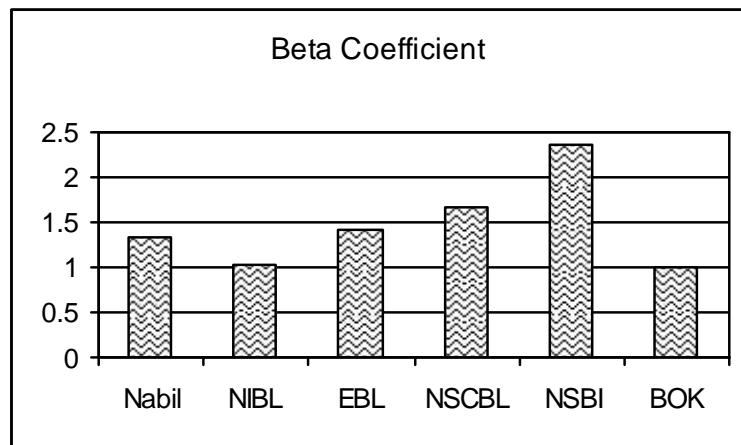
4.3- Analysis of Market sensitivity:

In this research beta coefficient is taken as the measurement of market sensitivity. Higher the beta higher will be the market sensitivity and higher will be the reaction to the market movement. Beta coefficient represents systematic risk of particular assets relative to the market. It is the key element of the CAPM. Beta measures non-diversifiable risk. Beta shows how the price of a security responds to market forces. Market sensitivity looks how sensitive are stocks return to the average market returns by looking at the percentage change in stock and market return during the same period. The following table shows the beta coefficient of each bank.

Table- 3
Beta coefficient of banks:

S.N.	Name of Banks	Beta(s)
1	Nabil	1.32
2	NIBL	1.03
3	EBL	1.41
4	NSCBL	1.66
5	NSBI	2.37
6	BOK	1

Figure-10
Beta Coefficient



According to the diagram, all the beta coefficient of banks is positive. Beta of NSBI is the highest 2.37 which means the stock of NSBI is highly sensitive with the market return.

4.4-Systematic and Unsystematic Risk:

Systematic risk is the portion of the total risk of an individual security caused by market factor that simultaneously affects the prices of all securities. It can't be diversified away. It is also called market risk or unavoidable risk or beta risk.

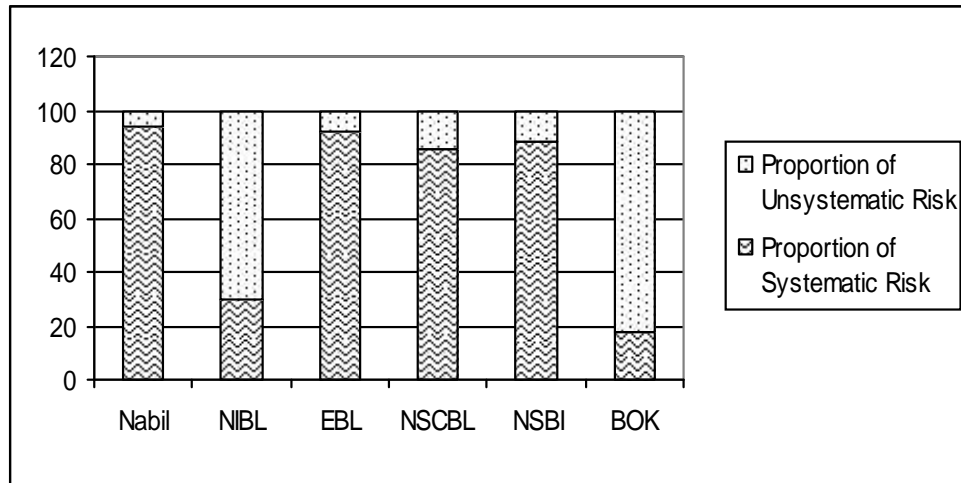
Unsystematic risk is the portion of total risk that can be diversified away. It is also called non-market risk or avoidable risk or diversifiable risk.

Table -4
Calculation of systematic and unsystematic risk

Banks	Total Risk	Systematic Risk	Proportion	Unsystematic Risk	Proportion
Nabil	0.2025	0.19	94	0.10	6
NIBL	0.3969	0.12	30	0.28	70
EBL	0.24	0.22	92	0.20	8
NSCBL	0.3481	0.30	86	0.04	14
NSBI	0.7056	0.62	88	0.08	12
BOK	0.6241	0.11	18	0.51	82

The systematic risk of Nabil, NIBL, EBL, NSCBL, NSBI and BOK are 0.192, 0.117, 0.219, 0.303, 0.618 and 0.11 and unsystematic risk are 1.05, 28, 2.1, 4.5, 8.7,6.8. NSBI has highest systematic risk and NIBL has highest unsystematic risk.

Figure-11
Proportion of unsystematic and systematic risk



4.5-Analysis of Required Return:

Investors should know whether the capital they are investing is safe or not .
 Study of required rate of return is necessary for investors before investing. The following table shows the required return of each bank.

Table-5

Banks	R_m	R_f	$R_m - R_f$	Beta(β)	Required Return
Nabil	0.28	0.032	0.248	1.32	0.36
NIBL	0.28	0.032	0.248	1.03	0.29
EBL	0.28	0.032	0.248	1.41	0.38
NSCBL	0.28	0.032	0.248	1.66	0.44
NSBI	0.28	0.032	0.248	2.37	0.61
BOK	0.28	0.032	0.248	1	0.28

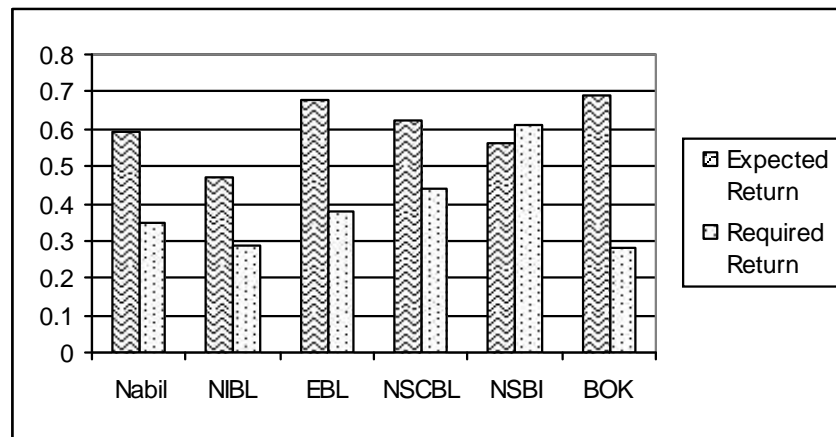
4.6- Comparison of Required Return with Expected

Return:

Table-6
Comparison of Required Return with Expected Return

Banks	Beta	Expected Return	Required Return	Remarks
Nabil	1.32	0.59	0.35	Undervalued
NIBL	1.03	0.47	0.29	Undervalued
EBL	1.41	0.68	0.38	Undervalued
NSCBL	1.66	0.62	0.44	Undervalued
NSBI	2.37	0.56	0.61	Overvalued
BOK	1	0.69	0.28	Undervalued

Figure-12



4.7- Portfolio Risk and Return:

Risk and return are based on the investment of single assets. Investor had constructing a portfolio to minimize risk and increase its return. The analysis of risk and return made up was only as a point of view on individual investors, that if he/she should invest in which banks securities? Which banks securities is more risky to comparing with each other? Constructing of portfolio or making an investment in more then one asset, which are negatively correlated, can reduce unsystematic risk without loosing any return.

Table -7

Calculation of Portfolio Risk and Return

Proportion		Proportion		R_p	\dagger_p
(Nabil)	1	(NIBL)	0	0.59	0.45
	0.75		0.25	0.56	0.44
	0.50		0.50	0.53	0.47
	0.25		0.75	0.50	0.54
	0.0		1	0.47	0.63
(EBL)	1	(NSCBL)	0	0.68	0.49
	0.75		0.25	0.665	0.50
	0.50		0.50	0.65	0.52
	0.25		0.75	0.635	0.55
	0		1	0.62	0.59
(SBI)	1	(BOK)	0	0.52	0.84
	0.75		0.25	0.5625	0.74
	0.50		0.50	0.605	0.70
	0.25		0.75	0.6475	0.715
	0		1	0.69	0.79
(NIBL)	1	(EBL)	0	0.47	0.63
	0.75		0.25		0.53
	0.50		0.50		0.47
	0.25		0.75		0.45
	0		1		0.49
(NIBL)	1	(NSCBL)	0	0.47	0.63
	0.75		0.25	0.507	0.58
	0.50		0.50	0.545	0.56
	0.25		0.75	0.5825	0.564
	0		1	0.62	0.59
(NIBL)	1	(NSBI)	0	0.47	0.63
	0.75	0.25		0.4825	0.634
	0.50	0.50		0.495	0.67
	0.25	0.75		0.5075	0.7461
	0	1		0.52	0.84
(NIBL)	1	BOK	0	0.47	0.63
	0.75		0.25	0.525	0.65
	0.50		0.50	0.58	0.68
	0.25		0.75	0.635	0.79
Nabil	1	EBL	0	0.59	0.45
	0.75		0.25	0.6125	0.46
	0.50		0.50	0.635	0.47
	0.25		0.75	0.6575	0.48
	0		1	0.68	0.49
Nabil	1	NSCBL	0	0.59	0.45
	0.75		0.25	0.5975	0.47
	0.50		0.50	0.605	0.51

	0.25		0.75	0.6125	0.4750
	0		1	0.62	0.59
Nabil	1	SBI	0	0.59	0.45
	0.75		0.25	0.5725	0.54
	0.50		0.50	0.555	0.64
	0.25		0.75	.5375	0.74
	0		1	0.52	0.84
Nabil	1	BOK	0	0.59	0.45
	0.75		0.25	0.6025	0.43
	0.50		0.50	0.64	0.50
	0.25		0.75	0.665	0.63
	0		1	0.69	0.79
EBL	1	SBI	0	0.68	0.49
	0.75		0.25	0.64	0.57
	0.50		0.50	0.60	0.65
	0.25		0.75	0.56	0.74
	0		1	0.52	0.84
EBL	1	BOK	0	0.68	0.49
	0.75		0.25	0.6825	0.46
	0.50		0.50	0.685	0.518
	0.25		0.75	0.6875	0.64
	0		1	0.69	0.79
NSCBL	1	SBI	0	0.62	0.59
	0.75		0.25	0.595	0.6455
	0.50		0.50	0.57	0.7065
	0.25		0.75	0.545	0.7716
	0		1	0.52	0.84
NSCBL	1	BOK	0	0.62	0.59
	0.75		0.25	0.6375	0.5578
	0.50		0.50	0.655	0.5873
	0.25		0.75	0.6725	0.67
	0		1	0.69	0.79

If investor interested to invest in two bank portfolio, the top five portfolio will be:

25% of NSCBL and 75% of NSBI	77%
75% of SBI and 25% of Bok	74%
25% of NIBL and 75% of NSBI	74%
25% of Nabil and 75% of NSBI	74%
25% of EBL and 75% of NSBI	74%

4.8 - Single Index model:

4.8.1 Simple Sharpe Portfolio Optimization:

Calculation of Cut of Rate
Table-8

Banks	Cut of Rate	Z value
Nabil	0.0065	48
NIBL	0.0018	1
EBL	0.043	28.
NSCBL	0.0022	12
NSBI	0.015	5
BOK	0.0104	9

To construct the optimum portfolio, the percentage invested for each security in the optimum portfolio is to be calculated. To find out the weight of selected securities in portfolio, z value is calculated. Weight is the proportion of z value on the base of total z value of portfolio.

Calculation of z value and Weight

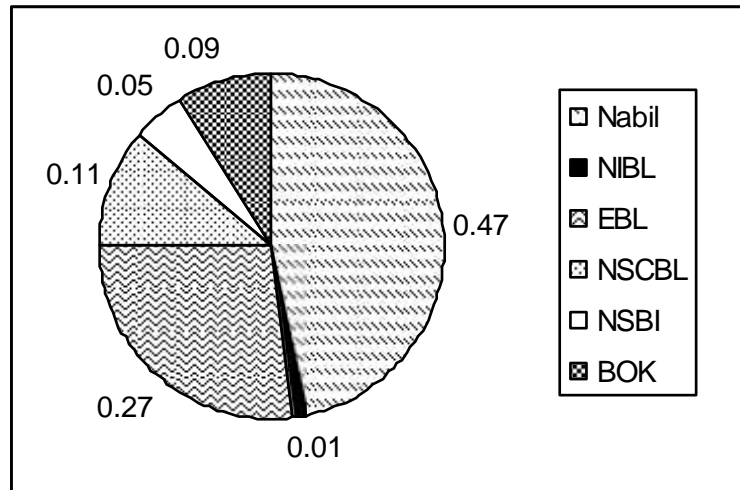
Table-9
Calculation of z value and Weight

Bank	Z value	Weight
Nabil	48	0.47
NIBL	1	0.01
EBL	28	0.27
NSCBL	12	0.11
NSBI	5	0.05
BOK	9	0.09
Total	103	

4.8.2 Optimum Portfolio Composition

Figure-13

Optimum Portfolio Composition



Above chart shows the proportion of optimum portfolio securities. We would invest our fund 47% in Nabil, 27% in EBL, 11% in NSCBL, 9% in BOK, 5% in NSBI, and 1% in NIBL.

Chapter-5

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary:

The development of any country depends upon its economic development. Financial restructuring is necessary for economic development. Similarly, good investment policies have a positive impact on economic development of the country.

Today in the changing nature of competition and in the increasing pressure of globalization, investment management has become the most critical determinant of investment. The changing life standard has always been challenging to the business community and also has given opportunities to produce different types of goods and services to fulfill the changing needs of people. No investor invests their capital until they are fully assured that investment is safe it requires a present sacrifice for a future uncertain benefit. According to the capacity of risk bearing, investors are different nature. Some are risk averse and some may be neutral.

Risk and Return is the key factor to analysis the financial condition of the company for investor. Risk and return move together. No one can guess, what turn the rate of return will take in the future. No investor will be ready to invest their capital on risky assets unless they are not assured of adequate compensation for accepting the risk.

Nepal.

Portfolio is a bundle of or combination of individual assets or securities. The investment portfolio usually offers the advantage of reducing risk through diversification of risk from risky investment to less risky investment. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate if the investor diversify funds into many more securities, that continue to spread out firm specific factor and portfolio volatility should continue to fall. Therefore portfolio analysis considers the determination of future risk and return.

Objectives of this research are to find out risk and return analysis of stock, to find out the portfolio of investment for an investor , and to find out optimal portfolio among the security trading in NEPSE. The data used in this study are mainly secondary data. Six listed commercial banks in NEPSE are taken as a sample. Cross sectional data are used to analyzed risk and return. With the help of expected rate of return standard deviation, variance and coefficient of variation, market sensitivity expected risk and return of commercial banks are analyzed. With the help of beta of the stocks, covariance with the market, systematic and unsystematic risk, the required rate of return of commercial banks is evaluated.

Sharpe's optimum portfolio model/single index model used to find out the optimum portfolio among the sample securities. To make the analysis easy to understand some related studies are reviewed. Tables and diagrams are used to Present the data and results from the analysis. Following findings are summarized and made conclusion as follows:

Major findings:

The major findings and conclusion of the study from different analysis are as follows:

- ❖ The expected return is an average return of the investment of the banks. Bank of Kathmandu has highest return i.e. 69%. The expected return of all the banks are above the 45%.
- ❖ Risk is the variability of Returns, which is measured in terms of S.D. of return. NSBI has highest 84% S.D. and Nabil has 45% lowest S.D.
- ❖ Market Return of NEPSE is 28%, Standard deviation 33% and Coefficient of variation is 1.18 Times.
- ❖ Beta coefficient represents systematic risk of particular assets relative to the market. According to the calculation NSBI has highest beta that is 2.37 and NIBL has 1.03 and all has greater than 1 . All stock has aggressive stock.
- ❖ Investors are risk lover and risk avoider. Risk lover investor ready to bear risk for higher rate of return and risk avoider investor try to avoid facing high risk and became ready to be satisfied in low return.
- ❖ CAPM describes the relationship between risk and required return. All of commercial banks except NSBI, rate of return is less than expected rate of return and under priced and NSBI's overpriced.

- ❖ The portfolio risk on investment is less than that of risk on individual investment that shows that portfolio analysis is useful to reduce risk. The portfolio risk and return analysis shows that higher risk shows higher return and lower risk shows lower return.

- ❖ Sharpe single index model helps to find out the optimum portfolio of NSE. The proportion of optimum portfolio security to invest 47% in Nabil, 27% in EBL, 11% in NSCBL, 9% in BOK , 5% in NSBI and 1% in NIBL.

Conclusion:

All the bank able to attract the investors because of their performance. The expected return of all the banks are above 45%. The banks providing good return to the investors and able to achieve the trust of people. All the banks has beta of greater than 1, that means all the banks has aggressive stock. By the analysis of different tools and techniques and monitoring closely the market, we can able to know about the movement of stock. Which gives us minimizing the risk and maximizing the return .By the analysis of single index model, we can construct optimum portfolio and invest on that optimum portfolio which will give us minimum risk and maximum return.. We can hope, our country is in transition period, we are in peace process. After the peace process, nation will on the way of progress and our economy establish which leads to develop the stock market.

5.4 Recommendation:

From the analysis of the study, the following recommendation and suggestions.

- ❖ Investment in single assets is not a possible to minimize risk, diversification of investments makes possible to minimize risk.
- ❖ Nepalese investors have not well known about the portfolios theory and investment strategies, they should have well known to achieve highest return with low risk.
- ❖ NEPSE is the only market of providing information, it is not sufficient and reliable for making investment decision. So NEPSE need to flow properly information about stock market.
- ❖ Government can play important role to provide information to investors and also aware program about stock market through government broadcasting and publishing.
- ❖ Except NSBI, required rate of return are less than expected rate of return, stock are under priced. So, investor points of view suggest purchasing securities.
- ❖ To reduce risk in future, under priced stock should be purchase, when market price will rise, sale the over priced securities.

- ❖ Investors always want to minimize risk or maximize return. By analysis of different tools and techniques and watching the stock market closely will provide which stock to purchase and when.
- ❖ Investors can also evaluate the risk of the concerned companies by its beta. If beta is greater than 1, that share is risky. If beta is less than 1, that security is less risky.
- ❖ People have liquidity but they are unproductive. Investment in common stock is very risky job. There is not any guarantee in return. So try to find out available best alternative or various investment strategies and best portfolio, which will increase wealth position of the investor and indirectly contribute to the economic growth of nation.
- ❖ With the help of single index model, optimum portfolio to invest is 47% in Nabil, 27% in EBL, 11% in NSCBL, 9% in BOK, 5% in NSBI and 1% in NIBL.
- ❖ Last decade, political instability affects the economy of the nation. Now the country is going through a peace process, and we can hope for a better economic condition of the nation. This will develop the securities market and its transaction.

Annex-1

Calculation of Total Dividend

Nabil

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	735	-	-	-	-
059/60	735	50		50	85
060/61	1000	65		65	93
061/62	1505	70		70	105
062/63	2240	85		85	129
063/64	5050	137		137	140

NIB

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	760	-	-	-	-
059/60	795	20		20	39.56
060/61	940	15		15	51.7
061/62	800	12.5		12.5	39.50
062/63	1260	55.46	35.46%	633.1	59.35
063/64	1729	30	25%	617.5	62.57

Total Dividend= DPS + Stock Dividend% * Next years MPS

EBL

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	430	-	-	-	-
059/60	445	20		20	29.9
060/61	680	20		20	45.58
061/62	870	-	20%	275.80	54.22
062/63	1379	25		25	62.78
063/64	2430	10	30%	949.60	78.4

BOK

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	254	-	-	-	-
059/60	198	5		5	17.72
060/61	295	10		10	27.5
061/62	430	15		15	30.10
062/63	850	18	30%	430.5	43.67
063/64	1375	20		20	

NSBI

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	401	-	-	-	-
059/60	255	8		8	11.47
060/61	307	-		-	14.26
061/62	335	-		-	13.29
062/63	612	5		5	18.27
063/64	1176	12.59	35%	541.44	39.35

SCBL

Fiscal Year	Closing MPS	DPS	Stock Dividend%	Total Dividend	EPS
058/59	1550	-	-	-	-
059/60	1640	110		110	149.3
060/61	1745	110		110	143.55
061/62	2345	120		120	143.14
062/63	3775	130	10	720	175.84
063/64	5900	80	50	3495	167.37

Annex-2

Single Year Holding Period Return Nabil

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	735	-	-
059/60	735	50	0.07
060/61	1000	65	0.44
061/62	1505	70	0.58
062/63	2240	85	0.54
063/64	5050	137	1.32

NIBL

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	760	-	-
059/60	795	20	0.07
060/61	940	15	0.20
061/62	800	12.5	-0.14
062/63	1260	633.10	1.37
063/64	1729	617.5	0.86

EBL

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	430	-	-
059/60	445	20	0.08
060/61	680	20	0.57
061/62	870	275.80	0.69
062/63	1379	25	0.61
063/64	2430	949.6	1.45

BOK

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	254	-	-
059/60	198	5	-0.20
060/61	295	10	0.54
061/62	430	15	0.51

062/63	850	430.5	1.97
063/64	1375	20	0.64

NSBI

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	401	-	-
059/60	255	8	-0.34
060/61	307	-	0.20
061/62	335	-	0.09
062/63	612	5	0.84
063/64	1176	541.44	1.81

SCBN

Fiscal Year	Closing MPS	Total Dividend	R = $\frac{D_t \Gamma(P_t Z P_{tZ})}{P_t Z P_{tZ}}$
058/59	1550	-	-
059/60	1640	110	0.13
060/61	1745	110	0.13
061/62	2345	120	0.41
062/63	3775	720	0.92
063/64	5900	3495	1.49

Annex-3

Standard Deviation and Variance Nabil

Year	R_j	$R_j \bar{Z} \bar{R}$	$(R_j \bar{Z} \bar{R})^2$
059/60	0.07	-0.52	0.2704
060/61	0.44	-0.15	0.0225
061/62	0.58	-0.01	0.0001
062/63	0.54	-0.05	0.0025
063/64	1.32	0.73	0.5329
Total			0.828

$$\dagger^2 \times \frac{\sum R_j \bar{Z} \bar{R}}{n \bar{Z} \bar{R}} = \frac{0.828}{5 \bar{Z} \bar{R}} = 0.2045$$

$$\dagger = 0.45$$

NIBL

Year	R_j	$R_j \bar{Z} \bar{R}$	$(R_j \bar{Z} \bar{R})^2$
059/60	0.07	-0.4	0.16
060/61	0.20	-0.27	0.0729
061/62	-0.14	-0.61	0.3721
062/63	1.37	0.9	0.81
063/64	0.86	0.39	0.1521
Total			1.5671

$$\dagger^2 \times \frac{1.5671}{5 \bar{Z} \bar{R}} = 0.3969$$

$$\dagger = 0.63$$

EBL

Year	R_j	$R_j \bar{Z} \bar{R}$	$(R_j \bar{Z} \bar{R})^2$
059/60	0.08	-0.60	0.36
060/61	0.57	-0.11	0.0121
061/62	0.69	0.01	0.0001
062/63	0.61	-0.07	0.0049
063/64	1.45	0.77	0.5929
Total			0.97

$$\dagger^2 \times \frac{0.97}{5 \bar{Z} \bar{R}} = 0.2425$$

$$\dagger = 0.49$$

BOK

Year	R_j	$R_j \bar{Z}\bar{R}$	$(R_j \bar{Z}\bar{R})^2$
059/60	-0.20	-0.89	0.7921
060/61	0.54	-0.15	0.0225
061/62	0.51	-0.18	0.0324
062/63	1.98	1.29	1.6641
063/64	0.64	0.05	0.0025
Total			2.5136

$$t^2 \times \frac{2.5136}{5 Z1} = 0.6284$$

$$t = 0.79$$

NSCBL

Year	R_j	$R_j \bar{Z}\bar{R}$	$(R_j \bar{Z}\bar{R})^2$
059/60	0.13	-0.49	0.2401
060/61	0.13	-0.49	0.2401
061/62	0.41	-0.21	0.0441
062/63	0.92	0.30	0.09
063/64	1.49	0.87	0.7569
Total			1.3712

$$t^2 \times \frac{1.3712}{5 Z1} = 0.3428$$

$$t = 0.59$$

NSBI

Year	R_j	$R_j \bar{Z}\bar{R}$	$(R_j \bar{Z}\bar{R})^2$
059/60	-0.34	-0.8/6	0.7396
060/61	0.20	-0.32	0.1024
061/62	0.09	-0.43	0.1849
062/63	0.84	0.32	0.1024
063/64	1.81	1.29	1.6641
Total			2.7934

$$t^2 \times \frac{2.7934}{5 Z1} = 0.6983$$

$$t = 0.84$$

Annex – 4

Covariance and Beta coefficient

Nabil

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	0.07	-0.52	-0.10	-0.38	0.1976
060/61	0.44	-0.15	0.08	-0.20	0.03
061/62	0.580	-0.01	0.29	0.01	-0.0001
062/63	0.54	-0.05	0.35	0.07	-0.0035
063/64	1.32	0.73	0.77	0.49	0.3577
Total					0.5817

$$\text{Covariance } (R_j, R_m) = \frac{(R_j \overline{ZR_m}) * (R_m \overline{ZR_m})}{n Z1} = \frac{0.5817}{4} = 0.1454$$

$$\text{Beta } (s) = \frac{\text{Covariance } (R_j, R_M)}{\text{Var}R_m} = \frac{0.1454}{0.11} = 1.32$$

NIBL

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	0.07	-0.40	-0.10	-0.38	0.152
060/61	0.20	-0.27	.08	-0.20	0.054
061/62	-.14	-0.61	0.29	0.01	-0.0061
062/63	1.37	0.90	0.35	0.07	0.063
063/64	0.86	0.39	0.77	0.49	0.1911
Total					0.454

$$\text{Covariance } (R_j, R_m) = \frac{0.454}{5 Z1} = 0.1135$$

$$\text{Beta } (s) = \frac{0.1135}{0.11} = 1.03$$

EBL

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	0.08	-0.6	-0.10	-0.38	0.228
060/61	0.57	-0.11	0.08	-0.20	0.022
061/62	0.69	0.01	0.29	0.01	0.0001
062/63	0.61	-0.07	0.35	0.07	-0.0049
063/64	1.45	0.77	0.77	0.49	0.3773
Total					0.6225

$$\text{Covariance } (R_j, R_m) = \frac{0.6225}{5 Z1} = 0.1556$$

$$\text{Beta } (s) = \frac{0.1556}{0.11}$$

NSCB

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	0.13	-0.49	-0.10	-0.38	0.1862
060/61	0.13	-0.49	0.08	-0.20	0.098
061/62	0.41	-0.21	0.29	0.07	-0.0021
062/63	0.92	0.30	0.35	0.07	0.021
063/64	1.49	0.87	0.77	0.49	0.4263
Total					0.7294

$$\text{Covariance } (R_j, R_m) = \frac{0.7294}{5 Z1} = 0.1824$$

$$\text{Beta } (s) = \frac{0.1824}{0.11} = 1.66$$

NSBI

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	-0.34	-0.90	-0.10	-0.38	0.342
060/61	0.20	-0.36	0.08	-0.20	0.072
061/62	0.09	-0.47	0.29	0.01	-0.0047
062/63	0.84	0.28	0.35	0.07	0.0196
063/64	1.81	1.25	0.77	0.49	0.6125
Total					1.0414

$$\text{Covariance } (R_j, R_m) = \frac{1.0414}{5 Z1} = 0.2603$$

$$\text{Beta } (s) = \frac{0.2603}{0.11} = 2.37$$

BOK

Fiscal Year	R_j	$(R_j \overline{ZR_j})$	R_m	$(R_m \overline{ZR_m})$	$(R_j \overline{ZR_j}) * (R_m \overline{ZR_m})$
059/60	-0.20	-0.89	-0.10	-0.38	0.3382
060/61	0.54	-0.15	0.08	-0.20	0.03
061/62	0.51	0.18	0.29	0.01	0.0018
062/63	1.98	1.29	0.35	0.07	0.0903
063/64	0.64	-0.05	0.77	0.49	-0.0245
Total					0.4358

$$\text{Covariance } (R_j, R_m) = \frac{0.4358}{5 Z1} = 0.1089$$

$$\text{Beta } (s) = \frac{0.1089}{0.11} = 1$$

Annex-5

Systematic Risk

Banks	S_j	S_j^2	\uparrow_m^2	Systematic Risk
Nabil	1.32	1.7424	0.11	0.192
NIBL	1.03	1.0609	0.11	0.117
EBL	1.41	1.9881	0.11	0.219
NSCBL	1.66	2.7556	0.11	0.303
NSBI	2.37	5.6169	0.11	0.618
BOK	1	1	0.11	0.11

$$\text{Systematic Risk} = \uparrow_m^2 * S_j^2$$

Unsystematic Risk

Banks	Total Risk(\uparrow_j^2)	Systematic Risk	Unsystematic Risk (Total risk- Systematic risk)
Nabil	0.2025	0.19	0.10
NIBL	0.3969	0.12	0.28
EBL	0.24	0.22	0.20
NSCBL	0.3481	0.30	0.04
NSBI	0.7056	0.62	0.08
BOK	0.6241	0.11	0.51

Annex-6

Calculation of Cut of Rate (C_j)

$$\text{Cut of Rate}(C_j) = \frac{\uparrow_m^2 (R_j - ZR_f) S_j}{1 + \Gamma \uparrow_m^2 \frac{S_j}{\uparrow_{ei}^2}}$$

$$\text{Nabil} = \frac{0.11 \frac{(0.59 Z_{0.032}) * 1.32}{1.05}}{1 \Gamma 0.11 \frac{1.32^2}{1.05}} = \frac{0.0077}{1.18} = 0.0065$$

$$\text{NIBL} = \frac{0.11 \frac{(0.47 Z_{0.032}) * 1.03}{28}}{1 \Gamma 0.11 \frac{1.03^2}{28}} = \frac{0.0018}{1.0042} = 0.0018$$

$$\text{EBL} = \frac{0.11 \frac{(0.68 Z_{0.032}) * 1.41}{2.1}}{1 \Gamma 0.11 \frac{1.41^2}{2.1}} = \frac{0.0479}{1.104} = 0.043$$

$$\text{NSCBL} = \frac{0.11 \frac{(0.69 Z_{0.032}) * 1.66}{4.5}}{1 \Gamma 0.11 \frac{1.66^2}{4.5}} = \frac{0.0024}{1.067} = 0.0022$$

$$\text{NSBI} = \frac{0.11 \frac{(0.69 Z_{0.032}) * 2.37}{8.7}}{1 \Gamma .11 \frac{2.37^2}{8.7}} = \frac{0.0158}{1.071} = 0.015$$

$$\text{BOK} = \frac{0.11 \frac{(0.69 Z_{0.032}) * 1}{6.8}}{1 \Gamma 0.11 \frac{1^2}{6.8}} = \frac{0.0106}{1.016} = 0.0104$$

Calculation of Z value

$$Z_j = \frac{S_j}{\dagger_{ei}^2} \left(\frac{R_j Z R_f}{S_j} Z C^* \right)$$

$$\text{Nabil} = \frac{1.32}{0.0105} \frac{0.59 Z_{0.032}}{1.32} Z_{0.043} = 48$$

$$\text{NIBL} = \frac{1.03}{0.28} \frac{0.47 Z_{0.032}}{1.03} Z_{0.043} = 1$$

$$\text{EBL} = \frac{1.41}{0.021} \frac{0.68 Z0.032}{1.41} Z0.043 = 28$$

$$\text{NSCBL} = \frac{1.66}{0.045} \frac{0.62 Z0.032}{1.66} Z0.043 = 12$$

$$\text{NSBI} = \frac{2.37}{0.087} \frac{0.56 Z0.032}{2.37} Z0.043 = 5$$

$$\text{BOK} = \frac{1}{0.068} \frac{0.69 Z0.032}{1} Z0.043 = 9$$

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