

Chapter 1

Introduction

1.1 Background of the study

Portfolio management is basically concerned with efficient management of portfolio investment in financial assets, including share and debenture of companies. Portfolio management assumes periodic supervision of the securities in portfolio. The basic problem of portfolio management is to establish an investment objective or goal and then decide the best way to reach the goal with the securities available. It leads the investors to obtain maximum return with minimum risk. It focuses on planning, implementing and monitoring.

A portfolio is a collection of investment securities. In other words, portfolio is a combination of proportions invested in different securities but not only one individual security.

According to Weston and Brigham, "A portfolio simply represents the practice among the investors of having their funds in more than one asset. The combination of investment assets is called a portfolio."

According to Raymond Brockington, "The term 'portfolio' simply means a collection of investments. For an investor through the stock exchange, the portfolio will be a collection of shareholdings in different companies."

The position of liquidity and profitability and the degree of risk associated with them are only the indicators taken into consideration while selecting the best option for investment.

Diversification of funds in different securities reduces the risk of capital loss and improves the expected returns of the investors. A well-known proverb, "**Don't put all the eggs in one basket**", gives us the knowledge that investors should not invest their all funds in one security rather they should invest in different securities which helps minimize the risk. It means there must be 'Diversification of the risk' with the proper diversification of the investment; risk will be diversified as a result the investors always stand on the safe side. The diversification in investment represents the portfolio management. Portfolio investment is investment in various securities in order to increase return by reducing risk. It is the selection of optimal alternative available and attainable that provides highest possible return from lowest possible risk.

Portfolio management is concerned with efficient management of portfolio investment in financial assets including shares and debentures of the companies.

According to Cohen, Zinbarg and Zeikel," Portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also over time appreciates in values and yields an adequate return consistent with the level of risk assumed".

Commercial Banks," Commercial Bank Act 1974 of Nepal has defined as "A commercial bank is one of which exchanges money, deposits money, accepts deposits, grants loans and performs commercial banking functions and which is not a bank meant for co-operative, agriculture, industrial or for such specific purpose."There are a lot of commercial banks at present but there are only some banks which are in good situation. So it is necessary to analyze how these banks have progressed and in which way investors select the commercial banks for investment purpose.

Before the establishment and operation of the stock exchange in Nepal, the only option left for the investors was bank deposits. But after the establishment of security market in Nepal and Stock Exchange has provided an avenue for the investors to invest the available funds in the securities .The Nepalese investors are not well acquainted with the financial status of the public companies on those securities they want to invest their funds. They are just found to be running after market trend. Therefore the decisions made by the investors sometimes, lead them to suffer loss instead of ample returned due to lack necessary data and information.

1.2 Focus of the Study

Modern banking history of Nepal began from the establishment of Nepal bank Ltd. in 1936. In 1956 Nepal Rastra Bank came in existence as a central bank of our country. The focus of the study is on portfolio analysis on investment of selected commercial bank in Nepal. This study is designed to minimized risk and maximized return by portfolio management and existing situation of portfolio management of commercial bank in Nepal. And to measure the financial performance of selected five listed banks in NEPSE, their risk, return, trend, and portfolio patterns etc. On the other hand, the study would provide information to management of the bank that would help them to take collective action. Further from the study, the shareholders would get information to make

decision while making investment on share of various banks. There are following focus of study given below:

- Existing situation of portfolio management of Nepalese commercial banks
- Investment to total deposit ratio analysis.
- Investment portfolio analysis of commercial banks and comparison with each other.
- Loans and advance portfolio analysis of commercial banks.
- Risk and return analysis of commercial banks in Nepal.

1.3 Statement of the problem

Day to day many mutual funds are increasing in the present globalization world. At that time there is need of money and intelligence to find which mutual fund has best performed, what investment strategies are applied, how does the mutual fund trend is going, in which mutual fund to be invested etc are one of the major emerging issue at present time. For finding these issues comparative analysis of such mutual funds is essential to purchase units of right mutual fund company.

From the study it is observed that Nepalese people hesitate to invest in the share market in present ruined condition. Many Nepalese investors invest their funds in tangible assets like building, machineries; jewelers etc or deposit their funds in bank because many Nepalese people are innocent about the share markets. Investors feel it's too difficult to find which company's shares to be purchased, how much money should be invested in different company's shares for higher return. They do not have any idea.

Due to lack of knowledge about risk and return, the investors who have invested their funds in some companies are also suffering from more risk and less return. It is found that the portfolio management technique is the most fruitful which helps to reduce the risk by increasing the expected rate of return. But due to lack of knowledge about various statistical and financial tools and techniques, the investors are facing a lot of problems.

1.4 Objective of the study

The prime objective of the study is to analyze and identify the existing situation in portfolio management of joint venture Banks in Nepal with a view to form an optimum investment portfolio among the securities of the companies listed

in NEPSE on the basis of monthly and annual report data from 2005 to 2010. The general objectives are as follow:

- To form optimum investment Portfolio.
- To examine investment situation of commercial banks in Nepal with reference to securities, loans and advances.
- To analyze the expected risk and return on common stock of commercial banks.
- To provide suggestions and recommendation to solve the problems faced by investors.

1.5 Importance of the study

Basically, this study is performed to apply the theoretical concept and knowledge of portfolio analysis to the practical aspect as a partial fulfillment of the requirement of Masters of Business Studies (MBS) under the faculty of Management, Tribhuvan University. Investment practices are in increasing day by day, there found to be finger count research and studies are done in connection to this securities market. As the fulfillment of the objective of the study, the investor should be well familiar with the leading factors for making decision regarding investment. Therefore, this type of study will help them provide the basic knowledge regarding the choice of investment alternatives and help them being rational in making investment decision.

Today's national need is to optimum utilization of fund in economic activities and there by improves the economics of the country .However, within the process of such small portfolio management in the third world countries, like Nepal, the concept of portfolio management does not play a quite role. Like in many developing countries, Nepalese investors are disadvantage in portfolio management. Realizing these facts, many organizations have the constancy for portfolio development have been established. By the help of this knowledge it will be easy to investors to select the securities of the companies listed in NEPSE under Grade 'A' and formation of the optimum investment portfolio among the securities on the basis if available data and information.

In this way the research are significant in the following ways:

- It shows which investment company is better than another one in the term of return and its consistency.
- It explores the problems of investors and provides solutions or ways to overcome the challenges to do better portfolio performance.
- It provides the portfolio management performance of different commercial banks in Nepal.

- It also benefited to the Security Board of Nepal because the study tries to provide some recommendation to it as a government body on behalf of executives, financial teachers, stockbrokers and students who have knowledge about mutual fund.
- Last but not the least, it provides literature to the researcher who wants to carry on future research in the field.

1.6 Limitation of the study

The present research has the following limitations:

- This research study has been undertaken as partial fulfillment of the requirements for the degree of Master of Business Studies, T.U. So its analysis tools and research area is based on academic courses.
- The limitation of the study is the differential coverage of the data. For analysis of different aspect, the data availability differs in various periods. Data published from various sources differ .Figure published by Nepal Rastra Bank and other banks do not tally .Because of this ,the total in many places are not equal .However ,in the study ,Nepal Rastra Bank is taken as authentic source of data.
- This study is mainly based on secondary data. Due to lack of required data and relevant information the portfolio analysis can be limited within a narrow scope.
- Though an infinite number of portfolios can be constructed, but only a limited numbers of portfolios are formed.
- Stock dividend has not been considered; as a result the study may have some deficiencies.
- Time /budget constraints and the lack of experience may be the other limitation of this study.
- The analysis has been based on five years performance of the joint venture banks.

Despite those above mentioned limitations, this study has tried to provide valid result as far as possible and in depth study of portfolio performance analysis for the formation of optimum investment portfolio.

1.7 Organization of the study

The organization of this research study is as follows:

Chapter One: Introduction

Chapter Two: Review of Literature

Chapter Three: Research Methodology

Chapter Four: Data presentation and Analysis

Chapter Five: Summary, Conclusion and Recommendation

First chapter has described about the background of the research, statement of problems, objectives of the study, significant of the study, limitation of the study which has helped to develop the conceptual framework about the research problem and subject matters.

Second chapter i.e. review of literature has advanced the knowledge about subject matters as well as general method of doing research in portfolio investment and formation of optimum investment portfolio by studying different related research .This chapter also consist that how this present study is different from previous studies.

Third chapter, i.e. research methodology has dealt with the research design, population, and sample, sources of data, data collection technique and analysis tools to perform policy and frame work within which the best alternative for forming portfolio among available securities can be ascertained.

Fourth chapter, i.e. dada presentation and analysis, has evaluated and examine the prospects of investment portfolio formation in Nepal by testing hypothesis and major finding.

Fifth chapter includes the summary and conclusion of whole research study and remedial measures that can be applied for further creation, up gradation, advancement of portfolio investment opportunities for the existing and potential investors.

CHAPTER II

REVIEW OF LITERATURE

In the previous chapter of this study, we emphasis on the conceptual framework about the selected topics. In this section, it is considered to the review of major related literature about the portfolio management and its analysis commercial banks in Nepal.

There are only two banks prior to 1980's they are NBL and RBB. All the three CB's of 1980's were established as JVB. Similarly six CB's of past 1990's were also come into operating as JVB's. latest banks including Nepal Industrial and Commercial Bank Ltd., Laxmi Bank Ltd., Kumari Bank Ltd. , Lumbani Bank Ltd., Machapuchhre Bank Ltd., Siddhartha Bank Ltd., Global Bank Ltd., Citizen Bank Ltd., Prime Bank Ltd., Sunrise Bank Ltd. and Bank of Asia Nepal Ltd. were established by private sector. Consequently the names of the banks are also changed. Nepal Arab Bank Ltd., Nepal Grindlyas Bank Ltd., Nepal Indosuez Bank Ltd., Nepal Bank of Ceylon Ltd., is known as Nabil Bank Ltd., Nepal Standard-Chartered Bank Ltd., Nepal Investment Bank Ltd., Nepal Credit & Commerce Bank Ltd., respectively.

Nowadays, there are 31 commercial banks operating in Nepalese financial market along with 9 joint ventures with foreign investors.

Name list of commercial banks in Nepal under grade A

Table No 2.1

.No.	Names	Operation Date (A.D.)	Head Office	Paid up Capital (Rs. '00 Thousands)
1	Nepal Bank Ltd.	1937/11/15	Kathmandu	3804
2	Rastriya Banijya Bank Ltd.	1966/01/23	Kathmandu	3853
3	Agriculture Development Bank Ltd.	1968/01/02	Kathmandu	94375
4	Nabil Bank Ltd.	1984/07/16	Kathmandu	20298
5	Nepal Investment Bank Ltd.	1986/02/27	Kathmandu	24091
6	Standard Chartered Bank Nepal Ltd..	1987/01/30	Kathmandu	16102
7	Himalayan Bank Ltd.	1993/01/18	Kathmandu	20000
8	Nepal SBI Bank Ltd.	1993/07/07	Kathmandu	18693
9	Nepal Bangladesh Bank Ltd.	1994/06/05	Kathmandu	20103
10	Everest Bank Ltd.	1994/10/18	Kathmandu	11196
11	Bank of Kathmandu Ltd.	1995/03/12	Kathmandu	13595
12	Nepal Credit and Commerce Bank Ltd.	1996/10/14	Siddharthanagar, Rupandehi	13997
13	Lumbini Bank Ltd.	1998/07/17	Narayangadh, Chitawan	13000
14	Nepal Industrial & Commercial Bank Ltd.	1998/07/21	Biaratnagar, Morang	13116
15	Machhapuchhre Bank Ltd.	2000/10/03	Pokhara, Kaski	16272
16	Kumari Bank Ltd.	2001/04/03	Kathmandu	14850
17	Laxmi Bank Ltd.	2002/04/03	Birgunj, Parsa	16140
18	Siddhartha Bank Ltd.	2002/12/24	Kathmandu	15610
19	Global Bank Ltd.	2007/01/02	Birgunj, Parsa	15000
20	Citizens Bank International Ltd.	2007/06/21	Kathmandu	19223
21	Prime Commercial Bank Ltd	2007/09/24	Kathmandu	22457
22	Sunrise Bank Ltd.	2007/10/12	Kathmandu	18554
23	Bank of Asia Nepal Ltd.	2007/10/12	Kathmandu	15175
24	DCBL Bank Ltd.	2008/05/25	Kamaladi, Kathmandu	19209
25	NMB Bank Ltd.	2008/06/05	Babarmahal, Kathmandu	16517
26	Kist Bank Ltd.	2009/05/07	Anamnagar, Kathmandu	20000
27	Janata Bank Nepal Ltd.	2010/04/05	New Baneshwor, Kathmandu	14000
28	Mega Bank Nepal Ltd.	2010/07/23	Kantipath, Kathmandu	16310
29	Commerz & Trust Bank Nepal Ltd.	2010/09/20	Kamaladi, Kathmandu	14000
30	Civil Bank Ltd.	2010/11/26	Kamaladi, Kathmandu	12000
31	Century Commercial Bank Ltd.	2011/03/10	Putalisadak, Kathmandu	10800

(Source: <http://bfr.nrb.org.np>, 2011)

Different visions have been expressed by the scholars in respect of portfolio performance. Review of literature compare with previous articles concerned with this study i.e. portfolio performance regarding with joint venture banks in Nepal. After studying in detail it make clear in diversification concept and risk return characteristics of the securities of the selected companies. Therefore, this

chapter basically deals with the theoretical aspects of risk and return, the basic requirement of the portfolio formation for investors. In this connection, the concepts are reviewed in light of research perspective, different studies, thesis, related books, journals and articles.

2.1.1 Investment

An Investment of fund may be the question of appreciation or depreciation the position of individual's wealth. Thus, the investors must think seriously before making an investment decision."Investment in its broadest sense means the sacrifice of certain present value for (possibly uncertain) future value". Any kind of investment either real or financial ,each investment entails some degree of risk .Therefore ,the reduction of risk can be possible by the formation of optimum investment portfolio .The investment process might be the essential requirement for the understanding of making investment.

2.1.2 Investment process

The investment process describes how an investor should make investment decision with regards to what marketable securities to invest in and when the investment should be made .The investment process can be highlighted as:

- 1) Set investment policy
- 2) Perform security analysis
- 3) Construct a portfolio
- 4) Revise the portfolio
- 5) Evaluate the performance of the portfolio

The investment process can be explained as:

➤ **Set investment policy:**

It is the initial step which helps determine the investor's objectives and the amount of his investable wealth .Making money alone cannot be an appropriate objective. It is appropriate to state that the objective is to make a lot of money by recognizing the possible losses. Therefore, investment objective should be stated in term of risk and return. This step concludes with the identification of potential categories of financial assets for consideration in ultimate portfolio.

➤ **Perform security analysis:**

This step involves examining a numbers of individual securities within the broad categories of financial assets previously identified .There are many approaches to security analysis .However, most of these approaches can be classified into technical analysis and fundamental analysis .The first classification helps in study of stock market prices in an attempt to predict future price movement for the common stock of a particular firm by examining the past prices, pattern of price movements etc. whereas the second classification helps in computation of the real present value of an asset. Considering the expected cash flows, time factor and discount rate.

➤ **Construct a portfolio:**

It is the vital step which involves identifying those specific assets in which to invest as well as determining the proportions of the investor's wealth to put into each stock. Here the issue of sensitivity, timing and diversification need to be addressed by the investor. Investing in portfolio rather than in single security reduces risk. Diversification in portfolio involves constructing the investor's portfolio in such a manner that risk can be minimized.

➤ **Portfolio Revision:**

This process concerns with the periodic repetition of previous three steps considering that portfolio once constructed may not be optimal. Over the time the investor may change his investment objectives and from new portfolio by selling certain securities they are presently held and buying some new securities that are not currently held.

➤ **Portfolio Performance evaluation:**

The last step of investment process, portfolio performance evaluation, involves determining periodically how the portfolio performed, in terms of not only the return earned, but also the risk experienced by the investor. Thus appropriate measures of return and risk are needed.

2.1.3 Investment Portfolio

A portfolio is usually defined as a combination of assets .It is a collection of securities. 'Portfolio means the lists of holdings in securities owned by an investor or institution'. Portfolio analysis considers the determination of future risk and return in holding various blends of individual securities. Portfolio theory deals with the selection of optimal portfolios, i.e. portfolio that provides the highest possible return for any specified degree of risk or the lowest

possible risk for any specified rate of return. Portfolio theory has been developed for the financial assets. Thus portfolio that provides the highest rate of return with least possible amount of risk is the real investment portfolio.

"A portfolio simply represents the practice among the investors of having their funds in more than one asset. The combination of investment assets is called portfolio".

"A portfolio simply means collection of investments. For an investor in the stock exchange, the portfolio is a collection of different types of securities in different companies".

2.1.4 Common Stock

"Common stock represents a commitment on the part of a corporation to pay periodically whatever its board of directors deems appropriate as a cash dividend .It is a residual claim, in this sense that creditors and preferences shareholders must be paid as scheduled before common stock holders can receive any payments. In bankruptcy, common stock holders are in the principal entitled only to any value remaining after all other claimants have been satisfied."

Common Stock holders are entitled certain rights, which can be highlighted as:

- Control through voting rights
- Pre-emptive right
- Residual right
- Limited liability
- Right to income and distribution of additional shares

2.1.5 Risk on Common Stock

Risk is simply the uncertainty or lack of definite outcomes or chance of losing something due to presence of some unfavorable events. However, risk is the product of uncertainty.

Its magnitude depends upon the degree of variability in uncertain cash flows and it's measured in terms of standard deviation.

"In world of uncertainty, expected return may not be realized .Risk can be thought of as the possibility that the actual return from holding a security will deviate from expected return. The greater the magnitude of deviation and greater the probability of its occurrence, the greater is said to be the risk of the security."

"Financial analysts and statisticians prefer to use a quantitative risk surrogate called the variance of returns, denoted by $\text{var}(r)$. The variance of an asset's rate of return equals the sum of the product of the squared deviations of each possible rate of return from the expected rate of return multiplied by the probability that the rate of return occurs."

$$\text{Var}(r^2) = \sum_{t=1}^T p_t [r_t - E(r)]^2$$

$$= P_1 [r_1 - E(r_1)]^2 + P_2 [r_2 - E(r_2)]^2 + \dots + P_n [r_n - E(r_n)]^2$$

The square root of the variance of the rates of return is called the standard deviation (σ) of the rate of return.

$$S.D. (\sigma) = \sqrt{\text{Var}(r)}$$

The standard deviation and the variance equally acceptable and conceptually equivalent quantitative measure of an asset's total risk.

Sources of Investment Risk:

Since all investment entails some degree of risk for the future returns, the investors should be aware of the types and sources of risk. The sources of the uncertainty that contribute to investment risk are:

a) Interest Rate Risk: It is defined as the potential variability of returns caused by changes in the market interest rates. If market interest rates rise or fall, then the investments 'present value will fall or rise. Present value moves inversely with changes in the market interest rate. The interest rate risk affects the prices of bond, stocks, real estate, gold, future contracts and other investment as well.

b) Bull-Bear Market Risk: It arises from the variability in market returns, resulting from alternating bull and bear market forces. When a security index rises fairly consistently from a low point, called a trough, a period of time this upward trend is called a bull market. The bull market ends when the market index reaches a peak and starts a downward trend. The period during which the market declines to the next trough is called bear market. Bull markets that usually risk more than enough to compensate for the bear market losses follow bear markets. But the alternating bull and bear market forces create a potential source.

c) Default Risk: Default risk is that portion of an investment's total risk that results from changes in the financial integrity of the investment. The variability of returns that investors experience as a result of changes in the credit worthiness of a firm in which they invest is their default risk.

d) Purchasing Power Risk: It is the variability of return an investor suffers because of inflation. Economists measure the rate of inflation by using a price index. The percentage change in the consumer price index is a widely followed measure of the rate of inflation.

e) Management Risk: Errors made by business managers can harm those who invested in their firms. Forecasting management errors is a difficult task that may not be worth the effort and, as a result, imports a needlessly skeptical outlook. Agency theory provides investors with an opportunity to replace skepticism with informed insight as they endeavor to analyze subjective management risk.

f) Liquidity Risk: Liquidity is that portion of an asset's total variability of the return, which results in price discounts given or sales commissions paid in order to sell the asset without delay.

g) Callability Risk: Some bonds and preferred stocks are issued with a call provision. Issuers like the call provision because it allows them to buy back outstanding preferred stocks and for bonds with the funds from a new issue if market interest rates drop below the level being paid on the outstanding securities. But whatever the issuing company gains by calling in on an issue is gained at the expense of the investors who have their securities called.

The portion of the security's total variability of returns that derives from the possibility that the issue may be called is the callability risk. Callability risk commands a risk premium that comes in the form of a slightly higher average rate of return. This additional return should increase as the risk that the issue would be called increases.

h) Convertibility Risk: Conversion is the contractual stipulation that is included in the terms of original security issue. This provision alters the variability of returns from the affected security.

Convertibility risk is the portion of the total variability of return from a convertible bond or preferred stock that reflects the possibility that the investment may be converted into the issuer's common stock at a time or under terms harmful to the investor's best interest.

i) Industry Risk: It is the portion of an investment's total variability of return caused by events that affect the products and firm that make up an industry.

.The stage of the industry 's life cycle, international tariffs and or quotas on the products produced by an industry ,product or industry related taxes, industry wise labor union problems, environmental restrictions, raw material availability and similar factors interact and affect all the firms in an industry simultaneously. As a result of these commonalities, the prices of the securities issued by competing firms tend to rise and fall together.

j) Political Risk: Political risk arises from the exploitation of a politically weak group for the benefits of a politically strong group, with the affects of various to improve their relative position increasing the variability of return from the affected asset regardless of whether the charge that causes political risk are sought by political or by economic interests, the resulting variability of return is called political risk if it is accomplished through legislative ,Judicial or administrative branches of the government .Political risk can be international as well as domestic.

k) Financial Risk: The uncertainty about the rate of return from an investment caused by firm's sources of financing or the capital structure is known financial risk. It arises because of the uses of fixed cost capital like debt and preferred capital in a firm. The higher the fixed financing charges (interest and preferred dividend) higher the degree of financial risk. If there is no use of debt or preferred stock, an increase or decrease in operating income passes directly to equity holders. However, the use of fixed cost capital causes net income to vary at greater proportion than the operating income .In the other words, the magnitude of the change in net income due to the change in operating income is greater if there is the use of fixed cost capital .Firms exposed to high financial risk may incur heavy loss in spite of good operating profit.

The above mentioned uncertainties are the major sources of investment risk. Moreover, there might be numerous minor sources of investment risk.

2.1.6 Return on common stock

2.1.6.1The Single Period Rate of Return

The single- period rate of return is the basic random variable in investments analysis. It helps to measure the increase or decrease of investor's the wealth .It is denoted by r which simply indicates the total return that an investor receives during the holding period . It implies that the value may increase through (i) a direct cash payment to the investors i.e. dividend payment /interest (ii) or increase in the market price of the investment relative to the original purchase price .The rate of return over the holding period or holding period return can be computed as :

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

Holding period returns are often calculated for periods other than one year, for this reason the length of the holding period must always be indicated for a specific HPR.

Many HPRs over periods shorter than one year are annualized. In general, if the length of holding period is not specified, it is assumed to be one year. HPRs are reported as annual equivalent, therefore, one possible measure of annualized HPR might be the average of several HPRs which can be stated as :

$$\overline{\text{HPR}} = \frac{\sum_{t=1}^n (\text{HPR}_t)}{n}$$

However the annual rate of return can be stated as :

$$\text{Annual Rate of Return} = (1 + \text{HPR})^{1/n} - 1$$

2.1.6.2 Required Rate of Return

The required rate of return is the minimum rate of return that an investor expects from his investment in risky assets. It is the function of real rate of return and risk, the required rate of return is the return on risk free assets i.e. government securities plus risk premium. It is determined by the help of CAPM/SML. The required rate of return with the help of CAPM/SML can be expressed as:

$$\text{Required Rate of Return (K)} = \text{RF} + (\text{Rm} - \text{Rf}) \beta$$

"When setting the required rate of return on investment, investors must consider the real rate of return, expected inflation and risk. Because consumption is foregone today, the investor is entitled to a rate of return that compensates for this deferred consumption. Since the investor expects to receive an increase in the real goods purchased later, and assuming for the moment, zero inflation and risk, the required rate of return could equal the real rate of return, in which case it would represent the pure time value of money to be invested relative to the demand for borrowed money."

2.1.6.3 Expected Rate of Return

If an investment has to be made, the expected rate of return or the expected holding period return should be equal to or greater than the required rate of return for that investment. The expected rate of return is based upon the

expected cash receipts i.e. dividend or interest over the holding period and the expected ending or selling price of the assets. The expected rate of return is an ex-ante or unknown future return. If the investor can describe the possible variables that will influence each of the possible rates of return and assign probabilities to these outcomes, the expected rate of return should equal the weighted average of the various possibilities.

2.2.1 Portfolio

A portfolio is a combination of investment assets. The portfolio is the holding of securities and investment in financial assets i.e. stocks, bonds etc. Portfolio management is related to the efficient portfolio investment in financial assets. The objective of the portfolio can be classified as primary and secondary objectives. The primary objectives are: To maximize return and minimize risk and secondary objectives are: regularity in return with stability, appreciation of wealth, liquidity, easy marketability, safety of investment and tax benefits.

2.2.2 Portfolio Analysis

In portfolio analysis, we estimate the expected return and risk of holding securities in a portfolio. Portfolio return is a weighted average of an expected return of individual securities, weighted being the proportion of wealth invested in individual securities. Portfolio risk is the variability of the returns of the portfolio. It is measured by the variance or the standard deviation of the portfolio return.

2.2.3 Portfolio Return

The weighted average of the expected return of individual securities in the portfolio is the return of the portfolio. Here the weight is the amount of wealth (fund) invested in the individual securities out of total investment. So the return of the portfolio depends on (i) the expected rate of return of each security in the portfolio (ii) the amount invested in each security. The portfolio expected return may be expressed as :

$$R_p = W_1R_1 + W_2R_2 + W_3R_3 + \dots + W_nR_n$$

Where:

R_p = Portfolio expected return

W_1 = Weight for stock 1

W_2 = Weight for stock 2

W3= Weight for stock 3

R1 = Expected return for stock 1

R2 = Expected return for stock 2

R3 = Expected return for stock 3

2.2.4 Portfolio Risk

The portfolio risk is the extent to which the actual return may deviate from the expected return. Covariance measure the degree of riskiness. Positive covariance shows that the variables move together where as negative covariance suggests that the variable move in opposite direction .Zero covariance means no tendency to move together in either a positive or negative linear fashion. The risk (variance of returns) from a portfolio made up of assets is defined as:

$$\text{Portfolio Risk } (\sigma_p^2) = \text{Var} (R_p) = \sum_{i=1}^n \sum_{j=1}^n W_i W_j \rho_{ij}$$

Where;

W_i = Proportion of investment in security i

W_j = Proportion of investment in security j

P_{ij} = Correlation coefficient between i and j security

σ_i = Standard deviation of security i

σ_j = Standard deviation of security j

As the main objective of the portfolio management is to reduce the level of risk. But it is not possible to eliminate the risk totally. Therefore, the total risk can be comprised of two components.

Total Risk = Systematic risk + Unsystematic risk

Systematic Risk:

The systematic or undiversifiable risk is the portion of the total risk which arises due to market factors. The market factors affect to the market price of the securities; so are the sources of the systematic risk .Because of the systematic nature; investors can not reduce the risk whatever efficient portfolio they hold. Thus this type of risk is also called undiversifiable risk. The systematic nature of the undiversifiable portion of the security's return is stated formally as follows:

$$E(r_i) = a_i + b_i E(r_m)$$

Where; a_i is a constant that is called asset's alpha. The beta (b_i) is an index of un diversifiable risk that gauges how much the i^{th} asset's return typically reacts to a change in the market portfolio return. $E(r_m)$ is the expected return from a highly diversified market portfolio.

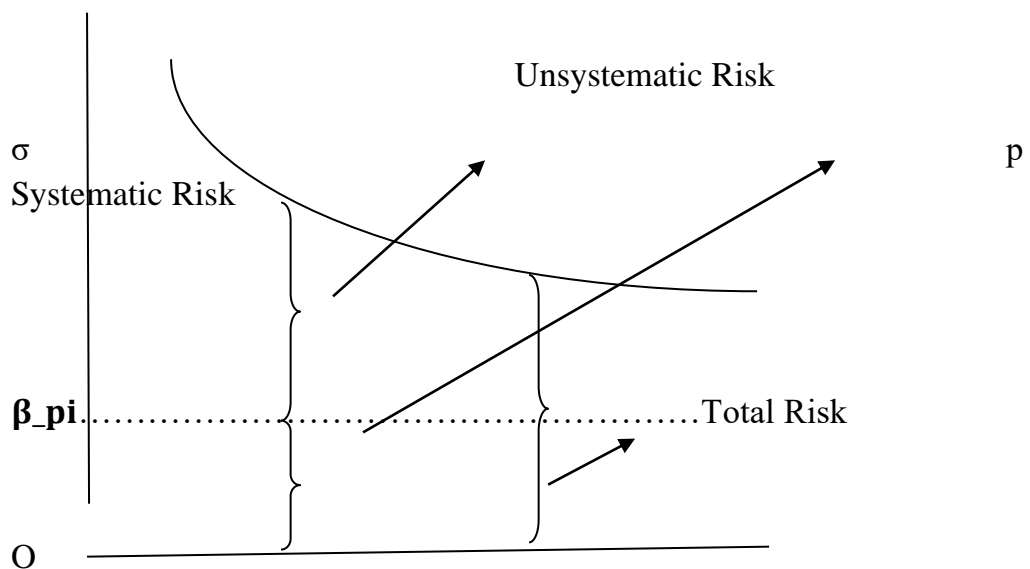
Unsystematic Risk:

Unsystematic risk or diversifiable risk is the portion of the total risk which is unexplained by overall market movements. It can be diversified away. It derives from the variability of the stock's excess return not associated with movements in the excess return of the market as a whole.

"Events such as labor strikes, management errors inventions, advertising, campaigns, shifts in consumer tastes and lawsuits cause unsystematic variability in the value of a market asset. Since unsystematic security price movements are statistically independent from each other, and so they may be averaged to zero when different assets are combined to form a diversified portfolio. Therefore, unsystematic risk is also called diversifiable risk.

Figure No.2. 1

Systematic and unsystematic risk



Sources: Jamec C. Van Horne Financial and Management policy

2.2.5 Diversification of Risk

As mentioned earlier, some level of risk can be reduced which is the main objective of the portfolio management. Diversification can help to reduce portfolio risk by eliminating unsystematic risk. Diversification simply means spreading investment upon different securities of different industries. Diversification among companies, industries and asset classes affords the investor the greatest protection against financial risk, business risk and volatility.

"Investors can reduce their potential for loss through diversification. The key to diversification is the age-old adage." do not put all of your eggs in one basket". The main point of diversification is to reduce risk rather than improve expected return. This is the power of diversification; the whole is greater than the sum of its parts."

Following are some different diversification techniques for reducing a portfolio risk.

1) Simple Diversification:

Simple diversification can be defined as "not put all eggs in one basket" or "spreading the risk ". But it does not eliminate risk by creating a simple diversified portfolio.

2) Diversification across Industry:

Some investment counselor's advocate selecting from different industries to achieve better diversification. But, empirical research has shown that diversifying across industries is not much better than simply selecting securities randomly since all industries are highly correlated with one another.

3) Superfluous Diversification:

If 10 or 15 different assets are selected for a portfolio, the maximum risk reduction benefits from simple diversification have most likely been attained. Further spreading of the portfolio's assets is superfluous diversification and should be avoided.

4) Simple Diversification Across Quality Rating Categories:

Quality rating measure default risk-essentially the risk of bankruptcy. The highest quality portfolio of randomly diversified stocks was able to achieve

lower level of risk than the simply diversified portfolio of lower - quality stocks. The result reflects the fact that default risk (as measured the quality ratings) is part of total risk. The higher quality portfolio contains assets with less default risk. This finding suggests that portfolio managers can reduce portfolio risk to level lower than those attainable with simple diversification by not diversifying across lower - quality assets.

5) Markowitz Diversification:

Markowitz diversification may be defined as "combining assets which are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing portfolio returns."

2.2.6 Markowitz Portfolio Selection Model

Of course, the portfolio investment is the best tool of risk diversification but there exists a problem of portfolio selection. Portfolio is the collection of securities .Investors always faces a problem of selecting optimal portfolio from a set of possible portfolios. Harry M. Markowitz, in 1952, published a paper that is generally viewed as the origin of the portfolio theory approach to investing.

Markowitz's approach begins by assuming that an investor has a given sum of money to invest at the present time. This money will be invested for a particular length of time known as the investor's holding period. At the end of holding period, the investor will sell the securities purchased at the beginning of that period.

Markowitz's model is a theoretical framework for the analysis of risk -return choices. Decisions are based on the concept of efficient portfolios. A portfolio is said to be efficient when it provides maximum expected return for the same level of risk or provides minimum risk for the same level of return.

Portfolio Theory Assumptions:

The portfolio selection model was first propounded by Harry M. Markowitz which is based on several assumptions regarding investor's behavior.

- 1) Investors consider each investment alternative as being represented by a probability distribution of expected returns over same holding period.
- ii) Investors maximize one period - expected utility and possess utility curve, which demonstrates diminishing marginal utility of wealth.

- iii) Individuals estimate the risk on the basis of the variability of expected returns.
- iv) Investors base decisions solely on expected return and variance of returns only.
- v) For a given risk level, investors prefer high return to lower returns. Similarly, for a given level of expected return, investors prefer less risk to more risk.

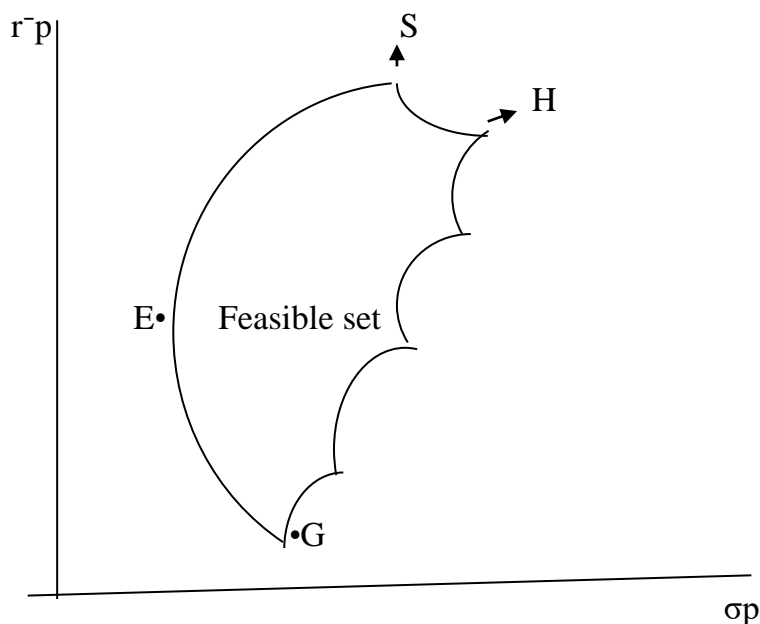
2.2.7 The Efficient Set Theorem:

Investor can prepare an infinite number of portfolios for investment .It is not necessary to evaluate all the portfolios which he /she create. The investor can select an optimal portfolio from a feasible set of portfolios.i.e. The efficient portfolio that

- i) Offer maximum expected return for varying levels of risk, and
- ii) Offer minimum risk for varying level of expected return

The set of portfolio meeting these two conditions is known as the efficient set. The efficient set can be identified from the feasible set. The feasible set simply represents all portfolios that could be formed from a group of N securities .All the possible portfolios, which could be formed, lie either on or within the boundary of feasible set. In general, this set will have an umbrella type shape similar to one shown in figure

Figure 2.2 Feasible and efficient set



2.2.8 Selection of Optimum Portfolio

"Given the efficient frontier and the risk return indifference curves, the optimal portfolio are found set point of tangency between the efficient frontier and a utility indifference curve .This point represents the highest level of utility the investor can reach."

To select an optimal portfolio an investor should plot his or her indifference curves on the efficient set and then proceed to choose the portfolio on the indifference curve that is farthest northwest .This portfolio will corresponding to the point at which an indifference curve is just tangent to the efficient set. As can be seen in the figure

Figure 2.3

Portfolio selection for a
Highly Risk - Averse investor

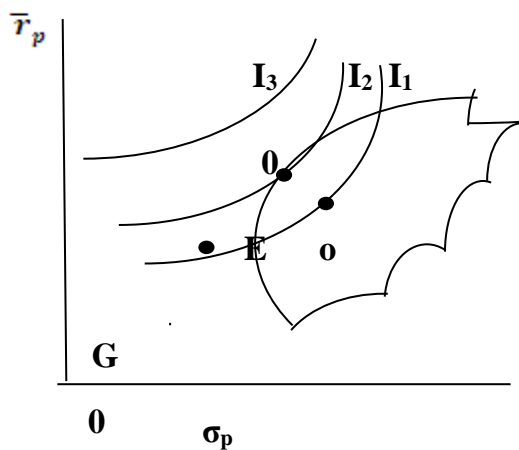
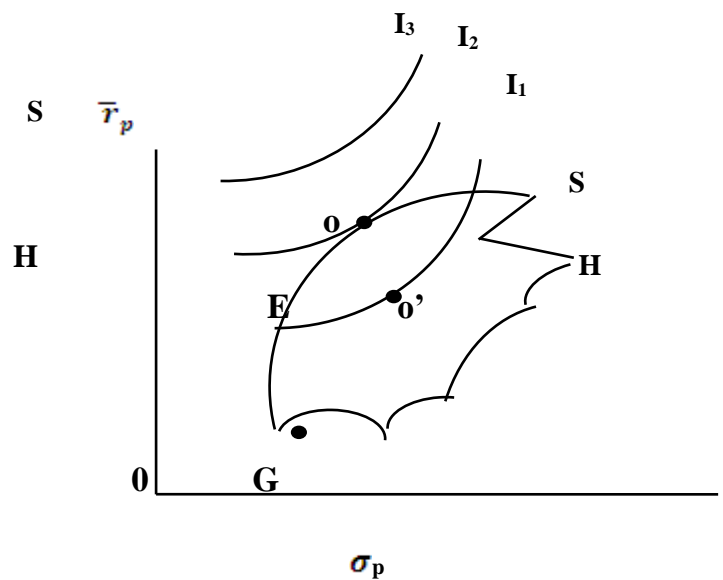


Figure 2.4

Selecting an Optimal Portfolio



Source: William F. Sharpe et al. Investments. 6th ed.

The portfolio 'O' the optimal portfolio which lie on indifference curve I2 , Although the investor would prefer a portfolio on I3 ,no such portfolio exists ; wanting to be on this indifference curve is just wishful thinking . In regards to

II , there are several portfolios that the investor could choose (eg.O).However, the figure shows that portfolio 'O' dominates such portfolio because it is on an indifference curve that is farther northwest .The portfolio selection for a highly risk-averse investor has been shown in figure

Upon reflection, the efficient set theorem is quite rational .The efficient theorem stating that; the investor need to be concern only with portfolios that lie on the northwest boundary of the feasible set, is a logical consequence.

2.3 Portfolio Performance Evaluation

2.3.1 Sharpe's Portfolio Performance Measure

Ranking portfolio's average returns ignores the skill with which they minimize risk and therefore presents an oversimplified picture. Hence ,in assessing the performance of a portfolio ,it is necessary to consider both risk and return .Sharpe devised an index of portfolio performance for portfolio i as :

$$S_i = \frac{\text{Risk Premium}}{\text{Total risk}} = \frac{\bar{r}_i - R}{\sigma}$$

Where,

S_i = Sharpe index of portfolio performance for portfolio i.

\bar{r}_i = Average return from portfolio i

σ = S.d. Of return from portfolio

R = Risk free rate of interest

$\bar{r}_i - R$ is the risk premium for portfolio i. The risk premium is the additional return over and above the risk -less rate that paid to induce investors to assume risk.

Sharpe's index of performance generates one number that is determined by both the risk and return of the portfolio or other investment being evaluated.

2.3.2 Treynor's portfolio performance Measure

Jack Treynor conceived an index of portfolio performance that is based on systematic risk, as measuring a portfolio's return relative to its systematic risk rather than relative to its total risk, as does the Sharpe measure.

$$T_p = \frac{\text{Risk - Premium}}{\text{Systematic risk index}} = \frac{\bar{r}_i - R}{\beta_p}$$

Where,

T_p = Treynor's index of portfolio performance for portfolio P

r = Average return from portfolio p

β_p = Systematic risk index of return for portfolio p

R = Risk- free rate of interest

2.3.3 Jensen's Portfolio Performance Measure

Dr. Michael C. Jensen has modified the characteristic regression line to make it useful as a one parameter investment performance measure. The basic random variables in Jensen's model are risk premiums, such as:

$$r_{p,i,t} = r_{i,t} - R_t$$

Where,

$r_{p,i,t}$ = risk premium for asset I in period t.

$r_{i,t}$ = One period rate of return from asset I in period t

R_t = Risk-less rate observed in period t.

2.4 Review of Related Studies:

2.4.1 " Portfolio Management of Listed Commercial Banks in Nepal's

The study "Portfolio Management of listed Commercial Banks and Insurance Companies in Nepal" conducted by Khem Nath Paudyal and submitted to Publick Youth Campus in 2009, conducted by Dipak Bahadur Bhandari and submitted to Central Department Kirtipur in 2009, conducted by Jagateswori Koju and submitted to Nepal Commerce Campus KTM in 2009. The main objective of this study are:

To analyze the return and risk of the common stock of Commercial Banks.

To analyze the diversifiable and undiversifiable risk of the return on common stock.

To analyze the portfolio return and risk.

To analyze the problem faced by the investors to select the best alternative. They have used three years historical data from F/Y 2007 to F/Y 2009. Following are some of their findings:

- 1) On the basis of risk and return, the share of all the commercial banks is attractive for investment.
- 2) The political and economic scenario is worsening day by day and it had the adverse impact on economic activities of the companies.
- 3) The overall market return cannot be regarded as attractive with respect to its risk. The risk per unit of return of market is very high.
- 4) Unsystematic risk of all the companies is high in comparison to total risk.

2.4.2 " A study on Risk and Return Analysis of Common Stock Investment"

The study conducted by Ms. Parmila Tuladhar entitled "A study on Risk and Return Analysis of common stock Investment" in 2008 is found to be one of the supports for the study. The study is based on eleven companies selecting two from each group that is categorized by NEPSE.

The main objectives of the study are

To describe the risk and return and other relevant variables those are very important in making decision on stocks investment.

To identify the problems faced by the individual investors to select best alternative in the stock market.

To analyze the risk and return of common stock and their portfolio.

To assess the past and present state of investment of common stock.

The study is based on randomly selected 11 companies. The study is based on recent historical data. It covers three years period from F/Y 2006/007 to 2009/010. The study has summarized the following findings.

Among each sample, ERR of Nepal Bangladesh Bank is the highest.

Bishal Bazar Co. has the lowest S.D. According to sector - sector wise comparison, banking has the highest ERR with 11.92. Other sectors have the highest S.D. with 43.73 and trading sector has lowest S.D. with 11.10. Other sector has the highest C.V. with 595.78 and insurance and finance sector has lowest C.V. with 285.28.

2.4.3 " Investor's problems in choice of Optimum Portfolio of Stocks in Nepal Stock Exchange"

"Investor's Problems Choice of Optimum Portfolio of Stock in Nepal Stock Exchange " is the thesis work conducted by Mr. Ropak Joshi in 2007. The main objective of the study are to find out and analyze the major problems of investor facing regarding the selection of most profitable stocks in NEPSE. He has used the historical data in order to achieve his objectives. He has summarized his finding as " portfolio management is a new concept for Nepalese investors .Due to lack of sufficient information ,proper investment is not possible .Proper investment needs huge information internal as well as external .The stock market of Nepal is also in growing stage only. There is only one stock exchange located in Kathmandu. Traditional cry system for trading stocks ,limited number of securities broker, lack of opportunities of investment and many reasons are there ,which are acting as barrier of development NEPSE."Mr. Joshi further stated that Nepalese investor's don't know in which stock to make investment and how to construct a portfolio. Many brokers are not willing to provide information to the investors; investors are trading the securities mostly under the pressure of brokers.

2.4.4 " Selection of Optimum Investment Portfolio in NEPSE"

"Selection of Optimum Investment portfolio in NEPSE" is the thesis work conducted by Mr. Prakash Kumar Gautam in 2008 by constructing the portfolio in the stock of Grade 'A' Companies listed in NEPSE till mid July 2004 on the basis of monthly data for 12 months i.e. (Mid July 2007 -Mid July 2008) .

The main objective of the study was as follow:

- To develop understanding for portfolio investment
- To find out the risk and return variables of securities
- To find out the optimum portfolio investment
- To find out the problem facing by investors to select best alternative for investment.
- To suggest the measures for the improvement of investment rationalities.

The study was conducted with the commercial banks be the best for investment because of positive earning and risk per unit of earning .The diversification is limited within the boundary of two industries i.e. banking and insurance .The stocks are found to be positively correlated which will not help in construction of efficient portfolio.

2.4.5 Mr. Prakash Shrestha (2003)

He has prepared the thesis on "Portfolio Analysis on Investment of Nepalese Commercial Banks". Risk and return on such assets, portfolio management and risk-return, relationship between various factors of commercial banks with various investment assets, performance of commercial banks towards investment. This study is also helpful to find out, to what extent commercial banks manage their risk and return using portfolio concept.

Objective:-

- To find out the relationship between various factors with various investment assets of commercial banks.
- To find out portfolio management and risk - return of commercial bank.
- How commercial banks manage their risk and return using portfolio concept.

Findings:

- Most of commercial banks are interested to invest their funds in more liquid and less risky sectors.

Investment on loan and advances is better than that of investment on share, debentures and government securities because loan and advances provides fixed interest income.

Commercial bank most mobilizes their deposit and other funds to profitable sector.

2.4.6 Mr. Prakash Poudel (2004)

He has prepared the thesis on entitled on "A Study of Portfolio Management on Common Stock of Commercial Banks." Portfolio management is one of the challenging tasks for every financial institution. This study is focused on the portfolio analysis of listed four commercial banks (EBL, NBBL, BOKL, HIBL).

Objective

- To analyze the risk and return on common stock investment.
- To study the level on portfolio risk and return on investment of commercial banks.
- To find out the trend on investment in different assets.

Findings

Bank has made an investment in more than one assets by investor.

It has made an investment in only two assets, that is risky assets (share and debenture) and risk free asset (government security).

Among four banks EBL has invested its highest fund on risk free asset and lowest amount on risky assets. NBBL has invested the lowest amount risk free asset and highest amount on risky asset. None of the banks have invested any amount on NRB bond.

2.4.7 Kalpana Khaniya (2003)

She has prepared the thesis on entitled 'Investment Portfolio Analysis of Joint Venture Banks'

Objective

- To portfolio structure of NABIL as compared to other joint venture banks.
- To analyze the investment on loan and advance.
- To compare the performance among under studied taken banks.

Findings :

Investment portfolio structure on NABIL banks is almost similar to other Joint Venture banks.

Most of the investment is concentrate into loans and advances to private sector enterprises. Securities investment is to purchase of government securities.

Financial performance of NABIL bank is at moderate position to other joint venture Bank.

2.4.8 Mr. Jagadish Basnet (2002)

The main objective of this study was to survey the efficiency of portfolio management. He has entitled the thesis on "Portfolio management of joint venture banks in Nepal".

Findings

Those banks who manage the portfolio properly has achieved result.

Portfolio management of listed commercial banks has not been applied in Nepalese context.

Which concluded that the investment portfolio of joint venture bank's assets, basically allocation of fund into different component of banking assets have different degree of risk and varied rate of return should be verified in such a way that would balance the conflicting goals between maximum yield and minimum risk?

This study shows that from his thesis, portfolio management of joint venture banks in Nepal, the researcher found the gap that research of So, to fulfill this gap, this study has undertaken by the researcher.

Gap between the previous research and present research:

It has contained five years data instead of 2 to 3 years data. It has also only on the basis of high level commercial banks instead of joint study of commercial and financial intuition.

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the research methodology to achieve the objective of the study. It includes the research design, population and sample, sample selection method, tools and techniques of data collection and their analysis.

3.1 Research Methodology

Research methodology is the process of arriving at the solution of problem through planned and systematic dealing with the collection, analysis and interpretation of facts and figures. Research methodology in other words, refers to the various methods or practices applied by the researcher in the entire aspects of the study." Research is a systematic method of finding right solutions for the problem where as research methodology refers to the various sequential steps to adopt by a researcher in studying a problem with certain objective is view".

The basic objective of this study is to form an optimum investment portfolio of securities of the companies listed in NEPSE under grade 'A' with regular trading. Therefore, this study will also be able to make some useful and meaningful recommendation so that all concerned would find something useful for them from this study.

3.2 Research Design

This study is mainly based on two types of research design i.e. descriptive and analytical. Descriptive research designs describe the general pattern of Nepalese investors, business structure, problem of portfolio management etc where as analytical research design makes analysis of collected facts and information and makes a critical evaluation of them. The research design is followed to analyze the 'Investment and loans and advances portfolio 'of commercial banks.'" Research design is a plan, structure and strategy investigation conceived so as obtain answer of research question and to control variable."

The design has helped examined and find out the problem and possibility of formulating the portfolio investment for the Nepalese investors with special reference to the securities of the listed companies in NEPSE under grade 'A' category. Analytical and descriptive approaches are used to evaluate the investment and loan and advance portfolio of commercial banks based on the secondary data and financial statement.

3.3 Population and Sample

There are Thirty One commercial Banks out of which nine joint venture banks operating in Nepal. Out of 31 commercial banks 6 commercial banks that comprise Standard Chartered Bank, Nepal Investment Bank, Himalayan Bank, Laxmi Bank, Everest Bank, SBI Bank are selected as sample for analysis .The selected sample represents 19.35 percent of the population. Ten years data also selected as a sample for the purpose of study. The present work on portfolio performance of joint venture Bank in Nepal, conducted in more area of different sectors in Nepal .Survey works is conducted in Nepal Stock Market, Nepalese Brokerage firms and joint venture Banks in Nepal.

3.4 Sources of Data and Method of Data Collection

The data for the study has used secondary in nature. The secondary data has collected from various library and various related such as books, journals ,articles ,trading report of NEPSE and report of NRB, published and unpublished reports etc. So the major sources and types of data are in published form such as;

Annual Report of Standard and Charter Bank Nepal Limited.

Annual Report of Everest Bank

Annual Report of NABIL Bank

Annual Report of Himalayan Bank Limited

Annual Report of Nepal Investment Bank Limited

Annual Report of Laxmi Bank Limited

Economic Survey (2001) Published by Nepal Rastra Bank

Financial Statement of Listed Companies Vol III and Vol IV published by Nepal Stock Exchange.

Bulletin and reports periodically published by various organizations

Internet, Home pages and related link visit specially the official website of NEPSE <http://www.nepalstock.com>

Other published materials like newspapers, journals, magazine, textbooks etc.

3.5 Data Processing Procedures and Analysis Tools:

The required data has been collected by using various techniques and tools by spending two months. The study is mainly based on secondary data.

3.5.1 Techniques:

Review of Related Studies:

Previous research work is the backbone of the present research work. During the research period, increasingly books; various types of journals and thesis related with portfolio management have been studied for the debt knowledge.

Observation:

During the field work, the researcher stayed in different investors and observed their portfolio structure, business styles, different used tools etc. The data thus collected and observed are tabulated after adjusting necessary amounts of each overhead in annual reports.

3.5.2 Tools of Data Analysis:

The data collected during field work are thoroughly analyzed .After completion of fieldwork; the collected data are classified into different categories as per their nature. The data has been analyzed by using the following tools:

Financial Tools:

Financial tools are the most important tools to evaluate the portfolio management of joint ventures banks in Nepal. There are several financial tools which can be applied in order to analyze the portfolio of joint venture banks. But the following main financial tools are considered for the analysis:

A) Ratios Analysis:

It shows the relationship between two accounting figures. Ratio analysis is used to compare a firm's financial performance and status to that of other firms or to itself on time. It refers to the numerical or quantitative relationship between two variables. In financial analysis, ratio is used as an index of yardstick for evaluating the financial position and performance of the firms. Only such ratios which are related to investment of JVBs are taken here.

a) Total Investment to Total Deposit Ratio

This ratio measures that which bank is more successful in mobilizing their total deposit on investment. Higher the ratio, better the utilization of collected fund and it generates regular income to the banks. This ratio is calculated by dividing investment by the total deposit.

$$\text{Investment to total deposit ratio} = \frac{\text{Investment}}{\text{Total deposit}}$$

b) Loans and Advances to Total Deposit Ratio

This ratio measures extend to which bank is able to mobilize their deposit funds to earn better profit by providing the fund to outsiders in the form of loans and advantages. The higher ratio represents the great efficiency of the firm in utilizing fund and vice -versa this ratio is calculated by dividing loans and advances by the total deposit. This can be stated as:

$$\text{Loans and Advances to Total Deposit Ratio} = \frac{\text{loans and advance}}{\text{Total deposit}}$$

c) Return on Total Assets Ratio

This ratio is calculated by dividing net profit after tax by total assets

$$\text{Return on total assets} = \frac{NPAT}{\text{Total assets}}$$

It measures the profitability with respect to total assets

B) Beta Coefficient:

Beta Coefficient is defined as a comparative measure of the sensitivity of an assets return to changes in the return on the market portfolio. It tells is how much systematic risk a particular asset has relatively to an average assets. The tendency of a stock to move up and down with the market reflected in its beta coefficient, β . Therefore, beta is a key element of the CAPM; mathematically the beta coefficient of a stock is the stock's co-variance with the market portfolio divided by the variance of the market portfolio. (Kothari, Shaken and Stoan; 1995:117).

Symbolically,

$$\beta_j = \frac{\text{Cov}(R_i, R_m)}{\sigma_m^2} = \frac{\rho_{jm} \times \sigma_j \times \sigma_m}{\sigma_m^2}$$

Where,

β_j = Beta co-efficient for stock 'j'.

COV (R_j, R_m)= Covariance between returns on stock j return of market.

σ_m^2 = Variance of market return.

$$Cov(R_j, R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n - 1}$$

An asset or a portfolio with a beta greater than 1 is considered to be aggressive (more risky than the market). An asset or portfolio with a beta less than 1 is considered to be defensive (less risky than the market). Beta coefficient of market is always equal to 1.

Expected Return and Risk on portfolio

The portfolio return is the weighted average expected return of the individual stocks in the portfolio with weights being the fraction of the total portfolio invested in each stock. The portfolio expected return has been calculated as follows:

$$R_P = W_1R_1 + W_2R_2 + \dots + W_nR_n$$

Where,

W_1 =Weight of stock 1

W_2 = Weight for stock 2

R_1 = Expected return for stock 1

R_2 = Expected return for stock 2

- **Portfolio Risk**

Portfolio risk is the total risk involved in the portfolio of different stocks with different weights. The portfolio risk can be measured by using the following model:

$$(\sigma_p^2) = \sum_{i=1}^n \sum_{j=1}^n W_i W_j r_{ij} \sigma_i \sigma_j$$

For three assets portfolio, the above model is expanded as below:

$$\sigma_p = \sqrt{W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + W_3^2 \sigma_3^2 + 2W_1W_2r_{12}\sigma_1\sigma_2 + 2W_1W_3r_{13}\sigma_1\sigma_3 + 2W_2W_3r_{23}\sigma_2\sigma_3}$$

Where,

W_1 = Weight of stock 1

W_2 = Weight for stock 2

W_3 = Weight for stock 3

σ_1 = Standard deviation of stock 1

σ_2 = Standard deviation of stock 2

σ_3 = Standard deviation of stock 3

r_{12} = Correlation coefficient between stock 1 & 2

r_{13} = Correlation coefficient between stock 1 & 3

r_{23} = Correlation coefficient between stock 2 & 3

- **Holding period Rate of Return:**

Holding period rate of return or single period rate of return is simply the total return an investor would receive during the investment period or holding period stated as a percent of the investment's price at the start of the holding period. It can be calculated as:

$$(\text{HPR}) = \frac{\text{Ending price} - \text{Beginning price} + \text{Cash dividend}}{\text{Beginning price}}$$

It can be expressed symbolically as:

$$(\text{HPR}) = \frac{P_{t+1} - P_t + C_t}{P_t}$$

Where,

P_{t+1} = Market price at the end of period P_{t+1}

P_t = Market price at the end of period P_t

C_t = Cash dividend received during the period

Statistical Tools:

There are various statistical tools can be applied to analyze the study of the portfolio management of joint ventures in Nepal. There are following main statistical tools can be used:

- **Arithmetic Mean**

Arithmetic mean of a set of observations is the sum of all the observations divided by the number of observations which is as follows:

$$\text{Arithmetic mean } (\bar{X}) = \frac{\sum x}{n}$$

Where,

$$\sum x = \text{Sum of total values}$$

n = no. of observations

- **Standard Deviation (σ)**

Standard Deviation is the square root of variance. Variance and standard deviation are equally acceptable and conceptually equivalent measures of total risk. Generally, it is used to measure the risk of return which is the measure of spread return. It has been calculated by using following expressions:

Symbolically,

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

Where,

σ_j = Standard deviation of returns on stock 'j' during the period n.

- **Coefficient of Variation (C.V)**

Coefficient of variation is another standard method of measuring the risk. It shows the risk per unit of return and it provides a more meaningful basis for comparison when the expected return on the two alternatives is the same.

Lowest C.V is preferable. It has been calculated as:

$$\text{C.V} = \frac{\bar{X}}{\sigma} \times 100$$

Least Square linear trend.

It indicates the future situation of investment and profitability trend of future time. Symbolically,

$$Y = a + bx$$

Where **a**= independent variable **bx**= dependent variable

Chapter: IV

Presentation and analysis of data

In the previous chapter the presentation of the Research Methodology has been adopted in this study. In this chapter, the focus is on the presentation and analysis part of the data in detail. It is basically concerned with the risk and return characteristics of common stock. Risk and return of the common stock in the selected banks under grade 'A' listed in NEPSE have been thoroughly analyzed and interpreted on the basis of secondary data. Risk and return characteristics of three assets portfolio formed by them have been thoroughly analyzed. According to the need of the study various tables, diagrams, charts etc. have used to analyze it in valid form.

Analysis of Ratios:

Ratio analysis is a very important tool of financial analysis. It is the process of establishing the significant relationship between the items of financial statements to provide a meaningful understanding of performance and financial position of a firm. Financial ratios can be used for analyzing and assessing the performance and position of the bank. In this chapter, only important financial ratios are analyzed to compare and analyze the financial performance of joint venture banks in Nepal.

INVESTMENT TO TOTAL DEPOSIT RATIO

Investment to total Deposit Ratio is calculated by dividing Investment by Total Deposit. Investment includes investment in government securities, special bonds of government, treasury bills and others. The total deposit consists of current deposits, fixed deposits, saving deposits, call deposits and others deposits.

The ratio of Investment to total Deposit measures the magnitude to which the banks are successful in mobilizing the total deposits on investment or not. High ratio indicates that bank cannot use whole of its fund or raised through deposits and borrowing into loans and advances. In order to fill this gap between collected funds and investment, the bank somewhat goes for investment such as government securities special bond of government, Treasury bill, provide loans to the public or private sectors and others. The following table no. shows the ratio of investment to total deposits of joint venture banks in Nepal.

Table No 4.1

Investment to Total Deposit Ratio

(in percentage)

FY	HBL	SCBNL	NIBL	LBL	Everest Bank	NABIL
2006	19.44497	37.50418	13.32625	9.562811	30.43311	31.95%
2007	21.58399	28.8783	13.29745	12.84601	27.40704	38.32%
2008	23.492	27.38746	9.157722	6.729748	21.10251	31.14447
2009	12.14584	27.1408	5.420586	5.81822	17.85109	28.98764
2010	8.179235	17.37686	5.721341	6.757651	13.56076	29.45639
Mean	16.969	27.66	9.38	8.3429	22.07	31.972
S.D.	5.84	6.39	3.47	2.58	6.16	3.35
C.V.	34.41	23.12	36.94	30.91	27.9	10.49

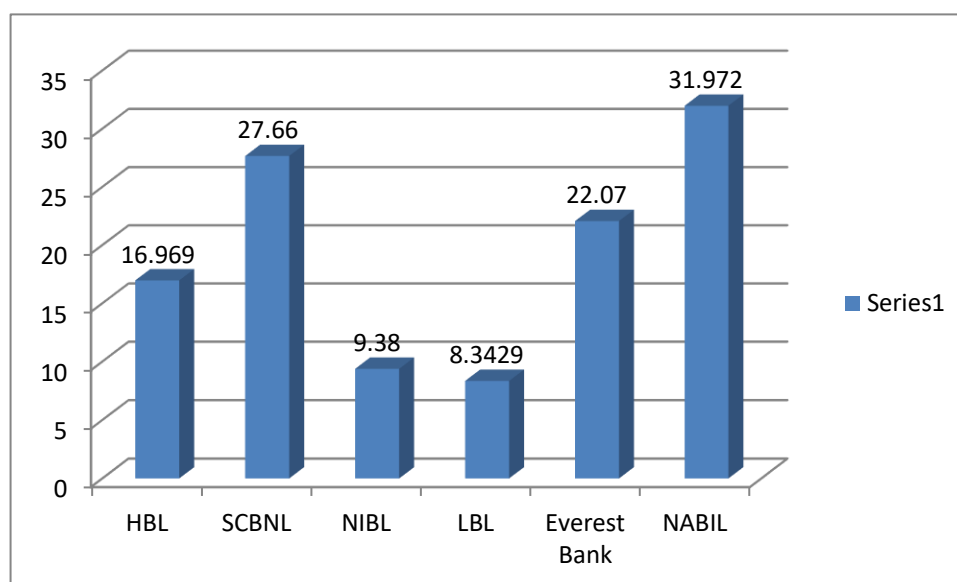
Source: Banking and Financial Statistics, NRB Mid 2010

Average Mean =19.40%

Average C.V. = 27.30%

Above table can be present by below chart N 4.1

Figure N. 4.1



The comparatively figure N. 4.1 reveals that the ratio of investment to total deposit of joint venture banks are in fluctuating trend throughout the review period. The mean investment to total deposits ratios of NABIL Bank Nepal is highest i.e. 31.972 % among the six joint venture banks. Similarly Standard

Chartered Bank Limited is taking second position i.e. 27.66 %. Standard Charter Bank Nepal, Everest and NABIL have the higher mean than average mean 19.40%. So that this bank mobilizes its fund effectively among the six joint venture banks. The mean investment to total deposit ratio of Himalayan Bank Limited, Nepal Investment Bank Limited and Laxmi Bank limited have lower than average mean investment. It indicates that, these banks mobilize the fund in investment title below the standard ratio.

The coefficient of variance ratios of NABIL Bank Limited is lowest among joint venture banks, i.e. 10.49 %. Lower ratio indicate that most consistent which is better than high consistent . NIBL has the highest coefficient of variance among the joint venture banks which indicate the investment of review period has much fluctuate. It is not suitable for the purpose of the risk.

LOAN AND INVEST TO TOTAL DEPOSIT RATIO

The loan and advance to total deposit ratio is calculated by dividing loan and advance by total deposit. It indicate that the utilization of earning from deposits are poor because of this banks have kept more fund idle without investing in profitable business and vice versa.

Table 4.2

LOAN AND INVEST TO TOTAL DEPOSIT RATIO

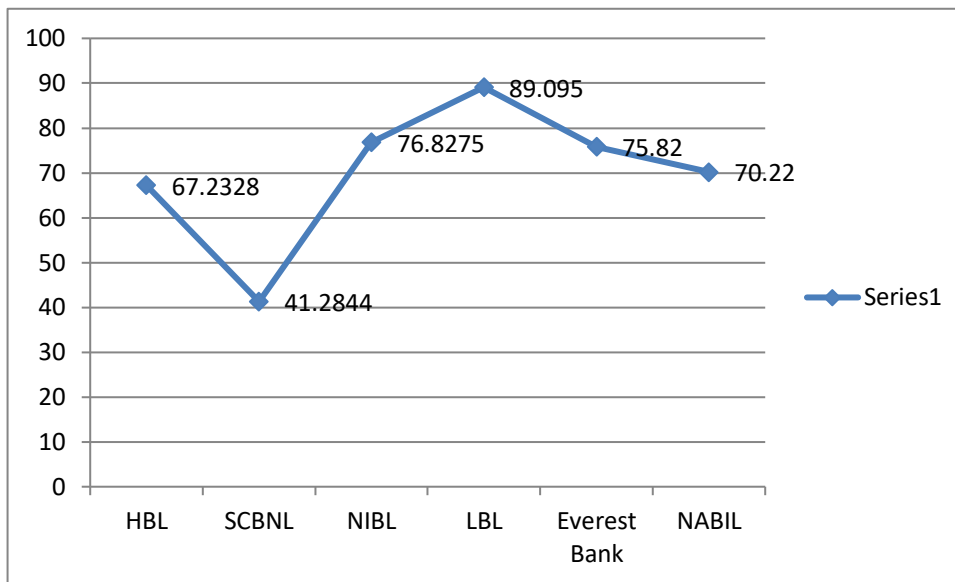
FY	HBL	SCBNL	NIBL	LBL	Everest	NABIL
2006	58.64674	38.633	68.7219	96.17488	73.43795	68.63596423
2007	59.09281	42.76774	71.38744	85.75614	77.43619	68.13040871
2008	62.83607	44.89996	78.79269	89.62005	78.56258	68.17797274
2009	72.92783	35.57895	77.62747	83.76954	73.43178	74.96786977
2010	82.66076	44.54231	87.60781	90.15729	76.23787	71.17062765
Mean	67.2328	41.2844	76.8275	89.095	75.82	70.22
S.D.	9.27	3.62	6.57	4.27	2.08	2.63
C.V.	13.79	8.76	8.55	4.79	2.75	3.74

Source: Banking and Financial Statistics, NRB Mid 2010

Average Mean = 70.08

Average CV = 7.06

Figure N. 4.2



The comparatively table listed in figure No 4.2 shows that the highest mean loan and advances to total deposit ratio of Laxmi Bank Limited Nepal i.e. 89.095% among the joint venture banks. Similarly NIBL is taking second position, i.e. 76.8275%. Therefore, Laxmi Bank Limited, Everest Bank Limited, Nepal Investment Bank Limited and NABIL have been invested high amount of fund in loan and advance which are higher than average mean. The mean loan and advance to total deposit ratio of Standard Chartered Bank Nepal Limited and Himalayan Bank Limited are less invested in loan and advance which is lower than average mean. It indicate that the earning from deposits are poor because of this banks have kept more fund idle without investing in profitable business.

The coefficient of variation in the ratio of Everest Bank Limited i.e. 2.75%. It indicates that the ratio of Everest Bank Limited has more uniform than other joint venture banks. Himalayan Bank Limited has the highest coefficient of variance in the ratio which indicates that Himalayan Bank Limited has less uniform among the joint venture banks.

We conclude that Laxmi Bank Limited and Everest Bank Limited are the most effective to mobilize the total deposits on loan and advances among the joint ventures banks. Similarly Himalayan Bank Nepal Limited is the least effective to mobilize the total deposits on loans and advances among the six joint ventures banks.

RETURN ON TOTAL ASSESTS

Assets management is very important because of the return on assets will rise if fewer assets are employed and all measures of the effective management of working capital .This ratio is calculated by dividing net profit after tax by total assets .This ratio measures the profitability with respect to the total assets .In the present study ,this ratio is examined to measure the profitability of all financial resources invested in the bank assets .Return on assets in vital ratio for the measuring the financial performance .The higher ratio reflects the efficient of the bank in using its overall resources. The following table No. Shows the ratio of return on total assets:

Table No 4.3

RETURN ON TOTAL ASSESTS

FY	HBL	SCBNL	NIBL	LBL	EVerest	NABIL
2006	1.55	2.56	1.64	0.79	1.49	3.23
2007	1.47	2.42	1.82	0.95	1.38	2.72
2008	1.76	2.46	1.79	1.13	1.65	2.32
2009	1.91	2.56	1.7	1.22	1.73	2.55
2010	1.19	2.7	2.2	1.66	2.09	2.37
Mean	1.576	2.54	1.83	1.15	1.67	2.64
S.D.	0.2475	0.097	0.1958	0.295	0.24	0.33
C.V.	15.7	3.82	10.7	25.65	14.37	12.5

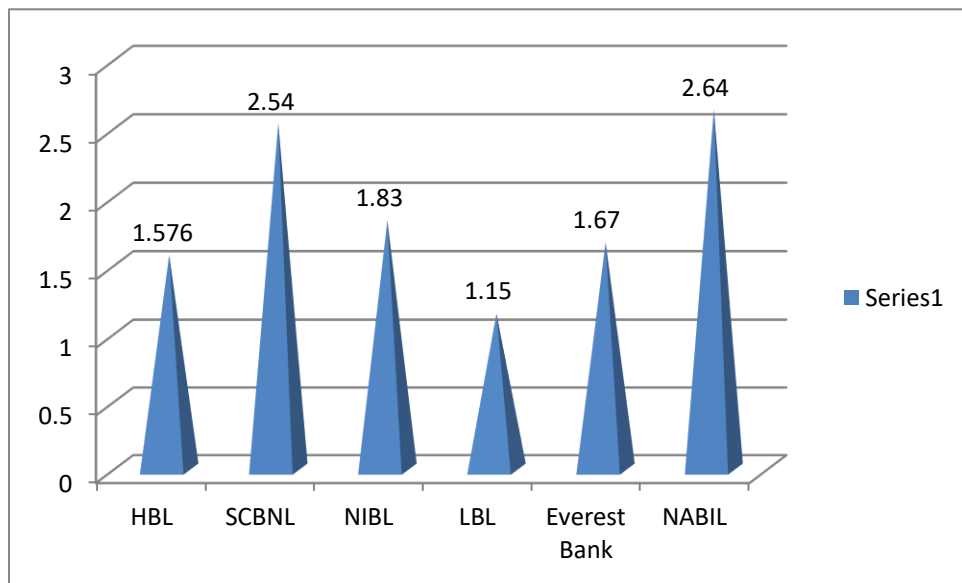
Source: Annual Report of Banks 2010

Average Mean =1.90

Average C.V. = 13.79

Figure N. 4.3

RETURN ON TOTAL ASSESTS



The comparative table listed in table N. 4.3 shows that the mean return on total assets shows that the mean return on total ratio of NABIL is the highest return i.e. 2.64 % and Laxmi Bank Limited is the lowest return i.e. 1.15 % throughout the review period .NABIL and Standard Chartered Bank Nepal Limited have above return than average which is quite good performance. And others joint venture banks have below the average return. The industry average return has 1.90 % and average C.V. is 13.79. Laxmi Bank Limited, Himalayan Bank Limited and Everest Bank are not uniformity ratio due to the higher average ratio than industry average C.V. The C.V. of Standard Chartered Bank is lowest among six joint venture banks i.e. 3.82% .It means that the ratios of Standard Chartered Bank Nepal Limited are less consistent among the six joint venture banks.

Risk and Return Analysis:

Risk is defined as the possibility of suffering some form of loss or damage. It is the chances of favorable or unfavorable event will happen. An event is one or more or more of the possible outcomes of doing something.

Managerial decision faces three types of situation (a) uncertainty, (b) risk and (c) certainty .Uncertainty is a situation where the probability is not known. Uncertainty exists at what time; the decision maker has no past data from which to develop a chance allotment. The risk situation is one in which the probabilities of a particular event occurring are known .Certainty is a situation

where the future forecast cent percent accurate and there would be no risk involved in such like situations.

Stock's Rate of Return:

The return can be calculated by using this method.

Single period rate of return:

Single period rate of return is the total return during the investment period or holding period .It is denoted by r or HPR. It is simply the total return an investor would receive during the investment period or holding period stated as a percent of investment price at the start of the holding period.

Table No 4.4

Return on common Stocks

FY	HBL	SCBNL	NIBL	LBL	Everest	NABIL
	HPR =	Ending Price - Beginning Price + Cash Dividend × 100 Beginning Price				
2005	-	-	-	-	-	-
2006	22.83	66.52	60	29.12	61.38	54.49
2007	59.55	58.41	37.62	87.5	76.94	129.91
2008	15.23	17.12	42.13	61.46	29.71	5.64
2009	-11.52	-11.27	-42.53	-4.56	-20.66	-6.46
2010	-52.96	-44.53	-47.41	-45.10	-32.38	-50.72
ΣX	33.13	86.25	49.81	128.42	114.99	132.86
Mean (\bar{X})	6.626	17.25	9.962	25.684	22.998	26.572
S.D.	37.46	41.84	45.50	46.99	43.36	61.58
C.V.	565.35	242.55	456.74	182.95	188.54	231.75

The statistical analysis describe that on the basis of periodic analysis, it is found that the stock of NABIL Bank Limited offer the highest rate of return i.e.(26.572%) per share where as the stock of Himalayan Bank Limited offer the lowest return i.e. (6.626%) . On the basis of average return over the period, the stock of NABIL Bank Limited seems to be the best stock for investment.

The decision making regarding the investment may mislead only by analyzing the risk characteristics because every return is influenced by the uncertainty or risk. Risk can be explained the variability of return from its central tendency .Therefore, the risk is measured by the standard deviation of return. By observing the standard deviation of the return of individual banks, it is

concluded that the HBL has the lowest S.D. i.e. 37.46 whereas the S.D. of NABIL is the highest i.e. 61.58. From this observation based on risk analysis it is found that the stock of HBL is the best investment alternative being the less risky stock.

Being the dissimilarly in the average rates of return of the stocks of various banks, the standard deviation may not provide a meaningful basis for measuring risk. Therefore, the decision solely based on risk and return cannot be the rational investment decision. In this regards, coefficient of variation can depict the exact position of risk per unit of return. Therefore, the lowest coefficient of variation is preferable. As a consequence from the above table it is observed that the coefficient of variation (C.V.) of Standard Chartered Bank Nepal is the lowest i.e. (182.95%) among the all stocks of joint venture banks.

Since the objective of the study is not only limited to the scope of single assets investment rather it is focused on the analysis for portfolio management (i.e. portfolio investment) and formation of the optimum investment portfolio among various securities. The proper management of portfolio helps to reduce the level of risk than making investment in single assets. From the above observation, it is concluded that the lower coefficient of variation is preferable for making investment decision on the stocks that give positive return. Here, three stocks with lesser coefficient of variation that give positive return are selected for portfolio management.

Market's Rate of Return:

Table: 4.5

Market return and Variance

Period	Closing price of NEPSE	HPR= $\frac{\text{Ending} - \text{beginning}}{\text{Beginning Price}} \times 100$	$(X - \bar{X})^2$
2004/05	286.67	-	
2005/06	300.05	4.67	335.99
2006/07	683.95	127.95	11014.5
2007/08	963.36	40.85	318.62
2008/09	749.10	-22.24	2046.66
2009/010	477.73	-36.23	3508.19
$\sum x$		115	17223.96
\bar{x}		23	
σ^2m			$17223.96/5 = 3444.79$
S.D. σm			58.69

Measuring Risk:

A risk is hard through to grasp, and a vast arrangement of conflict has surrounded attempts to define and measures it. The tighter the probability distribution of expected future returns the lesser the risk of a given financing. Measure of the tightness of the probability distribution by standard deviation. A standard deviation is the square root of the average of the squared distance of the observations from the mean. Standard deviation is a measure that does this, since it is an estimate of the likely deviation of an actual return from an expected return, It may provide to be a very good measure of the degree of uncertain.

Risk is defined as variability of return. The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measures of an asset's total risk .The purpose of this chapter to analyze and compare the risk and return of the assets or security of the joint venture banks. To analyze the risk and return, the beta coefficient, expected rate of return and security market line are used.

Beta Coefficient:

The beta coefficient is an index of systematic risk. Beta reflects that part of portfolio's returns and variation in returns, which is attributable to the overall movement of the market rather than to any unique characteristic of the portfolio. Beta coefficient may be used for ranking the systematic risk of different assets. If the beta is less than 1, the assets are defensive assets. If beta is greater than 1, then the assets is more volatile than the market and is called an aggressive assets. The greater the beta of a security, the greater the risk and vice versa.

Symbolically,

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

Where,

β_j = Beta co-efficient for stock 'j'.

COV (Rj, Rm)= Covariance between returns on stock j return of market.

σ_m^2 = Variance of market return.

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

$$\text{There for Cov of SCBN} = \frac{8363.7766}{n-1}$$

$$= \frac{8363.7766}{5-1}$$

$$= \frac{2090.94}{1}$$

$$\beta_j = \frac{\text{Cov}(R_j, R_m)}{\sigma_m^2} = \frac{2090.94}{3444.79}$$

$$= 0.61$$

Cov .of NIBL =

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

$$= \frac{8332.591}{4} = 2083.15$$

$$\beta_j = \frac{\text{COV}(R_j, R_m)}{\sigma_m^2} = \frac{2083.15}{3444.79} = 0.60$$

Cov of LBL,

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

$$= \frac{12623.9838}{4} = 3356$$

$$\beta_j = \frac{\text{COV}(R_j, R_m)}{\sigma_m^2} = \frac{3356}{3444.79} = 0.97$$

COV of Everest Bank

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

$$= \frac{10332.6069}{4} = 2583.15$$

$$B_j = \frac{\text{COV}(R_j, R_m)}{\sigma_m^2} = \frac{2583.15}{3444.79} = 0.75$$

COV of NABIL

$$\begin{aligned} \text{Cov}(R_j, R_m) &= \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n-1} \\ &= \frac{16032.3228}{4} = 4008.08 \end{aligned}$$

$$B_j = \frac{\text{COV}(R_j, R_m)}{\sigma_m^2} = \frac{4008.08}{3444.79} = 1.16$$

COV of HBL,

$$\begin{aligned} \text{Cov}(R_j, R_m) &= \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n-1} \\ &= \frac{9761.1397}{4} \\ &= 2440.28 \end{aligned}$$

$$B_j = \frac{\text{COV}(R_j, R_m)}{\sigma_m^2} = \frac{2440.28}{3444.79} = 0.708$$

We know that beta is that index of systematic risk, which is aroused by market forces and cannot be diversified. SCBL, NIBL, LBL, EvBL, HBL have the beta of 0.61, 0.60, 0.97, 0.75, 0.708 which indicates that it is a defensive type of assets which seem to less volatile than market. And NABIL has beta coefficient 1.16 which is more volatile than market.

Portfolio Analysis:

It is true that the portfolio reduces the level of risk as compared to making investment in single asset. However, all the portfolios are not equally risky

.The portfolio risk and return depend upon the single assets return, standard deviation, correlation between the return and proportion of the investment upon the assets. As per the objective of the study portfolio return of three asset portfolio can be calculated as:

Expected Rate of Return in Portfolio,

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

$$E(R_p) = W_1X^{-1} + W_2X^{-2} + W_3X^{-3} + W_4X^{-4} + W_5X^{-5} + W_6X^{-6}$$

Where,

X^{-1} = Average rate of return of asset 1

X^{-2} = Average rate of return of asset 2

X^{-3} = Average rate of return of asset 3

X^{-4} = Average rate of return of asset 4

X^{-5} = Average rate of return of asset 5

X^{-6} = Average rate of return of asset 6

W_1 = Weight age for asset 1

W_2 = Weight age for asset 2

W_3 = Weight age for asset 3

W_4 = Weightage for asset 4

W_5 = Weightage for asset 5

W_6 = Weightage for asset 6

The calculated expected rate of returns of the portfolio with different weightage (proportion) of investable amount is presented in the table below.

Table no.4.7

Computation of portfolio return with different weights

Opportunity set	Stocks						E(R _p)
	HBL (W1)	SCBN L (W2)	NIBL (W3)	LBL (W4)	EVBL (W5)	NABIL (W6)	
A	0.16	0.16	0.16	0.16	0.16	0.20	18.52
B	0.2	0.2	0.2	0.2	0.2	0	16.50
C	0.25	0.25	0.25	0.25	0	0	14.88
D	0.33	0.33	0.33	0.01	0	0	11.42
E	0.5	0.5	0	0	0	0	11.94
F	0	0	0.25	0.25	0.25	0.25	21.30
G	0	0	0	0	0.5	0.5	24.78
H	0	0	0.01	0.33	0.33	0.33	24.93
I	0.5	0	0	0	0	0.5	16.60

The above table shows that the set 'H' gives the highest rate of return which may not be suitable for portfolio analysis; therefore, there should be the selection of other opportunity set. Set 'H' is the best portfolio that gives the highest portfolio return i.e. 24.93. It implies that making investment 1% in the stock of NIBL, 33% in the stock of LBL, 33% in the stock of EvBL and 33% in the stock of NABIL. The objective of the study is not only making investment decision on the basis of portfolio return but also considering the analysis of the risk characteristic associated with the return. Therefore, it would be rational to analyze the risk characteristics of each opportunity set.

Before the analysis of the risk characteristics, it should be clear about the C.V. between the assets chosen for formation of portfolio.

Here, X, X1, X2, X3, X4 and X5 represents HBL, SCBL, LBL, EvBL, NIBL and NABIL.

$$Cov(R_j, R_m) = \frac{\sum (R_j - \bar{R}_j)(R_m - \bar{R}_m)}{n}$$

Computation of Co-variance of Stocks HBL, SCBL BL, NIBL, EVBL, ABIL.

Cov of HBL and SCBL,

$$= \frac{(X - \bar{X})(X1 - \bar{X}1)}{N} = \frac{7174.351}{5} = 1434.87$$

Cov of HBL and LBL,

$$= \frac{(X-x)(X2-x^{-2})}{N} = \frac{8401.587}{5} = 1680.32$$

Cov of HBL and EvBL,

$$= \frac{(X-x^{-})(X3-x^{-3})}{N} = \frac{8776.84}{5} = 1355.37$$

Cov of HBL and NIBL,

$$= \frac{(X-x^{-})(X4-x^{-4})}{N} = \frac{6922.449}{5} = 1384.49$$

Cov of HBL and NABIL,

$$= \frac{(X-x^{-})(X5-x^{-5})}{N} = \frac{10946.26}{5} = 2189.25$$

Cov of SCBL and LBL,

$$= \frac{(X1-x^{-1})(X2-x^{-2})}{N} = \frac{7944.582}{5} = 1588.92$$

Cov of SCBL and EvBL,

$$= \frac{(X1-x^{-1})(X3-x^{-3})}{N} = \frac{8776.84}{5} = 1755.37$$

Cov of SCBL and NIBL,

$$= \frac{(X1-x^{-1})(X4-x^{-4})}{N} = \frac{8641.108}{5} = 1728.22$$

Cov of SCBN and NABIL,

$$= \frac{(X1-x^{-1})(X5-x^{-5})}{N} = \frac{11348.81}{5} = 2269.76$$

Cov of LBL and EvBL,

$$= \frac{(X_2 - X^{-2})(X_3 - X^{-3})}{N} = \frac{8946.757}{5} = 1789.35$$

Cov of LBL and NIBL,

$$= \frac{(X_2 - X^{-2})(X_4 - X^{-4})}{N} = \frac{8681.068}{5} = 1736.21$$

Cov of LBL and NABIL

$$= \frac{(X_2 - X^{-2})(X_5 - X^{-5})}{N} = \frac{12205.06}{5} = 2441.01$$

Cov of EvBL and NIBL,

$$= \frac{(X_3 - X^{-3})(X_4 - X^{-4})}{N} = \frac{9097.24}{5} = 1819.45$$

Cov of EvBL and NABIL,

$$= \frac{(X_3 - X^{-3})(X_5 - X^{-5})}{N} = \frac{12227.7}{5} = 2445.54$$

Cov of NIBL and NABIL,

$$= \frac{(X_4 - X^{-4})(X_5 - X^{-5})}{N} = \frac{9750.055}{5} = 1950.01$$

Risk of portfolio:

Calculation of risk of portfolio,

$$\sigma_p = \sqrt{W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + W_3^2 \sigma_3^2 + 2W_1 W_2 \text{Cov}_{12} + 2W_1 W_3 \text{Cov}_{13} + 2W_2 W_3 \text{Cov}_{23} \dots}$$

.....

$$\sigma_p A = 43.245, \sigma_p B = 40.92, \sigma_p C = 40.66, \sigma_p D = 40.51, \sigma_p E = 38.81, \sigma_p F = 46.33, \sigma_p G = 49.40, \sigma_p H = 47.29, \sigma_p I = 48.92$$

Table No 4.8.....

Expected Portfolio Return, Risk and Coefficient of Variation

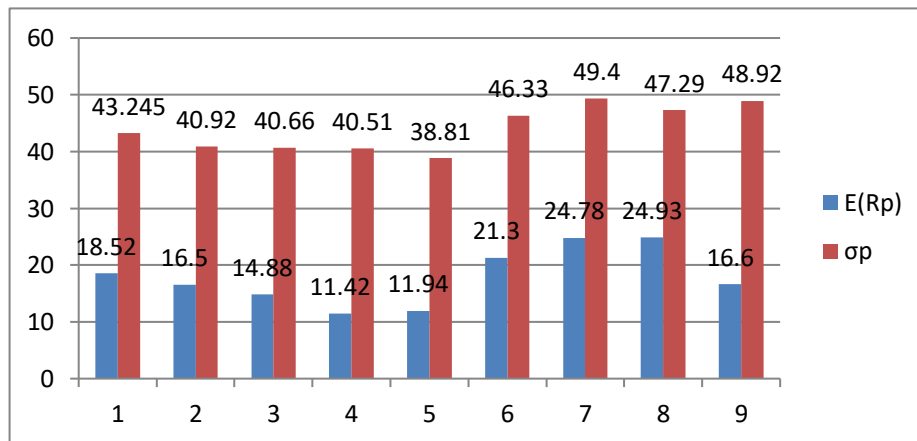
Opportunity set	E(Rp)	σ_p	CV%
A	18.52	43.245	233.50
B	16.50	40.92	248
C	14.88	40.66	273.25
D	11.42	40.51	354.73
E	11.94	38.81	325.04
F	21.30	46.33	217.51
G	24.78	49.40	199.35
H	24.93	47.29	189.69
I	16.60	48.92	294.7

Where,

$$CV = \frac{\sigma_p}{E(Rp)} \times 100$$

Expected Portfolio Return and Risk

Figure No 4.4



The above observation depicts that the expected portfolio return of the opportunity set H (8) is the highest i.e. 24.93 among the other sets. An investor always prefers the portfolio with highest expected return if the decision is to be made only on the basis of return because of the risk associated with it.

On the basis of portfolio risk. (Standard deviation) the opportunity set E(5) is the less risky portfolio with $\sigma_p= 38.81$ which contradicts to the opportunity set E. On the basis of the analysis of the stocks under different opportunity sets, it is observed that the expected returns are not uniform in all the sets. Therefore,

the risk factor may not also be the crucial factor that one can make the investment decision. Ultimately, it would be rational to make investment decision on the basis of risk per unit of return .i.e. the coefficient of variation which is the best measure for the investment decision.

The above figure 4.4 depicts that opportunity set H has the least coefficient of variation (CV) i.e. 189.69% .As a result base on the basis of the objective of the study, concluded that opportunity set H is fund to be the optimum investment portfolio .It gives the guideline to the investors to make investment 1% in the stock NIBL,33% in LBL,33% in EvBL and 33% in NABIL stocks. The portfolio can help increase the expected return up to 24.93% per share with decrease of risk of return up to 47.29%.

Regression Analysis:

TREND ANALYSIS

In financial analysis, the direction of change over a period, of year is of crucial importance. Trend analysis of ratio indicates the direction of change in all financial indicators. The purpose of this chapter is to analyze the loan & investment and total deposits of Standard Chartered Bank Nepal Limited, Nepal Investment Bank Limited, Laxmi Bank Limited and Himalayan Bank Limited during of 2001 to 2010.

Trend analysis is a statistical tool, which highlights the previous trend of the financial performance and helps t forecast the financial performance .One of the important duties, of commercial bank is to protect his depositors to whom the bank has contractual obligation to repay principal and interest. Interest can only be paid if it is earned by investing the depositor's fund in securities or by lending it out to borrowing customer's reward since it is their capital.

Loans and advances include loans, advances, overdrafts, cash credits, local and foreign bills purchases and discounts. Investment includes government securities, NRB bond, shares and debentures. Likewise, total deposits consist of current deposits, fixed deposits, saving deposits, money at call other deposits.

Trend Values ($Y_c = a + bx$) of loans and investment to total deposits ratio of Standard and Chartered Bank Nepal Limited (Ann.....)

Table N.4.7.1

Year t	Loans and Investment $Y_c = 16599.24 + 1407.7X$	Total Deposit $Y_c = 23918.75 + 2343.368X$	Ratio
2011	18006.94	26262.118	68.56621
2012	19414.64	28605.486	67.87034
2013	20822.34	30948.854	67.27984
2014	22230.04	33292.222	66.77247
2015	23637.74	35635.59	66.33183
2016	25045.44	37978.958	65.94557
2017	26453.14	40322.326	65.6042
2018	27860.84	42665.694	65.30033
2019	29268.54	45009.062	65.0281
2020	30676.24	47352.43	64.78282

The above table represents that, Standard Chartered Bank Limited's loan and investment have been increasing by Rs.1407.7 million every year .It is expected to reach Rs.30676.24million at the end of 2020.Similarly ,Standard and Chartered Bank Limited 's total deposits have been increasing by Rs. 2343.368 million every year and expected to reach Rs. 47352.43 at the end of 2020.Other thing remaining the same ,the ratio of loan and investment to total deposit of Standard and Chartered Bank Nepal Limited in 2020 will be 64.7828%.

Trend Value ($Y_c = a+bx$) of loan and investment to total deposits ratio of Nepal Investment Bank Limited (Annex.....)

Table N. 4.7.2

Year t	Loans and Investment Yc = 18282.73+4743.24X	Total Deposit Yc = 21422.11+5218.69X	Ratio
2011	23025.97	26640.8	86.43123
2012	27769.21	31859.49	87.1615
2013	32512.45	37078.18	87.68621
2014	37255.69	42296.87	88.08143
2015	41998.93	47515.56	88.38985
2016	46742.17	52734.25	88.63721
2017	51485.41	57952.94	88.84003
2018	56228.65	63171.63	89.00934
2019	60971.89	68390.32	89.15281
2020	65715.13	73609.01	89.27593

The above table represents that, Nepal Investment Bank Limited's loan and investment have been increasing by Rs.4743.24 million every year .It is expected to reach Rs.65715.13million at the end of 2020.Similarly ,Nepal Investment Bank Limited 's total deposits have been increasing by Rs. 5218.69 million every year and expected to reach Rs. 73609.01 at the end of 2020.Other thing remaining the same ,the ratio of loan and investment to total deposit of Nepal Investment Bank Limited in 2020 will be 89.2759%.

Trend Values ($Y_c = a +bx$) of loans and Investment to total deposits ratio of Himalayan Bank Limited (Annex.....)

Table N.4.7.3

Year t	Loans and Investment $Y_c = 20815.41 + 2505.89X$	Total Deposits $Y_c = 26467.34 + 2208.16X$	Ratio
2011	23321.3	28675.5	81.32831
1012	25827.19	30883.66	83.62736
2013	28333.08	33091.82	85.61959
2014	30838.97	35299.98	87.36257
2015	33344.86	37508.14	88.90033
2016	35850.75	39716.3	90.26709
2017	38356.64	41924.46	91.48988
2018	40862.53	44132.62	92.59031
2019	43368.42	46340.78	93.58587
2020	45874.31	48548.94	94.49086

The above table represents that, Himalayan Bank Limited's loan and investment have been increasing by Rs.2505.89 million every year .It is expected to reach Rs.45874.31million at the end of 2020.Similarly, Himalayan Bank Limited total deposits have been increasing by Rs. 2208.16 million every year and expected to reach Rs. 48548.94 at the end of 2020.Other thing remaining the same, the ratio of loan and investment to total deposit of Himalayan Bank Limited in 2020 will be 94.49%.

Trend Values ($Y_c = a + bx$) of loan and investment to total deposits ratio of Laxmi Bank Limited.(Annex.....)

Table N.4.7.4

Year t	Loans and Investment $Y_c = 6605.62 + 2106.8X$	Total Deposits $Y_c = 6130.65 + 2016.84X$	Ratio
2011	6605.62	6130.65	107.7475
2012	10819.22	10164.33	106.443
2013	12926.02	12181.17	106.1148
2014	15032.82	14198.01	105.8798
2015	17139.62	16214.85	105.7032
2016	19246.42	18231.69	105.5657
2017	21353.22	20248.53	105.4557
2018	23460.02	22265.37	105.3655
2019	25566.82	24282.21	105.2903
2020	27673.62	26299.05	105.2267

The above table represents that, Laxmi Bank Limited's loan and investment have been increasing by Rs.2106.8 million every year .It is expected to reach Rs.27673.62million at the end of 2020.Similarly, Laxmi Bank Limited total deposits have been increasing by Rs. 2016.84 million every year and expected to reach Rs. 26299.05 at the end of 2020.Other thing remaining the same ,the ratio of loan and investment to total deposit of Laxmi Bank Limited in 2020 will be 105.2267%.

Trend Values ($Y_c = a + bx$) of loans and Investment to total deposits ratio of NABIL Bank Limited (Annex.....)

Table N.4.7.5

Year t	Loans and Investment $Y_c = 31850600000 + 676026001.5X$	Total Deposits $Y_c = 31672800000 + 6813257288.9X$	Ratio
2011	39286886017	1.06619E+11	36.84804987
1012	39962912018	1.13432E+11	35.23075646
2013	40638938020	1.20245E+11	33.79673924
2014	41314964021	1.27058E+11	32.51651473
2015	41990990023	1.33872E+11	31.36660159
2016	42667016024	1.40685E+11	30.32806718
2017	43343042026	1.47498E+11	29.38547704
2018	44019068027	1.54311E+11	28.52612259
2019	44695094029	1.61125E+11	27.7394448
2020	45371120030	1.67938E+11	27.0165982

The above table represents that, NABIL Bank Limited's loan and investment have been increasing by Rs. 676026001.5 every year .It is expected to reach Rs. 45371120030 at the end of 2020.Similarly, NABIL Bank Limited total deposits have been increasing by Rs. 6813257288.9 every year and expected to reach Rs. 1.67938E+11 at the end of 2020.Other thing remaining the same, the ratio of loan and investment to total deposit of NABIL Bank Limited in 2020 will be 27.02%.

Trend Values ($Y_c = a + bx$) of loans and Investment to total deposits ratio of Everest Bank Limited (Annex.....)

Table N.4.7.6

Year t	Loans and Investment $Y_c = 236899.8091 + 48308.08866X$	Total Deposits $Y_c = 252440.2 + 61396.5X$	Ratio
2011	768288.7844	927801.7	82.80743443
2012	816596.873	989198.2	82.55139092
2013	864904.9617	1050594.7	82.32527365
2014	913213.0503	1111991.2	82.12412565
2015	961521.139	1173387.7	81.94402745
2016	1009829.228	1234784.2	81.7818391
2017	1058137.316	1296180.7	81.63501557
2018	1106445.405	1357577.2	81.50147225
2019	1154753.494	1418973.7	81.3794853
2020	1203061.582	1480370.2	81.26761686

The above table represents that, Everest Bank Limited's loan and investment have been increasing by Rs. 48308.08866 every year .It is expected to reach Rs. 1203061.582 at the end of 2020.Similarly, Everest Bank Limited total deposits have been increasing by Rs. 61396.5 every year and expected to reach Rs 1480370.2 at the end of 2020.Other thing remaining the same, the ratio of loan and investment to total deposit of Everest Bank Limited in 2020 will be 81.267 %.

Chapter V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The previous chapter was concluded with the presentation and analysis of necessary data required for the fulfillment of the objective of the study.

This chapter is concerned with the summary of the study, conclusion and recommendation on the basis of finding of study. This study is divided into three sections (i) Summary, (ii) Conclusion (iii) Recommendations.

5.1 Summary

The mean investment to total deposits ratios of NABIL is highest i.e. 31.972% among the joint venture bank. NABIL has the higher mean than industry average mean i.e. 19.40%. The mean investment to total deposits ratio of Nepal Investment Bank Limited, Himalayan Bank Limited and Laxmi Bank Limited are lower than the industry average. The Coefficient of variance ratio of NABIL is lowest among joint venture banks i.e. 10.49%.

The mean loan and advance to total deposit ratio of Laxmi Bank Limited is highest i.e. 89.095% among the joint venture banks. The mean loan and advances to total deposits ratio of Standard Chartered Bank Nepal Limited and Himalayan Bank Limited are less invested in loan and advance which is lower than industries average. On the basis of CV, it indicate that ratio of Everest Bank Limited has more uniform (C.V.2.75%) than other joint venture bank. We conclude that Nepal Investment Bank Limited and Laxmi Bank Limited (above mean average) are the most effective to mobilize the total deposits on loan and advance among the joint venture banks.

The mean return on total assets ratio of NABIL is the highest return i.e. 2.64% and Laxmi Bank is the lowest i.e. 1.15%. NABIL and Standard Charter Bank Nepal Limited have above return than average which is quite good performance. CV of Standard Charter Bank Limited has lowest among six joint venture banks i.e. 3.82%. It means that the ratio of Standard Chartered Bank Nepal Limited is less consistent among the six joint venture banks.

Beta co-efficient analysis. We know that beta is that index of systematic risk, which is aroused by market forces and cannot be diversified. SCBL, NIBL, LBL, EvBL, HBL have the beta of 0.61, 0.60, 0.97, 0.75, 0.708 which indicates that it is a defensive type of assets which seem to less volatile than

market. And NABIL has beta coefficient 1.16 which is more volatile than market.

From the portfolio combination of six commercial banks SCBN, NABIL Everest Bank Limited, LBL NIBL and HBL, On the basis of nine opportunity sets, Set 'H' is the best portfolio that gives the highest portfolio return i.e. 24.93. It implies that making investment 1% in the stock of NIBL, 33% in the stock of LBL, 33% in the stock of EvBL and 33% in the stock of NABIL, but it may not be suitable for portfolio analysis. On the basis of risk factor (σ_p) opportunity set E is less risky portfolio $\sigma_p E = 38.81$. On the basis of the analysis of the stocks under different opportunity sets, it is observed that the expected returns are not uniform in all the sets. Therefore, the risk factor may not also be the crucial factor that one can make the investment decision. Ultimately, it would be rational to make investment decision on the basis of risk per unit of return i.e. the coefficient of variation which is the best measure for the investment decision.

The above table 4.8 depicts that opportunity set H has the least coefficient of variation (CV) i.e. 189.69%. As a result based on the basis of the objective of the study, concluded that opportunity set H is found to be the optimum investment portfolio. It gives the guideline to the investors to make investment 1% in the stock of NIBL, 33% in the stock of LBL, 33% in the stock of EvBL and 33% in the stock of NABIL. The portfolio can help increase the expected return up to 24.93% per share with decrease of risk of return up to 47.29%.

From trend analysis it indicates that Standard Chartered Bank Nepal Limited and Laxmi Bank Limited, NABIL and Everest Bank have decreasing ratio of loan & investment to total deposit. Whereas Nepal Investment Bank Limited and Himalayan Bank Limited have increasing ratio of loan & invest to total deposit. But on the basis of high % of loan & investment to total deposit, Laxmi Bank Limited is 1st and Himalayan Bank Limited is 2nd. From this analysis it has been forecasted from 2011 to 2020 on the basis of historical data of 2001 to 2010.

Conclusions

There are 31 commercial banks in Nepal at present time. Out of them it has taken only six commercial banks as a sample study. It has completed on the basis of five years banking performance. This research has found out the performance of banks on the basis of portfolio management. To find out the performance, the studied has made from different angles. Like ratio analysis,

beta coefficient analysis, Coefficient variance, expected portfolio return and portfolio risk. On the basis of investment to total deposit ratio NABIL bank has efficiently utilized their deposit than other banks because it has highest average mean of investment to total deposit ratio ie 31.972 and lowest CV ie 10.49%. It shows that Laxmi Bank Limited, Himalayan Bank Limited and Everest Bank are not uniformity ratio due to the higher average ratio than industry average C.V.

The mean return on total assets ratio of NABIL is the highest return i.e. 2.64% and Laxmi Bank is the lowest i.e. 1.15%. NABIL and Standard Charter Bank Nepal Limited have above return than average which is quite good performance. CV of Standard Charter Bank Limited has lowest among six joint venture banks i.e. 3.82%. It means that the ratio of Standard Chartered Bank Nepal Limited is less consistent among the six joint venture banks.

LBL has highest loan and advance to total deposit ratio than other banks. It shows that this bank has used highest amount of deposit in the form of loan and advance rather than investment. Loan and advance given to outsiders do not increase return as the investment does.

On the basis of beta coefficient NIBL is more volatile to the investor because it has highest beta coefficient.

But on the basis of expected rate of return and portfolio CV we can conclude that investing in opportunity set H i.e. 1% in NIBL, 33% in LBL, 33% in EVBL and 33% in NABIL is best portfolio combination because it has highest return 24.93 and least CV ie 189.69. In the same way From trend analysis it indicates that Standard Chartered Bank Nepal Limited and Laxmi Bank Limited, NABIL and Everest Bank have decreasing ratio of loan & investment to total deposit. Whereas Nepal Investment Bank Limited and Himalayan Bank Limited have increasing ratio of loan & invest to total deposit. But on the basis of high % of loan & investment to total deposit, Laxmi Bank Limited is 1st and Himalayan Bank Limited is 2nd

Recommendation

On the basis of the analysis and findings the following recommendations can be forwarded to the individuals, institutions and others to overcome the problem associated with portfolio investment and its management.

The investment made in the securities might be the best investment alternatives rather than merely depositing the saving in the banks. Therefore, the investors

are suggested to make investment on the securities i.e. stocks on the basis of scientific analysis but not only running after the market trend and melodious slogans.

It is found that making investment in single asset is even riskier than portfolio investment. Considering the proverb 'Don't put all the eggs in one basket' the investors are suggested to diversify their investment which helps them to minimize the level of risk and maximize the expected return.

- The profitability position of HBL is the weakest in relation on return on assets. So, the bank should utilize its overall resources effectively to gain the peak profit margins.
- From the analysis of investment operation of CBs, NIBL and EBL increase its total investment by increasing total deposit and increasing investment on government securities.
- SCBL are not successful in better utilizing their total deposits on loan and advances so that it is recommended that SCBL should increase the amount of loan and advances.
- Risk and return play vital role on common stock investment of banking sector. Therefore, it is suggested to analyze risk and return with sincerely before investing in this sector. According to the analysis of individual common stock of Joint Venture Bank, Investors should not invest their money in common stock of NABIL due to , higher CV and beta coefficient.
- Analysis of the market sensitivity of common stock guides in investing on stock market. It is better to invest on such common stock, which has less beta i.e. defensive stock for that investor who does not eager to take high risk but higher return cannot obtain in such investment. Thus, investor should buy the under priced stocks when market is rising and sell the over-priced securities when market performance is falling. Similarly, the investors should hold that securities which are performing

better than the market. This study recommends purchasing the common stock of NABIL, SCBNL are under priced and HBL correctly priced.

- Investors must concern with the systematic risk that is measured by given stock's beta. The systematic risk is only the risk, which is priced at market. According to the study, the stock of NABIL has the higher systematic risk i.e. 1.16 . Although, there is chance of more return than expected and there is a chance of heavy loss because stock market investment is risky job. Thus, investor must be well aware of this fact and must be able to visualize and analyze about the whole things. To beat the stock market, proper analysis of individual security, industry and overall market is always essential.
- Investors need to diversify their fund to reduce the risk. Proper construction of portfolio will reduce considerable potential loss, which can be defined in term of the risk but portfolio construction is dynamic and difficult job. Thus, investor should be selected the stocks that have higher return and negative correlation or near to zero correlation between different companies and sector. The portfolio revision is also necessary at certain interval time to get best return at lower risk. According to the study, the portfolio between EBL & NABIL is recommended to construction due to lowest risk as well as higher return.
- Government should amend the rules and a regulation regarding to the stock market in time-to-time that ensures the protection of an individual investor's right. Such amendment is essential to make the act effectiveness with the pace of time and need to follow the implementation and supervision of rules and regulation to make sure the objective is achieved.
- Before making an investment decision in stock, it is recommended to visit and discuss with investment companies, with individual expert and researchers. Investor should make their investment decision because of reliable information or financial parameters of the related bank rather than imagination.

- The financial institutions and companies should provide the real financial statements. The data provided by NEPSE and the company itself are different in some cases. It creates confusion to potential investors about the actual financial condition of the company. They should publish their annual reports and information timely and accurately, which will help to the investors to take the investment decision on their common stock.
- Portfolio management is a dynamic subject matter, which changes at a flash. It is ever challenging. There should be regular research in portfolio management. Corporate body and individual investor strongly recommended make regular research on portfolio managements.
- It is found that making investment in single asset is even riskier than portfolio investment .Considering the proverb '**Don't put all the eggs in one basket**' the investors are suggested to diversify their investment with well diversified portfolio which helps minimize the level of risk and maximize the expected return.
- The investors on the basis of comparatively study on the stock of one industry i.e. banking and three
- It is very difficult to make decision regarding investment, therefore, all the concerned individuals ,organizations should remain up to date with the fresh information when and required .

These suggestions are widely based upon the secondary data of financial aspect of joint venture banks. Reformation steps should be taken after considering all aspect of the corporate. This work is done to fulfill academic requirement of Master Degree, so an exhaustive research should be taken for the fundamental changes of these bank's procedure, methodology and activities.

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Annex 1

Calculation of Total deposit Trend of Standard and Chartered Bank Nepal Limited

let the Linear Trend equation between Y and X be given by:

$$Y=a+bx.....(i)$$

Computation of linear Trend

Year t	Total Deposits Y	$\frac{t-2005+2006}{2}$ X	X ²	XY
2001	15430.1	-4.5	20.25	-69435.45
2002	15835.7	-3.5	12.25	-55424.95
2003	18755.5	-2.5	6.25	-46888.75
2004	21161.4	-1.5	2.25	-31742.1
2005	19344	-0.5	0.25	-9672
2006	23050.5	0.5	0.25	11525.25
2007	24640.3	1.5	2.25	36960.45
2008	29743.9	2.5	6.25	74359.75
2009	36871.8	3.5	12.25	129051.3
2010	34354.3	4.5	20.25	154594.35
Total	$\sum Y = 239187.5$	$\sum X = 0$	$\sum X^2 = 82.5$	$\sum XY = 193327.9$

Since , $\sum X=0$

$$a = \frac{\sum Y}{n} = \frac{239187.5}{10} = 23918.75$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{193327.9}{82.5} = 2343.368$$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 23918.75 + 2343.368X(ii)$$

Annex 2

Calculation of loan and investment Trend of Standard Charter Bank Nepal Limited

Let the linear trend equation between Y and X be the given by;

$Y = a+bx \dots\dots\dots(i)$

Computation of linear Trend

Year t	loan Investment Y	a t- $\frac{2005+2006}{2}$ X	X ²	XY
2001	10649.7	-4.5	20.25	-47923.7
2002	11460.4	-3.5	12.25	-40111.4
2003	12751.3	-2.5	6.25	-31878.3
2004	14610.2	-1.5	2.25	-21915.3
2005	15418.1	-0.5	0.25	-7709.05
2006	17550	0.5	0.25	8775
2007	17653.8	1.5	2.25	26480.7
2008	21501.1	2.5	6.25	53752.75
2009	23125.9	3.5	12.25	80940.65
2010	21271.9	4.5	20.25	95723.55
Total	$\sum Y = 165992.4$	$\sum X=0$	$\sum X^2=82.5$	$\sum XY =116135$

Since, $\sum X=0$

$a = \frac{\sum Y}{n} = \frac{165992.4}{10} = 16599.24$

$b = \frac{\sum XY}{\sum X^2} = \frac{116135}{82.5} = 1407.7$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 16599.24+1407.7X \dots\dots\dots(ii)$

Annex 3

Calculation of Total Deposit Trend of Nepal Investment Bank Limited the linear trend equation between y and x is given by;

Y = A+ bX..... (i)

Computation of Linear Trend

Year t	Total Deposits Y	$\frac{t-2005+2006}{2}$ X	X²	XY
2001	4256.2	-4.5	20.25	-19152.9
2002	4174.8	-3.5	12.25	-14611.8
2003	7922.8	-2.5	6.25	-19807
2004	11706.3	-1.5	2.25	-17559.5
2005	14254.8	-0.5	0.25	-7127.4
2006	18927.3	0.5	0.25	9463.65
2007	24488.9	1.5	2.25	36733.35
2008	34451.8	2.5	6.25	86129.5
2009	46697.9	3.5	12.25	163442.7
2010	47340.3	4.5	20.25	213031.4
Total	$\sum Y= 214221.1$	$\sum X=0$	$\sum X^2=82.5$	$\sum XY= 430542$

Since, $\sum X=0$

$a = \frac{\sum Y}{n} = \frac{214221.1}{10} = 21422.11$

$b = \frac{\sum XY}{\sum X^2} = \frac{430542}{82.5} = 5218.69$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 21422.11+5218.69X$ (ii)

Annex 4

**Calculation of Total Loan and Investment Trend of Nepal Investment Bank
Limited the linear trend equation between y and x is given by;**

$Y = A + bX$ (i)

Year t	Total Loan and Investment Y	$\frac{t-2005+2006}{2}$ X	X²	XY
2001	2685.5	-4.5	20.25	-12084.8
2002	2917.4	-3.5	12.25	-10210.9
2003	6272.6	-2.5	6.25	-15681.5
2004	9175.5	-1.5	2.25	-13763.3
2005	12243.9	-0.5	0.25	-6121.95
2006	15529.5	0.5	0.25	7764.75
2007	20738.4	1.5	2.25	31107.6
2008	30300.5	2.5	6.25	75751.25
2009	38781.7	3.5	12.25	135736
2010	44182.3	4.5	20.25	198820.4
Total	$\sum Y = 182827.3$	$\sum X = 0$	$\sum X^2 = 82.5$	$\sum XY = 391317.6$

Since, $\sum X = 0$

$a = \frac{\sum Y}{n} = \frac{182827.3}{10} = 18282.73$

$b = \frac{\sum XY}{\sum X^2} = \frac{391317.6}{82.5} = 4743.24$

Substituting the values of 'a' and 'b' in equation (i), the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 18282.73 + 4743.24X$ (ii)

Annex 5

Calculation of Total Deposit Trend of NABIL the linear trend equation between y and x is given by;

$$Y = A + bX \dots\dots\dots (i)$$

Computation of Linear Trend

Year t	Total Deposit Y	t-2008 X	X ²	XY
2006	19347399440	-2	4	-38694798880
2007	23342285327	-1	1	-23342285327
2008	31915047467	0	0	0
2009	37348255840	1	1	37348255840
2010	46410700628	2	4	92821401256
Total	$\sum Y =$ 158364000000	$\sum X = 0$	$\sum X^2 = 10$	$\sum XY = 68132572889$

Since, $\sum X = 0$

$$a = \frac{\sum Y}{n} = \frac{1.58364E+11}{5}$$

$$= 31672800000$$

$$b = \frac{\sum XY}{\sum X^2} = \frac{68132572889}{10} = 6813257288.9$$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 31672800000 + 6813257288.9X \dots\dots\dots(ii)$$

Annex 6

Calculation of Loan and Invest Total Deposit Trend of NABIL the linear trend equation between y and x is given by;

$$Y = A + bX \dots\dots\dots (i)$$

Computation of Linear Trend

Year t	Total loan Investment Y	a t-2008 X	X²	XY
2006	19101076261	-2	4	-38202152522
2007	24491089297	-1	1	-24491089297
2008	31304824746	0	0	0
2009	38416312042	1	1	38416312042
2010	45939789896	2	4	91879579792
Total	$\Sigma Y = 159253000000$	$\Sigma X = 0$	$\Sigma X^2 = 10$	$\Sigma XY = 67602650015$

Since, $\Sigma X = 0$

$$a = \frac{\Sigma Y}{n} = \frac{159253000000}{5}$$

$$= 31850600000$$

$$b = \frac{\Sigma XY}{\Sigma X^2} = \frac{67602650015}{10} = 6760265001.5$$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 31850600000 + 6760265001.5X \dots\dots\dots(ii)$$

Annex 7

Calculation of Total Deposit Trend of Himalayan Bank Limited the linear trend equation between y and x is given by;

$Y = A + bX$ (i)

Computation of Linear Trend

Year t	Total Deposit Y	$\frac{t-2005+2006}{2}$ X	X²	XY
2001	17613.6	-4.5	20.25	-79261.2
2002	18595.2	-3.5	12.25	-65083.2
2003	21002.8	-2.5	6.25	-52507
2004	22760.9	-1.5	2.25	-34141.4
2005	24831.1	-0.5	0.25	-12415.6
2006	26456.2	0.5	0.25	13228.1
2007	29905.5	1.5	2.25	44858.25
2008	31805.3	2.5	6.25	79513.25
2009	34681	3.5	12.25	121383.5
2010	37021.8	4.5	20.25	166598.1
Total	$\sum Y = 264673.4$	$\sum X = 0$	$\sum X^2 = 82.5$	$\sum XY = 182172.9$

Since, $\sum X = 0$

$a = \frac{\sum Y}{n} = \frac{264673.4}{10} = 26467.34$

$b = \frac{\sum XY}{\sum X^2} = \frac{182172.9}{82.5} = 2208.16$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 26467.34 + 2208.16X$ (ii)

Annex 8

**Calculation of Loan and Invest Total Deposit Trend of Himalayan Bank Limited
the linear trend equation between y and x is given by;**

$Y = A + bX$ (i)

Computation of Linear Trend

Year t	Total Loan and Investment Y	$t - \frac{2005+2006}{2}$ X	X²	XY
2001	11060.9	-4.5	20.25	-49774.1
2002	12262.1	-3.5	12.25	-42917.4
2003	14874.2	-2.5	6.25	-37185.5
2004	15863.4	-1.5	2.25	-23795.1
2005	18714.7	-0.5	0.25	-9357.35
2006	20660.1	0.5	0.25	10330.05
2007	24126.8	1.5	2.25	36190.2
2008	27456.9	2.5	6.25	68642.25
2009	29504.4	3.5	12.25	103265.4
2010	33630.6	4.5	20.25	151337.7
Total	$\sum X = 208154.1$	$\sum X = 0$	$\sum X^2 = 82.5$	$\sum XY = 206736.3$

Since, $\sum X = 0$

$a = \frac{\sum Y}{n} = \frac{208154.1}{10} = 20815.41$

$b = \frac{\sum XY}{\sum X^2} = \frac{206736.3}{82.5} = 2505.89$

Substituting the values of 'a' and 'b' in equation (i), the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 20815.41 + 2505.89X$ (ii)

Annex 9

Calculation of Total Deposit Trend of Laxmi Bank Limited the linear trend equation between y and x is given by;

$$Y = A + bX \dots\dots\dots (i)$$

Computation of Linear Trend

Year t	Total Trend Y	Depo t-2006 X	X ²	XY
2002	112.6	-4	16	-450.4
2003	691.8	-3	9	-2075.4
2004	1684.3	-2	4	-3368.6
2005	3028.6	-1	1	-3028.6
2006	4444.3	0	0	0
2007	7611.7	1	1	7611.7
2008	10917.2	2	4	21834.4
2009	16051.3	3	9	48153.9
2010	16764.7	4	16	67058.8
Total	61306.5	∑X=0	∑ X ² =60	135735.8

Since, $\sum X = 0$

$$a = \sum Y / n = 61306.5 / 9 = 6811.83$$

$$b = \sum XY / \sum X^2 = 135735.8 / 60 = 2262.26$$

Substituting the values of 'a' and 'b' in equation (i), the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 6130.65 + 2016.84X \dots\dots\dots (ii)$$

Annex 10

Calculation of Total Loan and Investment Trend of Laxmi Bank Limited the linear trend equation between y and x is given by;

$Y = A + bX$ (i)

Computation of Linear Trend

Year t	Total Loan and Investment Trend Y	t-2006 X	X²	XY
2002	154.1	-4	16	-616.4
2003	859	-3	9	-2577
2004	1984.9	-2	4	-3969.8
2005	3101.8	-1	1	-3101.8
2006	4699.3	0	0	0
2007	7505.3	1	1	7505.3
2008	10518.7	2	4	21037.4
2009	14380	3	9	43140
2010	16247.5	4	16	64990
Total	$\Sigma Y =$ 59450.6	$\Sigma X = 0$	$\Sigma X^2 = 60$	$\Sigma XY = 126407.7$

Since, $\Sigma X = 0$

$a = \Sigma Y / n = 59450.6 / 9 = 6605.62$

$b = \Sigma XY / \Sigma X^2 = 126407.7 / 60 = 2106.8$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$Y_c = 6605.62 + 2106.8X$ (ii)

Annex 11

Calculation of Total Deposit Trend of Everest Bank Limited the linear trend equation between y and x is given by;

$$Y = A + bX \dots\dots\dots (i)$$

Computation of Linear Trend

Year t	Total Deposit	t-2008	X²	XY
	Y	X		
2006	138024	-2	4	-276048
2007	181862	-1	1	-181862
2008	239763	0	0	0
2009	333229	1	1	333229
2010	369323	2	4	738646
Total	1262201	∑X=0	∑ X²=10	∑XY=613965

Since, $\sum X=0$

$$a = \sum Y/n = 1262201/5 = 252440.2$$

$$b = \sum XY / \sum X^2 = 613965/10 = 61396.5$$

Substituting the values of 'a' and 'b' in equation (i) ,the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 252440.2 + 61396.5X \dots\dots\dots(ii)$$

Annex 12

**Calculation of Investment and loan to Total Deposit Trend of Everest Bank Limited
the linear trend equation between y and x is given by;**

$$Y = A + bX \dots\dots\dots (i)$$

Computation of Linear Trend

Year t	Total Loan and Investment Trend Y	t-2006 X	X²	XY
2006	140026.0768	-2	4	-280052.154
2007	186491.8166	-1	1	-186491.817
2008	234002.8556	0	0	0
2009	298331.7362	1	1	298331.7362
2010	325646.5603	2	4	651293.1206
Total	$\Sigma Y = 1184499.046$	$\Sigma X = 0$	$\Sigma X^2 = 10$	$\Sigma XY = 483080.8866$

Since, $\Sigma X = 0$

$$a = \Sigma Y / n = 1184499.046 / 5 = 236899.8091$$

$$b = \Sigma XY / \Sigma X^2 = 483080.8866 / 10 = 48308.08866$$

Substituting the values of 'a' and 'b' in equation (i), the least square total deposits trend of standard Charter Bank Nepal Limited is given by,

$$Y_c = 236899.8091 + 48308.08866X \dots\dots\dots(ii)$$

Annex 13

Table No.4.6

Period	Market return()	SCB S1	NIB S2	LBL S3	EvBL S4	NABIL S5	HBL S6	(m-m ⁻) (S1-S ⁻ 1)	(m-m ⁻) (S2-s)	(m-m) (S3-s)	(m-m) (S4-s)	(m-m) (S5-s)	(m-m) (S6-s)
2006	4.67	66.52	60	29.12	61.38	54.49	22.83	-903.1194	-917.1964	-62.98186	-703.5426	-511.7364	-102.8676
2007	127.95	58.41	37.62	87.5	76.94	129.91	59.55	4319.741	2902.701	6487.582	5661.219	10845.331	4442.744
2008	40.85	17.12	42.13	61.46	29.71	5.64	15.23	-2.3205	574.198	638.601	119.809	-373.636	-35.485
2009	-22.24	-11.27	-42.53	-4.56	-20.66	-6.46	-11.52	1290.2408	2374.7308	1368.2356	1975.0892	1494.3668	1300.1012
2010	-36.23	-44.53	-47.41	-45.10	-32.38	-50.72	-52.96	3659.2256	3398.1456	4192.5332	3280.0394	4578.0016	4156.6494
Σx	115	86.25	49.81	128.4	114.99	132.86	33.13	8363.77	8332.59	12623.938	10332.669	16032.328	9761.137
\bar{x}	23	17.25	9.962	25.68	22.998	26.572	6.626						

Annex 14

Computation of Co-variance of Stocks HBL, SCBL BL, NIBL, EVBL, ABIL.

Year	HBL(X ₁)	(x ₁ -x̄ ₁)	SCB (X ₂)	(X ₂ -x̄ ₂)	(X ₁ -x̄ ₁)(X ₂ -x̄ ₂)	LBL(X ₃)	(X ₃ -x̄ ₃)	(x ₁ -x̄ ₁)(X ₃ -x̄ ₃)	EVBL(X ₄)	(X ₄ -x̄ ₄)	(x ₁ -x̄ ₁)(X ₄ -x̄ ₄)
2006	22.83	16.204	66.52	49.27	798.3711	29.12	3.436	55.67694	61.38	38.382	621.9419
2007	59.55	52.924	58.41	41.16	2178.352	87.5	61.816	3271.55	76.94	53.942	2854.826
2008	15.23	8.604	17.12	-0.13	-1.11852	61.46	35.776	307.8167	29.71	6.712	57.75005
2009	-11.52	-18.146	-11.27	-28.52	517.5239	-4.56	-30.244	548.8076	-20.66	-43.658	792.2181
2010	-52.96	-59.586	-44.53	-61.78	3681.223	-45.10	-70.784	4217.735	-32.38	-55.378	3299.754
Σ	33.13		86.25		7174.351	128.42		8401.587	114.99		7626.49
x̄	6.626		17.25			25.684			22.998		

Year	HBL(X ₁)	(x ₁ -x̄ ₁)	NIBL(X ₂)	(X ₂ -x̄ ₂)	(X ₁ -x̄ ₁)(X ₂ -x̄ ₂)	NABIL (X ₃)	(X ₃ -x̄ ₃)	(x ₁ -x̄ ₁)(X ₃ -x̄ ₃)	ABIL (X ₄)	(X ₄ -x̄ ₄)	(x ₁ -x̄ ₁)(X ₄ -x̄ ₄)
2006	22.83	16.204	60	50.038	810.8158	54.49	27.918	452.3833	169.291	1891.081	2465.372
2007	59.55	52.924	37.62	27.658	1463.772	129.91	103.338	5469.06	2544.34	2220.253	1138.403
2008	15.23	8.604	42.13	32.168	276.7735	5.64	-20.932	-180.099	-4.65088	-0.87256	-4.18184
2009	-11.52	-18.146	-42.53	-52.492	952.5198	-6.46	-33.032	599.3987	862.558	1245.126	1497.072
2010	-52.96	-59.586	-47.41	-57.372	3418.568	-50.72	-77.292	4605.521	4373.03	3421.253	3544.442
Σ	33.13		49.81		6922.449	132.86		10946.26	7944.58	8776.84	8641.108
x̄	6.626		9.962			26.572					

year	$(x_1 - \bar{x}_1)$ $(x_5 - \bar{x}_5)$	$(x_2 - \bar{x}_2)$ $(x_3 - \bar{x}_3)$	$(x_2 - \bar{x}_2)$ $(x_4 - \bar{x}_4)$	$(x_2 - \bar{x}_2)$ $(x_5 - \bar{x}_5)$	$(x_3 - \bar{x}_3)$ $(x_4 - \bar{x}_4)$	$(x_3 - \bar{x}_3)$ $(x_5 - \bar{x}_5)$	$(x_4 - \bar{x}_4)$ $(x_5 - \bar{x}_5)$
2006	1375.52	131.8806	171.9306	95.92625	1920.559	1071.549	1396.961
2007	4253.392	3334.479	1709.707	6387.942	1491.928	5574.258	2858.122
2008	2.72116	240.1285	1150.842	-748.863	215.9116	-140.496	-673.341
2009	942.0726	1320.393	1587.568	999.0198	2291.696	1442.111	1733.916
2010	4775.1	3919.876	4061.02	5471.037	3177.147	4280.276	4434.397
\sum	11348.81	8946.757	8681.068	12205.06	9097.24	12227.7	9750.055
\bar{x}							