PORTFOLIO MANAGEMENT
OF NEPALESE COMMERCIAL BANKS
& FINANCE COMPANIES

A THESIS SUBMITTED TO:
OFFICE OF THE DEAN, FACULTY OF MANAGEMENT
TRIBHUVAN UNIVERSITY

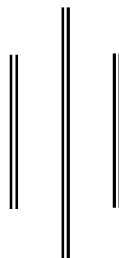In partial fulfillment of the requirement for the Master's Degree of Business Studies (M.B.S.)

By

SUBIN PRAKASH PRADHAN

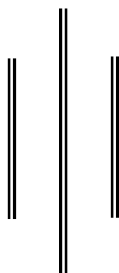T.U. Reg. No. 7-2-347-85-2000

CAMPION COLLEGE

PORTFOLIO MANAGEMENT OF NEPALESE

COMMERCIAL BANKS & FINANCE COMPANIES

A Thesis Submitted to:
Office of the Dean
Faculty of Management
TRIBHUVAN UNIVERSITY

In partial fulfillment of the requirement for the
Master's Degree of Business Studies (M.B.S.)

By

Subin Prakash Pradhan
T.U. Reg. No. 7- 2 - 347- 85 - 2000
CAMPION COLLEGE

VIVA-VOCE SHEET

We have conducted the Viva-Voce Examination of the Thesis Presented by

Subin Prakash Pradhan

Entitled

PORTFOLIO MANAGEMENT OF NEPALESE COMMERCIAL BANKS AND FINANCE COMPANIES

And found the thesis to be original work of the student and written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for **Master's Degree in Business Studies (M.B.S.).**

<u>Viva-Voce Committee</u>

Chairman (Research Committee):   ....

Member (Thesis Supervisor):   ....

Member (External Expert):   ....

Member (Head of the Department):   ....

Date:

RECOMMENDATION

This is to certify that the thesis:

Submitted by

Subin Prakash Pradhan

Entitled

PORTFOLIO MANAGEMENT OF NEPALESE

COMMERCIAL BANKS AND FINANCE COMPANIES

has been prepared as approved by this Department in the prescribed format of Faculty of Management. This thesis is forwarded for examination.

--------------------------   ----------------------------

Prof. Dr. Santosh Raj Poudyal

(Thesis Supervisor)   (Principal)

Date: ----------------------

ACKNOWLEDGEMENT

Portfolio Management is the art and science of making decisions about investment mix and policy, matching investments to objectives, assets allocation for individuals and institutions and balancing risk against performance. In other words, portfolio management is all about strengths, weaknesses, opportunities and threats in the choice of debt vs. equity, domestic vs. international, growth vs. safety and many other tradeoffs encountered in the attempt to maximize return at given appetite for risk.

First of all, I wish to express my sincere gratitude to my thesis guide reader Prof. Dr. Santosh Raj Poudyal, for his close guidance and continuous encouragement in writing this thesis. I am indebted to Mr. Binod Shah, and rest of the professors, friends & family members who have contributed a great deal for preparation of this thesis. Similarly, I am thankful to Mr. Sunil Shrestha along with all the respondents, who helped me in collection of opinions and giving their valuable suggestions. Besides, I would also like to thank the officers of NEPSE, SEBO/N, NRB, TU, and Campion College staff members for their continuous support.

Lastly, I am very pleased to forward my thesis for examination.

<div style="text-align: right">

Subin Prakash Pradhan

Researcher

</div>

October 2012

DECLARATION

I hereby declare that the work reported in this thesis entitled *"Portfolio Management of Nepalese Commercial Banks and Finance Companies"* submitted to Campion College and Faculty of Management, Tribhuvan University, Kathmandu, Nepal is my original work done in the form of partial fulfilment of the requirement for the Master's Degree of Business Studies (M.B.S.) under the guidance and supervision of Professor Dr. Santosh Raj Poudyal, Faculty of Management, Tribhuvan University, Kathmandu, Nepal.

(Subin Prakash Pradhan)

Researcher,

(T.U. Reg. # 7-2-347-85-2000)

Campion College

ABBREVIATION

A.D.   Anno Domini

B.C.   Before Christ

B.S.   Bikram Sambat

BOK   Bank of Kathmandu

CAPM   Capital Assets Pricing Model

CB   Commercial Banks

CMT   Capital Market Theory

CS   Common Stocks

CV   Coefficient of Variation

d.f.   Degree of Freedom

DPS   Dividend per Share

EBL   Everest Bank Limited

EPS   Earning Per Share

EVIC   Everest Insurance Company

FOM   Faculty of Management

FY   Fiscal Year

HBL   Himalayan Bank Limited

HGIC   Himalayan General Insurance Company

HMG	His Majesty's Government
HPR	Holding Period Return
IC	Insurance Companies
JVBs	Joint Venture Banks
KBL	Kumari Bank Limited
KTM	Kathmandu
MBS	Masters of Business Studies
MPS	Market Price per Share
NABIL	NABIL Bank Limited (previously Nepal Arab Bank Limited)
NEPSE	Nepal Stock Exchange
NHDF	Nepal Housing Development Finance
NHMF	Nepal Housing and Merchant Finance
NIBL	Nepal Investment Bank Limited
NRB	Nepal Rastra Bank
NSBIBL	Nepal SBI Bank Limited
NSMF	Nepal Share Markets and Finance
PF	Paschimanchal Finance
SD	Standard Deviation
SDR	Stock Dividend Ratio
SEBO	Security Board

SEC	Security Exchange Centre
SML	Security Market Line
T-Bills	Treasury Bills
TU	Tribhuvan University
Var	Variance
VAR	Value Added Ratio
WTO	World Trade Organization

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER – I
INTRODUCTION

1.1   Background of the Study

Nepal has an agriculture dominated economy, where most of the population is engaged in agriculture. So it is obvious that contribution of this sector in national economy is huge. Economic development is backbone of the any country. Without economic development, the country has fearsome of losing its existence and identity. Primary need of the country is to boost up its economy development to promote the welfare of the people and the country as well. Economy is the indicator of measuring the country's development and progress. Hence country should be economically developed. There should be proper investment in productive activities to enhance the country's economic development. The development of the modern age is going through the banking system. It requires huge amount of capital to invest in the productive sectors. So, in this banking age, it is being easier to generate the sources of capital through the banking activities. Commercial Banks and financial institutions are playing vital role in economic development through capital arrangement and its utilization in the proper sector.

Nepal has many implicit and explicit obstacles for every facets of the development. Investments in productive sectors are necessary for the economic development of any country. This increases economic activities which finally accelerates economic growth. The unutilized financial resources should be diverted towards productive sectors in order to increase the economic activities. Hence, sustained and balanced economic development of all sectors is possible.

The proper mobilization and utilization of domestic resources becomes indispensable for any developing countries aspiring for a sustainable economic development. In the changing nature of competition and increasing pressure of globalization on today's business world, investment management has become

the most critical determinant of the economy. Good investment policy has a positive impact on economic development of the country.

Bank and financial institution are playing vital role in the economic development of the country. Successful implementation of investment policy is the prime requisite for the successful performance of banks and other financial institutions.

The capital market consists of primary and secondary market. "The financial market in which security are initially issued, the only market in which the issuer is directly involved to the transaction is called primary market" (Gitman, 1985). On the other hand, "The secondary market is that financial market in which pre-owned securities (those that are not new issues are traded). The best example of secondary market (also called stock market) is organized stock exchanges like NEPSE in Nepal. "The stock exchange has important function as a ready market for securities, it ensures their liquidity and thus encourages people to channel savings into corporate investments, and as a pricing mechanism, it allocates capital among firm by determining prices that reflect the true investment value of a company's stock" (Pandey, 2001).

So far as the stock market is concerned it is an important constituent of capital market. Stock market is a financial market which probably has the greatest glamour and perhaps the least understood. Even in the least developed country like Nepal Stock market is one of the important part of the national economy justification for encouragement of the stock market is taken not only on the ideological background but also on the assumption that stock market expansion is partly a natural progression of a development of a country financial sector as long term economic progress.

Development requires economic growth. Economic growth occurs when people and their government respond to economic incentives. A vibrant private sector gives free reign to human creativity, fostering innovation and improving the living standard of the people (US Department of State, 2003). Increased

economic growth and individual prosperity through economic freedom must be the core goals of development. Open market and economic liberalization provide the fastest and most reliable path to increased growth and prosperity. With the worldwide move towards open and market oriented economic system, it has led to growth and expansion of banking and financial systems too.

1.2   Portfolio Management

Portfolio Management is the art and science of making decisions about investment mix and policy, matching investments to objectives, assets allocation for individuals and institutions and balancing risk against performance. In other words, portfolio management is all about strengths, weakness, opportunities and threats in the choice of debt vs. equity, domestic vs. international, growth vs. safety and many other tradeoffs encountered in the attempt to maximize return at given appetite for risk.

The objective of portfolio management is to analyze different individual assets and delineate efficient portfolio. Specifically, portfolio management will have the following objectives:

Primary Objectives:
1. To minimize risk.
2. To maximize return

Secondary Objectives:
1. Regular return.
2. Stable income.
3. Safety of investment.
4. Tax benefit

1.3 Focus of the Study

Investment, in its broadest sense, means the sacrifice of current amount of money and resources for the sake of future amount of money and resources. In other words, it is a commitment of money and other resources that are expected to generate additional money and resources in the future. The commitment takes place in the present and is certain to occur but the reward comes in the future and always remains uncertain. Therefore, every investment entails some degree of risk.

After the government adopted liberalized economic policy, many Commercial Banks and Finance Companies from private and foreign investment came into existence. Till date, 32 Commercial Banks and 77 Finance Companies are registered and operated their functions in Nepal. These banks have done much to open new frontier of economic development of our country. Likewise, Finance Companies as intermediaries are not only to mobilize and manage recourses but also to perform necessary financial activities required for the economic growth of the nation.

Some of the Commercial Banks and Finance Companies have issued common stock to the general public and listed their shares in NEPSE in order to become eligible for trading in secondary market. Out of them, 26 Commercial Banks and 71 Finance Companies have listed their shares in NEPSE. They should manage their funds in productive sectors to provide the maximum return to their shareholders. The overall return to their shareholders and the risk associated to their stock depend on their portfolio management i.e. how they have managed their investment portfolio.

Individual as well as corporate investors invest their money with the hope of getting healthy return in their investable funds. But due to lack of well diversified portfolio, individual as well as corporate investors make bad return from their investment. So, effective analysis of portfolio risk and return is

necessary to achieve good results through creating an optimal investment portfolio, one can reduce risk and maximize return significantly.

Hence, the study is mainly focused to the Commercial Banks and Finance Companies which are listed in the NEPSE on cluster sampling basis. The study is also focused on the portfolio risk and return of the Commercial Banks and Finance Companies. The study also focuses on the market volatility of those stocks. It is also focused on how the Commercial Banks and Finance Companies have managed their investment in order to maximize their return and reduce risk. Either they have adopted appropriate diversification into practice or not are another aspect of this study. Its focus is also on measuring financial performance of the banks and Finance Companies under study. The actual status of their stock price has been analyzed.

1.4   Statement of the Problem

According to Donald E. Fisher and Ronald J. Jordan, "An investment is a commitment of funds made in the expectation of some positive rate of return. If the investment is properly undertaken, the return will be commensurate with the risk the investor assumes".

Nepalese investors seem to invest their money in capital market in share and debentures because of lower interest rate provided by the banks and Finance Companies. Capital market/stock market has created investment opportunities to investors. Private sector initiated to raise funds through capital market after the establishment of NEPSE.

Nepal Stock Exchange (NEPSE) is organized stock exchange and this is the one stock exchange of Nepal. Many companies which have listed their shares do not want to furnish sufficient information to the existing as well as prospective investors. It raises a question-whether Nepalese investors make their investment by studying the market and risk return status of the securities

they choose or just they gamble to make the profit. The value of stock is affected by many factors directly and indirectly. Any investment should be made after analyzing risk associated with the return.

"Most investors use linear logic to formulate their investment strategies and make investment decisions. Linear logic is based in the assumption that the future will resemble the past in a highly predictable fashion," (Grewal, 1995). Assets having a greater probability of loss are felt as more risky than those with lesser chance of loss (Gary, 1992). Investment decisions based on research and study are always effective than any investments based on gambling.

The investment planning of the Commercial Banks and Finance Companies in Nepal heavily depend upon the rules and regulation provided by the Central Bank, NRB. The composition of asset portfolio of the Commercial Banks and Finance Companies is influenced by the policy of the Central Bank. It has also warned the Commercial Banks and Finance Companies to improve their productivity and manage portfolio. Moreover, with the prevailing economic recession in the country, they are investing their available funds in the government backed investments such as treasury bills, which yield lower rate of return in comparison to others. Government's securities are assumed to be risk free assets.

A) Are the Commercial Banks and Finance Companies as corporate investors properly utilizing their available fund?

B) Are the portfolio management adopted by them to mobilize fund systematically?

C) What type of portfolio management strategies are they adopting?

These are the key issues in investment decisions of Commercial Banks and Finance Companies. Hence, this deals with those problems in terms of risk and return characteristics and portfolio concepts.

1.5 Objectives of the Study

Every study is conducted with some objectives. The general objective of this study is to analyze the current status of portfolio management of listed Commercial Banks and Finance Companies in Nepal. The specific objectives of the research are as follows:

1. To analyze the return and risk of the common stocks of listed Commercial Banks and Finance Companies.

2. To analyze the systematic and unsystematic risk and return on common stocks of the listed Commercial Banks and Finance Companies.

3. To determine whether the shares of Commercial Banks and Finance Companies are correctly priced or not.

4. To analyze the portfolio return and risk of the listed Commercial Banks and Finance Companies.

5. To assess the present status of portfolio management of listed Commercial Banks and Finance Companies.

6. To provide suggestions and make necessary recommendations on the basis of fundamental analysis of the common stocks of the selected Commercial Banks and Finance Companies in Nepal.

1.6 Significance of the Study

First of all, it is the truth that this study is undertaken to apply the theoretical concept and knowledge of financial management to the practical field as a partial fulfillment of the requirement of Masters of Business Studies (MBS) under Faculty of Management.

Investments in stock market plays very crucial role in financial sector of an economy. It can affect the whole economic situation of the country. Stock market is a main source of finance for economic development through potential investors. But very few studies and researches have been undertaken regarding

the stock market. Since we are moving towards the free and open market economy such studies have become more significant. Such type of studies helps the investors-individuals as well as corporate, to make rational investment decisions. Thus, this study make the commercial banks and finance companies that listed their share in NEPSE eligible for trading in secondary market through assessment of the risk and return characteristics of the stocks.

After the economic liberalization in Nepal, public participation in securities investment has tremendously increased. But most of the individual investors are not aware about the risk associated with the return from the stocks. In such situations, this study determines the different aspects of the listed stocks such as diversifiable risk and undiversifiable risk, market volatility of returns, market price and so on. Besides, this study will be helpful and beneficial to all the prospective investors and researchers in the area of investment as it provides suggestion to some extent.

1.7   Limitations of the Study

Each study is conducted under some constraints and limitations. Similarly, this study is also limited by some common constraints. The specific limitations of the study are as follows:

1.   Data of the stocks of the respective banks and Finance Companies traded in NEPSE within the last 8 years (2003-2011) are only considered. The listed companies that have published their financial statement have only been considered.

2.   The study area is also limited; it is oriented within the KTM valley.

3.   The study is based on secondary data. However, primary data have also been used to analyze the current scenario of portfolio management of Commercial Banks and Finance Companies.

4.   When analyzing portfolio risk and return, investment of the listed companies are categorized into two assets only i.e. risk free and risky assets.

5.   This study is affected by financial resources of the student. Time and work force is also the limiting factors in undertaking this study.

1.8   Organization of the Study

This study has been divided into five chapters as:

Chapter I : Chapter I includes the general background of the study, history of capital market in Nepal, the introduction, functions and history of banking and finance companies in Nepal, the focus area of the study, statement of the problem, importance of the study, objectives of the study, limitations of the study, the definition of portfolio and so on.

Chapter II: Chapter II includes the review of available literature. Books, journals, articles, and the previous research reports on the concerned field will be reviewed. Review of literature has been divided into two parts:

     (i)   Conceptual/Theoretical Review

     (ii)   Review of related studies.

Chapter III: Chapter III consists, the research methodology employed to achieve the objectives of the study. Under this, research design, population and sample, sources of data, data collection technique, data analysis tools, and limitations of the methodology are included.

Chapter IV: Chapter IV consists, the data presentation and analysis. It includes of descriptive analysis of the gathered data and information using statistical as well as financial tools/models. Under this chapter, major findings of the study have been included based on secondary and primary data analysis.

Chapter V : The last Chapter V has been subdivided into three subsections:

     (i)   Summary

     (ii)   Conclusions

     (iii)   Recommendations based on the analysis.

CHAPTER – II
REVIEW OF LITERATURE

Review of literature consist of study of past research studies and relevant information that they used and induced. It is advancement of existing knowledge and in depth study of subject matter. It starts with a search of suitable topic and continuous throughout the volumes of similar or related subjects.

This chapter deals with theoretical aspect of the topic on risk, return and portfolio analysis in comprehensive, detail and descriptive manner. For this purpose, journals, articles, annual report and various research report related with topic have been reviewed. Similarly, various books related with the topic, published within country and outside of country also have been considered as far as possible. The concept of this portfolio management and its analysis is clear from the following studies.

2.1 Conceptual Review

Conceptual or theoretical review deals with the theoretical aspects of investment, return, risk, portfolio, and diversification and so on. Various books are reviewed under this.

2.1.1 Investment

Investment, in its broadest sense, means the sacrifice of current dollars for future dollars. Two different attributes are generally involved: time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if at all, and the magnitude is generally uncertain (Francis, 1980).

Investments are made in assets. Assets in all are of two types: real assets and financial assets (stocks, bond, t-bill etc.). These two investments are not competitive but complementary, highly developed institutions for financial investment greatly facilitating real investment.

*   The Investment Process (Sharpe, 2002).

The investment process describes how an investor should go about making decisions with regard to what marketable securities to invest in, how extensive the investment should be, and when the investment should be made. A five step procedure for making these decisions forms the basis of the investment process:

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

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

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

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

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

2.1.1.1 Investment Return

Single-Period Measure of Return

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

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

Annualized Holding Period Returns

One possibility is to take the simple arithmetic average of the annual HPRs computed by:

$$\overline{HPR} = \sum_{t=1}^{n} (HPR_t) / n$$

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

The geometric mean rate of return does not suffer from this flaw. The geometric mean rate of return, HPRg, is defined as the rate of return that would make the initial investment equal to the ending investment value. The formula for the geometric mean rate of return is,

$$\overline{HPR} = \prod_{t=1}^{n} (1 + HPR_t)^{1/n} - 1$$

Required Rate of Return

"When setting the **required rate of return** on an investment, an investor must consider the real rate of return, expected inflation and risk. Because consumption is forgone 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 expected inflation and risk, the required rate could equal the real rate of return, in which case it would represent the pure time value of money. The capital markets determine this rate based upon the supply of money to be invested relative to the demand for borrowed money" (Cheney & Moses,1995).

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

The required rate of return using CAPM/SML is:

$$\text{Required Rate of Return (K)} = \hat{e}_f + (R_m - \hat{e}_f)\beta$$

Expected Rate of Return

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

If the investor can describe the possible 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.

Listing the possible investment results and assigning probabilities to each of these outcomes is the same as creating a probability distribution in statistics. Probability distributions are used to describe possible outcomes and to assign individual probabilities, from zero (no chance of occurring) to one (full certainty that the outcome will happen), to each possible outcome.

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

$$E\ (HPR) = \sum_{j=1}^{n} P_j HPR_j$$

2.1.1.2 Risk

Risk can be defined as the variability of possible returns around the expected return of an investment.

Each investor has his or her own attitude about risk and how much he or she can tolerate. Since investment alternatives have different types of risks associated with them, the investor must determine which combination of alternatives matches his or her particular risk tolerances.

Financial analysts and statisticians prefer to use a quantitative risk surrogate called the variance of returns, denoted Var (r). The variance of an asset's rates of return equals the sum of the products 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 (Francis, 1980).

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

$$= P_1\ [r_1 - E(r_1)]^2 + P_2\ [r_2 - E(r_2)]^2 + \text{-------} + P_t\ [r_t - E(r_t)]^2$$

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

$$\text{Standard deviation } (\sigma) = \sqrt{\text{Var } (r)}$$

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

2.1.2 Trade-Off between Risk and Return

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

Utility Functions and Investors Choice (Van Horne, 2000)

The best mix of expected return and standard deviation for a security portfolio depends on the investors' utility function. If you are a risk averse investor who associate risk with divergence from expected value of return, your utility function might be depicted in the following figure. The expected return is plotted on the vertical axis, while the standard deviation is along the horizontal. The curves are known as indifferences curves; the investor is indifferent between any combination of expected return and standard deviation on a particular curve. In other words, a curve is defined by those combinations of expected return and standard deviation that results in a fixed level of expected utility.
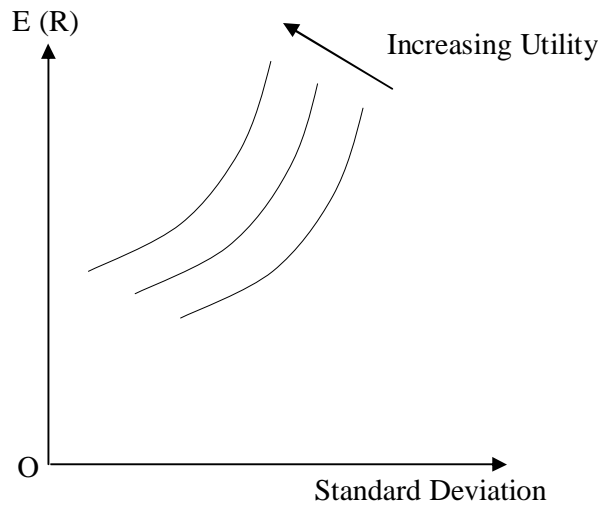
Figure 2.1: Hypothetical Indifference Curves.

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

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

Return

r₃% → $r_3\%$

Market Risk Premium
Line
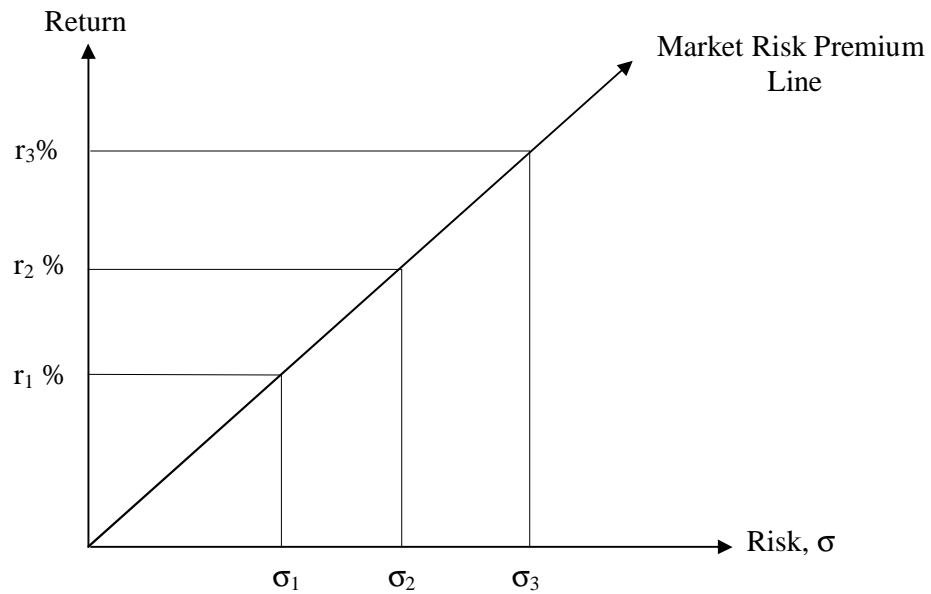
Figure 2.2: Positive Tradeoff between Risk and Return

The Figure 2.2 represents a higher risk premium. For taking risk σ_1, the expected return in r_1 when an investor assumes risk σ_2, the return must be r_2 increasing the return (risk premium) by r_2-r_1 for assuming more risk: σ_2-σ_1. The assumption of linear relationship states that the risk premium must increase /or decrease in proportion to a change in level of risk. It also indicates-higher the risk, higher the return and lower the risk lower the return.

2.2 History of Banking Development in Nepal

Formally, Nepal's banking history had begun with the establishment of Nepal Bank Limited in 1994 B.S. At that time, this bank had authorized capital of Rs. 10 million of paid up capital of Rs. 842 thousand. Nepal Bank Limited was the first commercial bank with 51 percent government equity. As a central bank, Nepal Rastra Bank was established in 2013 B.S. under the provision of Nepal Rastra Bank Act, 2012 B.S. with the objective of helping in the development of monetary and financial sector by undertaking various functions.

Another progress was added when Rastriya Banijya Bank came into existence in 1966 (2022 B.S.) fully government ownership with the authorized capital of Rs. 10 million and paid up capital of Rs. 2.5 million under the Banijya Bank Act 1965 (2021 B.S.). Likewise, Agriculture Development Bank was established in 1968 (2024 B.S.) under the Agriculture Development Bank Act, 1968 (2024 B.S.) with the objective of increasing the life standard of those people who are involved in agriculture.

In 1980, the government introduced, 'financial sector reforms'. The government adopted liberalized economic policies to develop the financial sector. As a pre-condition to economic liberalization, the foreign investment and technology transfer Act, 1981 came into existence. The government allowed private sectors to open banks. The government allowed the entry of foreign banks as joint ventures with up to a maximum of 50 percent equity participation. Many joint venture commercial banks and financial institutions were established. As a result, Nepal Arab Bank Limited was established as a first joint venture commercial bank in 1985 under the provision of commercial bank in 1985 under the provision of commercial bank Act, 1974 and Company Act, 1965. Nepal Indosuez Bank Limited was established in 1985 and Nepal Grindlays Bank Limited in 1986. At present, the name of Nepal Indosuez Bank Limited has been changed into Nepal Investment Bank in May 2002 which has not foreign share now and the name of Nepal Grindlays Bank Limited has been changed into Standard Chartered Bank Nepal Limited in 2001. Later, the following joint ventures were established respectively.

- Nepal Arab Bank Limited in 1984.
- Nepal Indo-Suez Bank Limited in 1986.
- Nepal Grindlays Bank Limited in 1987.
- Himalayan Bank Limited in 1993.
- Nepal SBI Bank Limited in 1993.
- Nepal Bangladesh Bank Limited in 1994.
- Everest Bank Limited in 1994.

- Bank of Kathmandu Limited in 1995.
- Nepal Bank of Ceylon Limited in 1996.

At present, there are 32 commercial banks registered and operated in Nepal (See Annex – II).

2.2.1 Meaning of Commercial Bank

According to G. Crowther, "A bank is an institution which collects money from those who have it spare or who are saving it out of their income and lends this out to those who requires it" (Crowther, 2003). It is established by law. So, it's a legal entity. Crowther has described that the merchants, money lenders and goldsmiths are the ancestors of modern banks.

Commercial bank means a bank which operates currency exchanges transactions, accepts deposits, provides loan, performs dealing relating of commerce except the banks which have been specified for the cooperative, agriculture, industry or other similar specific objectives (Nepal Government, *Commercial Bank Act,* 2031 B.S.).

Commercial banks are those banks, which pool together the savings of the community and arrange them for the productive use. Commercial banks transfer monetary sources from savers to users. They accept deposits from the public on the condition that they are repayable. They provide loans and advances from the money, which they receive through deposits. Apart from financing, they also render services like collection of bills of checks, safe keeping of the valuables, financial advising etc. to their customers.

2.2.2 Functions of Commercial Banks

There are many functions of commercial banks, following are the main functions performed by the commercial banks:

i. Accepting Deposits

Commercial banks accept deposits in three forms namely current, saving and fixed deposits.

a. Current Deposits: - Current deposit is also known as demand deposit. Under this, any amount may be deposited in this account. The bank does not pay any interest on such kind of deposits.

b. Saving Deposits: - Saving deposit is one of the deposits collected from small depositors and low-income depositors. The bank usually pays small interest to the depositors against their deposits. This is also called saving account.

c. Fixed Deposit: - Fixed deposit is the one in which a customer is required to keep a fixed amount with bank for a specific period, generally by those who do not need money for a stipulated period. The bank pays a higher interest on such deposits.

ii. Advancing Loans

Commercial bank provides loans and advances from the money, which it receives by way of deposits. Direct loans and advances are given to all types of persons against the personal security of the borrowers of against the security of movable of immovable properties. Banks in four forms grant loans, namely:

(a) Overdrafts   (b) Direct Loans

(c) Cash /Credit   (d) Discounting Bills of Exchange.

iii.   Agency Services

Commercial bank undertakes the payment of subscriptions, insurance premium, rent, income tax etc. It collects cheque, bills, dividends, interest, pensions etc. on behalf of the customers. The bank charges a small amount of commission for those services. It undertakes to buy and sell securities on behalf of its customers. Commercial bank also acts as a trustee, executor and administrator.

iv.   Credit Creation

Credit creation is very important function of the commercial banks. They accept deposits and advance loans. When the bank advances loans, it opens an account to draw the money by cheque according to his needs. By granting loans, the bank creates credit or deposit.

v.   Other Functions

Other functions of commercial banks include:

- Assist in Foreign Trade
- Carrying out the Foreign Currency Exchange
- To provide Travelers Cheque
- To facilitate in financial policy formulation by gathering and providing trading and monetary transaction related information.
- To underwrite the Debentures.
- To accept the Bills of Exchanges.
- To provide Advice to customers, entrepreneurs, and businessmen on economic matter.
- To create Credit on the specific basis and expand credit.
- To issue Credit Card, Debit Card, Master Card, Visa Card etc.

2.2.3 Meaning of Finance Companies

Government of Nepal has adopted a policy of economic liberalization. On the basis of this policy and with the initiative of Nepal Rastra Bank (NRB), Finance Company Act, 1985 A.D. (2042 B.S.) was passed by the legislation. According to this act a number of financial institutions were established. These institutions provide different types of services to corporate sectors as well as to individual entrepreneurs. Within a period of 19 years (1992-2011) all together 77 Finance Companies secured license from NRB for operation. Nepal Housing Development and Finance Company was the first private finance company, which was established in 1992 according to the Finance Company Act, 1985. Within a short span of time, they are showing increasing trend in the financial sector both in collecting and investing the funds in Nepal. They are able to tap even smaller amount of savings from public and investing in different productive sectors like manufacturing, trading and commercial activities. Finance Companies are giving their services in diverse areas. Following are the most common services so far being provided by them.

- Hire Purchase
- Housing Finance
- Security Trading
- Deposit Collection
- Merchant Banking

Finance Companies have, "To channelize funds by gradually shifting priorities from hire purchase and trading to industry to help in the capital formation within the country. The overall growth of the nature and extend of capital formation in the country. This is course of time; industrial financing should get higher priority in the lending strategy of finance companies in view of their future sustainability and full fledged growth."

Finance companies are "The effective scientific instrument for mobilizing public, private and external financial resources and channelize them into

productive areas as short term loans and long term loan on different commercial business activities."

According to the "Dictionary of Modern Economics", finance company is "a finance intermediary not a bank, which may obtain funds from its own capital resources or by accepting deposit (fixed period) or even by borrowing from other institution and which it on – lenders for a variety of purposes, especially to finance, hire purchase, contracts but also leasing."

Finance Companies provide loan to consumers and businessmen with specialized loan arrangements. There are three types of Finance Company according to the type of loan that they grant. They are:

a) Sales Finance Company: are the pioneers in car and appliance loans.
b) Personal Finance Company: make small personal loans which may or may not be secured by collateral.
c) Business Finance Company: specialize in commercial loans and leases" (Edmister, 1986).

In the Nepalese context, in the year 1985 (2042 B.S.), Finance Company Act has been formulated – "to incorporate finance companies for non banking business having brought about dynamism in the economic development of the country in order to promote the economic benefit of the people in general through institutionalized investment consolidating the scattered capital in the country" (Finance Company Act, 2042 B.S.). This statement clarifies that the objective of finance company is collecting idle funds from public and mobilizing them into productive sector and causing an overall economic development in an institutional way. Thus finance companies play a vital part in economic activities and development.

2.2.4 Functions of Finance Companies

The main objective of finance companies has to design for customer and also help them to execute the investment portfolio that is very suitable activities for the need and perfume. Another main function is to design for the investors business or venture the optimal capital structure and help them raise the capital that is 'the adequate capital formation for overall national development.' This is called production consumption linking model of credit and investment. Following are the certain specific functions of finance company, which are explained as below:

1. To explore and innovate new business opportunities such as venture financing, managing investment plans etc.
2. To collect and mobilize funds for investment in the country.
3. To mobilize small and large scale deposits from rural and urban areas and canalization of that deposit into productive structured and high priority areas to assist in the economic development of nation.
4. To prepare investment and credit strategy to the productive industrial sector which assist in the economic development of the nation.
5. To provide the various alternative to depositors in enabling clients to deposit according to their needs and preference.
6. Others:
   - Creation of employment opportunities.
   - Saving recycle for future.
   - Income for exertion.
   - Avail the basis needs and expectation of customers.

2.2.5 History of the Finance Companies in Nepal

The world economy nowadays is dominated by the ups and downs of financial activities, which play the vital role for the development of the nation as well as for the world economy. The world economic activity trends are affected by market policy and liberalization policies of the government. Economic liberalization policy has to create the environment for the establishment, growth and development of financial institutions in the world.

History of finance company in the global context is considerably longer in comparison to that in Nepal. Development of information technology has narrowed down the world and thus it has turned into an open international market overwhelming growth of banking and non-banking financial institution is not an amazing matter. The first commercial bank, "The bank of North America" opened in the same city in 1781 A.D. Then the first investment company "The Massachusetts Hospital life insurance company" was founded in 1816 A.D. which is usually designated as the first saving bank insurance company which is as old as the country itself (The Evolution of US Money Capital Market, 2003).

So, as to fulfill credit demand and deposit desire of the public, institutions like savings and loans, credit unions and finance companies came in to existence in developed countries including USA and UK in the beginning of 20th century. They used to collect required funds from banks by means of commercial papers and corporate used to provide installment credit to their customers. Afterward finance companies started the activities like factoring, pledging, leasing etc. as demand of time. After 1980 A.D., the companies have shrunken the distinction line between commercial banks and themselves as they are also accepting deposits and providing intermediate and long-term loans.

In Nepal, with economic liberalization policy of Nepal Government, Finance Company Act, 2042 B.S. came out. However, first company to register in Company register office was a completely government owned company called 'Nepal Housing and Development Finance Company' which came into operation in 2049 B.S. only after the first amendment in Act in 2049. After then, Nepal Finance and Saving Company Limited got license from NRB in 2049/9/22 putting its name as the first Finance Company to be operated from private sector. National Finance Company and Annapurna Finance Company also got license by the end of 2049. However, 3 Finance Companies initiated their operation in 2049. Similarly, there were 3 in 2050, 9 in 2051, 18 in 2052, 5 in 2053, 3 in 2054, 2 in 2055, 2 in 2056, 2 in 2057, 4 in 2058, 3 in 2059, 3 in 2060, 2 in 2061and so on. Invest Credit and Finance Company Limited was the last one to initiate the operation. After this the total number of finance companies with operating is 77. Till the end of FY 2067/68 there were total 77 Finance Companies listed in NEPSE. Nepal Finance Companies Association (NFCA) a purely non-profit voluntary organization of the Finance Companies was legally established. The association has been providing common platform to the members for raising various relevant issues like development of credits norms to determine quality grading of Finance Companies, undertaking complementary approach to growth among the companies through mutual interest, improving the credibility of the companies and also taking the public matter seriously that the companies have to be profitable for rewarding the shareholders according to their expectations.

2.3   Portfolio Risk and Return

Investment is the employment of funds with the aim of earning some expected rate of return. Investors seek to minimize inefficient deviations from this expected rate of return. Diversification is essential to the creation of an efficient investment because it can reduce the variability of returns around the

expected return. Diversification means dividing available assets across a number of different securities. Portfolio theory suggests developing a well diversified investment portfolio that as the maximum return at whatever level of risk the investor deems appropriate. Portfolio theory was originally proposed by Harry M. Markowitz in 1952 (Harry, 1952). The theory is concerned with the selection of an optimal portfolio by a risk-averse investor. A risk-averse investor is an investor who selects a portfolio that maximizes expected return for any given level of risk or minimizes risk for any given level of expected return. That is, a risk averse investor will select only efficient portfolio.

Moreover, Portfolio theory is based on the assumption that the utility of the investor is a function of two factors: mean (or expected) return and variance (or its square root, the standard deviation) of return. Hence, it is also referred to as the mean variance portfolio theory or two parameter portfolio theory.

2.4 Portfolio Analysis

2.4.1 Portfolio and Diversification

According to Jack Clark Francis, "Investment positions are undertaken with the goal of earning some expected rate of return. Diversification is essential to the creation of an efficient because it can reduce the variability of returns around the expected return (Francis, 1980).

Raymond, Brockington defined, "The term 'Portfolio' simply means collection of investments. For an investor through the stock exchange will be a collection of shareholdings in different companies. For a property investor, portfolio will be a collection of buildings. To a financial manager with in an industrial company, portfolio will be a collection of real capital projects. It will be apparent that the actual nature of the components of a portfolio demands on the population of opportunities from which the selection has been made (Raymond Brockington).

Feorge B. Cohen et al. defined the portfolio management as – " Portfolio management is the art of handling a pool of funds so that it not only preserves its original worth but also overtime appreciates in value and yields an adequate return consistent with the level of risk assumed" (Feorge).

"Portfolio is simply a combination of two or more securities or assets," (Francis, 1980).

The portfolio manager seeking efficient investments works with two kinds of statistics –expected return statistics and risk statistics. The expected return and risk statistics for individual assets are the exogenously determined input data analyzed by the portfolio analyst. The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate" (Van Horne and Wachowicz, 2000).

Diversification is a risk management technique that mixes a wide variety of investments within a portfolio. It is designed to minimize the impact of any one security on overall portfolio performance. "Diversification is possibly the greatest way to reduce the risk. This is why mutual funds are so popular (http://www.ameritrade.com.).

Diversification means reducing the investment risk by dividing the investment among a variety of assets. Diversification helps to reduce risk because different investments will rise and fall independent of each other. The combinations of these assets more often than not will cancel out each other' fluctuation, thereof reducing risk.

"Diversification in investments can be achieved in many different ways. Individuals can diversify across one type of asset classification – such as stocks. To do this, one might purchase shares in the leading companies across many different (and unrelated) industries. Many other diversification strategies are also possible. You can diversify your portfolio across different types of assets (stocks, bonds, and real estate for example) or diversify by regional

decisions (such as state, region, or country). Thousands of opinions exist" (http://www.ameritrade.com.).

The common saying "Don't put all your eggs in one basket" is the essence of the principle of diversification. Because all investments carry with them some level of risk, it is important to diversify and spread your money into many different investments.

"Diversification is important for very investor. In fact, it is so important that in 1990, Harry M. Markowitz won the Nobel Prize largely for his work on diversification" (http: //www.nefe.org.).

"Investors can reduce their potential for loss through diversification …. The key to diversification is the age-old adage, "don't 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* (http: //www.dfaus.com.).

Diversification can help to reduce portfolio risk by eliminating unsystematic risk for which investors are not rewarded. Investors are rewarded for taking market risk. By choosing securities of different companies in different industries, we can minimize the risks associated with a particular company's "bad luck". Diversification among companies, industries and asset classes affords the investor the greatest protection against business risk, financial risk and volatility.

Investments whose price movements are opposite each other are negatively correlated. When negatively correlated assets are combined within a portfolio, the portfolio volatility is reduced.

There are some different diversification techniques for reducing a portfolio risk (Francis, 1980).

1.   Simple Diversification

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

2.   Diversification across Industries

Some investment counselors advocate selecting securities 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 ratings measure default risk – essentially the risk of bankruptcy. The highest quality portfolio of randomly diversified stocks was able to achieve lower levels of risk than the simply diversified portfolios of lower-quality stocks. This result reflects the fact that default risk (as measured by the quality ratings) is part of total risk. The higher quality portfolios contain assets with less default risk. This finding suggests that portfolio managers can reduce portfolio risk to levels 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" (Markowitz, 1952). It can sometimes reduce risk below the un-diversifiable level. Markowitz diversification is more analytical than simple diversification and considers assets' correlations (or covariance). The lower the correlation between assets, the more that Markowitz diversification will be able to reduce the portfolio's risk.

Applying Markowitz diversification to a collection of potential investment assets with a computer is called **Markowitz Portfolio Analysis**. It is a scientific way to manage a portfolio, and its results are quite interesting. Since Markowitz portfolio analysis considers both the risk and return of dozens, or hundreds, or thousands of different securities simultaneously, it is a more powerful method of analyzing a portfolio than using intuition or selecting investments by committee.

*   Expected Portfolio Return

The expected portfolio return is the simple weighted average of the expected returns from the investment represented by a portfolio. This expected return is calculated by determining the expected return of each component of the portfolio and using these returns to compute a weighted average. The weights used are the portfolio weights, which describe how the portfolio's investment is weighted among the various assets/securities. Portfolio weights are percentages of the total dollar amount available to be invested in the portfolio and sum to 1. *The expected return of a portfolio E (R$_P$), is calculated as*:

$$\textbf{Expected Portfolio Return} = E\ (R_P) = \sum_{j=1}^{n} X_J E(R_J)$$

Where,

   E(R$_P$) = The expected return on the portfolio

   E (R$_j$) = The expected return of asset j

   X$_j$ = The portfolio weight for asset j, where $\sum W_j = 1.0$

   n   = Number of assets/securities in a portfolio

In a two asset portfolio comprising risk free asset and risky asset, the portfolio return will be as:

Expected Portfolio Return $= E(R_P) = X_F E(R_F) + X_m \cdot E(R_m)$

* **Portfolio Risk**

Total portfolio risk is measured by the variance of the portfolio's rate of return distribution. The portfolio risk depends on the risk of the individual securities and the covariance between the returns of the individual securities. The risk (variance of returns) from a portfolio made up of n assets is defined as:

$$\text{Portfolio Risk} = \text{Var}(R_P) = \sum_{i=1}^{n} \sum_{j=1}^{n} X_i X_j \rho_{ij} \sigma_i \sigma_j$$

Where,

X_i	= Proportion of investment in security i.
X_j	= Proportion of investment in security j.
ρ_{ij}	= Correlation coefficient between i and j securities.
σ_i	= Standard deviation of security i.
σ_j	= Standard deviation of security j.

Risk: Systematic Vs. Unsystematic Risk

Systematic Risk: Systematic risk is that portion of total variability in returns caused by market factors that simultaneously affect the prices of all securities (Francis, 1980). Systematic risk is the variability of a security's return with that of the overall stock market. It is also called unavoidable risk. It is measured by the beta. The beta of a stock is the slope of the characteristic line between returns for the stock and those for the market. Beta depicts the sensitivity of the security's excess returns to that of the market portfolio. If the slope is 1, it means that excess returns for the stock vary proportionately with excess returns for the market portfolio. In other words, the stock has the same unavoidable or systematic risk as the market as a whole. Slope steeper than 1 means that the stock's excess return varies more than proportionately with the excess return of

the market portfolio. Put another way, it has more systematic risk than the market as a whole. This type of stock is often called an "aggressive" stock. NA slope less than 1 means that the stock has less unavoidable or systematic risk than does the market as a whole. This type of stock is often called a "defensive" stock (Weston and Copeland, 1992).

"Changes in the economic, political and sociological environment that affect securities markets are sources of systematic risk. Systematic variability of return is found in nearly all securities to varying degrees because most securities tend to move together in a systematic manner," (Francis, 1980).

Unsystematic Risk: Unsystematic risk is that portion of total risk which is unique to the firm that issued the securities. It is the amount of a stock's variance unexplained by overall market movements. It can be diversified away. It derives from the variability of the stock's excess return not associated with movements in the excess return of the market as a whole.
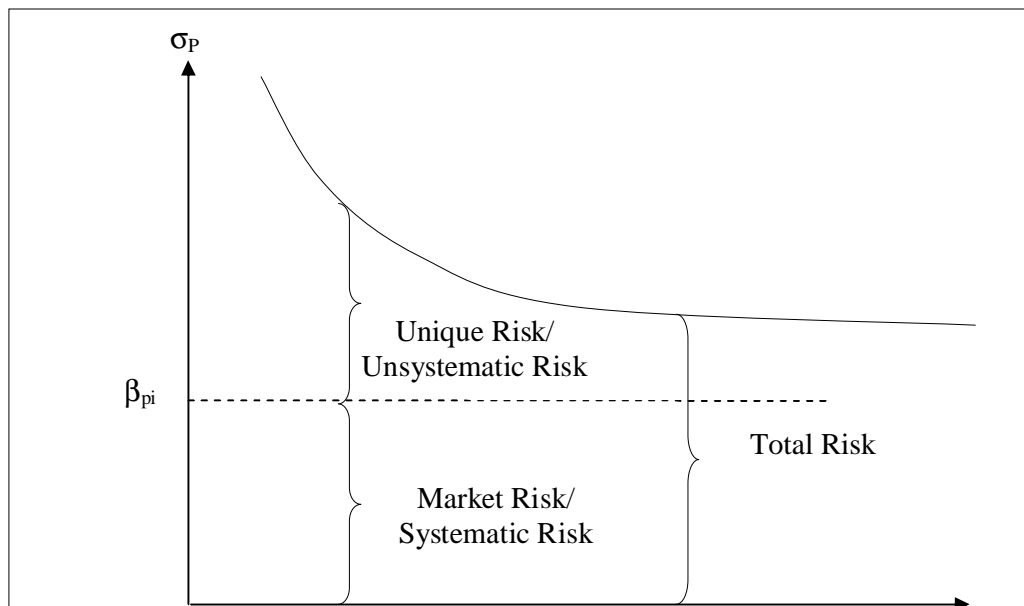
Figure 2.3: Risk and Diversification
Source: James C. Van Horne, *Financial Management & Policy.* 11thEdition. (New Delhi: Prentice Hall of India Private Limited, 2000).

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

2.4.2 Markowitz Portfolio Selection Model

A portfolio is a collection of securities. There exists a problem of portfolio selection. Investors face a problem of selection optimum portfolio from a set of possible portfolio. Hence, it is often referred to a portfolio selection problem. One solution to this problem was put forth in 1952 by Harry M. Markowitz, when he published a landmark paper that is generally viewed as the origin of the modern 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. Markowitz's approach considers the single period rate of return. Single period rate of return is simply the total return an investor would receive during the investment period or holding period.

Makowitz'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 developed by Harry M. Markowitz is based on several assumptions regarding investor's behavior (Bhalla, 2001).

i.   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 returns to lower returns. Similarly, for a given level of expected return, investors prefer less risk to more risk.

2.4.3 The Efficient Set Theorem (Sharpe, 2002)

An infinite number of portfolios can be formed from a set of N securities. The investor can buy any one security or buy more securities in order to create a portfolio. An investor can distribute his or her investing money in different securities.

Figure 2.4: Feasible and Efficient Set

Source: William F. Sharpe et.al. *Investments*. 6thEdition. (New Delhi: Prentice Hall of India Limited, 2002), p. 172.
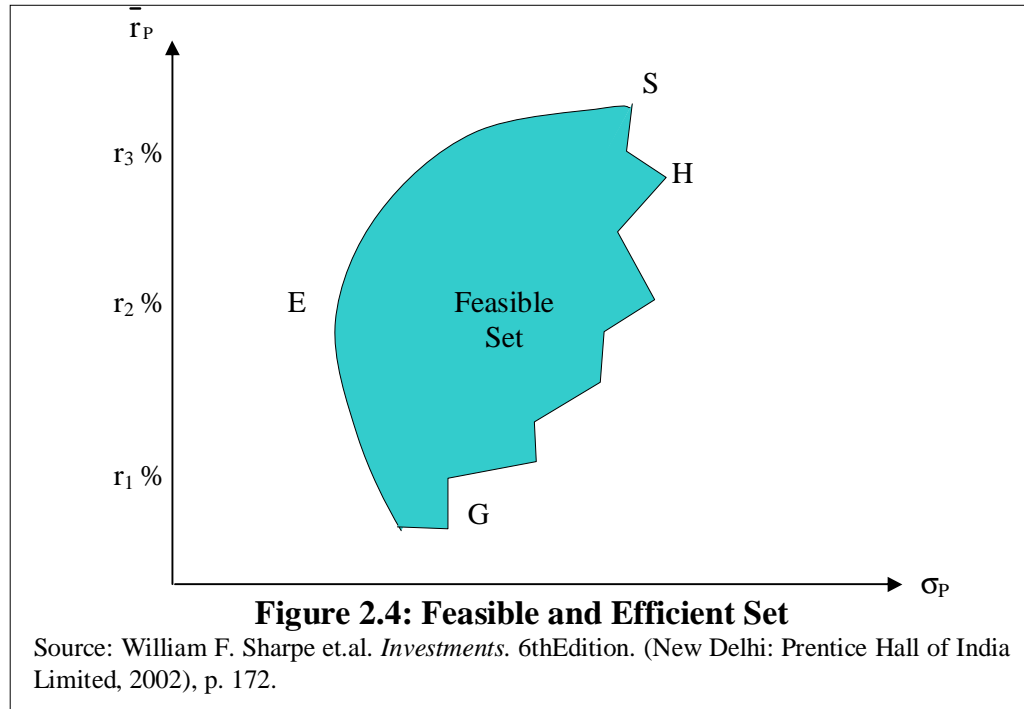
The investor should not have to evaluate all these portfolios. The investor can select an optimal portfolio from a feasible set of portfolios. Efficient set theorem states that:

An investor will choose his or her optimal portfolio from the set of portfolios that:

i.   Offer maximum expected return for varying levels of risk, and

ii.   Offer minimum risk for varying levels of expected return.

The set of portfolios meeting these two conditions is known as the efficient set. Efficient set is also known as the efficient frontier.

2.4.4 The Feasible Set

Figure 2.4 is an illustration of the location of the feasible set/the opportunity set. 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 from the N

securities, lie either on or within the boundary of feasible set. In general, this set will have an umbrella type shape similar to the one shown in the Figure 2.4.

2.4.5   The Efficient Set Theorem Applied to the Feasible Set

The efficient set can now be located by applying the efficient set theorem to this feasible set. To begin with, the set of portfolios that meet the first condition of the efficient set theorem must be identified. Looking at Figure 2.4, there is no portfolio offering less risk than that of portfolio E because if a vertical line were drawn through E, there would be no point in the feasible set that was to the left of the line. Also, there is no portfolio offering more risk than that of portfolio H because if a vertical line were drawn through H, there would no point in the feasible set to the right of the line. Thus the set of portfolios offering maximum expected return for varying levels of risk is the set of portfolios lying on the northern boundary of the feasible set between points E and H.

Considering the second condition next, there is no portfolio offering an expected return greater than portfolio S (because no point in the feasible set lies above a horizontal line going through S). Similarly, there is no portfolio G, because no point in the feasible set lies below a horizontal line going through G. Thus, the set of portfolios offering minimum risk for varying levels of expected return is the set of portfolios lying on the western boundary of the feasible set between G and S.

Remember that both conditions have to be met in order to identify the efficient set. It can be seen that only those portfolios lying on the northwest boundary between points E and S do so. Accordingly, these portfolios form the efficient set, and it is from this set of efficient portfolios that the risk-averse investor will find his or her optimal one. All the other feasible portfolios are inefficient portfolios and can be ignored.

2.4.6 Selection of the Optimal Portfolio

To select an optimal portfolio, an investor should plot his or her indifference curves on the efficient set and their process to choose the portfolio that is on the indifference curve that is farthest northwest. This portfolio will correspond to the point at which an indifference curve is just tangent to the efficient set. As can be seen in the Figure 2.5, this is portfolio O^* on indifference curve I_2. Although the investor would prefer a portfolio on I_3, no such portfolio exists; wanting to be on this indifference curve is just wishful thinking. In regard to I_1, there are several portfolios that the investor could choose (for example O). However, the figure shows that portfolio O^* dominates such portfolios 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 2.6.

Figure 2.5: Selecting an Optimal Portfolio
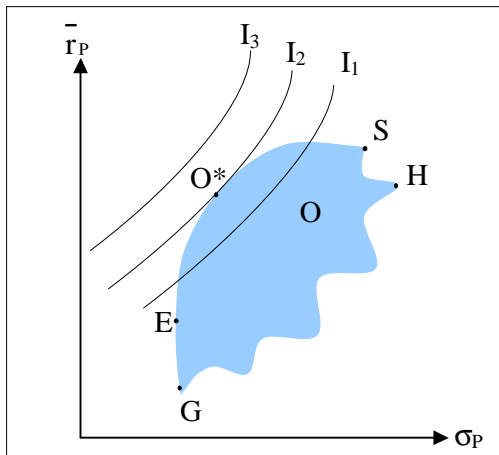
Figure 2.6: Portfolio Selection for a Highly Risk-Averse Investor
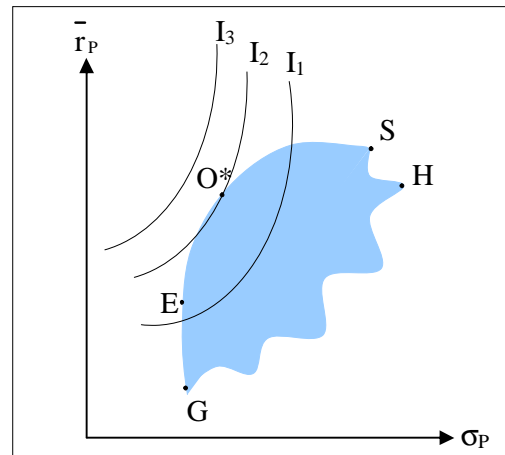
Source: William F. Sharpe et. al. *Investments.* 6th Edition. (New Delhi: Prentice Hall of India Limited, 2002), p. 173.

Source: William F. Sharpe et. al. *Investments.* 6th Edition. (New Delhi: Prentice Hall of India Limited, 2002), p. 174.

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

2.5   Capital Asset Pricing Model (CAPM)

Capital Asset Pricing Model (CAPM) is a descriptive model of how assets are priced. The major implication of the model is that the expected return of an asset will be related to a measure of risk for that asset known as beta. The exact manner in which expected return and beta are related is specified by the CAPM.

The capital assets pricing model states that the expected risk premium on each investment, which is proportional to its beta. This means that each investment should lie on the sloping security market line connecting treasury bills and Market Portfolio (Myers & Brealey, 2003).

In market equilibrium, a security will be expected to provide a return commensurate with its *unavoidable* risk. This is simply the risk that cannot be avoided by diversification. The greater the unavoidable risk of a security, the greater the return that investors will expect from the security. The relationship between expected return and unavoidable risk, and the valuation of securities that follows, is the essence of the capital asset pricing model (CAPM). This model was developed by William F. Sharpe (1990 Nobel Prize winner in economics) and John Lintner in the 1960s, and it has had important implications for finance ever since (Van Horne, 2000).

The CAPM used to calculate the required rate of return for stock j is:

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

Where,

$E(R_j)$ = The expected or ex-ante return on the jth risky asset.

R_f = The rate of return on a risk less asset.

$E(R_m)$ = The expected or ex ante return on the market portfolio.

β_j = Cov (R_j, R_m)/Var (R_m) = a measure of the un-diversifiable risk of the jth security.

The greater the beta of a security, the greater the risk and the greater the expected return required. Likewise, the lower the beta, the lower the risk, the more valuable it becomes and the lower the expected return required.

"In market equilibrium, the relationship between an individual security's expected rate of return and its systematic risk, as measured by beta, will be linear. The relationship is known as the **security market line,**" (Ibid, p. 70). When the CAPM is graphed in a figure, it is called the Security Market Line (SML). In equilibrium, all securities must be priced so that they fall on the SML. The fact is that they have different variances, which are irrelevant for determining their expected return, because total risk contains a diversifiable component, which is not priced in market equilibrium. SML may be used to explain the required rate of return on all securities whether or not they are efficient. The SML provides a unique relationship between un-diversifiable risk (measured by beta) and expected rate of return. Hence, if we can accurately measure the beta of a security, we can estimate its equilibrium risk-adjusted rate of return.

$$\text{Slope} = \frac{E(R_m) - R_f}{\beta_m - O}$$

Figure 2.7: The Security Market Line / CAPM
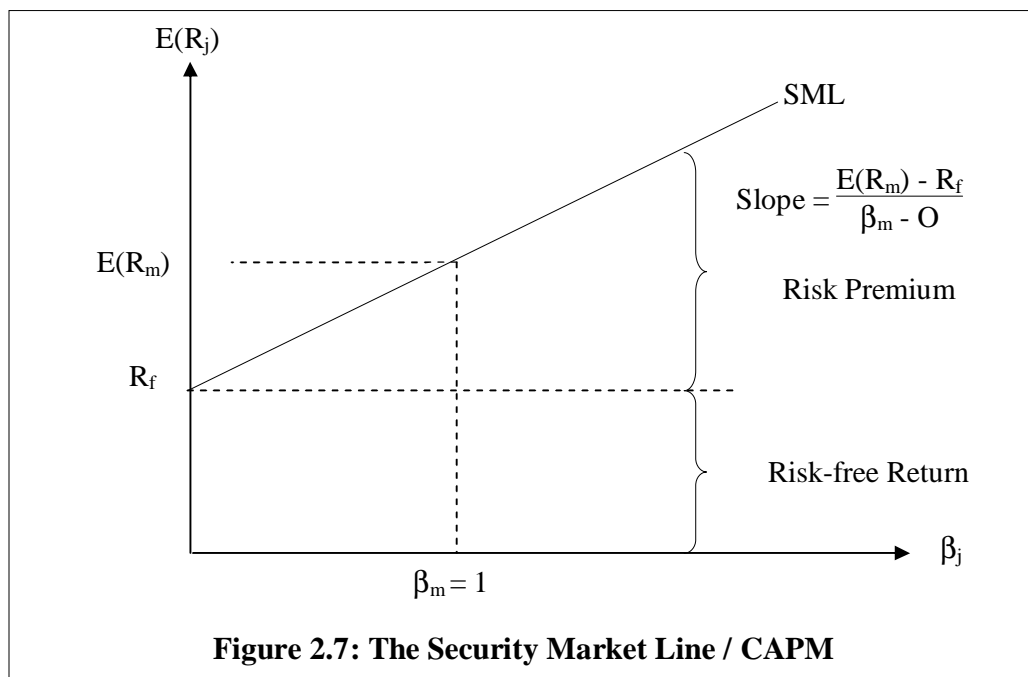
Source: James C. Van Horne, *Financial Management & Policy.* 11thEdition. (New Delhi: Prentice Hall of India Limited, 2000), p. 71.

The CAPM or SML is an equilibrium theory of how to price and measure risk. It has many applications for capital budgeting, asset valuation, determination of cost of equity capital and the explaining risk in the structure of interest rates.

The logic of the SML equation is that the required return on any investment is the risk free return plus a risk adjustment factor. The risk adjustment factor is obtained by multiplying the risk premium required for the market return by the riskiness of the individual investment. If the returns on the individual investment fluctuate by exactly the same degree as the returns on the market as a whole, the beta for the security is one. In this situation, the required return on the individual investment is the same as the required return on the total market. The risk premium is measured by the slope of SML.

Assumptions of the CAPM

Capital market theory (CMT) uses portfolio theory; thus the assumptions underlying portfolio theory also pertain to the CAPM. The additional assumptions underlying CMT and the CAPM appear less realistic than the portfolio theory assumptions. The assumptions of CMT are as follows:

1. All investors are risk-averse. Thus, all investors seek to be on the efficient frontier.
2. There are no constraints on the amount of money that can be borrowed or lent. Borrowing and lending occur at the identical risk-free rate, R_f.
3. All investors have identical beliefs about the expected returns and risks of assets and portfolios; that is all investors have homogeneous expectations.
4. All investors have a common investment horizon, whether it will be one month, three months, one year, or whatever.
5. All the investments are infinitively divisible and marketable; that is, it is possible to buy or sell any portion of an asset or portfolio.
6. Taxes and transaction costs do not exist. That is, there are no tax effects, costs of acquiring information or transaction costs associated with

buying or selling securities. These are often referred to as perfect market assumptions. Markets are assumed to be competitive; therefore, the same investment opportunities are available to all investors.

7. There are no unanticipated changes in inflation or interest rates.

8. The capital markets are in a state of equilibrium or striving toward equilibrium. There are no under priced or overpriced securities; if under pricing or overpricing exists, the prices will move to correct this disequilibrium situation.

Under and Over Valuations

In market equilibrium, the CAPM implies an expected return-risk relationship for all individual securities (the security market line). If an individual security has an expected return-risk combination that places it above the security line, it will be undervalued in the market. That is, it provides an expected return in excess of that required by the market for the systematic risk involved. $\hat{e}_j > R_f + [E(R_m) - R_f] \beta_j$. As a result, the security will be attractive to investors. According to the theory, the increased demand will cause the price to rise until the expected return declines sufficiently for the security to lie on the security market line and, thereby, for $\hat{e}_j = R_f + [E(R_m) - R_f] \beta_j$. An overvalued security is characterized by an expected return-risk combination that places it below the security market line. This security is unattractive, and investors holding it will sell it and those not holding it will avoid it. The price will fall and expected return will rise until there is consistency with the security market line and with equilibrium pricing.

2.6   Portfolio Performance Evaluation

2.6.1 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.* William F. Sharpe devised an index of portfolio performance for portfolio i as:

$$S_i = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{r_i - R}{\sigma}$$

Where,

S_i = Sharpe index of portfolio performance for portfolio i.

R_i = Average return from portfolio i.

σ_i = Standard deviation of returns for portfolio i.

R = Risk-less rate of interest.

$r_i - R$ is the risk premium for portfolio i. The **risk premium** is the additional return over and above the risk-less rate that is paid to induce investors to assume risk.

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

2.6.2 Treynor's Portfolio Performance Measure

Jack Treynor conceived and index of portfolio performance that is based on systematic risk, as measured by portfolios' beta coefficients. He suggests measuring a portfolio's return relative to its systematic risk rather than relative to its total risk, as does the Sharpe measure. Treynor's index is ascertained as:

$$T_P = \frac{\text{Risk Premium}}{\text{Systematic Risk Index}} = \frac{r_j - R}{\beta_P}$$

Where,

T_P = Treynor's index of portfolio performance for portfolio i.

r_i = Average return from portfolio i.

β_P = Systematic risk index of returns for portfolio i.

R = Risk-less rate of interest.

2.6.3 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:

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

Where,

$rp_{i,t}$ = 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.

2.7   Review of Journals, Articles and Websites

These days information highway or the internet has become one of the most easily accessible mediums to gain information in any subject matter. On this study, researcher has also consulted some articles related with topic from the different websites. A number of articles and research works have been published and conducted about commercial banks and JVBs but have been some related articles mentioned.

Bhagat Bista, in his book "Nepal Ma Aadhunik Banking Byabastha", has made an attempt to highlight some of the important factors which have contributed to the efficiency and performance of joint venture Banks. He concluded that the establishment of joint venture Banks a decade ago marks the beginning of modern banking era in Nepal. The joint venture banks have brought in many

new banking techniques such as computerization hypothecation, consortium finance and modern fee based activities into the economy" (Bista, 2048).

Likewise, Sharma Murari R. Wrote an article, "Joint Venture Bank in Nepal: Coexisting or growing out". In his words "It would be definitely unwise for Nepal not to let the JVBs operate in the country and not to take's advantage of them as additional means of resources mobilization as well as harbinger of new era in banking. But it will certainly be unfortunate for the country to develop the JVBs and the cost of the domestic banks. So far one should admit frankly no different treatment has been extended to the domestic and JVBs at least from the government side, which is commendable. If Nepal Government keeps on the stance of treating the domestic and JVBs equally deposit the lather's bargaining strength and if the JVBs also show their alacrity to come forward to share the trails and tribulations of this poor country, both types of banks will coalesce and co-exist complementing each other and contributing to the nation's accelerated development. On the contrary, if the JVBs use their straight against trading into the number some path of development along with domestic banks and the government. They will eventually grow out the domestic banks from the more profitable urban areas and lucrative urban sectors unless remedying by the determination of the government" (Sharma, 1998).

In December 1968, *Journal of Finance* paper concluded that investors should doubt "the economic justification of increasing portfolio sizes beyond 10 or so securities" (Evans & Archer, 1968). A similar study from the same era found that 90 percent of the diversification benefit came from just 16 stocks and 95 percent of the benefit could be captured by just 32 stocks (Fisher and Lorie, 1970).

Mr. Shiba Raj Shrestha in his article "portfolio management in commercial banks, theory and practice" (Shrestha, 2055) revealed – the portfolio management becomes very important both for individual as well as institutional

investors. Investors would like to select a best mix of investment assets subject to the following aspects:

- Higher return which is comparable with alternative opportunities available according to the risk class of investors.
- Good liquidity with adequate safety of investment.
- Certain capital gains.
- Maximum tax concessions.
- Flexible investment.
- Economic, efficient and effective investment mix.

Mr. Shrestha further stated that the commercials banks need competent manpower for continuous research and analysis and proper management information system to get success in portfolio management and customers' confidence. Regarding the portfolio management in Nepalese joint venture banks, he concludes that the portfolio management activities of Nepalese commercial banks at present are in nascent stage. Due to less developed capital market, unavailability of sufficient financial instruments in financial market, lack of proper techniques to run portfolio management activities in the best and successful manner, etc. have constrained the portfolio management of most of the joint venture banks.

Mr. Narayan Prasad Paudel undertook an independent study entitled "Investing in Shares of Commercial Banks in Nepal: An Assessment of Return and Risk Elements" (Paudel, 2002) is found to be relevant in the context of this study. .Mr. Paudel conducted the study with the objective of whether the shares of commercial banks were correctly priced by analyzing the realized rates of returns and the required rates of return using the CAPM.

The study was based on the data of shares of seven sample commercial banks from Mid July 1996 to Mid July 2001. For the purpose of analyzing risk characteristics of the shares of those commercial banks, standard deviation, the coefficient of variation, the correlation coefficient between the returns of

individual bank's share and the return on market portfolio and the beta coefficient were used. Average return on the 91 day Treasury bill was taken as a proxy of the risk-free rate of return.

On the basis of this study, it was found that the shares of BOK offered the highest realized rate of return. It was also found that none of the share prices were in equilibrium. The prices of the shares of SCBNL, NSBIB, NBBL, EBL and BOK were under priced.

Based on the standard deviation of the returns on shares of EBL could be considered as high-risk security. The standard deviation of the returns on shares of HBL was the lowest one. On the basis of CV, the share of BOK had the lowest risk per unit of return, the highest being with the shares of NABIL. It was also observed that the systematic risk was negative with the shares of NABIL. Therefore, the total risk on the returns on shares of NABIL was due to company specific characteristics rather than market pervasive. Returns on all the shares except NABIL, had positive correlation with the returns on market.

Most of the shares appeared to be defensive as beta coefficients are less than 1. Only the return on shares of BOK had beta coefficient of greater than 1, indicating that the share was more risky than the market.

Mr. Paudel concluded, "The shares of commercial banks in Nepal are heavily traded in the stock market and, therefore, these shares play a key role in the determination of stock exchange indicators. All the shares produced higher rates of return than the return on market portfolio. However, the risk-return characteristics do not seem to be the same for all the shares reviewed." He further concludes, "Most of the shares fall under the category of defensive stocks, except the shares of Bank of Kathmandu Limited. From the analysis, it appears that none of the shares are correctly period."

2.8 Review of Previous Theses

2.8.1 "Assessment of Performance of Listed Companies in Nepal" (Bhatta, 1995)

The study "Assessment of performance of listed companies in Nepal" was undertaken by Mr. Gopal Prasad Bhatta. The relevant objective of the study was, "to analyze the performance of listed companies in terms of expected rate of return and company specific risk, required rate of return, systematic risk and diversification of risk through portfolio context."

The study performed by Mr. Bhatta is based on 10 listed Companies data, using five years data from 1987 to 1991.

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

He has concluded that the analysis of risk and return shows many companies with higher unsystematic or specific risk. He has realized the need of expert institution to provide consultancy services to the investors to maximize their wealth through rational investment decision. Mr. Bhatta's study is mainly focused on companies and stock market rather than investors. However, this study has helped for the research of researcher topic.

2.8.2 "An Analysis of Financial Performance of Finance Companies in Context of Nepal" (Ranabhat, 1997)

A thesis entitled "An analysis of financial performance of finance companies in context of Nepal" was undertaken by Mr. Min Bahadur Ranabhat and submitted to FoM, Tribhuvan University. The findings of this research are as follows:

i.   The study clearly shows that the uses of fund towards the hire purchase loan are gradually decreasing.

ii.   The use of fund towards housing loans is also gradually decreasing with different rate.

iii.   The use of fund towards the term loan is gradually increasing.

iv.   The fund used by finance companies is gradually increasing towards leasing with the increasing rate.

v.   There are increasing uses of funds rewards government securities.

2.8.3 "Risk and Return Analysis in Common Stock Investment" (Sapkota, 1999)

The study "Risk and return analysis in common stock investment" conducted by Mr. Jeet Bahadur Sapkota is somehow related to this study. The relevant objective of the study was to analyze the risk and return of the common stocks in Nepalese stock market.

In his findings, "Banking industry is the biggest one in terms of market capitalization and turnover. Expected return on the common stocks of Nepal Bank Ltd. is maximum (i.e. 66.9%) and common stock of SBI Bank Ltd. is found minimum. In this regard common stock of Nepal Bank Ltd. is most risky and common stock of SBI Bank Ltd. is least risky. In the context of industries expected return of finance and insurance industry is found highest. Expected return of banking industry is 60.83 percent.

2.8.4 "Investors' Problems in Choice of Optimum Portfolio of Stocks in Nepal Stock Exchange" (Joshi, 2002)

A thesis entitled "Investor's problems in choice of optimum portfolio of stocks in Nepal stock exchange" was undertaken by Mr. Rupak Joshi in July 2002.

The main objective of this study was to identify the investors' problems in choice of optimum portfolio of stocks in NEPSE which concluded that portfolio management is a new concept for Nepalese investor. 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. The only one stock exchange located in Kathmandu. Traditional cry system for trading stocks, limited number of security broker, lack of opportunity of invest and many other reasons are there, which are acting as barrier of development of NEPSE."

Mr. Joshi further also concluded that most of the investors do not know in which stock to make investment and how to formulate the portfolio. Even many brokers do not furnish the information to the investors. Investors are trading the securities mostly under the pressure of brokers

2.8.5 "Portfolio Management of Joint Venture Banks in Nepal" (Basnet, 2002).

Mr. Jagadish Basnet undertook his thesis work entitled "Portfolio management of joint venture banks in Nepal" in 2002. The study is somehow related to this research.

The main objective of this study was to identify the efficiency of portfolio management of joint venture banks in Nepal. Furthermore, another related specific objective was to evaluate the investment and advances portfolio of joint venture banks.

Mr. Basnet chose NBBL, HBL, SCBNL, and EBL as a sample. The study covered the eight years (FY 1994-2001) data in order to achieve the study objectives.

The major findings of the study were:

- Among the four joint venture banks, NBBL is investing very high amount of its fund in government securities. The share and debenture stood `second position in the investment portfolio.
- The calculated value of beta coefficient (β_i) of the Standard & Chartered Bank Nepal Limited was 0.37. The bank was less risky asset in the market.
- HBL, NBBL and EBL all were defensive stocks.
- The Event Bank Limited was the highly risky asset in comparison the four banks. HBL had very nominal risk than market.

2.8.6 "Portfolio Management of Listed Finance Companies in Nepal" (Bhatta, 2003)

The study "Portfolio management of listed finance companies in Nepal" conducted by Mr. Dipesh Bhatta is a new concept in portfolio management of Nepalese companies.

The main objective was to study and analyze the existing situation of portfolio management of listed finance companies in Nepal. He used secondary (FY 1997-2002) as well as primary data through opinion survey. He used 20 percent samples and analyzed data in order to fulfill the set objectives.

The study found, "All the listed six finance companies stocks are under priced. So investors need to buy these stocks. In most of cases, portfolio management of listed finance companies in Nepal is not systematically organized. The process of determining the division of a corporate investors' portfolio among available classes is heavily based on experience. To reduce portfolio risk, most

of corporate investors use diversification across industries techniques. The major objective of portfolio management is to minimize risk. Generally, 2.5 years time horizon is appropriate for portfolio in most cases. In Nepalese stock market, it is found that passive portfolio strategy is more suitable than active strategy to achieve better results. Majority of the corporate investors depends on fundamental analysis than technical analysis for portfolio securities selection. Corporate investors revise their portfolio time to time using experience." Moreover, he concluded, "Expected market return is lower in comparison to market risk. So market is highly risky place to invest."

2.9   Research Gap

The review of above relevant literature has contributed to enhance the fundamental understanding and knowledge, which is required to make my study meaningful and positive. There have been lots of articles published related to management of public enterprises. There are various researcher conducted their research on portfolio management of Commercial Banks in Nepal, while reviewing other studies on portfolio analysis related to Commercial Banks. The researcher found the existing situation of portfolio management and their effectiveness of Commercial Banks in Nepal. So, this study has tried to analyze the return and risk of the common stocks of listed Commercial Banks and Finance Companies and to assess the present status of portfolio management of listed Commercial Banks and Finance Companies.

CHAPTER – III
RESEARCH METHODOLOGY

Under this, research design, population and sample, sample selection method, data collection and analysis techniques have been described. To find out such solution of problems various statistical and financial tools and techniques are applied according to the nature of phenomena. This chapter mainly deals with the research methodology used to ascertain the study objectives.

3.1   Research Design

This study is based on recent eight years historical data from F/Y 2003 to F/Y 2011. Hence, it is a historical research. It deals with common stocks of commercial banks and finance companies, which have listed their shares in NEPSE. It is a type of survey study which has been conducted to assess the existing situations of portfolio management of listed commercial banks and finance companies and describe the situation and events occurring at present.

3.2   Population and Sample

Population of this study includes all the commercial banks and finance companies registered and operated in Nepal. At present, there are 26 commercial banks and 77 finance companies in Nepal. However, only 21 commercial banks and 61 finance companies have listed their shares in NEPSE for trading in secondary market. They are the population of the study.

For this study, 4 listed commercial banks and 4 finance companies have been considered based on purposive sampling method. On the basis of volume traded and data availability, samples were taken. Similarly, some companies have been selected for gathering information through questionnaire.

The sampled Commercial Banks and Finance Companies are listed below:

Table 3.1 : Sample of Commercial Banks and Finance Companies

Category	Population size	Sample size	Sampled Companies
Commercial Banks	21	4	1. Nepal SBI Bank Ltd. 2. Everest Bank Ltd. 3. Bank of Kathmandu Ltd. 4. Nepal Bangladesh Bank Ltd.
Finance Companies	61	4	1. Nepal Housing Development Finance Co. Ltd. 2. Ace Finance Co. Ltd. 3. Nepal Share Markets & Finance Co. Ltd. 4. Nepal Housing & Merchant Finance Co. Ltd.

3.3 Sources of Data

The study is based on both secondary and primary data sources. Main sources of data are:

a) Secondary Sources

Secondary data have been collected through various books, published annual/trading reports of NEPSE, SEBO-N, NRB, commercial banks and finances companies. Especially, the official website of NEPSE – http://ww.nepalstock.com has become the main source for secondary data

b) Primary Sources

Primary data have been collected through questionnaire. The portfolio and/or investment managers were contacted and interviewed in order to collect the primary data.

## 3.4	Data Collection Techniques

The researcher has visited the different libraries and various related literatures such as books, journals, articles, booklets, magazines, published reports, computer data banks (internet), periodicals etc.

The primary data has been collected from the field works to meet the specific objectives of this research study. Questionnaire has been the main tool used to collect primary data for this study. Fifteen and Thirty questionnaires were received from the respondents of Commercial Banks and Finance Companies respectively.

## 3.5	Data Analysis Tools

On the basis of historical data both financial and statistical tools have been used to analyze different variables.

### 3.5.1	Financial Tools

**a)	Return and risk analysis of individual stocks**

- **Dividend per Share (DPS)**

Dividend per Share (DPS) is calculated as: **DPS = Cash Dividend + Stock Dividend.** Cash equivalent of stock dividend = SDR × Next year MPS where, SDR = Stock Dividend Ratio.

- **Market Price of Share (P)**

One of the principle measures of the value of the stock is market price of stock. It is denoted by P. Three price records are available in Nepal Stock Exchange Limited namely — high, low and closing price. For our study purpose, closing price of the stocks has been taken since our study focuses on annual data.

- **Return on common stock (R)**

  Holding Period Return:-

Generally, single period return or holding period return is represented by R and expressed in terms of percentage basis. It is calculated as:

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

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

Where,

P_{t-1} = Starting stock price

P_t = Ending stock price

D_t = Cash Dividend for time t.

Expected/Average Return of Common Stock (ê)

The expected rate of return for any asset is the weighted average rate of return using probability of each rate of return as the weight age. But when historical returns are used, then the arithmetic mean of the returns is known as average return on common stock represented by ê. The following formula is used to calculate an average return.

$$\text{Average Rate of Return on j stock} = \frac{\text{Sum of returns of Past Years}}{\text{No. of Years}}$$

Symbolically,

$$\hat{e} = \frac{\sum R_j}{n}$$

Where,

$\sum R_j$ = Summation of annual returns on stock j.

n = Number of observations.

- **Risk of Common Stock**

Risk is the deviation between actual return and expected return. Various factors play important role to bring such deviation or variability. Such variability, statistically is measured by standard deviation (σ) or variance, VAR (r). The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measures of an assets total risk. It is computed as:

$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\Sigma(R_j - \bar{R}_j)^2}{n - 1}}$$

b) **Risk and Return Analysis of Market**

- **Return on Market**

Annual return on market is the average return of market based on the index of market. NEPSE index will be used in this study. It is denoted by R_m.

Annual Market Return (R_m)

$$= \frac{\text{Ending NEPSE Index - Beginning NEPSE Index}}{\text{Beginning NEPSE Index}}$$

Average Market Return ($\hat{e}_m$)

$$\hat{e}_m = \frac{\Sigma R_m}{n}$$

Where,

ΣR_m = Summation of annual market return.

n = Number of observations.

- **Risk of Market Return**

$$\text{Standard Deviation } (\sigma_m) = \sqrt{\frac{\sum(R_m - \overline{R}_m)^2}{n-1}}$$

c) Market Sensitivity Analysis

- **Covariance**

Covariance is the joint variance of any two securities. It is a statistical measure of the relationship between two random variables. It is computed as:

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

$$= \rho_{j,m} \, \sigma_j \sigma_m$$

If two variables are independent, their covariance is zero.

- **Correlation Coefficients**

The correlation measure the degree of relationship of movement of securities return. Correlation between stock j and the market is computed as:

$$\rho_{j,m} = \frac{\text{Cov } (R_j, R_m)}{\sigma_j \sigma_m}$$

- **Beta**

A statistical measure of undiversifiable risk index is beta coefficient. It is computed as:

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

Where,

$\text{Cov } (R_j, R_m)$ = Covariance of returns of the jth asset with the market.

$\text{Var } (R_m)$ = Variance of returns for the market portfolio.

Beta coefficient as an index of systematic risk is used to rank the assets. If beta is larger than 1, then the asset is more volatile than market and is called aggressive beta. If the beta is less than 1, the asset is called defensive beta and its price fluctuation is less volatile than market. If the beta is exactly 1, the asset is called average.

d)   Analysis of undiversifiable and diversifiable risk

- **Undiversifiable risk**

Total risk of any individual stock can be measured by variance or standard deviation. Total risk can be partitioned as (i) Systematic and (ii) Unsystematic. Systematic risk is that portion of total risk caused by market factors that simultaneously affect the prices of all securities and cannot be avoided or diversified. Undiversifiable risk, market risk, beta risk are equally used terms. It is calculated as:

$$\text{Systematic Risk} = \beta^2_{jm} \text{ Var}(R_m)$$

Where,

β_{jm} = Beta coefficient of stock j with market return.

$\text{Var}(R_m)$ = Variance of market return

The percentage of systematic risk is measured by the coefficient of determination.

$$\text{Proportion of systematic risk} \quad = \frac{\text{Systematic Risk}}{\text{Total Risk}}$$

$$= \frac{\beta^2_{jm} \text{ Var}(R_m)}{\text{Var}(R_j)}$$

$$= \frac{\beta^2_{jm} \sigma^2_m}{\sigma^2_j}$$

$$= \rho^2_{jm}$$

- **Diversifiable Risk**

Diversifiable risk is that portion of total risk of an individual stock that can be diversified away. It is also called unsystematic risk, company specific risk or non-market risk. It is calculated as:

$$\begin{aligned}\text{Unsystematic risk} \quad &= \text{Total Risk} - \text{Systematic Risk} \\ &= \text{Var}(R_j) - \beta^2_{jm}\,\text{Var}(R_m) \\ &= \sigma^2_j - \beta^2_{jm}\,\sigma^2_m \end{aligned}$$

e) **Portfolio Analysis**
- **Portfolio Return**

The expected return on a portfolio is the simple weighted average of the expected returns from the investment represented by a portfolio. In a two asset portfolio *(Under this study, investment of CBs and FCs are categorized into risk free government securities and risky market portfolio),* the expected return of a portfolio, R $_P$, is calculated as:

Expected Portfolio Return, $\hat{e}_P = R_f X_f + \hat{e}_m X_m$

Where,

$\hat{e}_P$ = Expected return on the portfolio

$\hat{e}_m$ = Expected return on market portfolio

R_f = Return on risk free asset (government security)

X_f = Weight of investment in risk free asset

X_m = Weight of investment on risky market portfolio

- **Portfolio Risk**

Total portfolio risk is measured by the variance of the portfolio's rate of return distribution. The risk (variance of returns) from a portfolio made up of n assets is calculated as:

$$\textbf{Portfolio Risk} = \text{Var}(R_P) = \sum_{i=1}^{n} \sum_{j=1}^{n} X_i X_j \rho_{ij} \sigma_i \sigma_j$$

Where,

X_i	= Proportion of investment in security i.
X_j	= Proportion of investment in security j.
ρ_{ij}	= Correlation coefficient between i and j securities
σ_i	= Standard deviation of security i
σ_j	= Standard deviation of security j

But, the portfolio risk for two-asset (risk free government assets and risky market asset) is calculated as:

$$\text{Var}(R_P) = X_m \sigma_m$$

Since the government securities are risk free assets, they do not bear any risk. Hence, in a two asset portfolio of risky and risk free asset, the portfolio will have only the risk associated with risky assets only.

- **Capital Asset Pricing Model (CAPM)**

Assets with high degree of systematic risk must be priced to yield high rates of return in order to induce investors to accept high degrees of risk that are undiversifiable within that market. Hence, CAPM illustrates the positive relation between assets' systematic risks and their expected rates of return. CAPM is also called Security Market Line (SML). The SML equation is as:

$$K_j = R_f + (R_m - R_f) \beta_i$$

Where,

K_j	= Required rate of return on security j
R_f	= Risk free rate of return (government security)
R_m	= Return on market i.e. risky assets
β_j	= Beta of security j (systematic risk index of security j)

f.   Sharpe's Portfolio Performance Measure

William F. Sharpe devised an index to assess the portfolio performance by considering both the risk and return of any portfolio simultaneously. The Sharpe index of portfolio performance is calculated as:

$$S_j = \frac{\text{Risk Premium}}{\text{Total Risk}}$$

$$= \frac{R_j - R_f}{\sigma_j}$$

Where,

         S_j = Sharpe index of portfolio performance of portfolio j

         $\hat{e}_j$ = Average return from portfolio j

         R_f = Risk free rate of return

         σ_j = Standard deviation of returns for portfolio j

3.5.2   Statistical Tools

a)   Hypothesis Testing

To test the set hypotheses, t-test has been employed. Under Null Hypothesis (H_0), t-test statistics is:

$$t = \frac{X - \mu}{S/\sqrt{n}}$$

Where,

         X = Average return of the common stock of sample under study.

         μ = Average market return (assumed as population)

         S = Sample standard deviation

         n = Number of observation

3.6 Research Hypothesis

In order to achieve the set objectives, following hypotheses are set for testing:

3.6.1 Return Characteristics

For Commercial Banks

Null Hypothesis (H_0) : $\hat{e}_i = \mu$ i.e. There is no significant difference between the return of population and sample. i.e. Average return of common stock of listed commercial banks is equal to market (NEPSE Commercial Banking Index).

Alternative Hypothesis (H_A) : $\hat{e}_i \neq \mu$ i.e. There is significant difference between the return of population and sample. i.e. Average return of common stock of listed commercial banks is not equal to market (NEPSE Commercial Banking Index).

For Finance Companies

Null Hypothesis (H_0) : $\hat{e}_i = \mu$ i.e. There is no significant difference between the return of population and sample. i.e. Average return of common stock of listed finance companies is equal to market (NEPSE Finance Company Index).

Alternative Hypothesis (H_A) : $\hat{e}_i \neq \mu$ i.e. There is significant difference between the return of population and sample. i.e. Average return of common stock of listed finance companies is not equal to market (NEPSE Finance Company Index).

3.6.2 Risk Characteristics

For Commercial Banks

Null Hypothesis (H_0) : $\beta_i = 1$ i.e. There is no significant difference between the systematic risk of population and sample, i.e. the portfolio beta (systematic risk) of common stock of listed commercial banks is equal to market – NEPSE, (The market beta is always 1).

Alterative Hypothesis (H_A): $\beta_i \neq 1$ i.e. There is significant difference between the systematic risk of population and sample, i.e. the portfolio beta (systematic risk) of common stock of listed commercial banks is not equal to market (NEPSE).

For Finance Companies

Null Hypothesis (H_0) : $\beta_i = 1$ i.e. There is no significant difference between the systematic risk of population and sample, i.e. the beta (systematic risk) of common stock of listed finance companies is equal to market (NEPSE).

Alterative Hypothesis (H_A): $\beta_i \neq 1$ i.e. there is significant difference between the systematic risk of population and sample, i.e. the beta (systematic risk) of common stock of listed finance companies is not equal to market (NEPSE).

The set hypotheses have been tested on 5% level of significance ($\alpha = 5\%$).

3.7 Limitations of the Methodology

The methodology deployed in this research cannot be different from the common limitations of same types of thesis. However, in analyzing portfolio risk and return of the selected samples, the tools applied cannot best describe the relationships between the variables under study since portfolio analysis tools are based on various assumptions. In choosing samples, purposive and judgmental sampling method has been adopted. The reliability, accuracy and validity of the research findings depend on these samples.

The primary data and information is collected through questionnaires and direct interviews with the personnel. Validity of the study more depends on the primary information provided by the higher level personnel.

The study of portfolio management is a vague and difficulty in realistic analysis of current practices. So, to make it ease portfolio theory are used to analyze. Portfolio theory is not free from biasness because of its assumptions.

CHAPTER – IV
PRESENTATION AND ANALYSIS OF DATA

The objective of this chapter is to analyze and elucidate the collected data following is the conversion of unprocessed data to an understandable presentation. Thus, this chapter presents the analysis and interpretation of the data related to "portfolio analysis." Logically, the chapter is divided into three sections: analysis of secondary data, analysis of primary data and major findings of the study. Primary data have been used to assess the existing situation of portfolio management of listed Commercial Banks and Finance Companies. Tables, Diagrams and Charts have been used to depict the information precisely where necessary.

4.1 Presentation and Analysis of Secondary Data

This section provides interpretation and analysis of secondary data. Using secondary data related with portfolio analysis required variables are analyzed using financial and statistical tools that are as follows:

4.1.1 Risk and Return of Common Stocks

The return on common stock is the percentage increase/decrease in share price and any cash receipts such as dividends over a specific period of time. Here, one year holding period returns (R_i) are calculated. (Calculation are shown in **Annex III and IV**)

The risk is the possibility that the actual return from holding a stock may deviate from the expected rate of return. It is measured by variance or standard deviation of returns.

Commercial Banks

Average rates of return, variance of return standard deviations and coefficient of variation are presented in Table 4.1. Calculations are shown in **Annex III**.

Table 4.1

Average Rate of Returns, Variance, SD and CV of Commercial Banks

Commercial Banks	R_i	Var (Ri)	σ_r	C.V.
Nepal SBI Bank Ltd. (NSBIBL)	33.21%	22.71%	47.66%	1.44
Everest Bank Ltd. (EBL)	64.25%	29.10%	53.94%	0.84
Bank of Kathmandu Ltd. (BOK)	53.20%	16.24%	40.30%	0.76
Kumari Bank Ltd. (KBL)	53.51%	58.75%	76.65%	1.43

From the statistical results of stocks of different commercial banks, it has been observed that the stock of EBL has the highest average rate of return i.e. 64.25 percent and NSBIBL has the lowest average rate of return i.e. 33.21 percent. In terms of average rate of return, a rational investor chooses the stock of EBL. Furthermore, analyzing the risk characteristics, the KBL has the highest standard deviation i.e. 76.65 percent and BOK has the lowest standard deviation i.e. 40.30 percent.

However, the decision taken on the basis of risk and return separately is not rational decision. When historical returns are used, then the arithmetic mean of the returns is known as average return on common stock. Coefficient of variation (the ratio between risk and return) is the best measure to make investment decisions. It gives the exact situation of risk per unit of return. Risk is the deviation between actual return and expected return. Here, risk per unit of return of BOK is the lowest among all whereas of NSBIBL is the highest. On the basis of CV, the common stock of BOK is attractive among all. The rates of return and the risk are depicted in Figure.

Fig. 4.1

Risk and Return of the Stocks of Commercial Banks
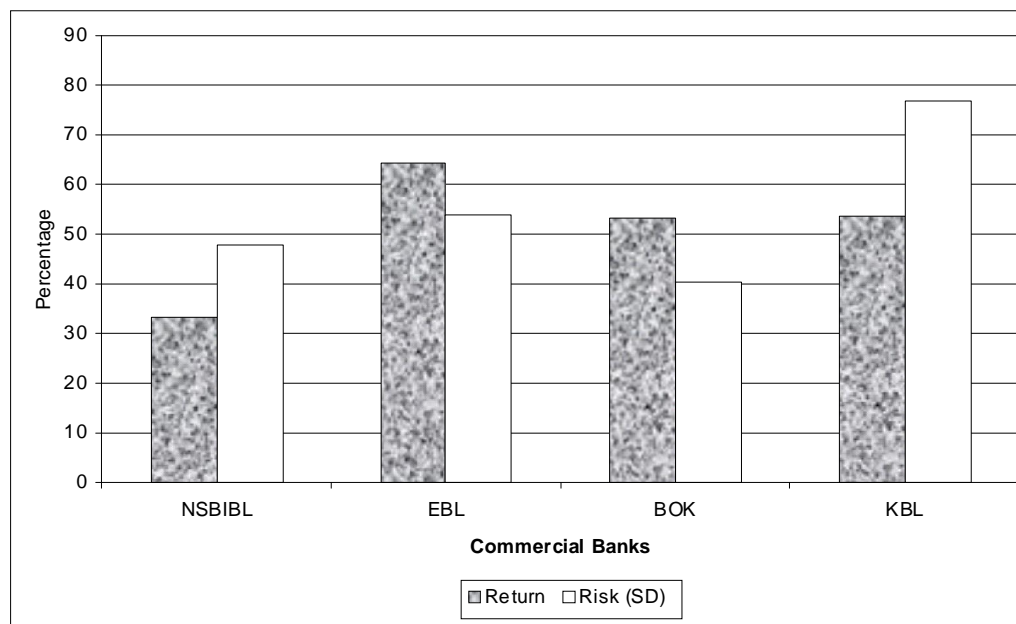
Finance Companies

Average rate of returns, variance of returns, standard deviations and coefficient of variation are presented Table 4.2. The calculations are shown in **Annex IV**.

Table 4.2

Average Rates of Return, Variance, SD and CV of Finance Companies

Finance Companies	R_i	Var (Ri)	σ_r	C.V.
Nepal Housing Development Finance Co. Ltd. (NHDF)	47.97%	42.08%	64.87%	1.35
Paschimanchal Finance Co. Ltd. (PF)	12.63%	1.62%	12.73%	1.01
Nepal Share Markets and Finance Co. Ltd. (NSMF)	96.28%	335.97%	183.29%	1.90
Nepal Housing & Merchant Finance Co. Ltd. (NHMF)	49.90%	64.65%	80.41%	1.61

The statistical results imply that over the period, the share of Nepal Share Markets and Finance Co. Ltd. (NSMF) offers the highest average rate of return where as the share of Paschimancal Finance offers the lowest average rate of return. The different shares have different rates of return within the range of 12.63 percent to 96.28 percent. On the basis of average rate of return, the share of Nepal Share Markets & Finance Co. Ltd. (NSMF) seems to be the best for investment. Considering the overall market, however, the shares of all the Finance Companies are attractive for investment.

Analyzing the return characteristics separately will mislead the investment decision. Each and every return carries an uncertainty or Risk. Risk can explain the variability of returns from its central tendency. The risk is measured by the standard deviation of the returns. Observing the standard deviation of returns of individual finance companies, Nepal Share Markets and Finance Co. Ltd. has the highest i.e.183.29 percent. Nepal Housing and Merchant Finance Co. Ltd., Nepal Housing Development Finance Co. Ltd., and Paschimanchal Finance Co. Ltd. have standard deviation of 80.41 percent, 64.87 percent and 12.73 percent respectively. Paschimanchal Finance Co. Ltd has the lowest risk among all.

However, the average rates of return are not the same and in such a situation, standard deviation may not provide a meaningful basis for measuring risk. So, the decision based on risk and return separately cannot be taken as rational. So, coefficient of variation can depict the exact position of risk per unit of return. Lower CV is preferable. The CV of NHDF is 1.35, PF is 1.01, NSMF is 1.90 and NHMF is 1.61.It seems that the CV i.e. risk per unit of return of NSMF is the highest and PF is the lowest among all. It seems that one percent increase in return of NSMF causes 1.90 percent increase in risk. On the basis of CV, the common stocks of PF seem attractive among all. NSMF offers the highest risk per unit of return. So, investors retaining the stocks of NSMF should assume more risk than any others.

The rates of returns and the risk are depicted in figure 4.2.

Fig. 4.2
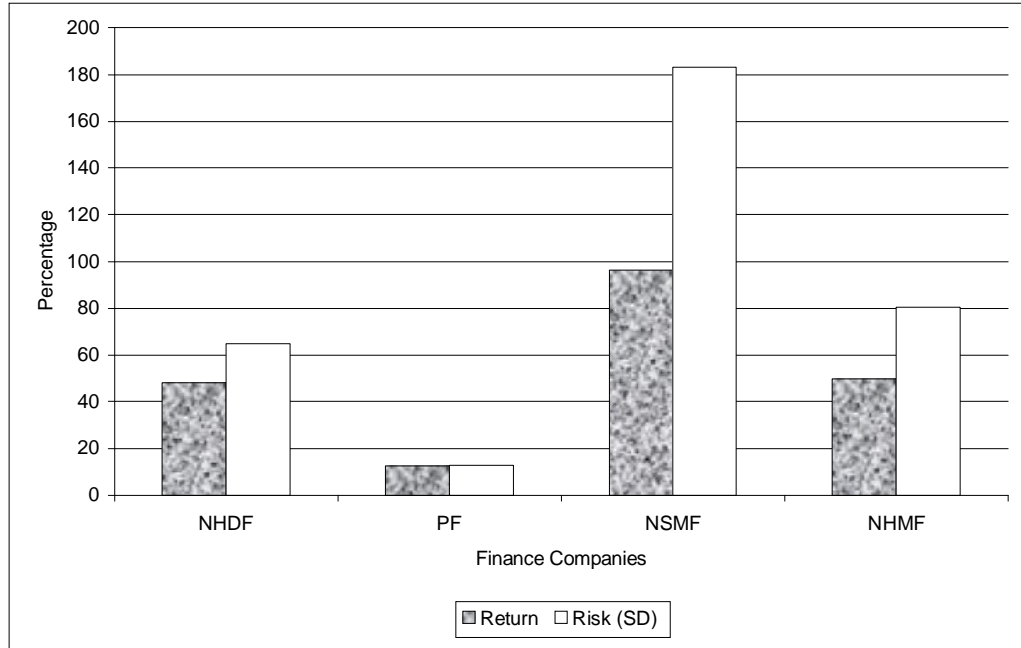
Risk and Return of the Stocks of Finance Companies

4.1.2 Market Risk and Return

Nepal Stock Exchange Limited (NEPSE) is the only secondary market of Nepal. Hence, NEPSE index represents the market. Market return is calculated on the basis of NEPSE index. The market indexes of last eight years and annual rate of returns are presented in Figure 4.3 and 4.4. Required calculations are shown in **Annex V**.

The annual trends of NEPSE index and annual returns on market have been depicted in Figure 4.3 and 4.4.

Fig. 4.3

Movement of Annual NEPSE Index
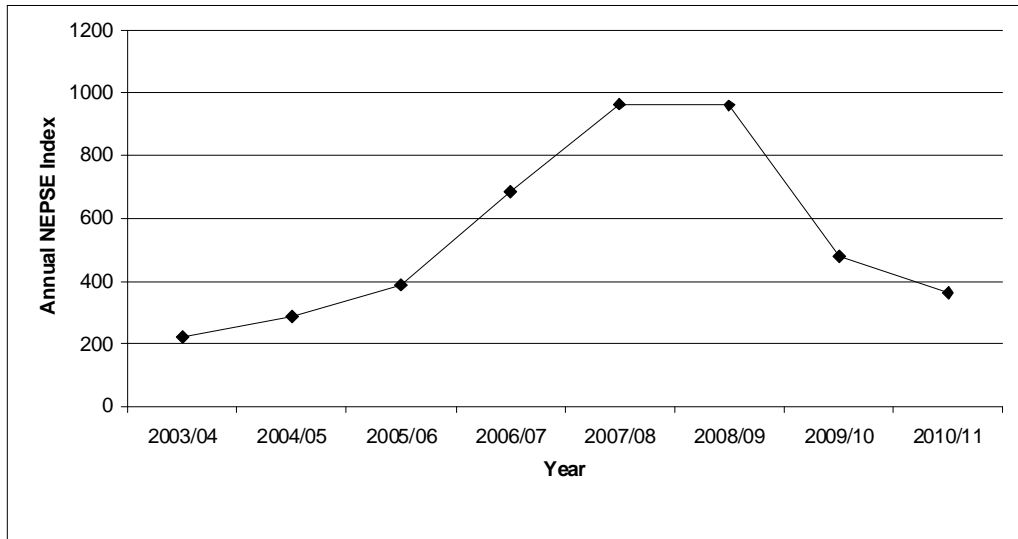
From the figure 4.3, the annual NEPSE index is in decreasing rate. In 2003/04 the index was 222.04, the NEPSE index was increasing till 2007/08 reaching the peak point of 963.36 showing its bullish trend. After FY 2007/08 the NEPSE started decreasing in diminishing trend. From the FY 2008/09 the NEPSE index started decreasing drastically from 959.26 to 477.73 at the end of FY 2009/10, which is still decreasing to 362.85 during the FY 2010/11.

Fig. 4.4

Movement of Annual Rate of Return of Market
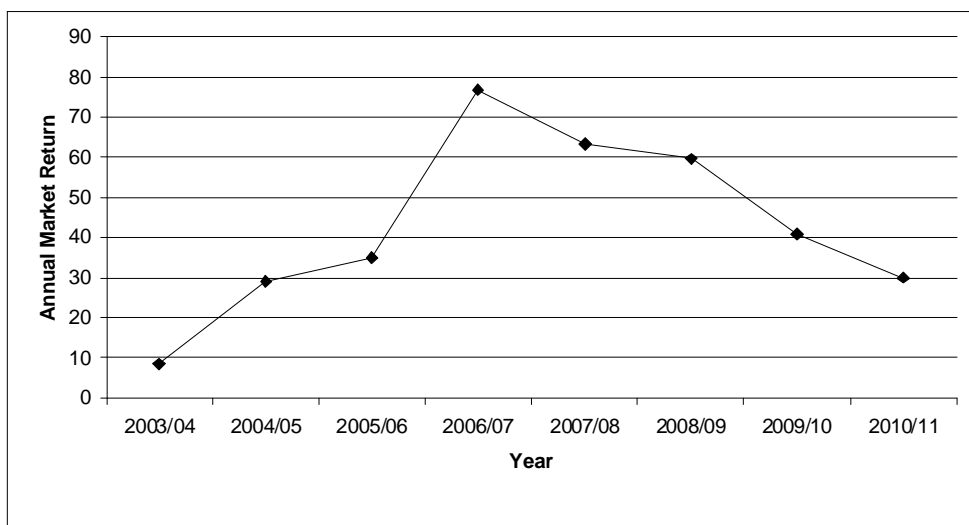
The annual rate of return of market in 2003/04 is 8.39% which is in increasing rate up to 2006/07.But in 2007/08, the annual rate of return of market is decreasing from 76.81 to 30.02 in 2010/11.

Average rate of return, variance and standard deviation of market have been shown in Table 4.3.

Table 4.3

Average Return, Variance, SD and CV of Overall Market Returns

	Average Return	Variance	Standard Deviation	C.V.
NEPSE (Market)	30.02%	8.80%	29.66%	0.99

Average rate of return of market is only 30.02 percent with a standard deviation of 29.66 percent. Coefficient of variation of the market returns is 0.99, which is not more than the coefficient of variation of individual Finance Companies and Commercial Banks. The market return is similar to the individual companies return. The market is not more risky than individual companies.

4.1.3 Market Sensitivity of Stocks

Covariance measures how the returns on common stock of individual companies and market co-vary. It measures the absolute association between two variables. Likewise, the correlation coefficient measures the relative association between two variables. The correlation between two variables can be within the limit of +1 to -1.

The variability of a security's return with the return of the overall market i.e. NEPSE, return is called systematic risk and cannot be avoided. It is measured by beta coefficient. Beta depicts the sensitivity of the security's excess returns to that of the market portfolio.

Commercial Banks

The covariance, correlation of the returns on common stocks of Commercial Banks with that of market return and the beta coefficients are shown in Table 4.4 calculations are shown in **Annex**

Table 4.4

Covariance and Beta Coefficients of Commercial Banks

Commercial Banks	Cov. (R_i, R_m)	β_i
NSBIBL	1.88%	0.21
EBL	12.18%	1.38
BOK	4.09%	0.46
KBL	13.23%	1.50

Observing Table 4.4, covariance between the returns of KBL and market is 13.23 percent, which is the highest among all. Likewise, the absolute association between the returns of NSBIBL and market is the lowest among all i.e. 1.88 percent.

When looking the beta coefficients, NSBIBL, EBL, BOK and KBL are 0.21, 1.38, 0.46 and 1.50 respectively. KBL has the highest betas and NSBIBL have the lowest beta i.e. 0.21.On the basis of beta coefficients, stock KBL and EBL is aggressive stocks. Since, it has the beta coefficients greater than 1. It is seen that the stocks of NSBIBL and BOK are defensive stock since their beta coefficients are less than 1.

Finance Companies

The calculated covariance, correlations and beta coefficient, of the stocks of Finance Companies are presented in Table 4.5. Required calculations are shown in **Annex VII**.

Table 4.5

Covariance and Beta Coefficients of Finance Companies

Finance Companies	Cov. (R_i, R_m)	β_i
NHDF	7.44%	0.85
PF	1.26%	0.14
NSMF	23.31%	2.65
NHMF	14.04%	1.60

From the results, co variances of the returns of NHDF, PF, NSMF, and NHMF with the overall market returns are 7.44 percent, 1.26 percent, 23.31 percent and 14.04 percent respectively. As covariance between two variables measures the absolute association, there is the highest absolute association between the returns of NSMF and market. Among all, NHMF has the second highest association, then after NHDF and at last PF has the lowest association with the market.

By observing the individual shares' beta coefficients, the stocks of NHDF and PF appear to be defensive since their beta coefficients are less than 1. Shares with low beta coefficients are less volatile than the market as a whole. However, the beta coefficient of NSMF and NHMF is greater than 1, so it is called aggressive stock. It indicates that the stock of NSMF and NHMF is more risky than market having more volatility than market. On the basis of beta coefficient, the stock of NSMF and NHMF is more risky and the PF and NHDF are less risky than market.

4.1.4 Systematic and Unsystematic Risk

Total risk is measured by the variance of returns and can be partitioned into systematic and unsystematic risk. Systematic risk is also called unavoidable or undiversifiable risk. It is caused by market factors. Changes in the economic, political and sociological environment that affect securities markets are sources of systematic risk.

Fig. 4.5: Partition of Total Risk

```
                    ┌─────────────────┐
                    │   Total Risk    │
                    └─────────────────┘
                             │
         ┌───────────────────┼───────────────────┐
         ▼                                        ▼
┌─────────────────┐        +         ┌─────────────────────┐
│ Systematic Risk │                  │  Unsystematic Risk  │
└─────────────────┘                  └─────────────────────┘
```
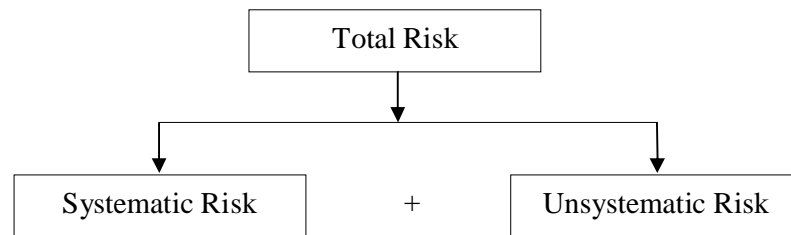
The systematic risk is computed as:

$$\text{Systematic Variance} = \beta^2 \, \text{Var} \, (R_m)$$

The percentage of systematic risk, also called proportion, is measured by coefficient of determination. Proportion of systematic risk is calculated by:

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

$$= \frac{\beta^2 \, \text{Var} \, (R_m)}{\text{Var} \, (R_i)} \qquad = \rho^2_{im}$$

Unsystematic risk is also called avoidable or diversifiable risk or non market risk or company specific risk. It is ascertained as:

$$\text{Unsystematic Risk} \quad = \text{Total Risk} - \text{Systematic Risk}$$

$$= \text{Var} \, (R_i) - \beta^2 \, \text{Var} \, (R_m)$$

Commercial Banks

Total, systematic and unsystematic risk and their proportions of the stocks of the Commercial Banks are presented in Table 4.6.

Table 4.6   Total, Systematic and Unsystematic Risk of CS of CBs and Their Proportions

Commercial Banks	Total Risk Var (R_i)	Systematic Risk β^2 Var (R_m)	Proportion of Systematic Risk	Unsystematic Risk	Proportion of Unsystematic Risk
NSBIBL	22.71%	0.39%	0.02	22.32%	0.98
EBL	29.10%	16.76%	0.58	12.34%	0.42
BOK	16.24%	1.86%	0.11	14.38%	0.89
KBL	58.75%	19.8%	0.34	38.95%	0.66

It has been observed from Table 4.6 that total risk of KBL is highest and BOK is lowest among all. Out of the total risk, systematic risk of KBL is the highest i.e. 19.8 percent which is 34 percent of total risk. Likewise, systematic risk of EBL is also higher than BOK and NSBIBL. NSBIBL and BOK have the systematic risk of 0.39 percent and 1.86 percent respectively. The highest systematic risk of KBL is due to highest correlation with market and the lowest systematic risk of NSBIBL is due to lowest correlation/covariance with market.

Out of total risk, 2 percent of NSBIBL, 58 percent of EBL, 11 percent of BOK and 34 percent of KBL are systematic and cannot be avoided. But 98 percent of NSBIBL, 42 percent of EBL, 89 percent of BOK and 66 percent of KBL are unsystematic or company specific risk. Hence, these can be avoided with an optimum portfolio construction. Among all, 66 percent of total risk of KBL can be diversified away. The risk of NSBIBL can only be eliminated by 98 percent with the construction of a well diversified portfolio.

The systematic and unsystematic risks of the common stocks of Commercial Banks are presented in Figure 4.6.

Fig. 4.6

Systematic and Unsystematic Risk of CS of CBs

Nepal SBI Bank Ltd.
2%
98%
□Systematic ■Unsystematic

Everest Bank Ltd.
42%
58%
□Systematic ■Unsystematic

Bank of Kathmandu Ltd.
11%
89%
□Systematic ■Unsystematic

Kumari Bank Ltd.
34%
66%
□Systematic ■Unsystematic
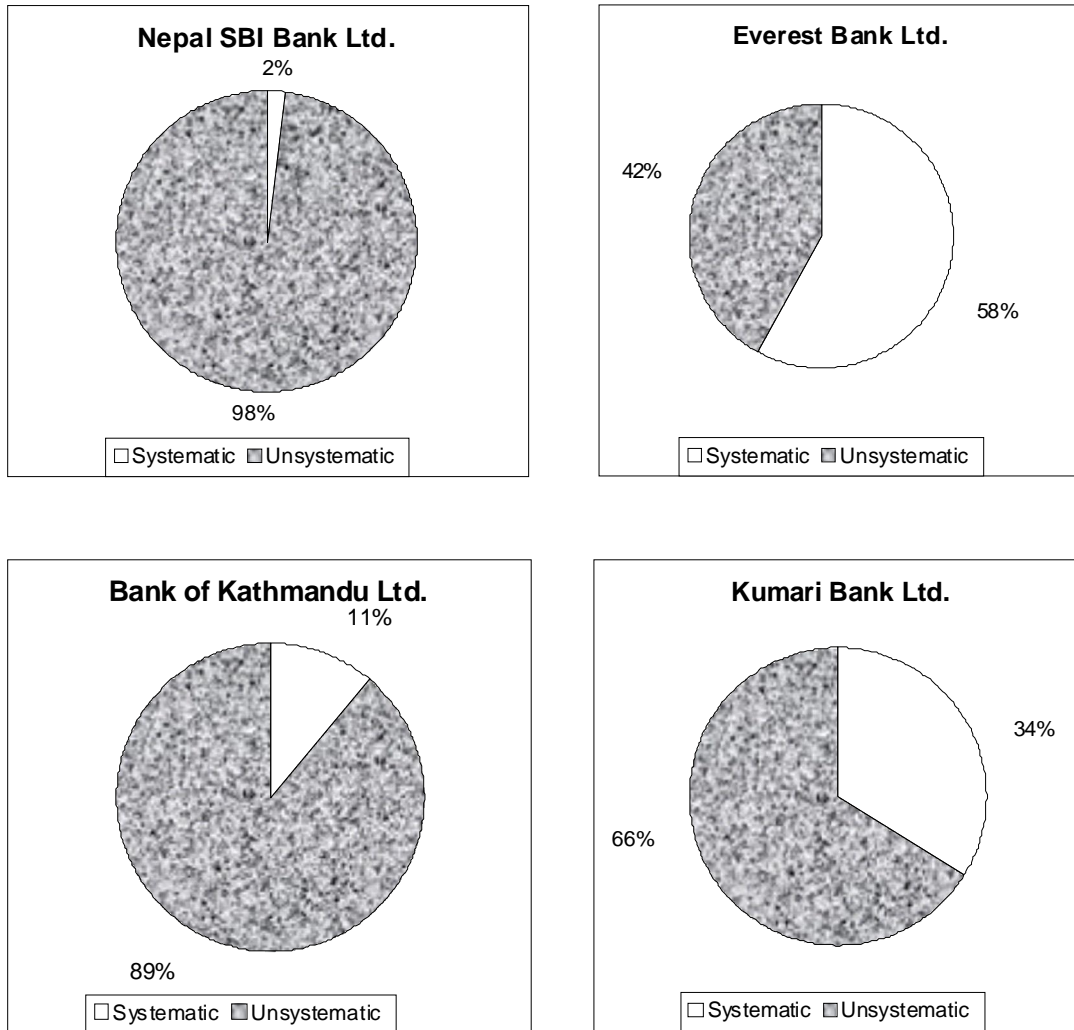
Finance Companies

Total, systematic and unsystematic risk and their proportions of the stocks of the Finance Companies are presented in Table 4.7.

Table 4.7

Total, Systematic and Unsystematic Risk of Common Stocks of FCs

and Their Proportions

Finance Companies	Total Risk Var (R_i)	Systematic Risk β^2 Var (R_m)	Proportion of Systematic Risk	Unsystematic Risk	Proportion of Unsystematic Risk
NHDF	42.08%	6.36%	0.15	35.72%	0.85
PF	1.62%	0.17%	0.10	1.45%	0.90
NSMF	335.97%	36.98%	0.11	298.99%	0.89
NHMF	64.65%	22.53%	0.35	42.12%	0.65

From the statistical results shown in Table 4.7 the stocks of NHDF, PF, NSMF and NHMF have the systematic risks of 6.36 percent, 0.17 percent, 36.98 percent and 22.53 percent respectively. Comparing each other, the share of NSMF has the highest systematic risk i.e. 36.98 percent whereas the share of PF has the least systematic risk i.e. 0.17 percent. On the basis of systematic risk, the stock of the PF is more attractive than others. The stock of NSMF appears most risky.

Out of total risk of individual stocks' return, the proportion of systematic risks of NHDF, PF, NSMF and NHMF are 0.15, 0.10, 0.11 and 0.35 respectively. It seems that 15 percent variability of returns of the common stocks of NHDF is systematic or caused by market factors. Likewise, 10 percent risk of PF is the result of market factor and 11 percent and 35 percent of NSMF and NHMF are due to market factors. These cannot be reduced. Considering the unsystematic risks, the unsystematic risks of NHDF, PF, NSMF and NHMF are 35.72 percent, 1.45 percent, 298.99 percent and 42.12 percent respectively. Among them, the stock of NSMF has the greatest unsystematic risk and PF has the least unsystematic risk. Out of total risks of NHDF, PF, NSMF and NHMF are 85 percent, 90 percent, 89 percent and 65 percent respectively are unsystematic or company specific risks which can be diversified away with an optimal

portfolio construction. There is the highest company specific risk of the stocks of PF i.e. 90 percent from the unsystematic risk perspective, the management errors or company specific weaknesses of PF are the highest among all. Out of total risk 85 percent of NHDF, 90 percent of PF, 89 percent of NSMF and 65 percent of NHMF can be diversified away.

The systematic as well as unsystematic risks of the common stocks of Finance Companies are in Figure 4.7

Fig. 4.7

Systematic and Unsystematic Risk of Common Stocks of FCs

Nepal Aawas Bikas Co. Ltd.

15%

85%

☐ Systematic ▨ Unsystematic

Paschimanchal Finance Co. Ltd.

10%

90%

☐ Systematic ▨ Unsystematic

Nepal Share Markets & Finance Co. Ltd.

11%

89%

☐ Systematic ▨ Unsystematic

Nepal Housing & Merchant Finance Co. Ltd.

65%

35%

☐ Systematic ▨ Unsystematic
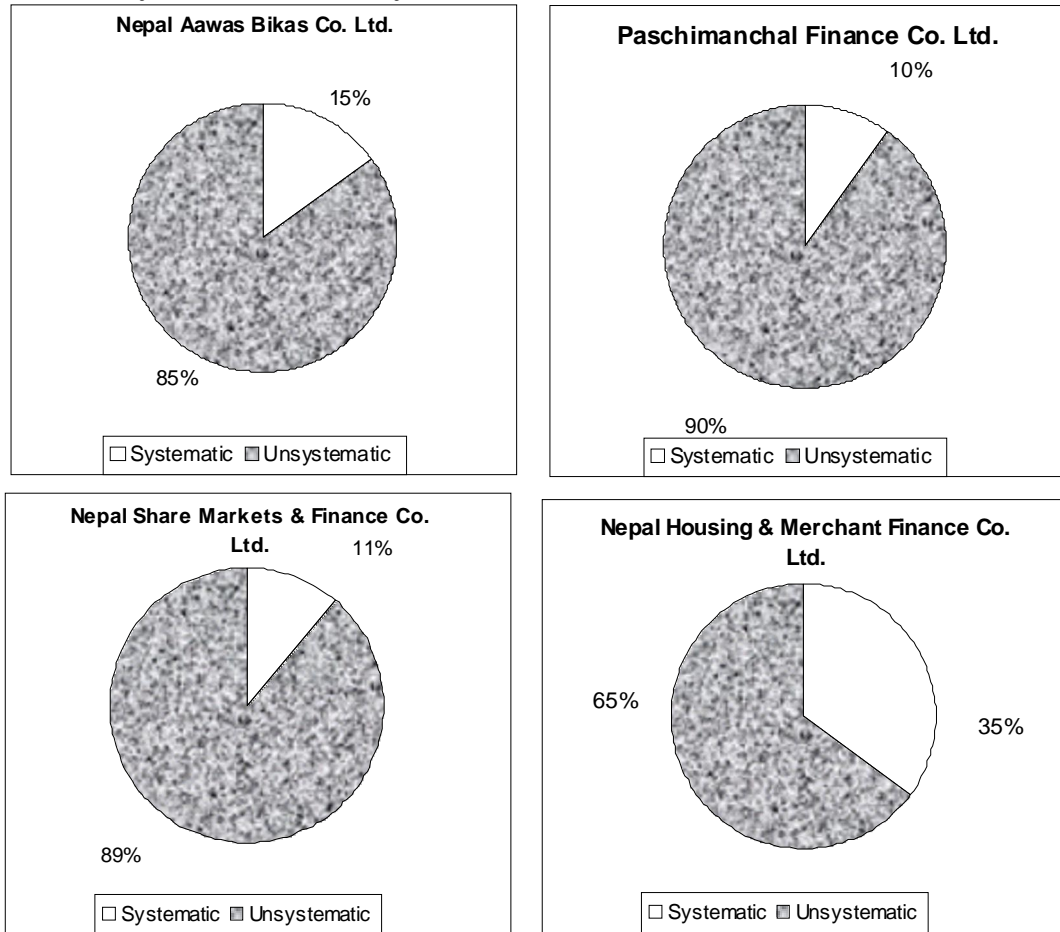
4.1.5 Price Situations of the stocks of Listed Companies

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

The greater the beta of a security, greater will be the risk and the greater the expected return required. Likewise, the lower the beta, lower will be the risk, the more valuable it becomes and the lower the expected return required.

Commercial Banks

The beta coefficients, risk premiums and required rate of return on the stocks of Commercial Banks are summarized in Table 4.8. Calculations are shown in **Annex VIII**

Table 4.8

Price Situations of CS of CBs

Commercial Banks	β	$\hat{e}_F$	$\hat{e}_m$	Risk Premium	Required Rate of Return	Average Rate of Return	Price Situation
NSBIBL	0.21				8.90%	33.21%	Under priced
EBL	1.38	3.29%	30.02%	26.73%	40.18%	64.25%	Under priced
BOK	0.46				15.59%	53.20%	Under priced
KBL	1.50				43.39%	53.51%	Under priced

From the results presented in Table 4.8, it has been observed that the overall average market return is 30.02 percent. The average Treasury bill rate is 3.29 percent. The risk premium for the stocks of all the commercial banks in the market is the difference between risk free rate and market rate of return i.e. 26.73 percent. Based on the riskiness of the stocks in terms of systematic risk only, the required rate of returns for individual stocks are 8.90 percent for

NSBIBL, 40.18 percent for EBL, 15.59 percent for BOK, 43.39 percent for KBL. Higher systematic risk requires higher required rate of return and vice versa. Since the beta coefficient of the stocks of KBL is the highest among all i.e. 1.50, its required rate of return is also highest among all i.e. 43.39 percent. Higher systematic risk requires higher risk premium. Likewise, the beta coefficients of the stocks of NSBIBL are the lowest among all i.e. 0.21 having the risk premium 26.73 percent and requiring the return of 8.90 percent. Comparing the required rate of return and the expected rate of return of the stocks of individual commercial banks, the required rate of return for all the banks are less than expected rate of return. Hence, all the stocks are under priced in the market. As a result, the shares of Commercial Banks appear attractive to investors. Hence, investors are advised to purchase not to sell the shares of commercial banks in the market. In the case of commercial banks also, the investors are required to take long position to gain from the stocks.

Fig. 4.8

The Required Rate of Return and the Average Rate of Return of CBs
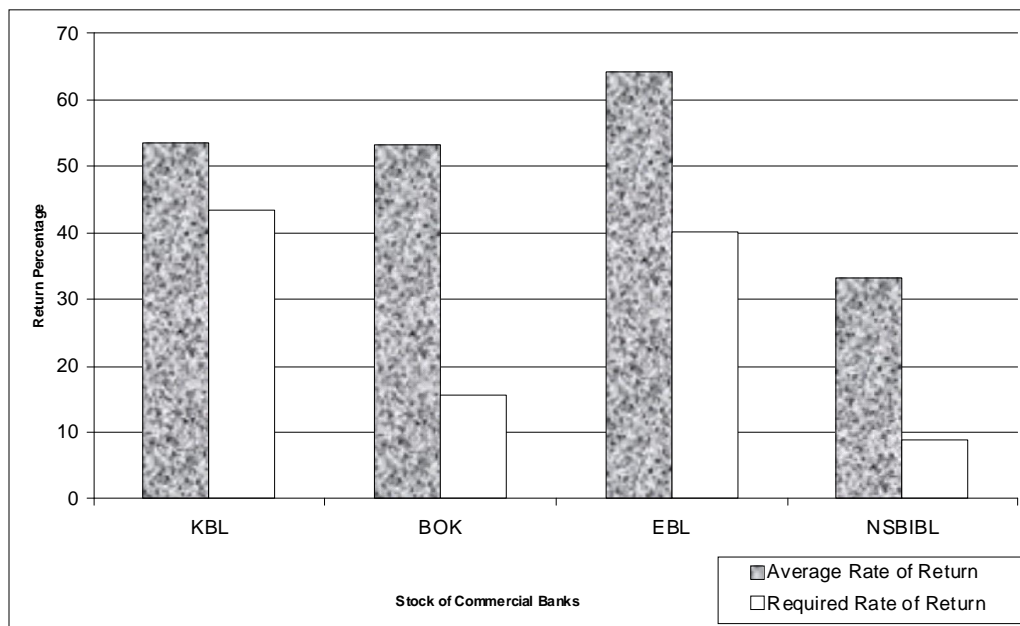
Finance Companies

The beta coefficients, risk premiums and required rate of return on the stocks of finance companies are summarized in Table 4.9. Calculation are shown in Annex VI

Table 4.9

Price Situations of CS of FCs

Finance Company	β	ê$_F$ %	ê$_m$ %	Risk Premium (ê$_m$– ê$_F$)	Required rate of return	Average rate of return	Price Situation
NHDF	0.85				26.01%	47.97%	Under priced
PF	0.14	3.29	30.02	26.73%	7.03%	12.63%	Under priced
NSMF	2.65				74.12%	96.28%	Under priced
NHMF	1.60				46.06%	49.90%	Under priced

From the results, it has been observed that the overall average market return is 30.02 percent. The average Treasury bill rate is 3.29 percent. The risk premium for the stocks of all the finance companies in the market is the difference between risk for rate and market rate of return i.e. 26.73 percent. Based on the riskiness of the stocks, the required rate of returns for individual stocks are 26.01 percent for NHDF, 7.03 percent for PF, 74.12 percent for NSMF and 46.06 percent for NHMF. Higher the beta, higher will be the required rate of return and vice versa. Since, the beta coefficients of the stocks of NSMF is the highest among all i.e. 2.65, its required rate of return is also the highest among all. Higher systematic risk requires higher risk premium. Likewise, the beta coefficient of the stocks of PF is the lowest among all i.e. 0.14 having the risk premium 26.73 percent and required rate of return of PF is 7.03 percent. Comparing the required rate of return and the expected rate of return of the stocks of individual finance companies, the required rates of return of NHDF and PF are less than expected/average rates of return. Hence all the stocks of finance companies are under priced. As a result, the shares of the Finance

Companies appear attractive to the investors. Hence, investors are advised to purchase not to sell the common stocks of Finance Companies in the market. The investors are required to take long position to gain from the stocks of Finance Companies.

Fig. 4.9 Required Rate of Return and Average Rate of Return of FCS
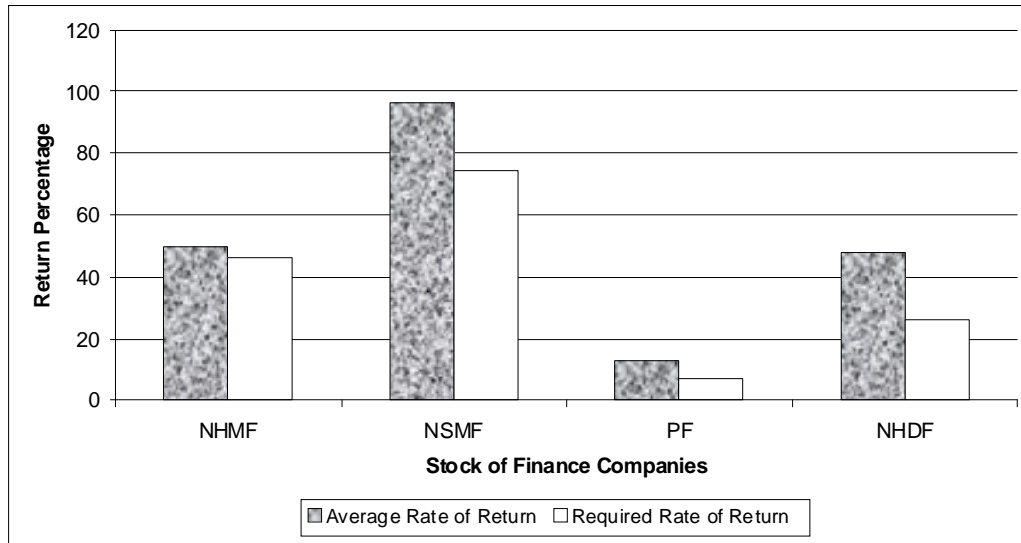
4.1.6 Portfolio Analysis

To analyze the portfolio risk and return of the finance companies and commercial banks, assets are categorized into two category: (i) Risky assets (market portfolio), and (ii) Risk-free assets (government securities). Here, the investment on others and shares are put under risky assets and government securities under risk free asset.

Two asset portfolio returns of the companies is the weighted average return of the investment on the risk-free and risky asset. The weight is the proportion of investment in risky and risk-free assets. Two asset portfolio returns is calculated as:

$$\text{Portfolio Return } (R_P) = X_{RF} . R_F + X_M . R_M$$

Here, X_{RF} represents the investment proportion in risk free assets. Likewise, R_F represents the return on risk free assets i.e. government securities. X_m represents the investment proportion in risky asset i.e. market portfolio and R_m represents the return on market.

Commercial Banks

All the selected commercial banks have invested their large amount of money in government securities. The proportions of investment in risky and risk free assets have been shown in Table 4.10.

On the basis of two assets portfolio consisting of risk free government securities and risky market portfolio, the annual portfolio returns, average portfolio returns, variance and standard deviations of portfolio of the respective Finance Companies are presented in Table 4.10.

Table 4.10 Portfolio Return and Risk of Commercial Banks

Commercial Banks	Rf (%)	Rm (%)	Wf (%)	Wm (%)	Rp (%)	σ_P (%)
NSBIBL	3.29	30.02	96.62	3.38	4.19	1
EBL	3.29	30.02	93.56	6.44	5.01	1.91
BOK	3.29	30.02	79.78	20.22	8.69	5.98
KBL	3.29	30.02	74.77	25.23	10.03	7.48

From the portfolio analysis, the portfolio return of NSBIBL is 4.19 percent, EBL is 5.01 percent, BOK is 8.69 percent, KBL is 10.03 percent with a standard deviation of 1 percent, 1.91 percent, 5.98 percent and 7.48 percent respectively. It seems that the portfolio returns of all the commercial banks are lower than the risk free rate. The portfolio return of KBL is the highest among all. The least portfolio return among all is the return of NSBIBL i.e. 4.19 percent. Regarding the portfolio risk, the portfolio risk of KBL is the highest

i.e.7.48 percent among all whereas NSBIBL has the lowest portfolio risk i.e.1percent.

The portfolio return and risk of the individual commercial banks are depicted in

Figure 4.10.

Portfolio Return and Risk of the Commercial Banks
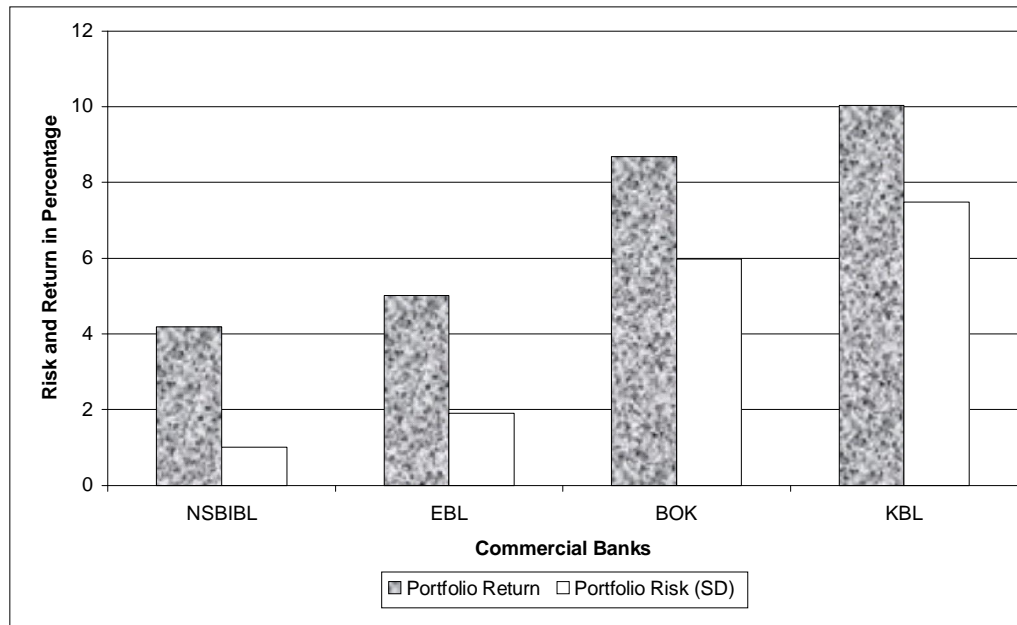
Finance Companies

All the selected finance companies have invested their large amount of money in government securities. Likewise, they have chosen shares of other companies for investment. The proportions of investment of finance companies are summarized in Annex X

On the basis of two assets portfolio consisting of risk free government securities and risky market portfolio, the annual portfolio returns, average portfolio returns, variance and standard deviations of portfolio of the respective finance companies are presented in Table 4.11.

Table 4.11 Portfolio Return and Risk of Finance Companies

Finance Company	Rf (%)	Rm (%)	Wf (%)	Wm (%)	Rp (%)	σ_P (%)
NHDF	3.29	30.02	17.17	82.83	25.43	24.57
PF	3.29	30.02	0	100	30.02	29.66
NSMF	3.29	30.02	20.60	79.40	24.51	23.55
NHMF	3.29	30.02	27.56	72.44	22.65	21.49

From the results of portfolio return and risk presented in Table 4.11, the average portfolio returns of NHDF, PF, NSMF and NHMF are 25.43 percent, 30.02 percent, 24.51 percent and 22.65 percent respectively.

Considering the risk characteristics of individual finance's portfolio, the portfolio risk (portfolio standard deviation) of NHDF, PF, NSMF and NHMF are 24.57 percent, 29.66 percent, 23.55 percent and 21.49 percent respectively. With respect to portfolio standard deviation, the portfolio of PF appeared most risky among all and the portfolio of NHMF appeared least risky. When the market return is declining, they should invest their amount in government securities in order to minimize risk and retaining minimum return. However, the risk of the portfolios managed by the finance companies except NHMF is less than the market risk i.e. 30.02 percent.

The portfolio return and risk of the individual finance companies are depicted in figure 4.11.

Fig. 4.11

Portfolio Return and Risk of the Finance Companies
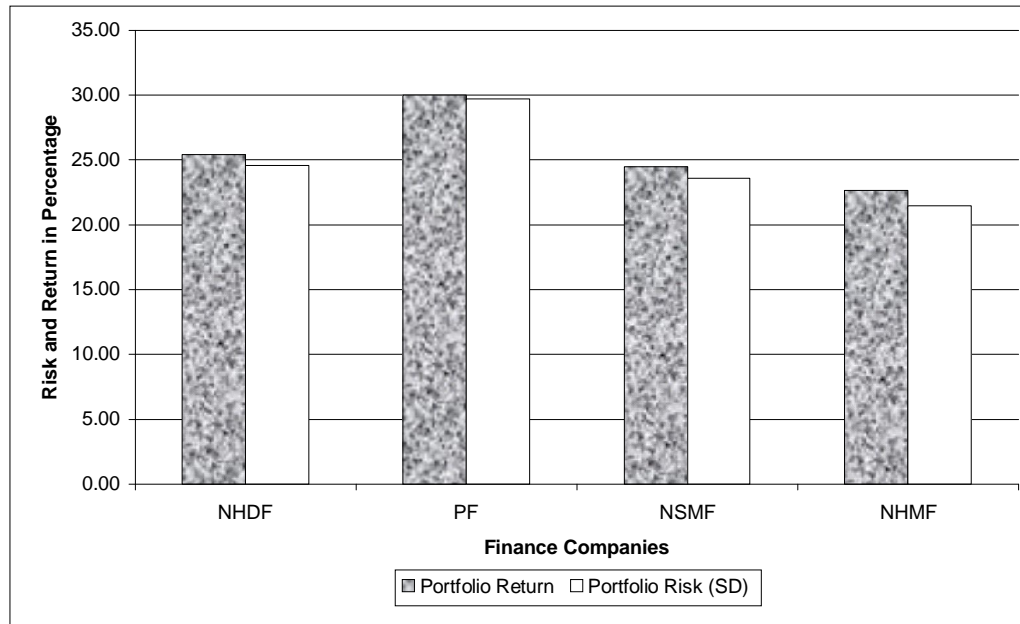
4.1.7 Portfolio Performance Evaluation

William F. Sharpe, Jack Treynor and Dr. Michael C. Jensen developed different indices of measuring the portfolio performance. William F. Sharpe considered both risk and return simultaneously. Here, the portfolio performance of listed companies has been evaluated based on Sharpe Index.

Commercial Banks

The portfolio performance indicators of each Commercial Bank have been shown in **Annex XI** and presented in Table 4.12.

Table 4.12

SHARPE Index of Portfolio Performance Measure for CBs

Commercial Banks	$Sp = \dfrac{R_P - R_F}{\sigma_P}$	Rankings
NSBIBL	0.9000	IV
EBL	0.9005	III
BOK	0.9030	I
KBL	0.9011	II

From Table 4.12, it has been observed that the Sharpe indexes of portfolio performance measure of NSBIBL, EBL, BOK and KBL are 0.90, 0.9005, 0.9030 and 0.9011 respectively. The portfolio performance measuring index of BOK is highest and of NSBIBL is the lowest among all. Hence, the portfolio of BOK is the best and of NSIBL is least among all.

Finance Companies

The portfolio performance indicators using Sharpe index of each Finance Companies have been shown in **Annex XI** and presented in Table 4.13.

Table 4.13

Sharpe Index of Portfolio Performance Measure for FCs

Finance Companies	$Sp = \dfrac{R_P - R_F}{\sigma_P}$	Rankings
NHDF	0.9011	II
PF	0.9012	I
NSMF	0.9011	II
NHMF	0.9009	III

From Table 4.13, it has been seen that the Sharpe index of portfolio performance measure of NHDF, PF, NSMF and NHMF seemed -0.9011, 0.9012, 0.9011 and 0.9009 respectively. The portfolio performance measuring

index of PF seemed highest and NHMF seemed the lowest among all. On the basis of Sharpe index, the portfolio of PF is the best and of NHMF is least among all.

4.1.8 Hypothesis Testing

4.1.8.1 Regarding the Return Characteristics

a) Commercial Banks

Null Hypothesis (H_O): $\hat{e}_i = \mu$ i.e. there is no significant difference between the return of population and sample.

Alternative Hypothesis (H_A): $\hat{e}_i \neq \mu$ i.e. there is significant difference between the return of population and sample.

Decision: The calculated value of t is 3.09. The critical value of t at $\alpha = 5\%$ for two tailed test at d. f. $3(N-1)$ is 3.182. Since the calculated value of t is less than the critical value of t at $\alpha = 5\%$, the **Null Hypothesis** is accepted and **Alternative Hypothesis** is rejected which means the average return of selected Commercial Banks is not significantly different from market return. Hence, it can be concluded that average rates of return of the selected Commercial Banks are lower than the average rate of return of market.

b) Finance Companies

Null Hypothesis (H_O): $\hat{e}_I = \mu$ i.e. there is no significant difference between the return of population and sample.

Alternative Hypothesis (H_A): $\hat{e}_I \neq \mu$ i.e. there is significant difference between the return of population and sample.

Decision: The calculated value of t is 0.78. The critical value of t at α = 5% for two tailed test at d. f. 3 (N − 1) is 3.182. Since the calculated value of t is less than the critical value of t at α = 5 percent, the **Null Hypothesis** is accepted and **Alternative Hypothesis** is rejected which means the average return of selected finance companies is not significantly different from market return. Hence, it can be concluded that average rates of return of the selected Finance Companies are lower than the average rate of return of market.

4.1.8.2 Regarding the Risk Characteristics

a)   **Commercial Banks**

Null Hypothesis (H_O): β_I = 1 i.e. there is no significant difference between the systematic risk of population and sample.

Alternative Hypothesis (H_A): $\beta_i \neq 1$ i.e. there is significant difference between the systematic risk of population and sample.

Decision: The calculated value of t is -0.51. The critical value of t at α = 5% for two tailed test at d.f. 3 (N − 1) is 3.182. Since the calculated value of t is less than the critical value of t at α = 5%, the **Null Hypothesis** is accepted which means the portfolio beta of selected Commercial Banks is equal to market beta. Hence, it can be concluded that the stocks of selected Commercial Banks are equally volatile to market.

b)   **Finance Companies**

Null Hypothesis (H_O): β_I = 1 i.e. there is no significant difference between the systematic risk of population and sample.

Alternative Hypothesis (H_A): $\beta_i \neq 1$ i.e. there is significant difference between the systematic risk of population and sample.

Decision: The calculated value of is 2.28. The critical value of t at $\alpha = 5\%$ for two tailed test at d. f. 3 (N – 1) is 3.182. Since the calculated value of t is less than the critical value of t at $\alpha = 5\%$, the **Null Hypothesis** is accepted which means the portfolio beta of selected Finance Companies is equal to market beta. Hence, it can be concluded that the stocks of selected Finance Companies are equally volatile to market.

(Calculation are shown in Annex – XII, a & b)

4.2   Presentation and Analysis of Primary Data

This section is concerned with the presentation and analysis of primary data collected through questionnaires the opinions and views expressed by the concerned persons of the Commercial Banks and Finance Companies are first presented and then analyzed using percentage.

4.2.1 Diversification Techniques

In order to identify the diversification technique of the Commercial Banks and Finance Companies, the respondents were asked what type of diversification techniques their own bank/finances companies were adopting in investing in securities. The responses regarding this are presented in Table 4.14.

Table 4.14

Diversification Techniques

S.N.	Research Variable	Commercials Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Simple diversification	10	66.67	25	83.33
2.	Superfluous diversification	0	0	0	0
3.	Diversification across industries	0	0	0	0
4.	Simple diversification across quality rating categories	5	33.33	5	16.67
5.	Markowitz diversification	0	0	0	0
	Total	15	100	30	100

Source: Field Survey.

From Table 4.14, it has been seen that out of 15 respondents of Commercial Banks, 66.67 percent respondents replied that they adopt simple diversification while making investments in securities. Only 33.33 percent respondents replied that their respective companies are adopting diversification across quality rating categories. Likewise, out of 30 respondents of Finance Companies, 83.33 percent respondents replied that they adopt simple diversification and 16.67 percent respondents replied that they adopt the diversification across quality rating categories. It seemed that commercial banks as well as Finance Companies are adopting simple diversification in allocating available funds. Other diversification except simple and diversification across quality rating categories are not found to be adopted.

4.2.2 Basis of Securities Selection in Investment Portfolio

The respondents were asked what type of analysis they carry out in selecting securities in their investment portfolio. In this regard, the responses are presented in Table 4.15.

Table 4.15

Basis of Securities Selection

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Fundamental Analysis	5	33.33	5	16.67
2.	Technical Analysis	10	66.67	25	83.33
3.	Random Walk Model	0	0	0	0
	Total	15	100	30	100

Source: Field Survey.

From Table 4.15, it is observed that out of 15 respondents of Commercial Banks, 33.33 percent respondent replied that the banks base the investment decision for security selection on fundamental analysis and 66.67 percent respondents replied that they base their investment decision on technical analysis. Likewise, out of 30 respondents of Finance Companies, 16.67 percent respondents replied that their Finance Companies base the investment decisions on fundamental analysis and 83.33 percent replied that Finance Companies base their investment decision on technical analysis. None of the respondents opted random walk model for their investment decision.

4.2.3 Satisfaction from Portfolio Return

The respondents were asked whether they were satisfied with the return from their securities portfolio or not. The responses regarding this are presented in Table 4.16.

Table 4.16

Satisfaction from Portfolio Return

S.N.	Research variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Yes	6	40	10	33.33
2.	No	9	60	20	66.67
3.	Don't know	0	0	0	0
	Total	15	100	30	100

Source: Field Survey.

From the Table 4.16, it is observed that out of total respondents of Commercial Banks, majority of the respondents i.e. 60 percent replied "No" and rest i.e. 40 percent respondents replied "Yes". Likewise, 66.67 percent respondents of the Finance Companies replied "No" and 33.33 percent of the respondents replied "Yes". It revealed that the Commercial Banks as well as Finance Companies are not satisfied with the return on their securities portfolio.

4.2.4 Investment Strategies

In order to know the investment strategy adopted by Commercial Banks/Finance Companies the respondents were asked what type of investment strategy their companies are adopting. The responses are presented in Table 4.17.

Table 4.17

Investment Strategies

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Active strategy	13	86.67	25	83.33
2.	Passive strategy	2	13.33	5	16.67
	Total	15	100	30	100

Source: Field Survey.

From Table 4.17, it is observed that out of 15 respondents of Commercial Banks, 86.67 percent respondents replied that their banks are adopting active strategy and 13.33 percent respondents replied that their banks are adopting passive strategy. Similarly, out of 30 respondents of Finance Companies, 83.33 percent respondents replied that their finance companies are adopting active strategy and 16.67 percent respondents replied that their Finance Companies are adopting passive strategy.

4.2.5 Scientific Management of Securities Portfolio

Regarding the scientific management of securities portfolio of the Commercial Banks and Finance Companies, the respondents were asked whether the securities portfolio of their company is scientifically managed or not the responses regarding this are presented in Table 4.18.

Table 4.18

Scientific Management of Securities Portfolio

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Yes	5	33.33	12	40
2.	No	10	66.67	18	60
3.	Don't know	0	0.00	0	0.00
	Total	15	100	30	100

Source: Field Survey.

From Table 4.18, it has been observed that out of 15 respondents of Commercial Banks, 66.67 percent respondents replied that the securities portfolio of their banks is not scientifically managed and 33.33 percent respondents replied that is scientifically managed. Likewise, out of 30 respondents of Finance Companies 60 percent respondent replied that their securities portfolio is not scientifically managed and rests i.e. 40 percent respondent replied "Yes". This seemed that the securities portfolios of Commercial Banks and Finance Companies are not scientifically managed.

4.2.6 Objectives of Portfolio Management

The respondents were asked to rank the portfolio management objectives. The marks/weights on each objectives of portfolio management are presented in Table 4.19.

Table 4.19

Objectives of Portfolio Management

S.N	Research Variable	Commercial banks		Finance Companies	
		Marks*	Rank	Marks*	Rank
1.	Minimize Risk	$3\times2+2\times0+1\times13=19$	3rd	$3\times15+2\times10+1\times5=70$	1st
2.	Maximize Risk	$3\times0+2\times10+1\times5=25$	2nd	$3\times5+2\times9+1\times16=49$	3rd
3.	Liquidity	$3\times7+2\times8+1\times0=37$	1st	$3\times19+2\times1+1\times10=69$	2nd

Source: Field Survey.

* Marks = $3 \times$ nos. of respondents assigning $3 + 2 \times$ nos. of respondents assigning $2 + 1 \times$ nos. of respondents assigning 1.

From the Table 4.19, it has been observed that the main objective of portfolio management of Commercial Banks was for liquidity. Secondly, they assigned equal priority to minimize risk and maximize return. However, for Finance Companies, the main objective of portfolio management was to minimize risk. However, they provided second and third priority to liquidity and maximize return respectively.

4.2.7 Investment Portfolio Revision

The respondents were asked whether they revise their securities portfolio time and again or not. The responses with respect to this are presented in Table 4.20.

Table 4.20

Investment Portfolio Revision

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Yes	15	100	30	100
2.	No	0	0	0	0
	Total	15	100	30	100

Source: Field Survey.

From the responses presented in Table 4.20, it is observed that out of 15, 100 percent respondents replied that their banks revise their securities portfolio time to time. Likewise, out of 30 respondents, 100 percent respondents also replied that their Finance Companies revise portfolio time to time. In conclusion, the Commercial Banks and Finance Companies revise their securities portfolio in timely manner.

4.2.8 Reason for Selecting Government Securities

Most of the available funds for investment in securities of Commercial Banks and Finance Companies of Nepal seem to be invested in government securities. Regarding this, the respondents were asked why they choose government securities in their portfolio. The responses are presented in Table 4.21.

Table 4.21

Reason of Selecting Government Securities

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Reducing Risk	7	46.67	25	83.33
2.	No other options are available	0	0	0	0
3.	Government Policy	8	53.33	5	16.67
	Total	15	100.00	30	100.00

Source: Field Survey.

Out of 15 respondents of Commercial Banks, 46.67 percent respondents replied that they mix government securities in their portfolio for reducing risk and 53.33 percent respondents replied that government has imposed compulsion to make investment in government securities. So, due to Government Policy, they choose government securities. Likewise, out of total respondents of Finance

Companies, 83.33 percent respondents replied "Reducing Risk" and 16.67 percent respondents replied "Government Policy." However, the Government Policy is concerned with risk reduction strategies.

4.2.9 Evaluation of Portfolio Performance and the Measures Adopted

In order to identify whether Nepali Commercial Banks and Finance Companies evaluate their portfolio performance or not, the respondents were asked "Do you evaluate your portfolio performance?" The responses of the respondents are presented in Table 22.

Table 4.22

Portfolio Performance Evaluation

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Yes	10	66.67	22	73.33
2.	No	5	33.33	8	26.67
	Total	15	100.00	30	100

Source: Field Survey.

From the responses presented in Table 4.22, it is observed that 66.67 percent respondents of the Commercial Banks replied "Yes" and 33.33 percent respondent replied "No". Likewise, 73.33 percent respondents of the Finance Companies replied "Yes" and 26.67 percent of respondents replied "No". It is obvious that Commercial Banks (supported by 66.67 percent) and Finance Companies (supported by 73.33 %) evaluate their portfolio performance.

If they evaluate their portfolio performance, then they were asked which one of the three indexes viz. Sharpe, Treynor and Jensen they employ to evaluate portfolio performance. None of the respondents close any one of the indexes. Even some of the respondents expressed anonymity about the indexes listed out

by the researcher. They replied that they evaluate their portfolio performance on the basis of experience and purposive judgment.

4.2.10 Government Interference

It is ever said that the securities portfolio of the Commercial Banks and Finance Companies is largely determined by the regulatory role of the government i.e. NRB in the case of Commercial Banks and Finance Companies. In this regard, the respondents were asked whether it is true or not. The responses regarding this are presented in Table 4.23.

Table 4.23

Government Interference

S.N.	Research Variable	Commercial Banks		Finance Companies	
		Nos.	%	Nos.	%
1.	Yes	5	33.33	18	60
2.	No	10	66.67	12	40
	Total	15	100.00	30	100

Source: Field Survey.

From the Table 4.23, it is observed that out of total respondents of Commercial Banks, 33.33 percent respondents agreed on the truth that there is government interference in portfolio construction and only 66.67 percent respondents replied that there is no governmental interference in portfolio construction. Likewise, 60 percent respondents of Finance Companies agree and 40 percent respondents disagreed. In conclusion, these are the large existence of government interference in any form in the security portfolio construction of Commercial Banks and Finance Companies.

4.2.11 Difficulties in Creating Securities Portfolio

The respondents were asked about the difficulties that the Commercial Banks and Finance Companies are facing in creating investment portfolio. Most of the respondents were of the opinion that the main difficulty is the government interference. However, the specific difficulties listed by them are:

a) There are few investment alternatives as well as investment areas.

b) The NRB regulate the securities portfolios of Commercial Banks and Finance Companies. Hence, the optimal portfolio construction cannot be possible, since the government fixes the investment limitation of the companies through issuing directives time and again.

c) The process and mechanism of determining risk-free rate is unscientific.

d) There is low return from the investment and high cost of fund. Basically, the investment properties of the Banks and Finance Companies are generally determined by the board of directors rather investment managers. Hence, the investment in the securities, mainly equity participation in other companies, is the strategic investment decision.

e) There is unhealthy competition between the Commercial Banks and Finance Companies. Basically, the Commercial Banks are adopting the same strategies as adopted by their competitors.

f) Continuous decline in the return of US and Euro market is one of the significant hindrances for the portfolio management of the Commercial Banks.

g) Deposit interest rate in Nepalese Commercial Banks and Finance Companies is very low. Investment in securities in the open market is too much risky. Hence, the Commercial Banks and Finance Companies are forced to make investment in Treasury Bills to put their investment in safer side.

h) The capital market is in infant stage. There is no secondary bond market. The secondary stock market is very inefficient.

4.3   Major Findings of the Study: Under this study, the primary data and secondary data of Commercial Banks and Finance Companies are analyzed.

4.3.1 Based on Secondary Data Analysis: Under secondary data, risk and return characteristics, market risk and return, market sensitivity, systematic and unsystematic risk, price situations, portfolio analysis and portfolio performance evaluation are analyzed.

4.3.1.1 Return and Risk Characteristics:

Commercial Banks

a)   The share of EBL offered the highest average rate of return i.e. 64.25 percent. However, the highest risky stock was KBL i.e. 76.65 percent where as the share of NSBIBL offered the lowest average rate of return i.e.33.24 percent. However, the least risky stocks were BOK i.e. 40.30 percent. On the basis of average rate of return the shares of EBL seemed to be the best for investment. Considering the overall market, however, the shares of all the Commercial Banks were attractive for investment.

b)   Coefficient of variation can depict the exact position of risk per unit of return. Lower CV is preferable. It seemed that the CV of NSBIBL was the highest and of BOK was the lowest among all. So, investors retaining the stocks of NSBIBL should assume more risk than any others.

Finance Companies

a)   The stock of NSMF had the highest average rate of return i.e. 96.28 percent. However, the highest risky stocks were NSMF i.e. 183.29 percent and PF had the lowest average rate of return i.e. 12.63 percent among all. However, the least risky stocks were PF i.e. 12.73 percent.

b)   Coefficient of variation is the best measure to make investment decisions, which gives the exact situation of risk per unit of return. The

CVs of NHDF, PF, NSMF and NHMF were 1.35, 1.01, 1.90 and 1.61 respectively. Here, risk per unit of return of PF was the lowest among all. Whereas of NSMF was the highest. On the basis of CV, the common stock of PF was attractive among all.

4.3.1.2 Market Risk and Return

a) The average market return is only 30.02 percent with the standard deviation of 29.66 percent (variance of returns being 8.80 percent). The return might not be regarded as attractive with respect to its risk. Coefficient of Variation, which measures the risk per unit of return, is 0.99. It seemed that the market was less risky than the individual stocks of listed companies.

4.3.1.3 Market Sensitivity

Commercial Banks

a) From the results, covariance between the returns of NSBIBL, EBL, BOK and KBL with the overall market returns is 1.88 percent, 12.18 percent, 4.09 percent and 13.23 percent respectively. As covariance between two variables measures the absolute association between them, there is the highest absolute association between the returns of KBL and market. Among all, EBL has the second largest association, then after BOK and at last NSBIBL has the least association with market.

b) The positive correlation coefficients observed in the statistical results revealed that if the returns on shares of the entire Commercial Banks move above its mean return, the returns on market move below its average return and vice versa. The correlation coefficients of all the Commercial Banks are less than 1 which indicates that returns on

individual stocks move less than the proportionate movements of the returns on overall market.

c)   The stocks of NSBIBL and BOK appeared to be defensive stock since their beta coefficients are less than one. However, the stock of EBL and KBL has been found to be aggressive and more volatile since its beta coefficient are more than 1. On the basis of beta coefficient, the stock of EBL and KBL are more risky. However, the stocks of NSBIBL and BOK and are less risky than market. Stocks of NSBIBL are least risky among all.

Finance Companies

a)   Covariance between the returns of NSMF and market is found to be 23.31 percent which is the highest among all. Likewise, the covariance between the returns of PF and market is the lowest among all i.e. 1.26%.

b)   The returns of all the finance companies are found to be positively correlated with market returns.

c)   On the basis of beta coefficients, stock NSMF has been found aggressive. It was seen that the stocks of NHDF and PF are defensive stocks since their beta coefficients are less than 1. Hence, stocks of NSMF and NHMF are more volatile than market and stocks of NHDF and PF are less volatile.

4.3.1.4 Systematic and Unsystematic Risk

Commercial Banks

•   Comparing each other, the stocks of KBL has the highest systematic risk i.e. 19.8 percent where as the stock of NSBIBL has the least systematic

risk. On the basis of systematic risk, the stocks of the NSBIBL are more attractive than others. The stocks of KBL appear most risky.

- It seems that 58 percent variability of returns of the common stocks of EBL is systematic or caused by market factors. Likewise, 34 percent risk of KBL is the result of market factor and 11 percent and 2 percent of BOK and NSBIBL are due to market factors. These can not be reduced. The stock of KBL has the greatest unsystematic risk and EBL has the least unsystematic risk. Out of total risks of NSBIBL, EBL, BOK and NBBL, 98 percent, 42 percent, 89 percent and 66 percent are unsystematic or company specific, which can be diversified away with an optimal portfolio construction. There is the highest company specific risk of the stocks of NSBIBL i.e. 98 percent. From the unsystematic risk perspective, the management errors or company specific weaknesses of NSBIBL are the highest among all.

Finance Companies

- Total risk of NSMF is highest and PF is lowest among all. Out of the total risk, systematic risk of NSMF is the highest i.e. 36.98 percent which is 11 percent of total risk. The highest systematic risks of NSMF are due to highest correlation with market and the lowest systematic risk of PF is due to lowest correlation/covariance with market.

- Out of total risk, 85 percent of NHDF 90 percent PF, 89 percent of NSMF and 65 percent of NHMF are unsystematic or company specific risk. Hence, these can be diversified away with an optimum portfolio construction.

4.3.1.5 Price Situations

a) The stocks of Commercial Banks as well as the Finance Companies are under priced since their required rates of return are less than their average rate of return. So, the investors are required to take long

position to make profit from the common stocks of Commercial Banks as well as Finance Companies.

4.3.1.6 Portfolio Analysis

Commercial Banks

a) All the selected Commercial Banks have invested their large amount of money in government securities.

b) Average portfolios returns of NSBIBL, EBL, BOK and NBBL are 4.19 percent, 5.01 percent, 8.69 percent and 10.03 percent respectively. The portfolio return of KBL appeared highest and that of NSBIBL appeared least among all.

c) Portfolio risk (Portfolio Standard Deviation) of NSBIBL, EBL, BOK and NBBL are 1 percent, 1.91 percent, 5.98 percent and 7.48 percent respectively. With respect to portfolio standard deviation, the portfolio of KBL appeared most risky among all and the portfolio of NSBIBL appeared least risky. The two asset portfolios of all the Commercial Banks seem to be very dissatisfactory. However, the risk of the portfolios managed by the companies is less than the market risk i.e.30.02%.

Finance Companies

a) The selected finance companies are not investing their large amount in government securities. PF hasn't made any investment in government securities.

b) The return on the portfolio of NHDF, PF, NSMF and NHMF are 25.43 percent, 30.02 percent, 24.51 percent and 22.65 percent respectively with a standard deviation of 24.57 percent, 29.66 percent, 23.55 percent and 21.49 percent respectively. It seems that the portfolio returns of all

the Finance Companies are greater than the risk free rate. The portfolio return of PF is the highest among all. Regarding the portfolio risk, the portfolio risk of PF is the highest i.e. 29.66 percent among all, whereas NHMF has the lowest portfolio risk i.e.21.49 percent. Considering the return characteristics, the portfolio of PF has been found good whereas the portfolio of NHMF has been found good with respect to risk characteristics.

4.3.1.7 Portfolio Performance Evaluation

Commercial Banks

On the basis of Sharpe index of portfolio performance measure, the portfolio of all the commercial banks seemed positive. However, the portfolio of BOK seemed to be performing the best among all with $S_p = 0.9030$

Finance Companies

The portfolio of PF was the best performer among all.

4.3.2 Based on Primary Data Analysis

Ø Simple diversification, diversification across quality rating categories is only found to be adopted by the Commercial Banks and Finance Companies.

Ø Majority of the Commercial Banks base their investment decision on technical analysis while very few of them base investment decision on fundamental analysis. Likewise, majority of the Finance Companies base their investment decision on technical analysis and only few Finance Companies base their decision on fundamental analysis.

Ø Most of the Commercial Banks are not satisfied from the portfolio return while only one third commercial banks are satisfied likewise; none of the Finance Companies are satisfied from portfolio return.

Ø Most of the Commercial Banks are adopting active investment strategies while few Commercial Banks are adopting passive strategy. Similarly, most of the Finance Companies are adopting active strategy, while few Finance Companies are adopting passive strategy.

Ø The securities portfolio of Commercial Banks and Finance Companies are not systematically managed.

Ø Major objective of portfolios management of Commercial Banks and Finance Companies were liquidity and minimizing risk respectively.

Ø Commercial Banks as well as Finance Companies revise their portfolios in a timely manner.

Ø Forty-six percent commercial banks make investment in government securities in order to reduce risk and fifty-three percent banks make investment because of liquidity as directed by NRB. Likewise most of the Finance Companies select government securities to reduce risk and others select to comply with NRB. The investment executives were of the opinion that because of sufficient unavailability of other options as well, they were forced to purchase government securities more than required to reduce risk.

Ø Most of the Commercial Banks and Finance Companies evaluate their portfolio performance. They evaluate their portfolio performance on the basis of experience and purposive judgment. However, some of the respondents expressed anonymity about the performance measuring indexes i.e. shape, Trey nor and Jensen.

Ø There is government interference to determine securities in a portfolio of Commercial Banks and of Finance Companies.

CHAPTER-V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter is concerned with the Summary of the study, Conclusion and Recommendation on the basis of the study findings. Logically, this chapter is divided into three sections:

(i) Summary   (ii) Conclusion and

(iii) Recommendations.

5.1   Summary

Portfolio management is concerned with efficient management of portfolio investment in financial assets, including shares and debentures of companies. The main objectives of this study are to analyze the current status of portfolio management of listed Commercial Banks and Finance Companies in Nepal. It focuses on the market volatility of those stocks and how the Commercial Banks and Finance Companies have managed their investment in order to maximize their return and reduce risk. Capital market is a significant mechanism for the development of national economy. It reinvigorates and boosts up the economic activities by mobilizing especially domestic financial resources. It provides best investment opportunities by transferring the fund from surplus savings to need based sectors through the transaction of financial instruments. Capital market has been passing through the transaction phase with various inconsistencies and hindrances. Financial instruments are traded in securities market. Stock market has the greatest role in the development of financial system. Capital market consists of (i) Primary market and (ii) Secondary market.

Investment is made with the goal of earning some expected rate of return. Investors seek to minimize inefficient deviations from this expected rate of return. To minimize inefficient deviations, diversification is essential to the

creation of an efficient investment as it can reduce the variability of returns around the expected return.

The expected portfolio return is the simple weighted average of the expected returns from the investment represented by a portfolio.

Total portfolio risk is measured by the variance of the portfolio's rate of return distribution. The portfolio risk depends on the risk of the individual securities and the covariance between the returns of the individual securities.

Portfolio management is the challenging task for the financial institutions. The objective of portfolio management is to analyze different individual assets and delineate efficient portfolios. The investment planning of the Commercial Banks and Finance Companies in Nepal heavily depend upon the rules and regulation provided by the Central Bank, NRB.

Commercial Banks and Finance Companies are playing the crucial role for the economic growth of Nepal. In Nepal, 21 Commercial Banks and 61 Finance Companies have listed their shares in NEPSE in order to make their shares eligible for trading. This study is focused on the portfolio risk and return of the Commercial Banks and Finance Companies. It primarily focused on how the Commercial Banks and Finance Companies have managed their investment portfolio in order to maximize their return and reduce risk by diversifying their available funds.

Data of the stocks of the respective banks and finance companies traded in NEPSE within the last 8 years (2003-2011) are only considered. It analyzes portfolio risk and return of Commercial Banks and Finance Companies listed in NEPSE which are categorized into two assets only i.e. risk free and risky assets.

For the study, 4 listed Commercial Banks and 4 Finance Companies have been considered for the study based on purposive sampling method. The study is based on secondary as well as primary data.

5.2   Conclusions

The following conclusions can be drawn from the study:-

1.   Considering the overall market return and risk, the shares of all the commercial banks are attractive for investment. However, the common stocks of EBL seem attractive among all considering risk per unit of return. Investors retaining the stocks of KBL should assume more risk than any others.

2.   Considering the return and risk characteristics of the common stock of all the selected finance companies, the common stock of NSMF is more attractive than others.

3.   The overall market return cannot be regarded as attractive with respect to its risk. The risk per unit of return is very high which proves that the market is more risky than the common stocks of Commercial Banks and Finance Companies.

4.   Almost common stocks of Commercial Banks and Finance Companies move in the same directions meaning they have positive correlation.

5.   Most of the stocks seem to be defensive and only few aggressive.

6.   The systematic risk of most of the companies is high in comparison to total risk. It seems that the variability of returns of the common stocks of most of the companies is market specific. Change in economic, political and sociological environment that affect securities are sources of market risk. Systematic variability is found in nearly all securities because most securities move together in systematic manner. The SML provides a unique relationship between undiversified risk (measured by beta) and expected rate of return. Hence, if we can correctly measure the beta of a security, we can estimate its equilibrium risk-adjusted rate of return.

7   The stocks of most of the Commercial Banks as well as the Finance Companies are under priced. Since their required rates of return are less than their average rates of returns. Hence, active strategy cannot work

effectively in Nepalese market. Long position on common stock can work effectively.

8. The government securities are assumed to be risk free. In a portfolio, government securities play a significant role for reducing portfolio risk. The selected Commercial Banks have invested their large amount of funds in government securities because of risk free return and liquidity.

9 The returns from the portfolio managed by the Commercial Banks and Finance Companies cannot be taken satisfactory. The portfolio management of the select Commercial Banks as well as Finance Companies does not seem effective and the portfolio theories are not found to be applied in real life situations in Nepalese context.

10 On the basis of Sharpe index, the portfolio of all the Commercial Banks seemed positive and the portfolio of PF is the best among the Finance Companies.

11. In selecting the securities to make investment, most of the Commercial Banks adopt simple diversification and very few adopt diversification across quality rating categories. Likewise, majority of the Finance Companies adopt simple and some adopt diversification across quality rating categories.

12 Nepalese Commercial Banks as well as Finance Companies base their investment decision on technical analysis. However, fundamental analysis is also used in either form.

13. Commercial Banks as well as Finance Companies are not satisfied from their portfolio returns.

14. Commercial Banks and Finance Companies are mainly adopting active investment strategies.

15. The securities portfolio of Commercial Banks as well as Finance Companies is not scientifically managed.

16   The major objective of portfolio management of Commercial Banks is liquidity. But for finance companies, the major objective is risk reduction and liquidity.

5.3   Recommendations

On the basis of major findings of the study based on secondary and primary data analysis, the researcher thinks appropriate to recommend the concerned institutions, individuals, authorities as well as others in order to consider the following.

1.   The government should focus on developing capital market. Initiatives for bond market establishment should be commenced as soon as possible.

2.   The investment strategies adopted by Nepalese individual investors are passive they just hold the securities and wait for dividend. Hence, active strategy should be followed to gain from the transactions.

3.   Corporate investors should enter into secondary stock market to make investment. They should select securities that behave oppositely in the market to reduce risk significantly. They should be active participation of corporate investors in the secondary market.

4.   In Nepalese context, the investors do not undertake any fundamental analysis when making investment decision. There is a trend of just purchasing the stocks on the basis of rumors i.e. the stocks of Commercial Banks and Finance Companies are largely traded in the market. Hence, the investors are recommended to make stock transactions on the basis of scientific analysis.

5.   The portfolio management of commercial banks as well as finance companies is not scientific. Hence, it must be scientific based on rational investment decisions.

6. Financial statements of some of the listed companies have not been submitted to NEPSE timely. Hence, there must be stringent rules and regulations for listed companies in order to make them responsible to disseminate updated information.

7. There should be autonomous institution to fix the risk free rate. Awareness related to investment opportunities, instruments, areas, markets and so forth should be raised to the general people. The scattered savings of the people should be diverted towards the capital market with appropriate government policies.

8. The practice of creating a well-diversified portfolio cannot be found in Nepalese Commercial Banks and Finance Companies. The investment risk can be significantly reduced with a well-diversified portfolio. Hence, it is suggested to diversify their investment in different securities that behave differently i.e. with negative or low correlation for reducing poor portfolio performance.

9   The process of determining the proportions of portfolio securities should be scientific based on proper analysis rather than will of the directors.

10. In Commercial Banks as well as Finance Companies, there are no investment/finance departments separately. Either Account or Treasury department manages the securities portfolio in Nepal. In most of the companies, securities portfolio/investment portfolio has been managed by non-finance graduates. Hence, finance graduates should be given responsibility of creating well-diversified portfolios.

11. The public limited companies who have listed their shares in NEPSE should disseminate the exact and updated information to the general public. The system of manipulation should be removed. Manipulated and inconsistent information make investment analysis and decisions very difficult making the decisions wrong. Hence, the updated and exact statements should be published.

BIBLIOGRAPHY / REFERENCES

Ø Ackerman, S.B (1951). *Insurance: A Practical Guide.* New York: The Ronald Press Company. Quoted for Bhandari Dilli Raj, (2003). *Banking and Insurance;* Principle and Practice. Kathmandu; Aayush Publication.

Ø Bhalla, V.K. (2001). *Investment Management.* 8th Ed. New Delhi: S. Chand and Company Limited.

Ø Bhandari, Dilli Raj (2003). *Banking and Insurance, Principle and Practice,* Kathmandu: Aayush Publication.

Ø Cheney, John M. and Mosses, Edward A. (1995). *Fundamentals of Investments.* 10th Ed. New York: West Publishing Company.

Ø Sharpe, William F. (2002). *Investments.* 6th Ed New Delhi : Prentice Hall of India Limited.p.17

Ø Van Horne, James C. (2000). *Financial Management and policy.* 11th Ed. New Delhi: Prentice Hall of India Private Limited.

Ø Francis, Jack Clark (1980). Investment: Analysis and Management. 3rd Ed Mc Graw-Hill Book College.

Ø Edmister, Robert O. (1986). Financial Institutions: Markets and Management. 2nd Sub Edition Mc Graw- Hill College.

Ø American Association of Individual Investors. Investing Basis. <http://www.aaii.com>>.

Ø Evans, John L. and Archer, Stephen H. (1968). *"Diversification and the Reduction of Dispersion: An Empirical Analysis".* Journal of Finance, December 1968.

Ø Fisher, Lawrance and Lorie, James (1970). *"Some Studies of Variability of Returns on Investments in Common Stocks".* The Journal of Business, April.

Ø Gary, Foreman, "Your Money: All About Risk and Return."
Grewal, T.S. (1995). The Thinking Investor. New Delhi: Vision Books, 1995.

Ø Markowitz, Harry M. (1952). "Portfolio Selection." *Journal of Finance.* March.

Ø   Nepal Rastra Bank (2004). Nepal Rastra Bank Samachar Patrika, Annual Publication. No. 49, 2004, Kathmandu: NRB.

Ø   Shrestha, Shiba Raj (2055). *"Portfolio Management in Commercial Banks: Theory and Practice"*. *Nepal Bank Patrika*. Baisakh Masanta 2055, Kathmandu: Nepal Bank Limited.

Ø   US Department of State (2003). Economic Prospective March 2003, Vol. 8, No. 2, Washington D.C.: US Department of State.

Annual Reports/Publications

Ø   Nepal Stock Exchange Ltd. (2003). *Trading Report 2002/2003*. Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2004). *Trading Report 2003/2004*. Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2005). *Trading Report 2003/2004*. Kathmandu: NEPSE

Ø   Nepal Stock Exchange Ltd. (2006). *Trading Report 2003/2004*. Kathmandu: NEPSE

Ø   Nepal Stock Exchange Ltd. (2007). *Trading Report 2003/2004*. Kathmandu: NEPSE

Ø   Nepal Stock Exchange Ltd. (2008). *Annual Report 2001-2007*. Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2006). *Financial Statements of Listed Companies 2005/2006*. Vol. XII, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2007). *Financial Statement of Listed Companies 2006/2007*. Vol. XIII, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2008). *Financial Statement of Listed Companies 2006/2007*. Vol. XIV, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2009). *Financial Statement of Listed Companies 2007/2008*. Vol. XV, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2010). *Financial Statement of Listed Companies 2008/2009.* Vol. XVI, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2011). *Financial Statement of Listed Companies 2009/2010.* Vol. XVII, Kathmandu: NEPSE.

Ø   Nepal Stock Exchange Ltd. (2012). *Financial Statement of Listed Companies 2010/2011.* Vol. XIII, Kathmandu: NEPSE.

Ø   Security Board, Nepal (2007). *Annual Report 2006/2007.* Kathmandu: SEBO/N.

Ø   Security Board, Nepal (2008). *Annual Report 2007/2008.* Kathmandu: SEBO/N.

Ø   Security Board, Nepal (2009). *Annual Report 2008/2009.* Kathmandu: SEBO/N.

Ø   Security Board, Nepal (2010). *Annual Report 2009/2010.* Kathmandu: SEBO/N.

Ø   Security Board, Nepal (2011). *Annual Report 2010/2011.* Kathmandu: SEBO/N.

Ø   Basnet, Jagadish (2002). *Portfolio Management of Joint Venture Banks in Nepal.* Unpublished MBS Thesis, Shanker Dev Campus, Faculty of Management, Tribhuvan University.

Ø   Bhatta, Dipesh (2003). *Portfolio Management of Listed Finance Companies in Nepal,* Unpublished MBS Thesis, Shanker Dev Campus, Faculty of Management, Tribhuvan University.

Ø   Bhatta, Gopal Prasad (1995). *Assessment of Performance of Listed Companies in Nepal.* Unpublished MBS Thesis, Faculty of Management, Tribhuvan University.

Ø   Gurung, Srijana (2005). *Portfolio Management of Finance Companies in Nepal.* Unpublished MBS Thesis, Shanker Dev Campus, Faculty of Management, Tribhuvan University.

Ø   Joshi, Rupak (2002). *Investors' Problems in Choice of Optimum Portfolio of Stocks in Nepal Stock Exchange Ltd.* Unpublished MBS Thesis, Shanker Dev Campus, Faculty of Management, Tribhuvan University.

Ø   Paudel, Naryan Prasad (2002). *Investing in Shares of Commercial Banks in Nepal: An Assessment of Return and Risk Element.* Development Finance Department, Nepal Rastra Bank.

Ø   Ranabhat, Min Bahadur (1997). *An Analysis of Financial Performance of Finance Companies in Context of Nepal.* Unpublished MBS Thesis, Faculty of Management, Tribhuvan University.

Ø   Sapkota, J.B. (1999). *Risk and Return Analysis in Common Stock Investment.* Unpublished MBS Thesis, Faculty of Management, Tribhuvan University.

Ø   Sharma, Durga Mani (2004). *Portfolio Management of Listed Commercial Banks and Insurance Companies in Nepal.* Unpublished MBS Thesis, Shanker Dev Campus, Faculty of Management, Tribhuvan University.

Websites

Ø   www.aaii.com

Ø   www.ameritrade.com

Ø   www.dfans.com

Ø   www.investopedia.com

Ø   www.nefe.org

Ø   www.nepalstock.com

Ø   www.nrb.org.np

Ø   www.sebon.gov.np

Ø   www.corporatenepal.com.np

ANNEXES

Annex I

Research Questionnaire

Dear Sir/Madam,

     I hereby request you to fill up the attached questionnaire in order to collect the precious facts, views and opinions from your side, which will be helpful for facilitating the research for the partial fulfilment of the requirement of the M.B.S. degree. The research topic is **"Portfolio Management of Nepalese Commercial Banks and Finance Companies".** Securities portfolio has only been considered for the study purpose. The views and opinions expressed in this questionnaire will only be used for the research purpose and kept confidential.

Your kind cooperation will be helpful to complete this research successfully.

Thanking you,

Yours Sincerely,

Subin Prakash Pradhan,
Researcher, (T.U. Reg. No: 7-2-347-85-2000)
Masters of Business Studies (M.B.S.),
Campion College

Name : _____

CB/FC : _____

Designation : _____

Date : _____

-------------------------------×-------------------------------×-------------------------------
Please place (√) mark on the correct box and express your opinion where necessary.
-------------------------------×-------------------------------×-------------------------------

1. What type of diversification technique has been followed by your Bank/Finance
    Company in creating investment portfolio?
    a) Simple diversification   €
    b) Superfluous diversification   €
    c) Diversification across industries   €
    d) Simple diversification across quality rating categories   €
    e) Markowitz diversification   €

2. On what basis does your Bank/Finance Company select the securities in the
    portfolio?
    a) Fundamental analysis   €
    b) Technical analysis   €
    c) Random walk model   €
    d) Others, if any   €

3. Are you satisfied from the return of your investment portfolio?
    a) Yes   €
    b) No   €
    c) Don't know   €

4. What type of investment strategy is your Bank/Finance Company adopting?
    a) Active strategy   €
    b) Passive strategy   €

5. Investment portfolio of your Bank/Finance Company is scientifically managed.
    Do you agree?
    a) Yes   €
    b) No   €
    c) Don't know   €

6.   Please rank the following objectives of portfolio management. Assign 3 to the highest one and 1 to the lowest one as per your objective.
      Minimize risk €   Maximize return €   Liquidity   €

7.   Does your Bank/Finance Company revise the investment portfolio time to time?
      a)   Yes   €
      b)   No   €

8.   Why does your Bank/Finance Company select the government securities for investment?
      a)   Reducing Risk   €
      b)   No others options are available   €
      c)   Others   €

9.   Do your company evaluate portfolio performance, if yes, which one of the following measures you adopt?
      a)   Yes   €   Sharpe Index   €
                             Treynor Index   €
                             Jensen Index   €
      b)   No   €

10.   It is ever said that the securities portfolio of Commercial Banks/Finance Companies is largely determined by the regulatory role of the government. Do you agree?
      a)   Yes   €
      b)   No   €

11.   In your opinion, what are the difficulties that Nepalese Commercial Banks/Finance Companies are facing in creating investment portfolio?

Annex II

Year End MPS, DPS, Realized Rate of Returns and Variances of Commercial Banks

Nepal SBI Bank Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	401	-			-	9.61			
2005/06	255	8			8	11.47	-34.41%	-68.56%	47.00%
2006/07	307	-			-	14.26	20.39%	-13.76%	1.89%
2007/08	335	-			-	13.29	9.12%	-25.03%	6.26%
2008/09	612	-			-	18.27	82.69%	48.54%	23.56%
2009/10	1176	5			5	39.35	92.97%	58.82%	34.60%
2010/11	1511	-			-	28.33	28.49%	-4.72%	0.22%
						$\sum R_i$	199.25%	$\sum(R_i - \hat{e}_i)^2$	113.57%
						$\hat{e}_i$	33.21%	Var (R_i)	22.71%

Everest Bank Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	430	-				32.91			
2005/06	445	20			20	29.90	8.14%	-56.11%	31.48%
2006/07	680	20			20	45.60	57.30%	-6.95%	0.48%
2007/08	870	20			20	54.20	30.88%	-33.37%	11.14%
2008/09	1379	-	20	486	486	62.80	114.37%	50.12%	25.12%
2009/10	2430	10	30	939.6	949.6	78.40	145.08%	80.83%	65.33%
2010/11	3132	20	30	-	20	91.82	29.71%	-34.54%	11.93%
						$\sum R_i$	385.48%	$\sum(R_i - \hat{e}_i)^2$	145.48%
						$\hat{e}_i$	64.25%	Var (R_i)	29.10%

Bank of Kathmandu Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	254	10			10	2.00			
2005/06	198	5			5	17.72	-20.08%	-73.28%	53.70%
2006/07	295	10			10	27.50	54.04%	0.84%	0.70%
2007/08	430	10			10	30.10	49.15%	-4.05%	0.16 %
2008/09	850	15			10	43.67	101.16 %	47.96%	23%
2009/10	1375	18	30	70.5	723	43.50	63.88%	10.68%	1.14%
2010/11	2350	2.11	40	-	2.11	59.94	71.06%	17.86%	3.19%
						$\sum R_i$	319.21 %	$\sum(R_i - \hat{e}_i)^2$	81.2%
						$\hat{e}_i$	53.20%	Var (R_i)	16.24%

Kumari Bank Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	100	-				0.38		-53.51%	28.63%
2005/06	100	0.00			0.00	3.26	0.00%	-53.51%	28.63%
2006/07	100	0.00			0.00	9.74	0.00%	-53.51%	28.63%
2007/08	269	0.00			0.00	17.58	169.00%	115.49%	133.38%
2008/09	443	0.00			0.00	16.59	64.68%	11.17%	1.25%
2009/10	830	0.00	20	201	201	22.70	132.73%	79.22%	62.76%
2010/11	1005	0.53	10	-	0.53	16.35	21.15%	-32.36%	10.47%
						$\sum R_i$	387.56%	$\sum(R_i - \hat{e}_i)^2$	293.75%
						$\hat{e}_i$	53.51%	Var (R_i)	58.75%

Source: http://www.nepalstock.com.

Annual Realized Rate of Returns = $(P_{t+1} - P_t + Div.) / P_t$

Total Dividend = Cash Div. + Stock Dividend Ratio × Next Year MPS

Year End MPS DPS, Realized Rate of Returns and Variances of Finance Companies

Nepal Aawas Bikas Beetta Co. Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	175	14	–	–	14	–	–	–	–
2005/06	153	15	–	–	15	19.81	-4.00%	-51.97%	27.01%
2006/07	165	18	–	–	18	31.82	19.61%	-28.36%	8.04%
2007/08	185	18	–	–	18	32.67	23.03%	-24.94%	6.22%
2008/09	190	-	20	51.40	51.40	29.09	30.49%	-17.48%	3.06%
2009/10	257	12	10	71	83	23.92	41.58%	-6.39%	0.41%
2010/11	710	1.05	20	-	11.32%	21.54	176.67%	128.7%	165.64%
						$\sum R_i$	287.79%	$\sum(R_i - \hat{e}_i)^2$	210.38%
						$\hat{e}_i$	47.97%	Var (R_i)	42.08%

Paschimanchal Finance Co. Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	250	20	–	–	20				
2005/06	235	10	–	–	10	53.18	-2.00%	-14.63%	2.14%
2006/07	220	30	–	–	30	30.16	6.38%	-6.25%	0.39%
2007/08	250	20	10	25	45	28.25	34.09%	21.46%	4.61%
2008/09	250	10	15	40.95	50.95	21.32	20.38%	7.75%	0.60%
2009/10	273	-	10	29.3	29.3	31.50	9.20%	-3.43%	0.12%
2010/11	293	1.05	20	-	1.05	48.90	7.71%	-4.92%	0.24%
						$\sum R_i$	75.76%	$\sum(R_i - \hat{e}_i)^2$	8.1%
						$\hat{e}_i$	12.63%	Var (R_i)	1.62%

Nepal Share Markets and Finance Co. Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	159	-	–	–				
2005/06	125	–	–	–	-2.32	-21.38%	-117.66%	138.44%
2006/07	103	–	–	–	2.90	-17.60%	-113.88%	129.69%
2007/08	120	–	–	–	10.94	16.50%	-79.78%	63.65%
2008/09	145	10	–	10.00	22.11	29.17%	-67.11%	45.04%
2009/10	300	10.53	–	10.53	16.92	114.16%	17.88%	3.20%
2010/11	1670	0.42	8	0.42	11.23	456.81%	360.53%	1299.82%
					$\sum R_i$	577.66%	$\sum(R_i - \hat{e}_i)^2$	1679.86%
					$\hat{e}_i$	96.28%	Var (R_i)	335.97%

Nepal Housing and Merchant Finance Co. Ltd.

Year	Year End MPS (P)	Year End DPS	Stock Div.	Stock Div. Amount	Total Dividend	EPS	Return (R_i)	$R_i - \hat{e}_i$	$(R_i - \hat{e}_i)^2$
2004/05	310	15	–	–	15	22.51	-	-	-
2005/06	240	10	–	–	10	16.33	-19.35%	-69.25%	6.40%
2006/07	230	10	–	–	10	12.49	0.00%	-	-
2007/08	214	-	10	21.00	21	24.20	2.17%	-47.73%	22.78%
2008/09	210	5	10	28.00	33	15.86	13.55%	-36.35%	13.21%
2009/10	280	-	20	163.2	163.2	33.99	111.05%	61.15%	37.39%
2010/11	816	1.58	30	1.58	1.58	34.98	191.99%	142.09%	201.90%
						$\sum R_i$	299.41%	$\sum(R_i - \hat{e}_i)^2$	323.20%
						$\hat{e}_i$	49.90%	Var (R_i)	64.65%

Source: http://www.nepalstock.com.

Annual Realized Rate of Returns = $(P_{t+1} - P_t + Div.) / P_t$

Total Dividend = Cash Div. + Stock Dividend Ratio × Next Year MPS

Average Rate of Return, Variance and Standard Derivation of Market Returns

Overall Market Index

Year	NEPSE Index (NI)	R_m	$R_m - \hat{e}_m$	$(Rm - \hat{e}_m)^2$
2004/05	227.54			
2005/06	204.86	-9.97%	-39.99%	15.99–%
2006/07	222.04	8.39%	-21.63%	4.68%
2007/08	286.67	29.11%	-0.91%	0.01%
2008/09	386.83	34.94%	4.92%	0.24%
2009/10	683.95	76.81%	46.79%	21.89%
2010/11	963.36	40.85%	10.83%	1.17%
		$\sum R_m = 180.13\%$		$\sum(R_m - \hat{e}_m)^2 = 43.98\%$

$$R_m = \frac{NI_{t+1} - NI_t}{NI_t}$$

Where,

NI_{t+1} = NPESE Index at year t + 1,

NI_t = NEPSE Index at year t.

$\bar{R}_m = \dfrac{\sum R_m}{N}$ = 180.13% /6 = 30.02%

$Var(R_m) = \dfrac{\sum (R_m - \bar{R}_m)^2}{N-1}$ = 43.98% /5 = 8.80%

$\sigma_m = \sqrt{Var(R_m)}$ = $\sqrt{8.80}$ %

= 2.96% *100 = 29.66%

Commercial Banks' Index

Year	CB	R_{CB}	$R_{CB} - \hat{e}_{CB}$	$(R_{CB} - \hat{e}_{CB})^2$
2004/05	219.35			
2005/06	220.59	0.57%	-30.42%	9.25%
2006/07	231.97	5.16%	-25.83%	6.67%
2007/08	304.64	31.33%	0.34%	0.00%
2008/09	437.49	43.61%	12.62%	1.59%
2009/10	789.21	80.39%	49.4%	24.40%
2010/11	985.65	24.89%	-6.1%	37.21%
		$\sum R_{CB} = 185.95\%$		$\sum(R_{CB} - \hat{e}_{CB})^2 = 79.12\%$

$$\text{Average Rate of Return } (\hat{e}_{CB}) \quad = \frac{\sum R_{CB}}{N} \quad = 185.95/6 \quad = 30.99\%$$

$$\text{Standard Deviation } (\sigma_{CB}) \quad = \sqrt{\frac{[R_{CB} - R``_{CB}]^2}{N-1}}$$

$$= \sqrt{\frac{79.12}{6-1}}$$

$$= \sqrt{\frac{79.12}{5}} \quad = \mathbf{3.98\%}$$

Finance Companies' Index

Year	FC	R_{FC}	$R_{FC} - \hat{e}_{FC}$	$(R_{FC} - \hat{e}_{FC})^2$
2004/05	262.29			
2005/06	260.21	-0.79%	-39.18%	3.23%
2006/07	195.99	-24.68%	-63.07%	17.54%
2007/08	228.39	16.53%	-21.86%	0.005%
2008/09	261.37	14.44%	-23.95%	0.08%
2009/10	471.82	80.52%	42.13%	40.09%
2010/11	1152.74	144.32%	105.93%	
		$\sum R_{FC} = 230.34\%$		$\sum (R_{FC} - \hat{e}_{FC})^2 = 195.61\%$

$$\text{Average Rate of Return } (\hat{e}_{FC}) \quad = \frac{\sum R_{FC}}{N} \quad = 230.34/6 \quad = 38.39\%$$

$$\text{Standard Deviation } (\sigma_{FC}) \quad = \sqrt{\frac{[R_{FC} - R``_{FC}]^2}{N-1}}$$

$$= \sqrt{\frac{195.61}{6-1}}$$

$$= \sqrt{\frac{195.61}{5}}$$

$$= \mathbf{6.25\%}$$

Covariance, Correlation and Beta Coefficients of Commercial Banks
Nepal SBI Bank Ltd.

Year	R_i	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$
2005/06	-34.41%	-67.62%	-9.97%	-39.99%	27.04%
2006/07	20.39%	-12.82%	8.39%	-21.63%	2.77%
2007/08	9.12%	-24.09%	29.11%	-0.91%	0.22%
2008/09	82.69%	49.48%	34.94%	4.92%	2.43%
2009/10	92.97%	59.76%	76.81%	46.79%	28.04%
2010/11	28.49%	-4.72%	40.85%	10.83%	-51.12%
$\sum R_i$	199.25%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$	9.38%
$\hat{e}_i$	33.21%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	1.876%

Everest Bank Ltd.

Year	R_i	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$
2005/06	8.14%	-56.11%	-9.97%	-39.99%	22.44%
2006/07	57.30%	-6.95%	8.39%	-21.63%	1.50%
2007/08	30.88%	-33.37%	29.11%	-0.91%	0.30%
2008/09	114.37%	50.12%	34.94%	4.92%	2.47%
2009/10	145.08%	80.83%	76.81%	46.79%	37.93%
2010/11	29.71%	-34.54%	40.85%	10.83%	-3.74%
$\sum R_i$	385.48%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$	60.9%
$\hat{e}_i$	64.25%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	12.18%

Bank of Kathmandu Ltd.

Year	R_i	R_i-$\hat{e}_i$	R_m	R_m-$\hat{e}_m$	(R_i-$\hat{e}_i$)(R_m-$\hat{e}_m$)
2005/06	-20.08%	-73.28%	-9.97%	-39.99%	29.30%
2006/07	54.04%	0.84%	8.39%	-21.63%	-18.17%
2007/08	49.15%	-4.05%	29.11%	-0.91%	0.04%
2008/09	101.16%	47.96%	34.94%	4.92%	2.36%
2009/10	63.88%	10.68%	76.81%	46.79%	5.01%
2010/11	71.06%	17.86%	40.85%	10.83%	1.93%
$\sum R_i$	319.21%	$\sum R_m$	180.13%	$\sum (R_i$-$\hat{e}_i)$ $(R_m$-$\hat{e}_m)$	20.47%
$\hat{e}_i$	53.20%	$\hat{e}_m$	30.02%	Cov (R_i,R_m)	4.09%

Kumari Bank Limited

Year	R	R_i-$\hat{e}_i$	R_m	R_m-$\hat{e}_m$	(R_i-R_i)(R_m-$\hat{e}_m$)
2005/06	0%	-53.51%	-9.97%	-39.99%	21.40%
2006/07	0%	-53.51%	8.39%	-21.63%	11.57%
2007/08	169%	115.49%	29.11%	-0.91%	-1.05%
2008/09	64.68%	11.17%	34.94%	4.92%	0.55%
2009/10	132.73%	79.22%	76.81%	46.79%	37.17%
2010/11	21.15%	-32.36%	40.85%	10.83%	-3.50
$\sum R_i$	387.56%	$\sum R_m$	180.13%	$\sum (R_i$-$\hat{e}_i)$ $(R_m$-$\hat{e}_m)$	66.14%
$\hat{e}_i$	53.51%	$\hat{e}_m$	30.02%	Cov (R_i,R_m)	13.23%

Source: http://www.nepalstock.com

Correlation and Beta Coefficient of Selected Commercial Banks with Market Returns

	Covariance cov (R_i,R_m)	σ_i	σ_m	Cor (R_i, R_m)	Var (R_m)	Beta coefficient β
NSBIBL	1.88%	47.65%		0.13		0.21
EBL	12.18%	53.94%	29.66%	0.76	8.80%	1.38
BOK	4.09%	40.30%		0.34		0.46
KBL	13.23%	76.65%		0.58		1.50

Covariance, Correlation and Beta Coefficient of Finance Companies

Nepal Aawas Bikas Beetta Co. Ltd.

Year	R	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$
2005 /06	-4.00%	-51.97%	-9.97%	-39.99%	20.78%
2006 /07	19.61%	-28.36%	8.39%	-21.63%	6.13%
2007 /08	23.03%	-24.94%	29.11%	-0.91%	0.23%
2008 /09	30.49%	-17.48%	34.94%	4.92%	-0.86%
2009 /10	41.58%	-6.39%	76.81%	46.79%	-3.0%
2010 /11	176.67%	128.7%	40.85%	10.83%	13.94%
$\sum R_i$	287.79%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$	37.22%
$\hat{e}_i$	47.97%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	7.44%

Paschimanchal Finance Co. Ltd.

Year	R	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i) (R_m - \hat{e}_m)$
2005 /06	-2.00%	-14.63%	-9.97%	-39.99%	5.85%
2006 /07	6.38%	-6.25%	8.39%	-21.63%	1.35%
2007 /08	34.09%	21.46%	29.11%	-0.91%	-0.20%
2008 /09	20.38%	7.75%	34.94%	4.92%	0.38%
2009 /10	9.20%	-3.43%	76.81%	46.79%	-1.61%
2010 /11	7.71%	-4.92%	40.85%	10.83%	0.53%
$\sum R_i$	75.76%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)$ $(R_m - \hat{e}_m)$	6.3%
$\hat{e}_i$	12.63%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	1.26%

Nepal Share Markets and Finance Co. Ltd.

Year	R	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i)(R_m - \hat{e}_m)$
2005/06	-21.38%	-117.66%	-9.97%	-39.99%	47.05%
2006/07	-17.60%	-113.88%	8.39%	-21.63%	24.63%
2007/08	16.50%	-79.78%	29.11%	-0.91%	0.73%
2008/09	29.17%	-67.11%	34.94%	4.92%	-3.30%
2009/10	114.16%	17.88%	76.81%	46.79%	8.39%
2010/11	456.81%	360.53%	40.85%	10.83%	39.05%
$\sum R_i$	577.66%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)(R_m - \hat{e}_m)$	116.55%
$\hat{e}_i$	96.28%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	23.11%

Nepal Housing and Merchant Finance Co. Ltd.

Year	R	$R_i - \hat{e}_i$	R_m	$R_m - \hat{e}_m$	$(R_i - \hat{e}_i)(R_m - \hat{e}_m)$
2005/06	-19.05%	-69.25%	-9.97%	-39.99%	27.69%
2006/07	0.00%	-	8.39%	-21.63%	0.22%
2007/08	2.17%	-47.73%	29.11%	-0.91%	0.43%
2008/09	13.55%	-36.35%	34.94%	4.92%	-1.79%
2009/10	111.05%	61.15%	76.81%	46.79%	28.69%
2010/11	191.99%	142.09%	40.85%	10.83%	15.39%
$\sum R_i$	299.41%	$\sum R_m$	180.13%	$\sum (R_i - \hat{e}_i)(R_m - \hat{e}_m)$	70.19%
$\hat{e}_i$	49.90%	$\hat{e}_m$	30.02%	Cov (R_i, R_m)	14.04%

Source: http://www.nepalstock.com

Correlation and Beta Coefficient of Selected Finance Companies with Market Returns

	Covariance cov. (R_i, R_m)	σ_i	σ_m	Cor (R_i, R_m)	Var (R_m)	Beta coefficient $\beta)$
NHDF Co. Ltd.	7.44%	64.87%		0.39		0.85
PF Co. Ltd.	1.26%	12.73%	29.66%	0.33	8.80%	0.14
NSMF Co Ltd.	23.31%	183.29%		0.43		2.65
NHMF Co Ltd.	14.04%	80.41%		0.59		1.60

Annex VII

Required Rate of Returns of CBs and FCs

Commercial Banks
Table - 1

Commercial Banks	$\hat{e}_F$	$\hat{e}_m$	β_i**	$E(R_i)=\hat{e}_F + (\hat{e}_m - \hat{e}_F)\beta_i$
NSB IBL			**0.21**	8.90%
EBL	3.29% *	30.02% #	**1.38**	40.18%
BOK			**0.46**	15.59%
KBL			**1.50**	43.39%

Finance Companies
Table - 2

Finance Co.	$\hat{e}_F$	$\hat{e}_m$	$\beta_i^{\#\#}$	$E(R_i)=\hat{e}_F + (\hat{e}_m - \hat{e}_F)\beta_i$
NHDF			**0.85**	26.01%
PF	3.29% *	30.02% #	**0.14**	7.03%
NSMF			**2.65**	74.12%
NHMF			**1.60**	46.06%

*	Annex XIV T-1
#	Table 4.3
**	Table 4.4
##	Table 4.5

Calculation of Weights of Investments in Commercial Banks

NSBIBL

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	17.9	1189.4	1207.3
2007	17.9	1889.6	1907.5
2008	19.6	2588.1	2607.7
2009	19.0	3591	3610.8
2010	313.9	345.6	659.5
2011	53.3	3035.55	3088.85
Total	441.6	12640.05	13081.65
Weight (%)	3.38	96.62	100

EBL

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	54.6	1599.4	1654
2007	69.3	2466.4	2535.7
2008	28.7	2100.2	2128.9
2009	651.9	3548.6	4200.5
2010	279.7	4704.6	1984.3
2011	239.55	4821.60	5061.15
Total	1323.75	19240.8	20564.55
Weight (%)	6.44	93.56	100

BOK

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	305.9	1510.7	1816.1
2007	105.6	2371.8	2477.4
2008	451.6	2146.7	2598.3
2009	716.3	2658.4	3374.7
2010	660.4	2332.04	2992.4
2011	1093.60	2113.22	3206.82
Total	3328.4	13132.86	16461.26
Weight (%)	20.22	79.78	100

KBL

Year	Amount invested in shares and debenture	Amount invested in govt.Sector	Total investment
2006	187.6	235.9	423.2
2007	381.9	601.6	983.5
2008	70.3	1120.0	1190.3
2009	280.6	1114.3	1394.9
2010	380.5	1297.9	1678.4
2011	669.70	1469.10	2138.8
Total	1970.6	5838.8	7809.4
Weight (%)	25.23	74.77	100

Source: http://www.nepalstock.com

Calculation of Weights of Investments in Finance Companies

NHDF

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	39.3	15.0	54.3
2007	28.0	15.0	43.0
2008	32.6	15.0	47.6
2009	48.2	10.0	58.2
2010	97.3	5.00	102.3
2011	68.3	5.00	73.1
Total	313.5	65	378.5
Weight (%)	82.83	17.17	100

PF

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	28.03	0	28.03
2007	48.03	0	48.03
2008	45.00	0	45.00
2009	64.60	0	64.60
2010	70.63	0	70.63
2011	69.94	0	69.94
Total	326.18	0	326.18
Weight (%)	100	0	100

NSMF

Year	Amount invested in shares and debenture	Amount invested in govt. Sector	Total investment
2006	23.7	8.0	31.7
2007	24.9	2.4	27.3
2008	8.9	3.9	12.8
2009	10.5	2.1	13.6
2010	49.9	11.7	61.6
2011	52.47	16.10	68.57
Total	170.37	44.2	214.57
Weight (%)	79.40	20.60	100

NHMF

Year	Amount invested in shares and debenture	Amount invested in govt.Sector	Total investment
2006	59.9	28.6	88.5
2007	62.0	27.5	89.5
2008	55.9	27.5	83.4
2009	51.9	12.5	64.4
2010	52.1	12.5	64.6
2011	36.52	12.5	49.02
Total	318.32	121.1	439.42
Weight (%)	72.44	27.56	100

Source: http://www.nepalstock.com

Annex X

Sharpe Index of Portfolio Performance Evaluation

Commercial Banks

Commercial Banks	$\hat{e}_P$	$\hat{e}_F$	σ_P	$S_P = \hat{e}_P - \hat{e}_F \sigma_P$
NSB IBL	4.19%	3.29%	1.0%	0.9
EBL	5.01%	3.29%	1.91%	0.9005
BOK	8.69%	3.29%	5.98%	0.9030
KBL	10.03%	3.29%	7.48%	0.9011

Finance Companies

Finance Cos.	$\hat{e}_P$	$\hat{e}_F$	σ_F	$S_P = \hat{e}_P - \hat{e}_F \sigma_P$
NHDF	25.43%	3.29%	24.57%	0.9011
PF	30.02%	3.29%	29.66%	0.9012
NSMF	24.51%	3.29%	23.55%	0.9011
NHMF	22.65%	3.29%	21.49%	0.9009

Annex XI (a)

Sample Mean and Standard Deviation

Calculation of sample mean of Commercial Banks

Commercial Banks	X	X – X̄	(X -X̄)²
NSB IBL	33.21%	-17.83%	3.18%
EBL	64.25%	13.21%	1.75%
BOK	53.20%	2.16%	0.05%
KBL	53.51%	2.47%	0.06%
∑X	204.17%	∑ (X -X̄)²	-5.04%
X̄	51.04%	S D . (S)	12.96%

Calculation of sample mean of Finance Companies

Finance Companies	X	X – X̄	(X -X̄)²
NHDF	47.97%	-3.73%	0.14%
PF	12.63%	-39.07%	15.26%
NSMF	96.28%	44.58%	19.87%
NHMF	49.90%	-1.8%	0.03%
∑X	206.78%	∑ (X -X̄)²	35.3%
X̄	51.70%	S D . (S)	34.30%

Calculation of weighted average Beta and standard deviation of Commercial Banks

Commercial Banks	Beta (β)	Market capitalization (Million)	Weight (W)	W ×β	$\beta - \beta_F$)	$\beta - \beta_F$)²
NSB IBL	0.21	9788.31	0.2259	0.0474	-0.68	0.46
EBL	1.38	11838.96	0.2732	0.3770	0.49	0.24
BOK	0.46	14173.82	0.3270	0.1504	-0.43	0.18
KBL	1.50	7537.50	0.1739	0.2609	0.61	0.37
Total	3.55	43338.59	1.0000	0.8357	∑ $\beta - B_F$)²	1.25

The weighted average beta of commercial banks β cb)= wβ i = 0.8357

We have,

$$\beta = \beta I / n$$

$$= 3.55 / 4$$

$$= 0.8875$$
$$= 0.89$$

$$\text{Standard Deviation of Beta (S)} = \sqrt{\frac{1}{N-1} \sum (\beta - \beta_P)^2}$$

$$= \sqrt{1.25/4-1}$$

$$= \sqrt{1.25/3}$$

$$= \sqrt{0.4167}$$
$$= 0.6455$$
$$= 0.65$$

Hence, estimated population standard deviation = 0.6455

Calculation of weighted average Beta and standard deviation of Finance Companies

Finance Companies	Beta (β)	Market capitalization (Million)	Weight (W)	$W \times \beta$	$(\beta - \beta_P)$	$(\beta - \beta_P)^2$
NHDF	0.85	493.62	0.1291	0.1097	-0.46	0.21
PF	0.14	148.26	0.3878	0.0543	-1.17	1.37
NSMF	2.65	2672.00	0.6988	1.8518	1.34	1.80
NHMF	1.60	509.65	0.1333	0.2133	0.29	0.08
Total	5.24	3823.53	1.0000	2.2291	$\sum (\beta - B_F)^2$	3.46

The weighted average beta of Finance Companies $(\beta_{fc}) = \sum w_i b_i = 2.2291$
We have,

$$\beta = \sum \beta_i/n$$

$$= 5.24/4$$
$$= 1.31$$

$$\text{Standard Deviation of Beta (S)} = \sqrt{\frac{1}{N-1} \sum (\beta - \beta_P)^2}$$

$$= \sqrt{3.46/4-1}$$

$$= \sqrt{3.46/3}$$

$$= \sqrt{1.15}$$
$$= 1.07$$

Hence, estimated population standard deviation = 1.07

Hypothesis Testing

For Return of Commercial Banks

1. Test Statistics: Under H_0

$$t = \frac{\overline{X} - \mu}{\frac{S}{\sqrt{N}}} \qquad = \frac{51.04 - 30.99}{\frac{12.96}{\sqrt{4}}} \qquad = 20.05/6.48 = 3.09$$

Where, Sample mean return of commercial banks, $\overline{X}$ ($\hat{e}_J$) = 51.04%

Population mean return of commercial banks μ = 30.99%

Standard deviation of market portfolio (population), S = 12.96

Sample Size, N = 4

For Return of Finance Companies

2. Test Statistics: Under H_0

$$t = \frac{\overline{X} - \mu}{\frac{S}{\sqrt{N}}} \qquad = \frac{51.70 - 38.39}{\frac{34.30}{\sqrt{4}}} = 13.31/17.15 = 0.78$$

Where, Sample mean return of Finance companies, $\overline{X}$ (R_J) = 51.70%

Population mean return of Finance companies μ = 38.39%

Standard deviation of market portfolio (population), S = 34.30

Sample Size, N = 4

For Risk of Commercial Banks

3. Test Statistics: Under H_0

$$t = \frac{\overline{X} - \mu}{\frac{S}{\sqrt{N}}} \qquad = \frac{0.8357 - 1}{\frac{0.65}{\sqrt{4}}} = -0.1643/0.325 \qquad = -0.51$$

Where, Weighted Average Beta of Commercial Banks, $\overline{X}$ (β cb) = 0.8357

Estimated Population Standard Deviation, S_{cb} = 0.65

Sample Size, N = 4 $\qquad\qquad \mu$ (β_m) = 1

For Risk of Finance Companies

4. Test Statistics: Under H_0

$$t = \frac{\bar{X} - \mu}{\frac{S}{\sqrt{N}}} \qquad = \frac{2.2291 - 1}{\frac{1.07}{\sqrt{4}}} \qquad = 1.2291/0.54 = 2.28$$

Where, Weighted Average Beta of Finance Companies, $\bar{X}(\beta_{fc}) = 2.2291$

Estimated Population Standard Deviation, $S_{fc} = 1.07$

Sample Size, $N = 4$ $\qquad \mu(\beta_m) = 1$

5. Critical value of t for two-tailed test at d.f. = 3 and α = 5% is 3.182.

Annex XII

Nepal Stock Exchange Limited

S.N.	Commercial Banks	Listing Date
1.	Nabil Bank Ltd.	24/11/1985
2.	Nepal Investment Bank Ltd.	22/07/1986
3.	Standard Chartered Bank Ltd.	04/07/1988
4.	Himalayan Bank Ltd.	05/07/1993
5.	Nepal SBI Bank Ltd.	17/01/1995
6.	Nepal Bangladesh Bank Ltd.	24/12/1995
7.	Everest Bank Ltd.	07/04/1996
8.	Bank of Kathmandu Ltd.	17/07/1997
9.	Nepal Industrial & Commercial Bank Ltd.	13/06/2000
10.	Machhachapuchhre Bank Ltd.	28/05/2003
11.	Laxmi Bank Limited	20/04/2004
12.	Kumari Bank Ltd.	29/07/2004
13.	Lumbini Bank Ltd.	10/11/2004
14.	Nepal Credit & Commmerce Bank Ltd.	31/01/2005
15	Siddhartha Bank Ltd.	24/02/2006
16	DCBL Bank Ltd	13/06/2002
17	NMB Bank Ltd.	20/06/2001
18	Global Bank Ltd.	26/03/2009
19	Kist Bank Ltd.	28/12/2004
20	Bank of Asia Ltd.	25/05/2009
21	Citizen Bank International Nepal Ltd.	25/05/2009
22	Prime Commercial Bank Ltd.	12/09/2009
23	Sunrise Bank Ltd.	12/09/2009
24	Agricultural Development Bank Ltd.	10/08/2010

S.N.	Finance Companies	Listing Date
1.	Nepal Finance and Saving Co. Ltd.	02/02/1993
2.	NIDC Capital Markets Ltd.	28/06/1993
3.	National Finance Co. Ltd.	06/07/1993
4.	Nepal Share Markets Ltd.	28/10/1993
5.	Annapurna Finance Co. Ltd.	22/09/1994
6.	Kathmandu Finance Limited	13/07/1995
7.	Peoples Finance Limited	07/08/1995
8.	Union Finance Limited	27/11/1995
9.	Citizen Investment Trust	26/12/1995
10.	Nepal Aawas Bikas Beetta Co. Ltd.	01/05/1996
11.	Narayani Finance Limited	25/06/1996
12.	Yeti Finance Company Ltd.	23/01/1997

13.	Reliable Investment Bittiya Sanstha Ltd.	26/03/2009
14.	Gorkha Finance Ltd.	19/02/1997
15.	Samjhana Finance Co.Ltd.	28/03/1997
16	Universal Finance Ltd.	10/04/1997
17.	Nepal Housing & Merchant Fin. Ltd.	08/08/1997
18.	General Finance Ltd.	20/04/1998
19.	Maha Laxmi Finance Ltd.	31/08/1998
20.	Lilitpur Finance Ltd.	08/10/1998
21.	Goodwill Finance Co.Ltd.	22/12/1998
22.	Paschimanchal Finance Co.Ltd.	20/05/1999
23.	Pokhara Finance Ltd.	02/09/1999
24.	Lumbini Finance & Leasing Co.Ltd.	08/01/2001
25.	Merchant Finance Co.Ltd.	15/02/2009
26.	Siddhartha Finance Ltd.	20/06/2001
27.	Alpic Everest Finance Co.Ltd.	12/10/2001
28.	Sikhar Bittiya Sanstha Ltd.	26/03/2009
29.	United Finance Ltd.	26/11/2002
30.	International Leasing & Finance Co.Ltd	26/11/2002
31.	Shree Investment Finance Co.Ltd.	14/02/2003
32.	Central Finance Co.Ltd.	18/03/2003
33.	Nepal Shrilanka Merchant Banking & Finance Ltd.	24/04/2003
34.	Premier Finance Co.Ltd.	28/05/2003
35.	Navadurga Finance Co.Ltd.	05/08/2003
36.	Butwal Finance Ltd.	30/12/2003
37.	Janaki Finance Ltd.	30/12/2003
38.	Standard Finance Ltd.	02/03/2004
39.	Om Finance Ltd.	02/03/2004
40.	Cosmic Merchant Bank & Finance Co.Ltd.	02/05/2004
41.	Fewa Finance Co.Ltd.	17/09/2004
42.	Kaski Finance Ltd.	26/12/2008
43.	World Merchant Banking & Finance Ltd.	31/01/2005
44.	Birgunj Finance Ltd.	20/03/2005
45	Capital Merchant Banking & Finance Ltd	27/11/2005
46	Everest Finance Ltd	27/11/2005
47	Prudential Bittiya Sanstha Ltd	23/02/2006
48	Srijana Finance Ltd	26/05/2006
49	Royal Merchant Banking & Finance Ltd.	26/06/2006
50	Guheshwori Merchant Banking & Finance Ltd.	06/07/2006
51	IME Financial Institutions Ltd.	15/09/2006
52	Bhajuratna Finance & Saving Co.Ltd.	21/09/2006
53	Patan Finance Ltd.	11/05/2007
54	Imperial Fin. Institutions Ltd.	27/08/2007
55	Civil Merchant Bittiya sanstha Ltd.	18/09/2007
56	ICFC Bittiya Sanstha Ltd.	11/10/2007
57	Nepal Express Finance Ltd.	19/12/2008

58	Kuber Merchant Bittiya Sanstha Ltd.	13/05/2008
59	Prabhu Finance Ltd.	10/08/2008
60	Lord Buddha Finance Ltd.	14/12/2008
61	Sagarmatha Merchant Banking & Finance Ltd.	14/12/2008
62	Api Finance Ltd.	23/09/2009
63	Crystal Finance Ltd.	6/11/2009
64	Zenith Finance Ltd.	23/10/2010
65	Surya Darshan Finance Co. Ltd.	23/10/2010
66	Shuva Laxmi Finance Ltd.	13/10/2010
67	Swastik Merchant Finance Ltd.	25/10/2010
68	Unique Financial Institution Ltd.	11/11/2010
69	Seti Bittya Sansthan Ltd.	11/11/2010
70	Arun Finance Ltd.	10/01/2010
71	Valley Finance Ltd.	21/02/2010
72	Himalaya Finance Ltd.	21/02/2010

Table 1: NEPSE Indexes

Year	FC Index	CB Index	NEPSE Index
2004/05	262.29	219.35	227.54
2005/06	260.21	220.59	204.86
2006/07	195.99	231.97	222.04
2007/08	228.39	304.64	286.67
2008/09	261.37	437.49	386.83
2009/10	471.82	789.21	683.95
2010/11	1152.74	985.65	963.36

Source: Various NEPSE Trading and Annual Reports.

Table 2: 91 Days Treasury Bill Rates

Year	Annualized T-Bills Rates (%)
2005/06	3.48
2006/07	2.93
2007/08	2.46
2008/09	2.84
2009/10	2.42
2010/11	4.22
	Average T-Bills Rate = 3.29%

Source: Quarterly Economic Bulletin, Vol. XXXXII, NRB, Mid –-July 2011.