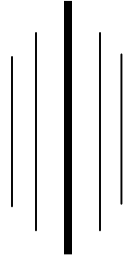
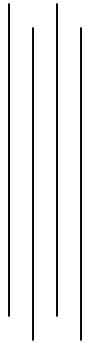


PORTFOLIO ANALYSIS OF COMMERCIAL BANKS



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A Thesis Submitted to :

Office of the Dean
Faculty of Management
Tribhuvan University

*In partial fulfillment of the requirement for the degree of Master of
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and found the thesis to be the 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

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DECLARATION

I hereby declare that the work reported in this thesis entitle "**Portfolio Analysis of Commercial Banks**" submitted to Post Graduate Campus, Biratnagar, Faculty of Management, Tribhuvan University is my original work done in the form of partial fulfillment of the requirement for Master's Degree in Business Studies under the supervision of Mr. Ram Prakash Upadhyaya.

Date :.....

Shrijana Pokhrel (Acharya)

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ABBREVIATION USED IN THIS STUDY

ADB	:	Agriculture Development Bank
AM	:	Arithmetic Mean
ATM	:	Automated Teller Machine
C.V.	:	Coefficient of Variation
CAPM	:	Capital Asser Pricing Model
CGY	:	Capital Gain Yield
CML	:	Capital Market Line
COV	:	Coefficient of Variation
D.Y.	:	Dividend Yield
DPs	:	Dividend Per Share
EBL	:	Everest Bank Limited
FY	:	Fiscal Year
GM	:	Geometric Mean
HPR	:	Holding Period Return
i.e.	:	That is
JVB	:	Joint Venture Bank
Ltd	:	Limited
MPs	:	Market Price Per Share
NABIL	:	Nepal Arab Bank Limited
NBBL	:	Nepal Bangladesh Bank Limited
NEPSE	:	Nepal Stock Exchange
NGBL	:	Nepal Grindlays Bank Limited
NIDC	:	Nepal Industrial Development Corporation
No.	:	Number
NRB	:	Nepal Rastra Bank
PNB	:	Punjab National Bank
Pvt	:	Private

RBB	:	Rastriya Banijya Bank
RRR	:	Required Rate of Return
Rs.	:	Rupees
SCT	:	Smart Choice Technology
SEBON	:	Security Exchange Board of Nepal
SML	:	Security Market Line
T-bill	:	Treasury Bill
Var	:	Variance
WWW	:	World wide web
%	:	Percentage

CHAPTER – ONE

1. INTRODUCTION

1.1. Background of the study

Economic situation is very important for each and every country for its Economic Development Possibility of overall development depends upon economic condition of the country. Economic growth facilitates the economic development in the country. Nepal is the country whose pace of economic growth is very slow and the economists of the country are making enough endeavours to accelerate economic growth.

Financial institutions play an important role in the economic growth and the development of the country. A tremendous growth is the number of financial institutions in Nepal has been witnessed in the last two decades. The history of modern banking system in Nepal began in 1937 A.D. with the establishment of Nepal Bank Limited (NBL) as the first commercial bank in Nepal. After the establishment of NRB, Nepal witnessed a systematic development of the financial system. After the adoption of liberalized economic policies during the 1980s, financial industries expanded rapidly in Nepal. Financial institutions help to mobilize resources, enhance financial saving raise productive investment and facilitate domestic and international payments. Financial institutions help to mobilize the freeze and scattered saving of the society and play an intermediary role to make investment of the collected fund in different productive sectors. They help to reduce poverty, raise employment opportunity and raise people's life standard by increasing the activities of trade and industries.

Nepal has bordered on the two most newly emerging Asian economics of the World India is the East, South, West and China in the North. Nepal has around 26 million population comprised of more than 100 caste / ethnic groups. Nepal presents gloving example of being in Socio-cultural harmony and has maintained its pride to be an independent and sovereign state. Still the people about 77% are living in rural areas. The population growth is not exceeding than 2.2%. Agriculture is the mainstay of the economy constituting 80% of employment and 38% of the GDP. The economic growth was 4.5% of

GDP is the nineties but the pace of growth slowed down to just 2.5% during the Tenth five year plan period. (2002 – 2007).¹

In almost all the developing country, like Nepal, banking is mere a simple deposit and lending centre. Only few people know the significance of bank and banking activities. This is mainly due to the large gap between the rich and the poor people. Thus, the developments of banking activities are necessary for the poor people. They must be aware of the banking activities like mobilizing people saving in productive sector, better use of money etc. People must be aware of the fact that in any plan of economic development banking plays a strategic importance for development.

The Nepalese financial sector is composed of banking and non-banking sectors. The banking sector is comprised of NRB and commercial banks. The non-banking sector consists of development banks, micro-credit development banks, finance companies, co-operative, financial institutions, non-government organizations (NGOs) performing committed banking activities, other financial institutions include insurance companies, employees provident fund, citizen investment trust, postal saving offices and Nepal stock exchange.

In Nepal, the buying and selling activities of financial securities (mainly stock) is conducted in Nepal stock exchange (NEPSE). The development of stock market in Nepal started with the establishment of commercial banks in the country besides the informal sectors, the listing of shares in the stock exchange center (SEC) and their trading in the stock market is a recent phenomena.²

Formally stock market development started only after the establishment of securities exchange center is 1984, which was later renamed as Nepal Stock Exchange (NEPSE) in 1990.

Therefore, the commercial development of the country depends upon a well equipped and proper banking system. This helps for the evaluation and analysis of their

¹ Microfinance towards empowerment of disadvantage groups in Nepal, page 1

² R.S. Pradhan, "**Stock Market behaviour in a small capital market: A case study of Nepal,**" The Nepalese Management review, 1993, vol. 9. No. 1.

working capital management. They can efficiently and effectively complete with their rivals and retain their customers and shareholders.

This study is concerned with the development of commercial banking sector with the proper management in portfolio analysis and the latest data and the information are collected and the work has been performed from the reliable sources.

1.2. History of Commercial and Joint Venture Banks in Nepal

Commercial banks are the most important banking sector which has promoted the country in the development and growth of its economy. "Commercial banks means a bank authorized to receive both demand and time deposits, to engage in trust services, to issue letter of credit, to rent time deposit boxes, and to provide similar services."³

Commercial banks are established to improve people's economic welfare and facility, provide loan to the agriculture, industry and commerce, and to offer banking services to the people and the country. "Commercial bank is the cooperation which accepts demand deposits subject to cheque and makes short term loans to business enterprises regardless of the scope of its other sources."⁴

Commercial banks are directly related with the people and institutions. Commercial banks are established, to accelerate common people's economic welfare & facility, to make available loan to the agriculture, industry & commerce and to provide the banking services to the public and the state. The salient feature of commercial banks lies, in fact not in their assets, but in their liabilities. Commercial banks are the largest and most diversified intermediaries and ranges of assets hold and liabilities issues. The operation of commercial banks records the economic pulse of the economy. The size and composition of their transactions mirror the economics happening in the country. They are as essential instrument of accelerated growth in a developing economy. By mobilizing community savings and diverting them into productive channels. Commercial banks expand the tempo and appreciate the value of aggregate economic activity in the economy. In Nepal, Commercial banking started with the establishment of Nepal Bank Limited under the Nepal Bank Act 1993 B.S, the authorized capital was contributed by the government (51%) and remaining by public (49%). Nepal Bank ltd was established in 1994 B.S. Thus, the history of

³ According to Black new dictionary.

⁴ American Institution of Banking Principal of Banking Operation, USA 1992, p – 1.

banking system came in the country through the establishment of Nepal Bank limited in 1994 B.S. the public sector tejaraath system used to function like bank. Under this system loan were given to people against adequate security of ornaments. This system also granted loans to government employees. Such loans were repayable in installment. Thus, the tejaraath system may be aptly considered as the foundation of modern banking system.

These days' commercial banks have covered the huge area of an economy of a country. After 2040 B.S. the JVBs has been established. The first JVB established was "Nepal Arab Bank Limited."⁵ (Renamed as Nabil Bank Limited since 1st January 2002) B.S. 2041.03.29 (12th July 1984) which was proved to be a milestone in the history of banking. Nabil Bank Ltd. gave a new ray of hope to the sluggish financial sector. The second JVBs "Nepal Indosuez Bank Limited"⁶ were established in 2043 B.S. after the incorporation of NIBL, a new joint venture Bank under the Name of "Nepal Grindlays Bank Limited"⁷ was established in 10th Magh 2043 B.S. It is the third JVB of Nepal." After the establishment of NGBL, More JVBs were come into existence after the initiation of government's policy of economic liberalization and privatizations in 2049 B.S." ⁸, there are Himalayan Bank Limited (2049), Nepal SBI Bank Limited (2050), Nepal Bangladesh Bank Limited (2051), Everest Bank limited (2051), Bank of Kathmandu (2052) and So on. Similarly, Nepal Credit & Commerce Bank (Previous Nepal Bank of Ceylon Ltd) (2053) (NCC Bank), Nepal Industrial & Commercial Bank Ltd. (NIC) (2055), Lumbine Bank Ltd(2055), Machhapuchhre Bank Ltd (2057), Kumari Bank Ltd (2056), Laxmi Bank Ltd (2058), Siddhartha Bank Ltd (2058).

1.3. Brief Profile on the sample of Commercial Banks taken under study

1.3.1. Nepal SBI Bank Limited (NSBL)

Nepal SBI Bank Ltd. (NSBL) is the first Indo-Nepal Joint Venture is the financial sector sponsored by three institutional promoter's namely state bank of India, Employees

⁵ Annual Report, Nepal Arab Bank Ltd.

⁶ Annual Report, Nepal Indosuez Bank Ltd.

⁷ Annual Report, Nepal Grindlays Bank Ltd.

⁸ Gorkhapatra, Nepal National Daily. Ashad 3rd , 2053 B.S.

Provident fund and Agricultural Development Bank of Nepal through a Memorandum of understanding signed on 17th July 1992. NSBL was established signed on 17th July 1992. NSBL was established on 7th July 1993 with an Authorized capital of Rs. 12 Crore and commercial operation with one full-fledged office of Durbar Marg, Kathmandu. Now, its corporate office is situated is Hattisar, Kathmandu with 18 staff members. The staff strength has science increased to 256.

The authorized and issued capital has been increased to Rs. 100 crore and Rs. 87.45 Crore, respectively. The local promoters are employees provident fund and Agricultural development Bank/Nepal. The management team and the Managing Director who is also the CEO of the Bank are deputed by SBI. SBI also provides management support as per the technical services Agreement.

Fifty percent of the bank, set up is 1993, is held by the state bank of India, 15 percent by the Employees provident fund, 5% by the Agricultural Development Bank Nepal and 30 percent by the general public.

Share Subscription of SBI is as follows:

Share Subscription	Percentage (%)
State Bank of India	50
Employees Provident Fund	15
Agricultural Development Bank	05
General Public	30
Total	100%

1.3.2. Nepal Credit and Commerce Bank Ltd. (NCC).

Nepal Credit and Commerce Bank Ltd. (NCC Bank) formally registered as Nepal Bank of Ceylon Ltd. (NBOL), commenced its operation of 14th October, 1996 as a joint venture with Bank of Ceylon, Srilanka. It was the first private sector Bank with the largest authorized capital of NRS, 1000 million. The Head Office of the Bank is located at Siddhartha Nagar, Rupandehi, the birthplace of LORD BUDDHA, while its corporate office is placed at Bagbazar, Ktm.

The name of Bank was changed to Nepal credit and Commerce Bank Ltd. (NCC Bank) on 10th September 2002 due to transfer of shares and management of the Bank from Bank of Ceylon, an undertaking of Government of Srilanka to Nepalese Promoters. At present, NCC Bank provides banking facilities and services to rural and urban areas of the Kingdom through its 17 branches. The bank has developed corresponding agency relationship with more than 150 international Banks having worldwide network.

The following is the capital Structure of (NCC)

Authorised Capital	-	Rs. 1000 million
Issued Capital	-	Rs. 1000 million
Paid up Capital	-	Rs. 700 million.

The bank is using pumoriplus, the most commonly used software by Nepalese Banks. The bank offer Any Branch Banking Services (ABBS) in branches operating in Kathmandu and Banepa. Telex and SWIFT are other modes of communication for efficient and effective transmission of information. The bank is also SCT (Smart Choice Technology) Network jointly is consortium with 12 other member Banks. This facility enables the customers to withdraw cash from any of the 26 ATM Terminals located at different parts of the country and to purchase goods from more than 250 shopping complexes and department store under POS arrangement.

NCC Bank has strategic alliance with ICICI Bank, which facilitates our customers to remit their money to more than 570 locations of India through ICICI Bank branches and their correspondent Banks is India. Our customers can effect their money transfer to India either through speed Transfer Arrangement or through Demand Draft Arrangement. Under Speed Transfer Arrangement, Money can be credited on-line to the beneficiary's amount at more than 400 branches of ICICI Bank, India. Under Demand Draft Arrangement, the Bank can issue draft payable at more than 670 locations in India. Our services across the globe include remittance, draft arrangement, import and export business, guarantee etc.

1.3.3. Nepal Industrial and Commercial Bank Ltd. (NIC)

Nepal Industrial & Commercial Bank Ltd. (NIC) commenced its operation on 21st July 1998 from Biratnagar. The Bank was promoted by some of the prominent business

houses of the country. The current shareholding pattern of the Bank constitutes of promoters holding 65% of the shares while 35% is held by general public. NIC bank is one of the most widely-held banking companies in Nepal, with over 32000 shareholders. The shares of the bank are actively traded in Nepal Stock Exchange with current market capitalization of about NPR 10,699 million.

Within 10 years of commencing business, the bank has grown rapidly with 16 branches throughout the country while 2 more are planned to be opened this year. All branches are interconnected through V-sat and are capable of providing real time on line transactions.

The Bank is the first commercial Bank in Nepal to have received ISO 9001:2000 certification for quality management system. Further more, NIC bank became the 1st bank in Nepal to be provided a line of credit by International Finance Corporation (IFC), an arm of World Bank Group under its Global Trade Finance program, enabling the Bank's letter of Credit and Guarantee to be accepted confirmed by more than 200 banks worldwide.

To add to these achievements, the bank has also been awarded the "Bank of the Year 2007-Nepal" by the World renowned financial publication of the Financial Times, U.K – The Banker. This is the fruit of the Bank's out-standing performance backed by belief and support of its customers towards the bank. The bank is run by professionals and believes in the highest standards of corporate governance.

The Board of Directors of the Bank is supported by a management team, which comprises of young, enthusiastic professionals. Its Organizational structure is designed to support its business goals.

The bank has an Authorized capital of Rs. 1600 million with paid-up capital of Rs. 944 million. The promoter group holds 65% of paid-up capital amounting to Rs. 618 million and remaining 35% amounting to Rs. 326 million by the general public. The shares are listed with Nepal Stock Exchange.

1.4. Focus of the Study

The main focus of this study is to know the required rate of return to the find risk and return behaviour of the stock and about the creation of portfolio. The creation of portfolio by which an investor can safeguard his or her investment. The study is to show how an effected portfolio can reduce the risk. People prefer less risk to more return i.e. they try to ignore risk, which is not possible.

According to this study portfolio refers to investment of funds in two or more than two securities is a way that loss occurred in one security can be covered by another securities. The relationship between the risk and return is a topic of major concerned among investor and analyst. The relationship is very critical and difficult to understand. The investor suffers more for not having the sound knowledge about the risk and return. People are more profit motivated but they do not show much concentration in risk automatically more return means more risk. In such a case, creation of portfolio helps in reducing the risk.

The basic principles of portfolio selection are that the investor tries to increase the expected return on their portfolio and to reduce the standard deviation of that return. A portfolio that gives the highest expected return for a given standard deviation or the lowest standard deviation for a given expected return is known as an efficient portfolio. To work out which portfolios are efficient an investor must be able to state the expected return and standard deviation of each stock and the degree of correlation between each pair of stocks. Investors who are restricted to hold common stock should choose efficient portfolios that suit their attitudes of risk. But investors who can also borrow and lend at the risk free rate of interest should choose the best common stock portfolio regardless of their attitudes to risk.⁹

Other theory and tools are also used to support the portfolio theory. It is believed that this study will help many investors to know how they should use their money while investing in financial securities.

1.5. Statement of the Problem:

⁹ R.A. Brealey and S.C Myers, Principles of corporate finance, (12th ed), Tata MC graw Hill publishing company, New Delhi, 2005, p. 210.

In every research, there are some problems. The research is done as the solution to the problem. Hence, we can say that problems gives rise to the necessity of research joint venture banks are operationally more efficient, having better performance while comparing with local banks, but they face many problems. The main focus of the statement of the problem is stressed towards the comparative study of portfolio management of the selected JVBs viz. SBI, NCC, and NIC. All the three mentioned JVBs have been competing in the same economic environment and financial market. Similarly, all the three banks are operationating successfully under computerized system to meet the growing competition in banking system.

1.6. Objective of the study

The primary objective of the study is to identify the existing problems of the working capital management of selected different joint venture banks. More over, following are the specific objectives of the study.

-) To analyze the investment portfolio of the selected commercial banks.
-) To know the required rate of return of a stock of the selected commercial banks.
-) To find the sentivity of the stock of the sample banks.
-) To find the risk and return behaviour of the stock and other relevant variables which are very important in making decisions to invest in the stock.
-) To compare between the sample banks risk and return and market risk and return.
-) To recommend suggestion about portfolio management to concerned authority is making their policy decision relation to risk and return behavior of common stock.
-) To analyze the significant of beta in CAPM analysis.

1.7. Need and Importance of the Study

This study is important to various group but is particular is directed to a certain groups of people and the organizations. The commercial banks are gaining a wide popularity through their efficient management and professional services and playing increment role in the development of the economy.

The study of the portfolio analysis of Nepal SBI Bank Limited, Nepal Credit and Commercial Bank Limited and Nepal Industrial and Commercial Bank Limited are beneficial to the management, to the shareholders and to the outsiders. This study will be helpful to go deeply into the various matters as to why the performance of their bank is better or worse than other joint venture banks. The management will be able to find out the loose areas and gaps, which can be corrected in near future.

For the shareholders the portfolio analysis of this bank are also important to know how these funds are utilizing and to what extent they are gaining. The study will thus, help to identify the productivity of their scarce sources.

The outsiders such as depositors, investors, stock brokers, debtors, competitors, merchant bankers, investment bankers etc are also made aware whether to deposit or not ? To finance or not?

Thus along from the above group the policy maker will also be beneficial from this study. They are officials of government security exchange board, Nepal Stock Exchange (NEPSE), Tax office.

1.8. Limitation of the Study

The limitations of the study are as follows:-

- a) The risk of the companies is measured by standard deviation of the return of the companies.
- b) The reliability of conclusion of the study is based upon the accuracy of secondary data.
- c) Only short listed companies are taken as population of study, which are listed in Nepal Stock Exchange (NEPSE).
- d) The study has been done covering the five years data as available from the website of NEPSE.
- e) Some of the data are taken on verbal information of the management of the company. The validity and confidence of the data depends on the faithful and trustworthiness.
- f) Time and resources are also the limitation of their study.
- g) The unavailability of latest data for study is in the website of NEPSE.

1.9. Organisation of the study

The study comprises five chapters: each devoted to some aspects of the study of portfolio analysis of Nepalese Joint Venture Banks namely Nepal SBI Bank, Nepal Credit and Commerce Bank Limited and Nepal Industrial and Commercial Bank Limited. Each chapter contains:

Chapter One	:	Introduction
Chapter Two	:	Review of literature
Chapter Three	:	Research Methodology
Chapter Four	:	Presentation and Analysis of data
Chapter Five	:	Summary, Findings and Recommendation

The first chapter includes the introductory part of this study as already mentioned which describes the background, brief profile on sample of commercial banks, focus of the study, statement of problem, objective of the study, significance of the study, limitation of the study and organization of the study.

The second chapter describes theoretical analysis and brief review of related and pertinent & literature available. It includes a discussion on conceptual framework and review of the major studies.

The third chapter describes the research methodology employed in this study. This describes the matter and source of data, population and sample, mode of analysis, meaning and definition of statistical tools.

The fourth chapter deals with the presentation and analysis of secondary data by using various analytical tools.

The fifth and final chapter states summary, conclusion and major findings of this study.

Finally, bibliography and appendices have also been included in the last part of the study.

CHAPTER TWO

2. REVIEW OF LITERATURE

2.1. Introduction

The second chapter attempts to review the literature on portfolio analysis. So regarding this, an attempt is being made to empire the ideas and facts from different books and journals. Also before analyzing the literature on portfolio analysis this chapter also attempts to focus on the theories of risk and return and capital asset pricing model. Literature review is basically a "stock-taking" of available literature in one's field of research¹⁰. Research is a continuous process and hence the procedures and the findings may change due to continuous research. For getting the power or ability of analysis and interpretation of date, a research must review the literature about his field of study.

2.2. Conceptual Framework (Theoretical Review)

The general concepts of the share and other related caters is important to because before getting into the core subject matter of portfolio analysis. Following subsection to this section will be employing the conceptual matters.

2.2.1 *Common Stock*

Common stock represents equity or an ownership position in a corporation. It is a residual claim in the sense that creditors and preferred stock holders must be paid as scheduled before common stockholders can receive any payments. In bank equity, common stockholders are in principle entitled to any value remaining after all other claimants have been satisfied. (However in practice courts sometimes violates this principle)

The market value of a share is the price at which it trades in the stock market. It is generally based on expectations about the performances of the company in general and the company, in particular. Ordinary shares of all companies may not be traded on stock

¹⁰ H.K. Wolf and P.R Pant, A hand book for social Science Research and Thesis Writing, Buddha Academic Enterprises, kathmandu, 2000, p-30.

markets. There fore, the market value of ordinary share of all companies may not be available.¹¹ The great advantage of the corporate form of organisation is the limited liability of its owners. Common stocks are generally "fully paid and non assessable, meaning that common stock holders may loose their initial investment, but not more. That is, if the corporation fails to meet its obligations: the stockholders cannot be forced to give the corporation the funds that are needed the pay of the obligations.

Holders of common stock have no guarantee of receiving any periodic distributions of earnings in the form of dividends, nor are they guaranteed anything the event of liquidation. Common stockholders are likely to receive nothing as a result of bankruptcy proceedings.

2.2.2. Securities

Securities are normally the shares, debentures, preferred stocks, warrant, convertibles or any other financial certificates issued by the finance companies to the general public securities are the legal representation of the right to receive prospective future benefits under stated condition. The investments environment encompasses the kinds of marketable securities that exist and where and how they are bought and sold.

These certificates are issued at a certain price one called par value and are transferable from one person to another. In simple way, we can understand securities as the promissory paper that the company gives to the investors after receiving certain rupees as loan or share. The first issue of concern is how an individual selects the specific securities to hold during the current period. Assume that our knowledge of the individual's attitudes towards risky investment is that for a given expected return the alternatives with minimum standard deviation will be preferred.¹²

The investors not only like return, they dislike risk. Their holding of an assortment of securities assets to that fact.

2.2.3. Stock Certificate

¹¹ I.M. Pandey, **Financial Management**, 7th ed., Vikas Publishing House Pvt. Ltd, new Delhi, 1997, p-905

¹² Donald E. Fisher, Ronald J. Jordan, **Security Analysis And Portfolio Management**, (5th ed), Prentice Hall of India, new Delhi, 1993, p-58.

Many stockholders have chosen to avoid these rather cumbersome procedures. Instead depository arrangements are used, which substitute computerized records for embossed certificates.¹³ The exact percentage of the ownership of shareholder depends on the number of share received is total numbers of shares.

Share of stock held by and investor may be transferred to a new owner with the assistance of either the issuing corporation or more commonly its designated transfer agent. This agent will cancel the old stock certificate and issue a new one in its place made out to the new owner. Frequently a registrar will make sure that this canceling and issuing of certificates has been done properly. Usually, banks and trust companies act as transfer agents and registrars. Many stock holders have chosen to avoid these rather cumbers once procedures.

2.13. Concept of Investment

Investment in its broadest sense, means the sacrifice of current dollars for future dollars. The Investment environment includes the kinds of marketable securities that exist and where and how they are bought and sold. The investment process is concerned with how an investor should make decisions about what marketable securities to invest in, how expensive the investments should be, and when the investments should be made.

Investment involves two different attitudes time and risk. Where these are more risk the return is also high. Risk and return are the foundation of modern financial theory. So, they have the important concepts in finance. In finance what is risk? How it is measured? How it is measured ? Is studied. So, risk and return are the part of investment decisions. When sensible investment strategies are compared with one another, risk and return tend to go together. That is, securities that have higher average returns tend to have greater accounts of risk.

¹³ Wilkam F. Shaepe, Gordon J. Alexander and Jeffus V.Baisey, Investment, Prentice Hall of India Pvt. Ltd., New Delhi, 1999, p- 502.

The meaning of Investment return is when people buy common stock, they give up current consumption in the hope of attaining increased future consumption. The total return on investment is the sum of the income and the capital gain or loss on investment.

Total return = Dividend income + Capital gain

If the stock selling price is less than the purchase price, the investor will suffer from a capital loss and vice-versa. The return from an investment is the realizable cash flow earned by its owner during a given.

2.13.1. Concept of Risk

In simple sense, risk is the chance of loss or damage, if injury. An asset having greatest chances of loss is viewed as more risky than those with lesser chances of loss. Risk can be defined as the chance of loss or in certainty of getting back both interest (return) and principal account invested. Risk is the possibility that the actual return for an investment will differ from the expected return.

In situations involving 'risk', the probabilities of various outcomes are known. But under 'uncertainty' there is no knowledge of the probability distribution of the possible outcomes. Fischer D.E and Jordan R.J describe risk as "..... is holding securities are generally associated with the possibility that realized returns will be less than the returns that were expected. The source of such disappointment is the failure of dividends (interest) and \ or the security's price to materialize as expected. They also distinguish the term risk and uncertainty". The further wrote, "Risk, suggests that a decision maker knows the possible consequences of a decision and their relative likelihood at the time he makes that decision. Uncertainty, on the other hand, involves a situation about which the likelihood of the possible outcomes is not known"¹⁴

2.13.1.1. Measurement of Risk

¹⁴ D.E.Fisher and R.J. Jordan, Security Analysis & Portfolio Management, 5th ed. Prentice Hall of India, 1993, p-98.

(a) Standard deviation Method

Standard deviation method is the most useful method of calculating risk. However these are many methods but most analysts uses this method. The standard deviation of a distribution of asset returns represents the square root of the average squared deviation of the individual outcomes from the expected value. Standard deviation is used not for calculating risk only but also to comparing risks among securities. In order to compare standard deviation with risk one must be careful, because it is an absolute measure of dispersion of outcomes in relationship to an expected value.

The main advantage of standard deviation is that the uncertainties of the return can be summarized into a single, easily calculated number. On the other hand, the main disadvantage of standard deviation is that it considers possible return above the expected value to be as risky as returns below the expected value.

Greater the standard deviation greater the risk of investment. Standard deviation measures the degree of risk of common stock. the risk or standard deviation is denoted by (σ) which is given by :

$$\text{Standard deviation } (\sigma) = \sqrt{\sum_{j=1}^n (R_j - R_j) P_j}$$

In comparisons of assets with differing expected values, the use of the standard deviation can easily be improved upon by converting the standard deviation into coefficient of variation. The coefficient of variation is generally conceptual only for data that are non-negative. The co-efficient of variation (C.V.) is a measure of relative dispersion (risk) a measure of risk per unit of expected return. The larger the c.v the larger the relative risk of investment.

The coefficient of variation (C.V.) is calculated by dividing the standard deviation by mean Mathematically.

Coefficient of variation (c.v) = $\frac{\sigma}{\mu}$ \ R

A distribution with smaller C.V. is said to be more homogeneous or uniform than the distribution with greater C.V. standard deviation is the only absolute measure of risk depending upon the units of measurement. Also,

Standard deviation = $\sqrt{\text{variance}}$

(b) Beta (β)

It is an indicator of the relationship between an individual investment return and the general market return. The beta coefficient is an index of systematic risk. Systematic risk is that risk which cannot be diversified a way.

Beta is symbolically denoted by 'B'. mathematically,

$$\text{Beta } (\beta) = \frac{\text{Cov } (j, m)}{\sigma_m^2}$$

Thus, beta is not a measure of the systematic risk of a security or a portfolio; it is more like an index of systematic risk. The beta of a portfolio is simply a weighted average of the individual stock betas is the portfolio.

Interpretation of Beta can be done as:

The beta of the market portfolio is by definition always equal to 1 and beta's value of asset generally ranges between +0.5 to 2.

$\beta = 1$: It is moderate approach. This type of investment systematic risk is same as indicated in market portfolio.

$\beta < 1$ = It is called defensive approach. This type of investment the proportion of systematic risk is lesser than that of market portfolio.

$\beta > 1$; It is called aggressive approach. This type of investment the proportion of systematic risk is greater than market portfolio.

2.13.2. *Concept of Return*

Every investor wants to have a return from an investment as much as they need. Returns that are sought by the investor during the course of their investment horizon have a very conceptual meaning.

Over the years most companies pay dividends to shareholders. If the company is profitable it generally will distribute some of its profit to shareholders. Therefore as the owner of shares of stock, the shareholders will receive some cash called dividend during the year. This cash is called the income component of shareholders return. In addition to the dividends, the other part of return is the capital gain or, if it is negative, the capital loss (negative capital gain) on the investment.

Thus return can be defined as the net proceeds after tax from given investment alternatives. Return increases the value of initial investment after deducting tax.

2.13.2.1. Classification of measurement of return

- (a) On the basis of time period of investment.
 - i. Single period measurement
 - ii. Measurement of return over several periods.
- (b) On the basis of average return
 - i. Annualized HPR (AM)
 - ii. Geometric HPR (GM)
- (c) On the basis of form of return
 - i. Required rate of return
 - ii. Expected rate of return.

(a) On the basis of time period of investment

i. Single period measurement

The single period rate of return is the basic random variable in investment analysis. This rate of return concept is important because it measures the speed at which the investor's wealth increases or decreases. They expect to collect dividends and eventually sell the stock at a profit. The rate of return (or simply the return) is calculated as follows:

Return = End of period wealth - Beginning of period return \ Beginning of period wealth

ii. Measurement of return over several periods

The rate of return of share for more than one year can be calculated. The average rate of return (ARR) is the sum of the one period of return of various period divided by number of period.

$$R = R_1 + R_2 + R_3 \dots\dots\dots R_n \ / \ n$$

(b) On the basis of average return

i. Annualized HPR :

Annualized HPR is simply an arithmetic mean of HPRs of different years.

$$\text{HPR} = \frac{\text{HPR}_1 + \text{HPR}_2 + \text{HPR}_3 \dots\dots + \text{HPR}_{n/n}}{n}$$

ii. Geometric HPR

Geometric mean can express the true average rate of return over a multi-period and can show accurately the change in the investment value. The geometric average is defined as the nth root of the product resulting from multiplying a series of returns together.

$$\text{GM} = [(1+\text{HPR}_1) (1+\text{HPR}_2) (1+\text{HPR}_3)\dots\dots\dots (1+\text{HPR}_n)]^{1/n} - 1$$

c) On the basis of form of return

i) Required Rate of Return

The minimum return that an investor expects at least not to suffer from loss is the required rate of return. Thus an investor must consider the following three components while setting the required rate of return.

- **Real risk free of return.**

This rate is determined by capital market depending upon the demand and supply of capital. It denotes the time value of money.

- **Expected inflation**

It symbolizes the future price appreciation of goods, which the investor has intended to purchase through the return of his investment after the sequestration of scheme.

- **Risk**

Risk generally denotes improbability of being paid back interest and principal amount.

ii) *Expected Rate of Return ;*

Expected rate of return is that return which an investor expects from his investment is the forth coming future. Expected rate of return is also called as ex-ante return of investment as it remains unknown to the investors. Expected rate of return depends upon the future cash receipt over investment horizon.

"The expected rate of return for any asset is the weighted average rate of return using the probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rates of return and their respective probabilities.¹⁵

¹⁵ J.C.Francis, Investment Analysis and Portfolio Management, McGraw Hill international, New York, 1992, p-11.

Expected rate of return will always be more than required rate of return (RRR). It is therefore when an investor has higher or equal expected rate of return is compare to the rate of return (RRR) then only that investment alternative is acceptable.

The expected rate of return can be calculated as:

$$E(\text{HPR}) = \dots\dots\dots$$

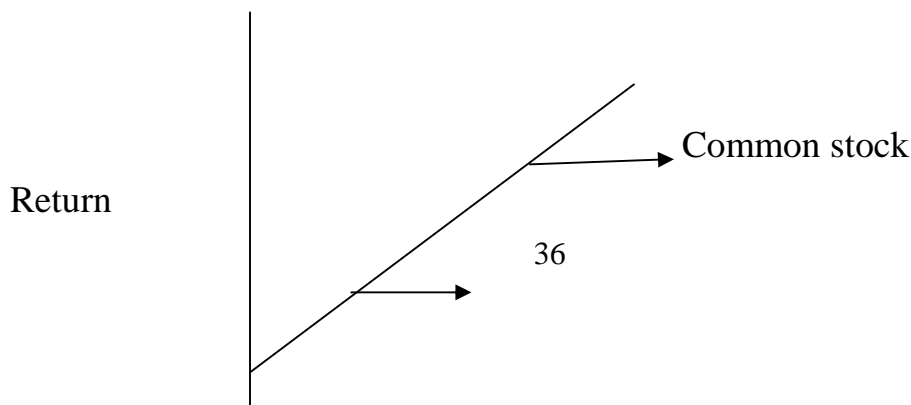
When future events are not possible to obtain for calculating the expected rate of return, is such a condition, the historical data are used to calculate the rate of return.

$$E(\text{HPR}) = \phi \text{ HPR}_s / n$$

2.13.3. *Relationship between Risk and Return*

The relationship between risk and return is one of the fundamentals topics of financial management. Investors are very much lucky if they can find the exact relationship between these two of the securities they are thinking to invest.

It is very difficult for investor to find the accurate relationship between risk and return. "Higher the risk, higher the return' is the bottom line of finance. however, it is not always true that a riskier asset will pay a higher average holding period return it is usually true. The reason is that investors are risk averse- they dislike risk and seek to avoid it. As a result, high- risk assets must offer investors high returns to induce then to make the riskier investment.



Corporate
bond

T- Bills

Risk

Figure no 1: Figure showing the relationship between risk and return.

2.14. Process of Investment

2.14.1. Set Investment Policy

Setting Investment policy, involve determining the investor's objectives and the amount of his or her invest able wealth. Investment objectives should be stated in terms of both risk and return. These are a positive relationship between risk and return for sensible investment strategies.

This steps is the investment process concludes with the identification of potential categories of financial assets to be included is the portfolio. This identification will be based on, among other things. The investment objectives, amount of investable wealth and tax status of the investor.

2.14.2. Security Analysis

Security Analysis the second step of Investment process involves examining several individual securities or groups of securities within the broad categories of financial assets previously identified. Security analysis can be classified in two approaches. Technical Analysis and fundamental analysis. Technical Analysis involves the study of stock market prices in an attempt to predict future price movements. The analyst identifies emerging trend or pattern, and predicts accurately future price movements for a particular stock. The fundamental Analysis begins with the ascertain that the true or 'intrinsic' value of any financial asset equals the present value of all cash flows the owner of the asset expects to receive. This stock analyst attempts to forecast the timing and size of these cash flow and converts the cash flow to present value using an appropriate discount rate. Finally the time

value of firm is compared with the current market price of a common stock. Stock whose estimated true value is less than their current market price are known as overvalued or overpriced stocks, whereas those whose estimated true value is greater than their current market price are known as undervalued or under priced.

2.14.3. Portfolio Construction

Portfolio literally means the act of investing the funds in two or more than two securities so that the loss of one security can be covered by the other securities. A portfolio is a bundle or combination of individual assets or securities. If the investor holds a well diversified portfolio, then this concern should be the expected return and risk of the portfolio rather than individual asset or securities. Portfolio theory suggests how a risk adverse investor can select optimal efficient portfolios.

Portfolio construction the third step of Investment process involves identifying specific assets in which to invest and determining how much to invest in each one. The issue of selectivity, timing and diversification need to be addressed by the investor. Selectivity refers to security analysis and focuses on forecasting price movements of individual securities. Timing involves forecasting price movements of common stocks in general relative to fixed income securities. Diversification involves constructing the investors portfolio in such a manner that risk is minimized, subject to certain restrictions.

2.14.4. Portfolio Revision

Portfolio revision concerns the periodic repetition of the previous three steps. An investor may change his objectives, which in turn, would make the currently held portfolio less than optimal. The investor may create a new portfolio by selling certain securities and by purchasing others. Portfolio revision will be possible if the prices of securities changed. Some securities that initially were not attractive may become attractive and others that were attractive at one time may no longer be. The investor may want to add to the unattractive one and eliminate the attractive one.

2.14.5. Portfolio Performance Evaluation

Portfolio performance Evaluation, the fifth step, involves determining periodically how the portfolio is performing in terms of the return earned and also the risk experienced by the investor. Thus, appropriate measure of return and risk as well as relevant standards are needed.

2.15. Concept of Portfolio Management Theory

A portfolio is a collection of securities. The expected return and standard deviation of a portfolio depends upon the expected return and standard deviation of each security in the portfolio.

Portfolio Theory is a defensive technique to counter the problem of investment risk. it shows how an investor can reach his optimal portfolio position.

2.15.1. Assumptions of Portfolio Theory

-) An investor makes investment (portfolio) decisions purely on the basis of risk and return of that assets or portfolio. That is, the utility function (or the indifference curve) of the investor is based on risk and return.
-) Investors are risk averse, which means they will choose the portfolio with the smaller standard direction. They prefer less risk or more return. But these are some investors who prefer risk to return. Risk averter, Risk neutrals and risk seekers are the various types of investors. "Alternatively, an individual is said to be risk averse if the utility of expected wealth is greater than the expected utility of wealth i.e. if

$$U[E(W)] > E[U(W)] \dots \dots \dots \text{risk aversion}$$

If the utility of expected wealth is equal to the expected utility of wealth then investor is said to be risk neutral, i.e.

$$U[E(W)] < E[U(W)] \dots \dots \dots \text{risk Neutrality}$$

Finally, an investor is said to be risk seeking if the utility of expected wealth is less than expected utility of wealth, i.e.

$$U[E(W)] > E[U(W)] \dots \dots \dots \text{risk seeking}^{16}$$

¹⁶ C.Peterson and C.W. Lewis, Managerial Economics Prentice Hall of India, New Delhi, 2001, p-470.

- J The risk of returns from an assets or security is the variability of returns from the average value of returns, which is the standard deviation or variance.
- J The returns from an assets or security is the expected return, that is weighted average value returns, weights being the probability distribution returns for some period.
- J Investors adhere to the principle of dominance that means investors prefer the asset which has high return for many given level of risk than the which has low risk for any given level of return that the asset which has high risk.

2.15.2. *Risk and expected return of a portfolio*

(a) **The portfolio's rate of return**

Portfolio return is simply the weighted average return of individual securities, which are combined in certain ratio is portfolio, and the weights being the proportion invested in individual securities i.e., A,B,C,D.....

Suppose we consider a single period of time, say a month. if the individual securities in the portfolio produce various rates of return, what will be the return to the portfolio as a whole ? Let us consider a portfolio of two securities and first consider the rupee return to the portfolio. We will assume we have Rs. 1000 to invest, and we put Rs. 400 of it in security A and Rs. 600 in security B. In the next month, A produces a rate (Rs. 36). What is the rupee rate of return to the portfolio? The rupee returns to the portfolio is obviously the sum of the rupees return to the two securities.

$$\text{Rs.76} = (\text{Rs. } 400 \times 0.10) + (\text{Rs } 600 \times 0.60) \quad \text{Rs. } 76 = \text{Rs } 40 + \text{Rs. } 36$$

The percentage rate of return to the portfolio is given by the rupee return divided by the mount we have invested, which in this case is Rs. 1000.

Dividing both sides of the above equation by Rs. 1000, we get.

$$7.6 \% = \text{Rs. } 76 / \text{Rs}100 = [\text{Rs. } 400 / \text{Rs. } 1000 \times 0.10] + [\text{Rs. } 600 / \text{Rs } 1000 \times 0.60]$$

The term W is the fraction of money we are investing in each security. Thus the rate of return to our portfolio, in any given period of time, is a weighted

average of the rates of return that are being produced by the securities in the portfolio, where we are weighting by the fraction of our money that we are investing in each security. These fractions are also called portfolio weights. When summed they add up to 100 percent, and they are computed as;

$$W_A = \frac{\text{Rupee amount of security A bought (sold short)}}{\text{Total equity investment in the portfolio}}$$

A portfolio weight can either be positive or negative. A positive weight means we are buying the security; we also refer to this as taking a long position in the security. The opposite of taking a long positions taking a short position or selling short. In this case the portfolio weight is negative because the narrator is negative.

Selling a short isn't quite the same as selling some security that we happen to own. "Expected rate of return to a portfolio is a simple weighted average of the expected rates of return to this security that are included in the portfolio. The weights are gained equal to the fraction of our own money that we are investing in each security."¹⁷

The general formula for the expected return of portfolio is as follows:

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

Where,

$E(R_p)$ = Expected return on portfolio.

W_{ij} = Weight or proportion of investment into assets / securities i and j.

$E(R_{ij})$ = Expected returns of individual securities or assets I and j.

n = total number of different securities in the portfolio.

To summarize, we can say that in any given period of time, the rate of return on our portfolio is a weighted average of the rates of return on the stocks in the portfolio. In taking the average, the weights are given by the fraction of our own money that we are investing in each stock.

¹⁷ R.A. Haugen, Modern Investment Theory, Prentice Hall international Inc., New Delhi, 1997, p-69-70

i) Portfolio Return - Two - asset case

In this case, the formula use will be

$$E(R_p) = \phi (W_A) E(R_A) + (1-W_A) E(R_B)$$

Where,

$E(R_p)$ = Expected return on portfolio.

W_A = Weight or proportion of investment is asset A

$E(R_A)$ = Expected return on asset A

$E(R_B)$ = Expected return on asset B

n = Total number of securities in the portfolio.

ii) Portfolio Return - N asset case.

In this case formula will be,

$$E(R_p) = \phi (W_A) E(R_A) + (W_B) E(R_B) + \dots\dots\dots W_n E(R_n)$$

Where,

$E(R_p)$ = Expected return on portfolio

W_A = Weight or proportion of investment is asset A

$E(R_A)$ = Expected return on asset A

W_B = Weight or proportion of investment is asset B.

$E(R_B)$ = Expected return on asset B

n = Total number of securities in the portfolio.

(b) Portfolio Risk

It is not easy to calculate portfolio risk. The reason of co-variability between returns of securities combined in the portfolio. Portfolio risk is not only weighted average of individual securities included in a portfolio but also its covariance.

Covariance is a statistical measure of the degree to which two variables (e.g. securities returns) move together. Positive covariance explains that, on average the two variables move together. Negative covariance suggests that, on average, the two variables move in opposite directions. Zero covariance means that the two variables show no tendency to vary together in either a positive or negative linear function. Covariance between security returns complicates our calculation of portfolio standard deviation. Still this dark cloud of mathematical complexity contains a silver lining - covariance between securities provides for the possibility of elimination some risk with reducing potential return.¹⁸

So, portfolio risk is the weighted average risk of individual securities combined in the portfolio and their co-variability. The riskiness of a portfolio, as is the case of individual assets or securities, is measured by the variance or standard deviation of the portfolio rate of return. However, the variance (or standard deviation) of a portfolio is not simply the weighted average of variances (or standard deviations) of individual securities. The association of movements of returns of two securities is affecting the portfolio variance.

If X and Y are two securities, then the covariance can be calculated as :

$$COV_{xy} = \sum_{i=1}^n \phi [R_x - E(R_x)] [R_y - E(R_y)] P_i$$

Where,

COV_{xy} = Covariance of securities X & Y

R_x, R_y = Returns of securities X and Y

P_i = Probability of occurrence of the state of economy

It can be observed from the calculation of covariance of returns of securities X & Y that it is a measure of the standard deviation of the securities and their association. Thus covariance can also be calculated as :

$$COV_{xy} = \sigma_x \sigma_y \rho_{xy}$$

¹⁸ JC Van Horne and D.M Jr. Wahowez, Fundamental of financial management, Mc Graw hill International, new York, 2000, p-96.

Where,

σ_x = Standard deviation security X

σ_y = Standard deviation security Y

ρ_{xy} = correlation coefficient of X & Y

The variance of two security portfolio is given as :

$$\text{Var}(R_p) = \sigma_p^2 = w_i^2 \sigma_i^2 + w_j^2 \sigma_j^2 + 2w_i w_j \text{COV}_{ij}$$

In the above formula of variance, there are three terms on the right hand side of the equation. The first term involves the variance of security i (σ_i^2), second term involves variance of security j (σ_j^2) and the third term involves covariance between two securities COV_{ij} . It should be noted that $\text{COV}_{x,y} = \text{COV}_{y,x}$. This is the ordering of the variables is not relevant when expressing the covariance between two securities.

The formula indicates an important point. The variances of individual securities and the covariance between the two securities. The variance of a security measures the variability of an individual security's return. Covariance measures the relationship between two securities. For given variance of the individual securities, a positive relationship or covariance between the two securities increases the variance of the entire portfolio. A negative relationship or covariance between the two securities tends to go up when the other goes down, or vice versa, our two securities age effective each other. We are achieving what we call a hedge in finance, and the risk of our entire portfolio will be low. However, if both our securities rise and fall together, we are not hedging at all. hence, the risk of our entire portfolio will be higher.

The standard deviation of the portfolio return is

$$\sigma_P = \text{S.D (portfolio)} = \sqrt{\text{var (portfolio)}}$$

Correlation coefficient, which is significant in portfolio construction, is standardized statistical measure of the linear relationship between two variables. The extent of the benefits of portfolio diversification depends on the correlation between returns of securities. The correlation coefficient will

always lie between +1.0 and -1.0. lesser the correlation higher will be the reduction portfolio of risks. These are three influences to reduce portfolio risk in relation to the standard deviation of individual securities in isolation as :

- The extent to which the correlation between the returns form the individual securities is less than 1.0.
- The number of securities in the portfolio.
- The proportions or weights of the individual securities in the portfolio in relation to their correlation among one another.

"The covariance number is unbounded. Theoretically, its range extends all the way form to plus infinity. We can bound it, however by dividing by the product of the, standard deviations from the two investment.¹⁹

The correlation P_{AB} between two random variables is defined as the covaraince divided by the product of their standard deviations.

Mathematically

$$P_{AB} = COV_{AB} / \exists A, \exists B$$

Where,

P_{AB} = Correlation coefficient between the returns on securities A and B.

COV_{AB} = Covariance of returns of securities A and B

$\exists A \exists B$ = Standard deviation of the returns for securities A and B.

A correlation coefficient of 1.00 indicates that an increase is the return for on security is always associated with a proportional increase is the return from the other security, and similarly for decrease. A correlation coefficient of - 1.00 indicates that an increase is the return from the security is always associated with proportional decrease is the return for the other security, and rice-virsa A zero coefficient indicates an absence of each security racy independently of the other.

¹⁹ R.A. Hugen, Modern Investment Theory, Prentice Hall international Inc. New Jersey, 1997, p-48-49.

2.16. The Efficient Frontier

Efficient frontier is the combination of all possible portfolios called the attainable set of investment opportunities. It is the locus of investment graphed in risk return space which has the maximums expected rate of return in their class or the minimum risk at whatever rate of return is selected.

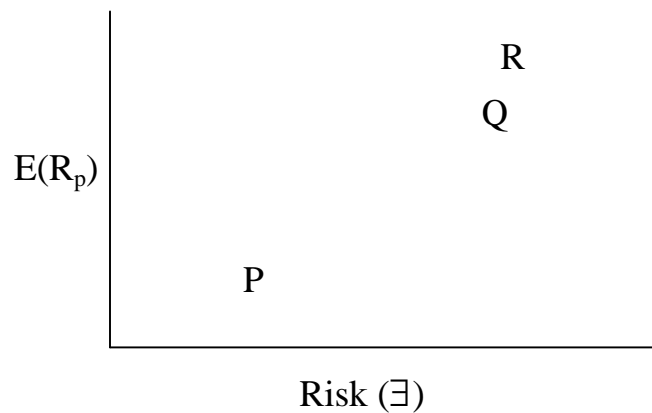


Figure no.2 : Figure Showing Efficient Frontier

The above figure illustrates about the efficient portfolio. Portfolio P has minimum risk. This portfolio has low risk and low return than portfolio Q that has high risk and high return. Portfolio R has high risk and low return as compared to portfolio Q. Thus, portfolio Q dominated portfolio R. A risk adverse investor will prefer a portfolio with the highest expected return for a given level of risk or prefer a portfolio with the lowest level of risk for a given level of expectation return. In the portfolio theory, this is referred to as the principle of dominance and the portfolio which has the highest expected returns for a given level of risk is called an efficient portfolio in above figure, the line PR is the efficient frontiers, and represents the locus of all portfolios which have the highest return for a given level of risk. All other portfolios that lie outside the efficient frontier are inefficient portfolio.

it may be observed in the above figure that both portfolios P and Q are equally efficient. Portfolio P has low risk and low return, while portfolio Q has high risk and high return. Which portfolio the investor will choose will depend on his risk-return reference.

Thus, efficient frontier is a curve in which the efficient portfolio lie. It indicates that the portfolio, which lie in the efficient frontier curve, is more efficient than portfolio which lies below the curve. Because of lack of perfectly positive correlaton the efficient frontier is concave.

2.17. Systematic & Unsystematic Risk

Systematic risk also referred to as non-diversifiable risk or unavoided risk is that type of risk which cannot be reduced by investing in portfolio. The systematic risk is not under the control of investors. All the investors are to face the systematic risk. The systematic risk arises due to external factor like state of economy, conceptions, strategy, inflation, deflation, natural clarity like earthquake, flooders.

The beta of a security measures the systematic risk. This is the risk associated with changes is the market's excess return. Since most securities have betas between the value of 0.8 and 1.2 and most investors want extensive diversification. It is difficult to reduce systematic risk by changing the composition of the risky, securities is the portfolio (by the definition the beta of market is 1.0)

A beta coefficient of unity indicates that a security has the same as want of systematic risk as the market portfolio. a, beta coefficient greater (less) than unity indicates the security is riskier (safer) than market portfolio.

Thus as systematic risk are to be borne out by the investor may cost and this is not diversifiable so the investor expects certain additional return from the investment is order to convey emergence of systematic risk and beta is the modern technique to calculate systematic risk.

Systematic risk includes market risk, interest-rate risk and purchasing power risk.

) Unsystematic (Diversifiable Risk)

Unsystematic risk is also called avoidable risk. This risk can be reduced by investing in portfolio. The risk arise due to internal and controllable factors are unsystematic risk.

In other word we can say the risk arises from the uncertainties which are unique to individual securities, and which is diversifiable if large number securities are combined to form well diversified portfolios. The unique risk of individual securities in a portfolio cancelled out each other. This part of risk can be totally reduced though diversification, and it is called unsystematic, or unique or diversified risk. The examples of unsystematic risk are -

- Workers declare strike in a company
- A formidable competitor enters the market.
- increase in tax custom duty etc.
- The company makes a break through in process innovation.
- The research & development expert of the company leaves
- the company loses a big contract in a bid.

The uncertainty surrounding the ability of the issuer to make payments on securities stems from two sources; (1) the operating environment of the business, and (2) the financing of the firm. These risks are referred to as business risk and Financial risk, respectively. They are strictly a function of the operating conditions of the firm and the way in which it chooses to finance its operations.

i) Business risk

Business risk is a function of the operating conditions faced by a firm and the variability these conditions inject into operating income and expected dividends. Business risk can be divided into two broad categories; external and internal. Internal business risk is largely associated with the efficiency with which a firm conducts its operation within the broader operating environment imposed upon it. Each firm has its own set of internal risks, and the degree to which it's successful in coping with them is reflected in operating efficiency. External business risk is the result of operating conditions imposes upon the firm by circumstances beyond its control. Each firm also faces its own set of external risks depending upon the specific operating environmental factors with which its must deals. The external factors, from

cost of money to defense budget cuts to higher tariff to a downswing in the business cycle, are far too numerous to list in detail, but the most pervasive external risk factor is probably the business cycle.

- ii) Financial risk ; Financial risk is associated with the sway in which a company finances its activities. The presence of borrowed money or debt in the capital structure creates fixed payments in the form of interest that must be sustained by the firm. The presence of these interest commitments fixed interest payments due to debt or fixed dividend payments on preferred stock causes the amount of residual earnings available for common stock dividend to more variable than if no interest payments were required. Financial risk is available risk to the extent that management has the freedom to decides to borrow or not to borrow funds. By engaging in debt financing, the firm changes the characteristics of the earning stream available to the common stock holders. Superficially, the reliance on debt financing, called financial leverage, has at least three important effects on common stock holders. Dept financing (a) increases the variability of their returns (b) affects their expectations concerning their returns and (c) increase their risk of being ruined.

2.18. Concept and Meaning of capital asset pricing model (CAPM)

Over the past few years, a great deal of theory has been developed with respect to risk-return trade offs. The most important aspect of risk is the overall risk of the firm as perceived by investors in the market place. This risk significantly affects investment opportunities and even more important, the owner's wealth. The basic theory with respect to risk and return is commonly called the capital asset pricing model (CAPM). It was developed to explain the behaviour of security prices and provide a mechanism whereby investors could assess the impact of a proposed security investment on their overall portfolio risk and return.

The capital asset pricing model (CAPM) is a major contribution to modern business finance theory and practice. The CAPM is an extension of the portfolio literature of the 1950s. The main change is that the CAPM makes use of the prices bat the market is setting

for return risk trade offs rather than uses subjective measure of attitudes toward risk (such as the risk preferences of specific investors).²⁰

The CAPM says that investors have available a market basket of risky securities and the opportunity to invest in securities with no risk of default. Risk preferences of investors deduct a combination of the market basket of the risk less securities. In equilibrium, the return of any security must be such that the investor expects to earn a basic return equal to the return on a default free security plus and adjustment that is heavily influenced by the correlation of the security's return and the market's return. If the return from the investment is positively correlated with the market return, the equilibrium return will be larger than the default free returns. If the correlation is negative, the equilibrium return will be smaller than the default-free return. We cannot prove that investors behave in a manner consistent with the CAPM, but it is likely that the model is useful representation of how investors act.

The CAPM is an attempt to provide both a theoretical understanding and a practical measure of the cross section of one period expected return rates on currently marketed portfolios of risk assets during a particular period of time. The CAPM is a "one-factor" pricing model in the sense that it postulates that only one factor—namely, the expected return rate on the market portfolio M —suffices to explain the cross section of portfolio return rates.

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 model provides the intellectual basis for a number of the current practices in the investment industry.

CAPM suggests that in equilibrium market, every security available in the market is priced and they provide risk-adjusted rate of return.

One important limitation of CAPM for corporate decision making should be kept in mind. The model assumes that the investors are widely diversified and equally important, it assumes that the managers of the firm are willing to make investment decisions with the objective of maximizing the well being of this type of investor. This means that unsystematic risk (for which the investor is well diversified) may be ignored in the evaluation of investments.

²⁰ H.Jr. Bierman and S. Smidt, *Financial Management for Decision Making*, McMillan Publishing Company, 1986, p-102.

It is well-known that objectives of firms and managers are multi-dimensional and that there will be a reluctance to ignore risk because it doesn't affect the well-diversified investor. The so-called 'unsystematic' risk is not something that is likely to be ignored by a management that includes that includes among its objectives the continuity of existence of the firm.

Investors are much more complex in their behavior and markets are less than perfect. Investment decision-making under uncertainty is not an easy task, but uncertainty is a characteristic of the world and the problem must be faced. It is important to remember that the CAPM model generally relies on historic data to estimate required (or expected) returns. The betas, which are developed by using historical data for the given asset as well as for the market, may not actually reflect the future variability of returns. Therefore the required returns specified by the model can be viewed only as rough approximations. Various financial experts have viewed CAPM in different ways. Some of them are as follows.

'Capital asset pricing model (CAPM) describes the way expected returns on different securities will relate to their risk if everyone in the economy used portfolio theory to determine his/her investment positions.'²¹

'CAPM' is an equilibrium model of the trade off between expected portfolio return and unavoidable risk.'²²

Thus, the CAPM is a major contribution to modern business finance theory and practice. It is an extension of the portfolio literature of the 1950s and early 1960s. The main change is that CAPM makes use of the prices that the market is setting for return-risk trade offs rather than use subjective measure of attitudes towards risk (Such as the risk preferences of specific investors). 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).

2.18.1. Assumptions of capital assets pricing model (CAPM)

In its purest form the capital asset pricing model is a comprehensive theory of risk and return relationship in perfect markets. It makes such assumptions, as rational behaviors on the part of all investors know risks and expected returns, no fees, commission or taxes,

²¹ R.A. Haugen, *Modern Investment Theory*, Prentice hall International inc., new jersey, 1997, p-119.

²² J.C. Van Horne, *Financial Management and Policy*, Prentice Hall of India, New Delhi, 2000, p-62.

and no risk of bankruptcy. Within the confines of these highly restrictive assumptions a risk return relationship is developed in considerable detail. In perfect market such as those assumed by the model there is no quarreling with capital asset theory. it is a conceptually correct approach to risk and return.

The CAPM model relies on a number of assumptions that create nearly perfect world. Although they appear to be unrealistic empirical studies have confirmed their reasonableness and have provided support for the existence of relationships described by CAPM. CAPM is based on a number of assumptions.

Sharpe, Alexander and Bailey have mentioned the following assumption about the CAPM.

"Assumption of the CAPM:

- J Investors evaluate portfolios by looking at the expected return and standard deviation of the portfolios over a one period horizon.
- J Individual assets are infinitely divisible, meaning that an investor can buy a fraction of a share if he or she so desires.
- J Investors are risk - averse, so when given a choice between two otherwise identical portfolios, they will choose the one with the lower standard deviation.
- J Investors are never satiated, so when given a choice between two otherwise identical portfolios, they will choose the one with the higher expected return.
- J There is a risk free rate at which an investor may either lend (that is, invest) money or borrow money.
- J Taxes and transaction cost are irrelevant

To these assumptions the following ones are added;

- J All investors have the same one-period horizon.
- J The risk free rate is the same for all investors.
- J Information is freely and instantly available to all investors.
- J Investors have homogenous expectations, meaning that they have the same perceptions in regard to the expected returns, standard deviation and covariance of securities.²³

²³ William F.Sharpe, Gordon J. Alexander, and Jeffery V.Bailey: *Investment, Prentice Hall of India Private Limited, New Delhi,2000, p-262.*

2.18.2. Use of capital asset pricing model (CAPM)

Though the assumption on which CAPM is based limits the generality of the model, it is still widely used. Bierman and Smidt²⁴ have identified the following uses of CAPM.

- i) To form portfolios of securities (the weighted average of the betas of all the securities is one relevant risk measure if the investor is imperfectly diversified)
- ii) To estimate the cost of equity capital using $r_j = r_f + (r_m - r_f) \beta_j$

These estimates are used both for public utility regulatory proceedings and determining the required return to be earned by operating division of corporations.

- iii) To evaluate securities :- if the expected return is large than $r_j = r_f + (r_m - r_f) \beta_j$

The security is a "bargain".

If a security has larger expected return than the return indicated by the CAPM all investors (with homogeneous expectations) will buy it until its expected return is lowered to be equal to $r_j = r_f + (r_m - r_f) \beta_j$

In the manner if a security I is expected to earn less than $r_j = r_f + (r_m - r_f) \beta_j$ no one will buy (some will sell it short), its price will decrease and its expected return will increase.

All securities are contained in the market portfolio in proportion to their market value. The beta of market portfolio is one (1).

2.18.3. Limitations of capital asset pricing model

- ζ It is hard to estimate the risk free rate of return on project under different economic environment.

²⁴ H.Jr Bierman and S.Smidt, Financial Management of Decision making, McMillan Publishing Company, New York, 1986, p-115.

- ζ The CAPM is really just a single period model. It is not possible to use the CAPM for projects, which last for more than one year.
- ζ The model does not appear to adequately explain the variation in stock returns. Empirical studies in the past 15 years stocks may offer higher returns.
- ζ What are market portfolios ? Does it include the bond market ? Real estate ? Commodities ? Private placements ?
- ζ The market portfolio, and hence its return, are not observable and have to be estimated, therefore the model is not testable.
- ζ The model assumes that all investors are risk averse. Some investors (e.g. some day traders) are not risk averse.
- ζ The model assumes that all investors create mean - variance optimized portfolios. There are many investors who don't know variance optimized portfolio is.
- ζ Complications in decision-making cannot be modeled easily.

2.19. Relationship between the risks of assets with its expected rate of return.

It is commonplace to argue that the expected return on a security should be positively related to its risk. That is individuals will hold a risky security only if its expected return compensates for its risk. Now we consider our world where all individuals (i) have homogeneous expectations and (ii) all individuals can borrow and lend at the risk free rate. All individuals hold the market portfolio of risky securities here.

While only the portfolios that are candidates to be held by investors are positioned on the capital market line (drawn in $E(r)$, σ space), all portfolios and individual securities. All two of equation describes relationships that should exist in equilibrium if the capital asset pricing model is correct.

The capital market line (CML) and the security market line (SML) are merely different pictures of the same market equilibrium. The CML may be used for determining the required return only for those efficient portfolios that are perfectly correlated with the

market portfolio because they fall on the CML but the SML may be used to explain the required rate of return on all securities whether or not they are efficient.

2.19.1. Capital market line

Simply, a construct that is used to portray the relationship between the risk and return in a market portfolio and the risk less rate of return thereby defining the widely held notations of the price of risk and price of immediate consumption is the capital market line. Since "price" to the buyer is the same as the "reward" to the seller, these notations can also be thought of as rewards; specifically, the reward per unit of risk borne and the reward for waiting.

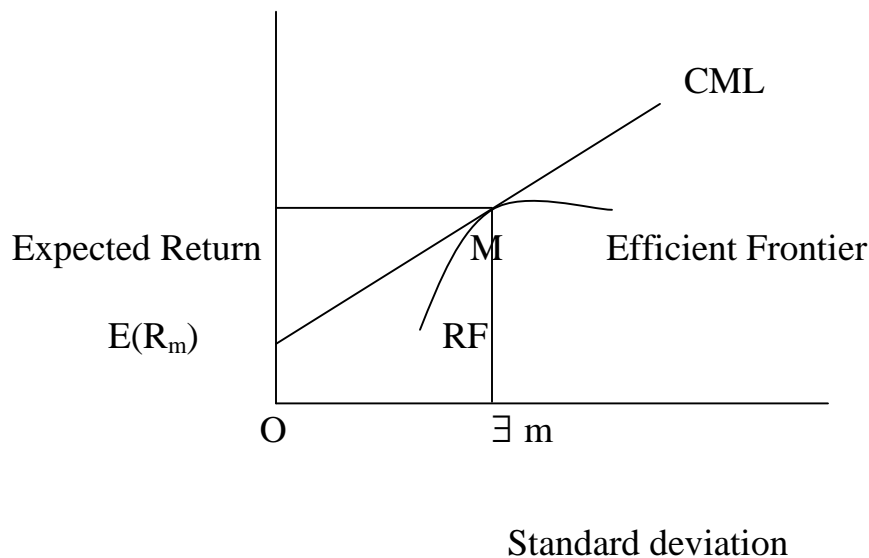


Figure No. 3 : Figure showing of CML can be presented as

$$E(R_j) = R_f + E(R_m) - R_f / \Sigma_m \times \Sigma_j$$

Where,

$E(R_m)$ = Market portfolio return

R_f = Risk free rate

Σ_m = Standard deviation of portfolio return

Here, $E(R_m) - R_f / \Sigma_m$ is the slope of CML which is represented by the \rightarrow

So the formula of CML can also be expressed as: $E(R_j) = R_f + \Sigma_j \rightarrow$

Where,

→ Slope of CML.

The CML express the current "trading terms" for risk and return for efficient combinations the combinations investors will actually hold. It reflects current expectations regarding the distributions of future outcomes from investments. Realized rates of return will generally differ from the expected values. Also there is no reason to believe that the trading terms for risk and return will remain constant overtime. Both the interest rate R_f and the price of risk 'n' reflect individual preferences and opportunities and as these changes so should R_f and → Equilibrium conditions are therefore given only at the present point in time and reflect expectations of outcomes one period from now.

Over time the equilibrium changes as new assets enter the market and old assets disappear. Instead if such asset changes occur with sufficient rapidity, equilibrium may never be achieved since adjustments are not necessarily instantaneous. The theory presented here is meant to describe the equilibrium that the system at least approach if not attains.

"The capital asset pricing model can be portrayed graphically by means of the capital market line. Theoretically, the "market" encompasses all securities in proportion to their market value; however in practice, value weighted indexes such as the NYSE or the S & P composite indexes are used as proxies for the "market". Given the assumption of an efficient capital market, the pricing of the market portfolio at any point in time, accurately reflects an equilibrium relationship between the market's consensus of risk and expected return".²⁵

2.19.2. Security market line (SML)

The SML shows that if risk increases the return should also increase proportionally. The risk affecting the return is the market risk."²⁶

²⁵ R.L. haginand L.D.Schall, *The theory of Financial Decisions*, McGraw Hill kugakusha ltd, New Delhi, 1989, P-140.

²⁶ F.J.Weston and E.F.Brigham, *Essentials of managerial Finance*, The Dryden Press, New York, 1996, p-208.

"SML is the line that shows the relationship between risk as measured by beta and the required rate of return for individual securities.

Security market line is the graphical representation of the CAPM. it shows the relationship between risk and required rate of return with the help of SML the overpriced and under priced stock can be located.

The SML shows that if risk increases the return should also increase proportionally. The SML describes that the investor cannot get the compensation for unsystematic risk, the systematic risk is only compensated representing by beta of the security. If the stocks are under priced, they lie above the SML and if they are overpriced, they lie below the SML. If the expected rate of return is more than required rate of return, the stock is called under priced and if the expected rate of return is less than the required rate of return, the stock is called overpriced.

2.20. Beta

Beta measures non- diversifiable risk. Beta shows how the price of a security responds to market forces. In effect the more responsive the price of a security is to changes in the market, the higher will be its betas. A stock's contribution to the risk of a fully diversified portfolio depends on its sensitivity to changes. This sensitivity is generally known as beta.²⁷

Risk associated with an investment outcome can be broken down into two parts. (i) the systematic part related to relationship of the security to market and (ii) the residual part related to the deviation between the expected and actual results for the non-market component of return.

We can split up the variance of return on a security or portfolio into two parts $\sigma^2(r) = \beta^2 \sigma^2(r_m) + \sigma^2(E)$

²⁷ R.A.Barely and S.C. Myers, *Principles of Corporate Finance*, Tata McGraw Hill, New Delhi, 2000, p-145

Total variance = systematic risk + residual variance

The first term i.e. $\beta^2 \sigma^2(r_m)$ of the equation is called the systematic risk of the investment. It accounts for the part of security's variance, which cannot be diversified away. This part of variance is contributed to the variance of a well diversified portfolio of many different stocks. The second term i.e. $\sigma^2(E)$ is called the residual variance or unsystematic risk. It represents the part of a security's total variance that disappears as we diversify. It is mainly because of residual variance that the variance of portfolio is less than the weighted average of the variances of the securities in the portfolio.

Rational investors hold diversified portfolios from which the diversifiable risk is more or less eliminated. Hence the relevant measure of risk of an investment is its non-diversifiable risk (or systematic risk). Do all securities have the same degree of non-diversifiable risk? All securities do not have the same degree of non-diversifiable risk because the magnitude of influence of economy wide factors tends to vary from one firm to another.

How is non-diversifiable risk measured? It is generally measured by beta, β . Though not perfect, beta represents the most widely accepted measures of the extent to which the return on a financial asset fluctuates with the return on the market portfolio. By definition, the beta for the market portfolio β_m is 1.

The beta coefficient is an index of systematic risk. Beta coefficient may be used for making the systematic risk of different assets.

... Beta Coefficient

In order to assess an asset's non-diversifiable risk its beta coefficient must be determined. The beta coefficient can be viewed as an index of the degree of responsiveness or co movement of asset return with market return. The beta coefficient for an asset can be found by examining the asset's historic returns relative to the returns for the market. The market returns should be based upon a broad index of all risky assets. Because such an index is not confidently available they are

typically measured by the average return on all (or a large sample of) assets. In international context, the standard and Poor's 5000 Stock composite indexes or some other stock index is commonly used to measure market return. The beta for the market is equal to 1; all other beta is viewed in relation to his value. Asset betas may take on values that are either positive or negative; positive betas are much more common than negative betas. The majority of betas fall between 2 and 2.

So the beta is an indicator of the relationship between n individual investment's return and the general market.

2.21. Review of related studies

The base of markowitz's portfolio theory is that higher the risk, higher the return and a well- diversified portfolio can significantly reduces the risk of portfolio. In previous section, some theoretical frameworks of portfolio management were defined. in this section, an attempt has been made to test the theoretical base of portfolio management.

it is observed that risk has two parts. One is systematic and another is unsystematic. A study about risk factor conducted by B.F. king showed that one-half of total risk was occurred due to systematic risk. in his word- 'nearly all stocks listed on the New York Stock Exchange move in the same direction as the NYSE Index. On the average, 50 percent of the variation in a stock's price can be explained by variation in the market index. In other words, about one-half the total risk is an average common stock is systematic risk. there are some empirical studies based on the theoretical beliefs of portfolio management. Modigliani and pouge (1974) took the realized rates of return and the betas of many different assets between January 1945 and June 1970. In most cases, risk-return relationships make sense.

Another statement of portfolio-diversification reduces the risk- is also tested by Wagner & Lau (1971). They divided a sample of 200 NYSE stocks into six subgroups based on S & P's quality rating as of June 1960. The result as the number of securities in the portfolio increases, the standard deviations of portfolio returns decreases but at a decreasing rate,

with further reductions in risk being relatively small after about 10 securities are included in the portfolio.

2.21.1. *Review from related proposal*

There are very few topics regarding the analysis of portfolio management in Nepal. A master degree thesis of 'Risk and return analysis of common stock investment' written by Durga hari Bhattarai is reviewed here. Which shows that there exists a positive relationship between risk and return.

Master degree thesis of 'Beta analysis of Commercial Banks in Nepal' written by Jaybendra Jha is also reviewed here which gives the core knowledge about the risk of the commercial banks through the analysis of Beta. Which shows that the Beta is the index of systematic risk and systematic risk is the risk, which cannot be eliminated?

Similarly the master degree thesis written by Dinesh Adhikari about 'portfolio management of Commercial Banks in Nepal' is also reviewed here. here fine and crucial idea is given about the portfolio management. here the thesis prepared by the Dinesh Adhikari shows that the portfolio is the act of investing the funds in different securities so that the loss occurred in one securities can be covered by other, and the portfolio comprises of two or more than two securities.

Some of his findings are:

- a. Investor should always try to minimize risk and every effort should be made to do so.
- b. Investors should select negatively correlated stock, while they create portfolio investment.
- c. To create a portfolio of stocks, it is always better to diversity a cross industries.
- d. Highly positive co-varied stock should be avoided to create a portfolio.
- e. Any investment in stock market should be done only after careful examinations of each stock's price, the trend effect of dividend, bonus share and prospectus of he company.

2.22. Review of study about Nepal stock exchange.

Since this study has a major link with stock market of Nepal, it, therefore, needs some paragraph about stock market. In this section, the background and some of studies about Nepal stock market is dealt.

The history of stock market began with the floatation of shares by Biratnagar jute mill and Nepal Bank limited in 1937, other development relating capital markets were the introduction of the company act, in 1951. The first issue of government bonds was in 1964 and the establishment of the securities marketing center in 1976, under the company act. It assisted public limited companies to raise capital through issue of shares and debentures and also provide a market place for trading securities. Although the purpose of the establishment was to assist the public limited companies, but it was only concerned with dealing the government bonds and treasury bills in the beginning phase of establishment. After the securities Exchange Act in 1983, the security marketing center was changed to securities exchange center and it opened the floor for secondary trading of shares to provide liquidity and marketability of new issued securities. His Majesty's Government under a program initiated to reform capital market and in the process securities exchange center was converted into Nepal Stock Exchange in 1993. Nepal Stock Exchange opened its trading floor in 13th January 1994 from newly appointed brokers and market makers.

People invest in stock market for return. However, those returns are subject to risk. A careful analysis requires before investing in stock market. A portfolio investment is a good investment strategy.

The NEPSE has also licensed dealer for primary and secondary market. The primary market dealer operates as a manager to the issuer and underwriter whereas the secondary market dealer operates as a portfolio manager.

Presently, the NEPSE has licensed 11 dealers for primary market and 2 dealers for secondary market.²⁸

Investment in the security market is not risk free. At the same time, such investments are also called gambling. As a matter of fact, blind speculation in the stock market is gambling

²⁸ Rabindra Bhattarai; *Theory and Practice*, (2nd ed), Buddha Academic Publishers and Distributors Private Ltd., Kathmandu, Nepal, 2005, pp-14-15.

where as informed speculation is investment. A quickly achieved peaks and values of the NEPSE index graph are the results of a speculator behavior shown by a majority of investors in process. Some have lost their capital while some others have made good profits. losing and making money are however parts of game. Everybody cannot be a winner every time. But the past of the stock market has left some clues to the future. All can make money in stocks if they can rightly decipher the clues.

CHAPTER - THREE

3. RESEARCH METHODOLOGY

3.9. Introduction

Research Methodology is the method which the researcher uses in the course of his research. This is the step, guidelines and tools used in the research. It simply means the sequential steps to be followed in studying or analyzing a problem. Research methodology describes the method used to solve the research problem. It is the guidelines followed by the researcher in order to give the result to his study. In fact, it is the outline of the research, which the researcher is going to do. So, research methodology is very important as it represents the method of entire research.

3.10. Research Design

In simple language, planning for research is a research design. It is a purposeful scheme of action proposed to be carried out in a sequence during the process of research. Research design helps researcher to enable him / her to keep track of action and to know whether she was moving in the right direction to achieve his/her goal. Research design is the plan, structure and strategy of investigation concerned so as to obtain answers to research questions and to control variances.

Research design is the plan for the collection of data and an analysis of data. It presents a series of guideposts to enable the researcher to progress in the right direction in order to achieve the goal. This research study is based on recent historic data. It covers the seven years period from fiscal year 2002/03 to 2007/08. Thus a research design is a plan for the collection and analysis of data. Research design is the main part of a thesis or any research work. This study tries to evaluate the portfolio analysis of the selected banks. To accomplish the objectives it has adopted the descriptive cum analytical type of research design. It tries to describe and analyze all these facts that have been collected for the purpose of the study. Some analytical and accounting tools have also been applied to examine the facts and descriptive techniques have been adapted to evaluate the structure of selected nature of operations.

3.11. Population and Samples

This study is concerned with the portfolio analysis of commercial banks in Nepal. So, the population of study is all the listed commercial banks. But, the study of all commercial banks is not possible. As a result a sub-group of the population is selected, which is called sample and samples in this study are the common stocks and dividend of three commercial banks. The following commercial banks are samples for this study:

Nepal SBI Bank Limited (NSBL)

Nepal Credit & Commercial Bank Limited (NCC)

Nepal Industrial and Commercial Bank Limited (NICBL)

3.12. Sources of Data

Data can be obtained from two sources i.e. either from primary source or secondary source. The data, which are used for the first time for the purpose of research work, is known as primary data. These types of data are original in nature. Similarly, the data already in was or processed for statistical work is known as secondary data.

This study on portfolio analysis of commercial banks is based on secondary data (NEPSE, Bulletin of Nepal Rastra Bank and SEBON).

3.13. Data Collection Techniques

This research study is based on secondary data. So, for the purpose of the study, data are collected from the website of NEPSE (WWW.Nepal Stock. Com). In this website the financial statements of different listed commercial banks are placed and as per the data are collected for study.

3.14. Data Analysis Tools

After the collection of research data an analysis of the data is to be done. The data can be analyzed using statistical and financial tools. This study is being analyzed using both statistical and financial tools.

3.14.1. *Statistical tools*

3.14.1.1. Arithmetic Mean

Arithmetic mean also called 'the mean' or 'average' or 'arithmetic average' is the ratio of the sum of all observations to the number of observations. If X_1, X_2, \dots, X_n denotes 'n' variety values of the random variable X_1 , then the arithmetic mean denoted by

$$\begin{aligned} X &= X_1 + X_2 + \dots + X_n / n \\ &= EX / n \end{aligned}$$

Where,

E_x = Sum of Observation

n = number of observation

3.14.1.2. Weighted Arithmetic Mean;

Simple average method assumes that all the items under consideration are of equal importance in the distribution. But in many cases, the relative importance of the items in the distribution is not same. In such a situation the relative importance are considered as weights of the variable and weighted average is to be completed.

Mathematically,

If X_1, X_2, \dots, X_n denotes the variables with corresponding weights W_1, W_2, \dots, W_n respectively ('W' may denote the percentage of weighted form) then the weighted arithmetic mean is given by,

$$X_w = w_1 X_1 + W_2 X_2 + \dots + W_n X_n$$

$$W_1 + W_2 + \dots + W_n$$

$$= \phi W_x / \phi w$$

3.14.1.3. Standard Deviation

Karl person first introduce the concept of standard deviation in 1983. Standard deviation is the positive square root of the arithmetic average of the squares of all the deviations measured from the arithmetic average of the series. The square of standard deviation is called variance. The standard deviation measures the absolute dispersion of a distribution. The greater the amount of dispersion the greater the standard deviation, i.e. greater will be the magnitude of the deviations of the values from their mean. A small standard deviation means a high degree of uniformity of the observation as well as homogeneity of a series. If X_1, X_2, \dots, X_n denotes a set of 'n' observation then its standard deviation is given by

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

Where, σ = Standard deviation

X = Observation set

\bar{x} = Arithmetic Mean

n = No. of Observation

3.14.1.4. *Coefficient of Variance (c.v.)*

The coefficient of variation measures the risk per unit return. It is the ratio of standard deviation of returns to the mean of that distribution. It is a measure of relative risk.

$$\text{Symbolically, Coefficient of variation (c.v)} = \sigma / \bar{x}$$

Where,

σ = Standard deviation,

\bar{x} = Mean

3.14.1.5. Correlation

The correlation analysis is the techniques used to measure the closeness of the relationship between the variables. If two quantities vary in a related manners so that

a movement an increase or decrease is one tend to be accompanied by a movement in the same or opposite direction is the other, they are called correlated. If the relationship is inverse they are called negatively correlated. If any change in one does not affect the other variable they are called uncorrelated.

Symbolically,

$$r = \text{COV}(x,y) / \sigma_x \sigma_y$$

Where,

Cov (x,y) = covariance between 'x' and 'y' variables.

σ_x = Standard deviation of Variable 'x'

σ_y = Standard deviation of variable 'y'

r = Correlation

3.14.2. Financial tools

3.14.2.1. Return on Common Stock (R)

Return simply is the income received on an investment plus any change in market price, usually expressed as percentage of the beginning market price of investment.

Symbolically,

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

Where,

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

D_t = cash dividend received at time t

P_t = price of stock at time t.

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

3.14.2.2. Expected Return on common stocks I

One of the main aims of this study is to determine the expected return on the investment in common stock. Generally this is obtained by arithmetic mean of the one – years return.

Symbolically,

$$R_j = \frac{1}{n} \sum R_{j/n}$$

Where,

R_j = Expected rate or return on stock j.

n = number of years that the return are taken.

3.14.2.3. Beta (B)

It is a modern technique to measure systematic risk of an investment or is an index of systematic risk. It measures the sensitivity of a stock; return on the market portfolio.

Symbolically,

$$B_j = \text{Cov}(R_j, R_m) / \sigma^2_m$$

Where,

B_j = Beta coefficient of stock j.

$\text{Cov}(R_j, R_m)$ = Covariance between R_j and R_m

σ^2_m = Variance of market return.

Systematic risk and unsystematic risk

Total Risk (r^2) = Systematic risk ($B^2 \sigma^2_m$) + unsystematic risk (σ^2_c)

Systematic Risk = ($\rho^2 \sigma^2_m$)

Standard Error = $\overline{r_a r(e)} = \overline{\sigma^2_e}$

Coefficient of Determination or proportion of systematic risk (r^2) and proportion of unsystematic risk ($1-r^2$)

Proportion of systematic risk (r^2) = Systematic Risk / Total Risk

$$= (\rho^2 \sigma^2_m) / \sigma^2$$

Correlation with market = $r = \sqrt{r^2}$

Proportion of unsystematic risk = ($1-r^2$)

3.15. Method of analysis and presentation

Results are presented in tabular form and clear interpretation on it is given simultaneously. Detail calculation are presented in appendices at the end of report. To make report simple and easily understandable charts, diagrams and graphs have been used. Summary, Conclusion & recommendations are presented finally.

3.16. Chapter Plan / Scheme

The study is divided into five chapters;

Chapter I : Introduction includes background of study, focus of study, statement of problem, objective of study, need and importance and importance of study, limitation and organization of study.

Chapter II : Review of literature includes review of various books, journals and review of related studies.

Chapter III : Research methodology includes the research design, data collection procedures, tools for analysis, methods of analysis and presentation.

Chapter IV : Data presentation, interpretation and analysis includes the analysis of risk and return of the common stock of selected Joint Venture Banks, comparison of sample banks with market in terms of risk and return beta and portfolio analysis.

Chapter V: Summary, Conclusion & recommendation are presented in this chapter.

CHAPTER – FOUR

4. DATA PRESENTATION AND ANALYSIS

4.10. Introduction

Presentation and analysis of data is major part of this research study. The purpose of the study is to analyze the risk and return of market of selected banks, and to show the effect of diversification among the sample banks. It also attempts to calculate the beta and required rate of return using CAPM from selected samples. After collecting the necessary data this section of study attempts to analyze, interpret and present the data so that some conclusion can be drawn for the objective of this study.

This chapter deals with data presentation, analysis and interpretation following the research methodology presented in the third chapter. In order to meet the objective, required data are collected and processed to arrive at concrete conclusion. Thus in this course of analysis, data gathered from various sources have been presented in the tabular form. By using financial and statistical tools the data have been analyzed. The results of the computation have also been summarized in appropriate tables.

4.11. Analysis of Market Risk-Return and Risk Free Rate of Return

Nepal a developing economy condition , has only one small size and immature stock market, which is yet to cross its length year of operation. It regularly publishes the level and movement of index of stock market. Market Risk and return can be known from the index of stock market.

The table, which is presented below, shows the yearly movement of index from the beginning of its establishment to the period of this study. The indices of NEPSE index are taken at the end of fiscal year of the 31st ashad or 17th July is presented in the table and is also presented in the graph below:

Table no.1:

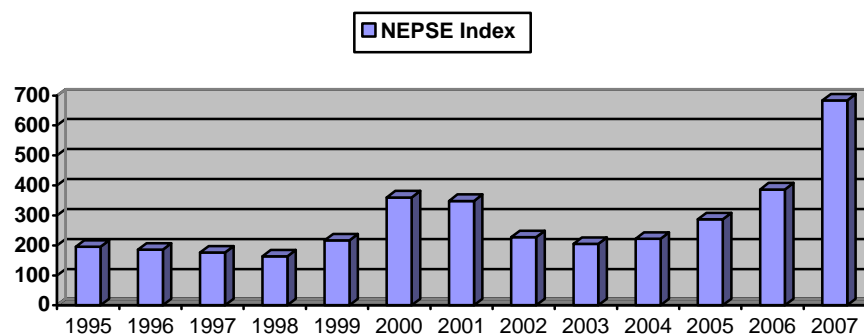
Table showing the NEPSE Index

Year	NEPSE Index
------	-------------

July 1995	195.5
July 1996	185.6
July 1997	176.3
July 1998	163.4
July 1999	216.9
July 2000	360.1
July 2001	348.4
July 2002	227.5
July 2003	204.9
July 2004	222.0
July 2005	286.7
July 2006	386.8
July 2007	683.9

Source: Quarterly Economic Bulletin, mid-october 2007, Nepal Rastra Bank.

Graph No.1:



Source : Yearly movement of index of Nepal stock exchange from 1995/____ to 2007/08

The risk-free rate of return is the return of a risk-free asset. All corporate securities in principle have some change of default; a corporation cannot issue the risk-free asset. The risk free returns should be free of interest rate risk, default risk, reinvestment risk and marketability risk. A typical short-term security issued by government has almost free of any risk. To calculate the risk-free rate of return for the period of this study, the Treasury bill (all-days) issued by Nepal Rastra Bank on the behalf of government is taken into consideration. A 364 days T-bill is free of default risk, interest-rate risk, reinvestment risk, marketability risk and also from inflation risk because of very short period of maturity, the

risk-free rate of return is calculated by finding the arithmetic mean of risk-free rate of return of period of study. The indices of the Treasury bill at end of fiscal year 31st Ashad or 17th July is presented in the table and is presented in the graph below:

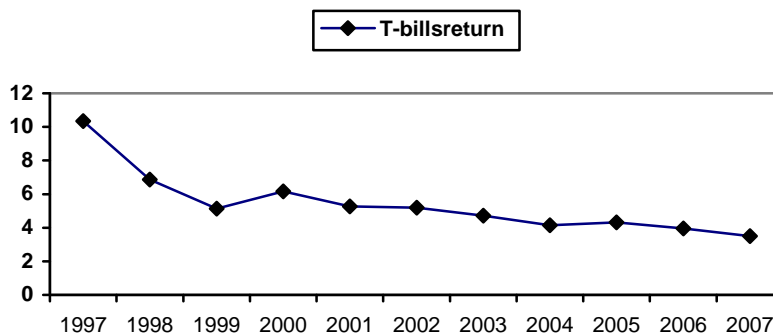
Table No. 2

Table Showing the T-bill return

Year	T-bills return
July 1997	10.34
July 1998	6.86
July 1999	5.13
July 2000	6.16
July 2001	5.26
July 2002	5.20
July 2003	4.71
July 2004	4.15
July 2005	4.32
July 2006	3.95
July 2007	3.50

Source: quarterly Economic Bulletin, Mid-October 2007, Nepal Rastra Bank.

Graph No.2



Source : Annual movement of rate of return of T-bills (364 days)

The table presented below shows the NEPSE Index, T-Bill rate of return and risk and return of market with risk free rate of return.

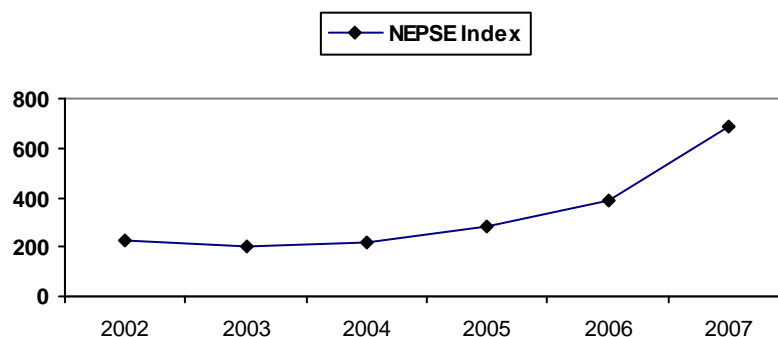
Table no.3:

Table showing the NEPSE Index and T-Bill

Year	NEPSE Index	Market return (rm%)	Annual T-Bill return(%)
July 2002	227.5	-	-
July 2003	204.9	-9.93	4.71
July 2004	222	8.35	4.15
July 2005	286.7	29.14	4.32
July 2006	386.8	34.91	3.95
July 2007	683.9	76.81	3.50
Total		139.28	20.63
Average return		27.86	4.13
Standard deviation		32.62	0.45
Variance		1064.06	0.20

Source : Appendix

Graph No.- 3



Source : Annual movement of rate of return of T-bills (364 days)

The table-1, the figure, shows the decreasing phrase of NEPSE index in the initial stage from year 1995 to year 1998. NEPSE Index increase from year 1998 to the year 2000 and it again decrease till the year 2003. And again it increase sharply from the year 2004 to 2007. The lowest point if NEPSE Index can be observed in year 1998 when the index went down to 163.40 points and the highest point of NEPSE Index can be observed in the year 2007 of 683.90 points.

Based on the calculation of NEPSE Index of table no.3 during these periods, the average market return is found to be 27.86%. While the variation in the return (variance) is found to be 1064.06%. The standard deviation is found to be 32.62%. As a whole, low rate of return with high risk.

Inconsistency is increasing and decreasing trend can also be found with the return of T-Bill. By observing the table and graph no.2, the T-Bill rate of return was 10.34% in July 1997 and decrease to 5.13% in July 1999. And it increase sharply in 2000. And again the decline in T-Bill of (365 days) can be in after 2001.

The lowest annual T-Bill return can be observed in year 2007 of 3.50% and the highest annual T-Bill can be observed year 1997 of 10.34%.

Based on the calculation during the period of table 3, it can be observed that the return of T-Bill is found to be 4.13%. While the variation in the return (variance) is found to be 0.45%.

4.12. Analysis of Banking Sector

Banking sector dominates all other sector in the stock market. Investors want to invest more in banking sector rather than the other sector. In the stock market almost 80% of the daily transaction, accounts for the banking sector. Their market price is also higher than the other sector. They regularly pay divided to investor. In Nepal, these are altogether 26 commercial banks having two governments and rest joint venture and private banks.

People are satisfied with the service and hold the view that the jobs of banking sectors are better than other jobs.

If the investment is made in two or more than two banks or asset the it is termed at the case of portfolio investment. However, this study mainly focuses on the return and risk of stock of selected joint venture banks, correlation among them and the risk and return portfolio. It also calculates the risk of stock in term of market i.e. beta. Finally, the compassion is done between the required rate of return and expected rate of return.

4.12.1. *Nepal SBI bank limited (NSBL)*

The following table shows the relevant data of MPs and calculation of CGY and return of Nepal SBI bank limited, during the year 2002/03.

Table No.4

Table mentioned the MPs, CGY, and return of stock of Nepal SBI bank, from 2002/03 to 2007/08.

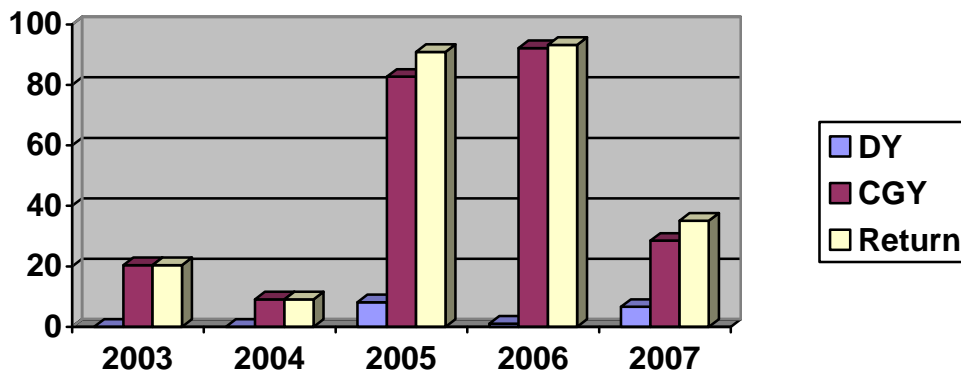
Year	Price (Rs)	DPs (Rs)	DY (%)	CGY (%)	Return (%)
2002/03	255	-	-	-	-
2003/04	307	0	0	20.39	20.39
2004/05	335	0	0	9.12	9.12
2005/06	612	0.05	8.17	82.69	90.86
2006/07	1176	0.1259	1.07	92.16	93.23
2007/08	1511	0.10	6.62	28.49	35.11
Total					248.71
Average Return					49.74%
Standard deviation					39.71%
Variance					1576.88%

Source: Appendix

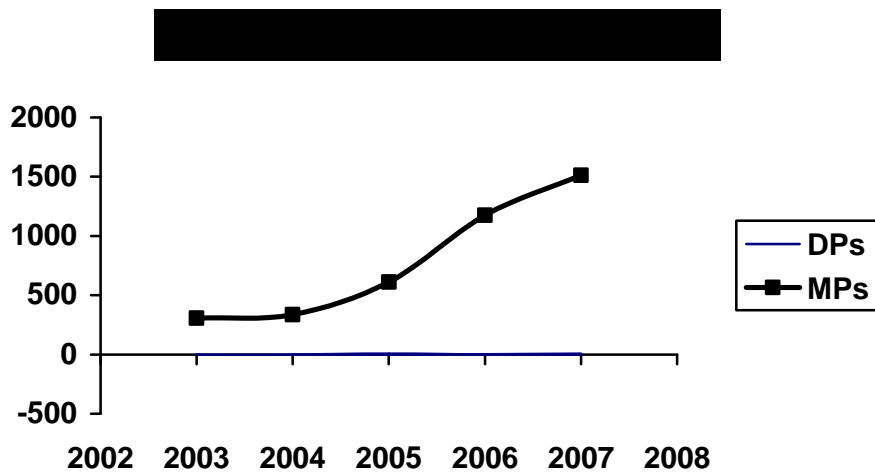
The graph presented below shows the relationship among CGY, stock return and DY of Nepal SBI bank limited as well as the relationship between DPs and MPs.

Graph No. 4

**DY, CGY and Return on Stock of Nepal SBI Bank
Limite**



Graph No. 5



From the given table and graph it is observed that MPs of Nepal SBI bank goes on increasing in from the year 2002/03 to 2007/08. It increases from the Rs.225 to Rs.1511. The MPs goes on increasing slowly from Rs.225 to Rs.612 in year 2002/03 to 2005/07 but it increases heavily in the year 2007/08, to Rs.1176 and again in year 2007/08 is increased upto 1511. The dividend is not offered in the year 2003/04 and 2004/05. But the dividend is offered in the relevant year are Rs 0.50, Rs 0.1259 and Rs 0.10. The highest return on stock was in the year 2006/07 of 93.23% and the lower return was in the year 2004/05 of 9.12%.

The average return of Nepal SBI bank during period is found to be 49.74%. Variance is found to be 1576.88% and standard deviation is found to be 39.71%

4.12.2. Nepal Industrial & Commercial Bank

NIC bank commenced its operation from Biratnagar. The shareholding pattern of the bank constitutes of promotes holding 65% of the Shares while 35% is held by general public. The bank was incorporated in year 1998.

The following table shows the relevant data of MPs, DPs and calculation of DY, CGY and return of NIC bank during the year 2001/03 to 2007/08.

Table No.5:

Table mentions the DPs, MPs, CGY, DY and return of stock of NIC bank limited from 2002/03 to 2007/08.

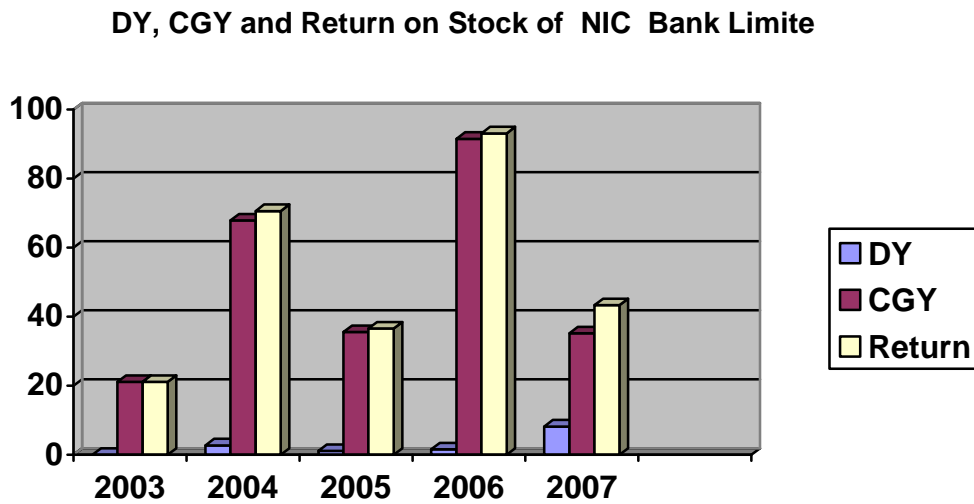
Year	Price (Rs)	DPs (Rs)	DY (%)	CGY (%)	Return (%)
2002/03	180	-	-	-	-
2003/04	218	-	0	21.11	21.11
2004/05	366	0.10	2.73	67.89	70.62
2005/06	496	0.0053	1.07	35.52	36.59
2006/07	950	0.015	1.58	91.53	93.11
2007/08	1284	0.0105	8.18	35.16	43.34
Total					248.71
Average Return					49.74%
Standard deviation					39.71%
Variance					1576.88%

Source : Appendix

The graph presented below shows the relationship among CGY, stock return and DY of NIC bank limited as well as the relationship between DPs and MPs.

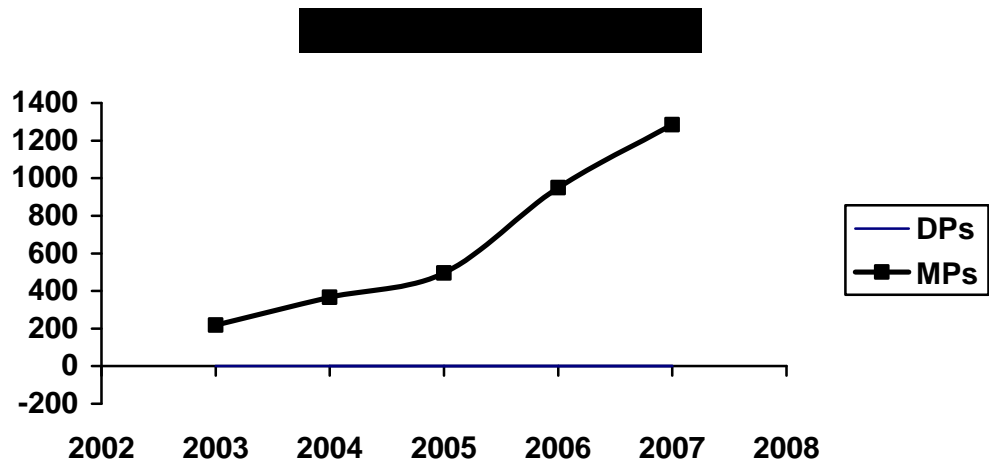
Graph No.6:

DY, CGY and return on stock of NIC bank limited.



Graph No.7:

DPs and MPs of NIC bank limited.



The NIC bank limited offered dividend of Rs. 0, Rs 0.10, Rs 0.0003, Rs 0.015, Rs 0.0105 in the relevant year. The highest return can be observed in year 2006/07 of 93.11%. Whereas the lowest return was observed in year 2003/04 of 21.11%.

The average return of NIC bank limited is found to be 52.95%. The standard deviation and variance, which measures the risk, is found to be 28.72% and 824.84% respectively.

4.12.3. Nepal Credit & Commercial Bank Limited (NCCBL)

Nepal Credit and Commercial bank ltd is a joint venture bank with bank of Ceylon, Srilanka. The head office of the bank is located at Siddhartha Nagar, Rupandehi while its corporate office is placed at Bagbazar, Kathmandu.

The following table shows the relevant data of NPs, DPs and calculation of DY, CG.Y and return of NCCBL ltd, during the year 2002/03 to 2007/08.

Table No. 6

Table mentions the DPs, MPs, CGY, DY and return of stock of NCC bank Ltd from 2002/03 to 2007/08

Year	Price (Rs)	DPs (Rs)	DY (%)	CGy (%)	Return (%)
2002/3	-	-	-	-	-
2003/4	100	0	0	0	0

2004/5	120	0	-	-20	-20
2005/6	94	0	0	-21.67	-21.67
2006/7	316	0	0	236.17	236.17
2007/8	457	0	0	44.62	44.62
Total					239.12
Average return					47.82
Standard deviation					108.63%
Variance					11800

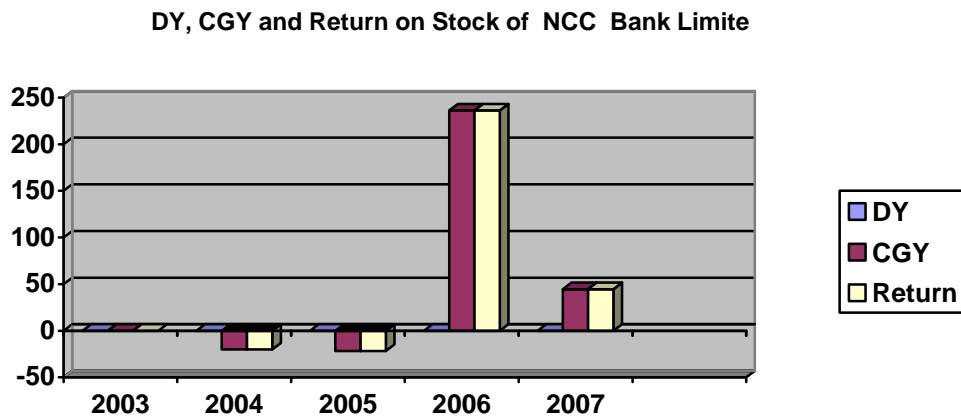
Source : Appendix

Since

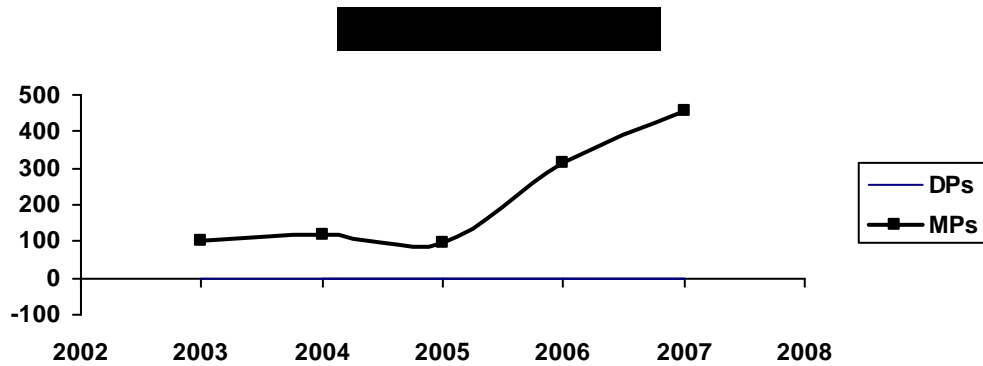
NCC bank 2003/04 market price is not available therefore, it is assumed market value as par value of this year.

The graph presented below shows the relationship among CGY, stock return and Dy of NCC bank ltd as well as the relationship between NPs and DPs

Graph no. 8 ;



Graph no. 9



From the above table and graph it is observed that MPs decline is the year 2004/05 and gradually increase from 2006/07 to 2007/08. The CGY is negative in 2004/05 to 2005/06 of 20% & 21.67%. And the highest CGY is found of 236.174 % in 2006/07.

The bank offered no dividend in any year because the bank is facing the declining stage. highest return of 236.17% can be seen in year 2006/07 and lowest return of -20% can be seen is year 2004/05.

The average return is found to be 41.824%. The standard deviation is found to be 108.63% and variance is found to be 11800%

4.13. Summary Result of Banking Sector

The following table, which is presented below, give the overview on calculated summary result of the analysis of banking sector.

Table No. 7:

Table showing the return and risk of selected banks.

Banks	Return (%)	Variance (%)	Standard deviation	Coefficient of variancaton
Nepal SBIBl	49.74	1576.88	39.71	0.80
NICBL	52.94	824.84	28.72	0.54
NCCBL	47.824	11800	108.63	2.27

Source : Appendix

The table above summarize the analysis of banking sector. The table also presents the NICBL with high return and lowest risk among the three selected banks. The NCC bank

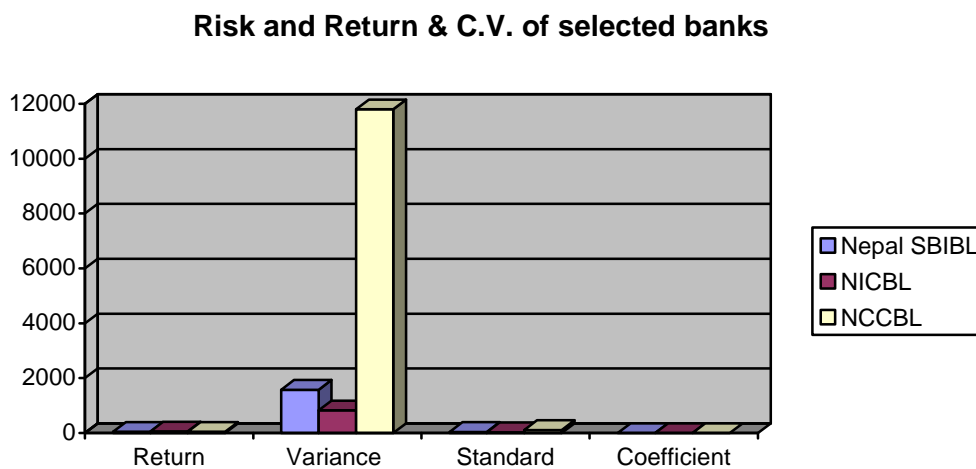
has lower return with the high risk. So, the Investor should take the chance to invest in NICBL which has high return and low risk.

Higher the coefficient of variation (c.v.) higher the risk and lower the coefficient of variation (c.v.) lower the risk. Here, c.v. is an important tool for measuring the variability of return. According to this tool of measurement NCCBL is were risky and NICBL is least risky.

The following graph presents the above table so that comparison can be done easily.

Graph no. 10

Risk and Return & C.V. of selected banks



4.14. Analysis of Covariance and Correlation

Always some degree of covariance in the market price of various securities can be observed. The covariance measures how two variables co vary. Covariance's indicated COV.

The correlation coefficient is standard statistical measure of the linear relationship between two variables. It ranges from -1 to +1. if the correlation is negative it states that the risk can be eliminated. Correlation is indicated by "r"

In this part the numerical value of covariance and correlation among the price of securities is presented. Mathematically. Covariance can be shown as ;

$$\text{Cov}(x,y) = \phi \sum P_i [(R_x - E(R_x)) [(R_y - E(R_y))]$$

In case of historical return.

$$\text{Cov}(x,y) = \phi [(R_x - E(R_x)) [(R_y - E(R_y)) / n-1]$$

Mathematically for correlation (r_{xy})

$$r_{xy} = \text{Cov}(x,y) / \exists x, \exists y$$

4.14.1. Covariance and Correlation analysis of Banking Sector :-

Generally, the movement of bank shares price seems to be positive which indicates that when the price of one bank's share increases other banks show also follow the same trend. The table presented below shows the covariance, variance and coefficient of correlation of return on stock with in banking sector.

Table no. 8

Variance and covariance of banking sector between periods of 2002 to 2007.

Bank	SBIBL	NICBL	NCCBL
Nepal SBIBL	1576.88	357.79	1907.82
NICBL	357.79	324.84	2263.99
NCCBL	1907.82	2263.99	11800

Source : Appendix

Table no. 9

Correlation coefficient matrix for banking sector between periods of 2002 to 2007

Bank	SBIBL	NICBL	NCCBL
Nepal SBIBL	1	0.31	0.44

NICBL	0.31	1	0.73
NCCBL	0.44	0.73	1

Source : Appendix

In order to invest for investor the above tables gives very important information especially the second table is more important. The table indicates the relations among the share price of given banks. The coefficient of correlation between SBI to SBI is 1 which itself vary with perfectly. Then coefficient of correlation between SBI and NIC is 31% i.e. 0.31 which indicates the share price of SBI and NIC is positively correlated. If the share price of NIC increases by 100% then, the share price of SBI increases by 31% similarly, if the share price of NIC decreases, the share price of SBI also decreases. The coefficient of correlation between NCC and NIC is 0.73, which indicates the share price of NIC and NCC is positively correlated if the share price of NIC increase by 100% then the share price of NCC increases by 73% similarly the share price of NIC decreases. The above table of banking sector's covariance and correlation analysis summarizes that NIC and NCC has highest positive degree of correlation. NIC and SBI have lowest degree of correlation.

4.15. Analysis of Diversification

Portfolio is the act of investing the funds in two or more than two securities which helps in diversifying the risk. In other way a well diversified portfolio reduces the risk. In this portion of the study, it is attempted to test the effect of diversification. Further more, the role of covariance or correlation in selecting optimal combination of securities and weight of investment is also tested. Portfolio theory suggests that positively correlated securities do not reduce the risk where as negatively correlated securities reduces the risk.

4.15.1. Analysis of Diversification in Banking Sector

Selecting two samples, say Nepal SBIBL and NICBL following data related to two samples are already calculated.

	Nepal SBIBL	NICBL
Expected Return	49.74%	52.95%
Variance	1576.88%	824.84%
Covariance	357.79%	

If an investor decides to invest 'wx' portion of his/her investable fund into the stock of Nepal SBIBL. Similarly, (j-wx) of funds will be invested in NICBL stock. The expected return from portfolio can be found by using the equation,

$$E(R_p) = W [E(R_x) + (j-wx) E(R_y)]$$

Table No. 10:

Table showing the expected risk and return portfolio for various levels of investment between the shares of Nepal SBIBL and NICBL.

W_x	$1-W_x$	Expected Return Portfolio $E(RP)\%$	Standard Deviation Portfolio $(r_p)\%$	Variance portfolio (VAR)%
1	0	49.74	39.71	1576.88
0.9	0.1	50.06	36.74	1349.96
0.8	0.2	50.38	34.01	1156.71
0.7	0.3	50.78	31.58	997.19
0.6	0.4	51.02	29.52	871.39
0.5	0.5	51.35	27.92	779.30
0.4	0.6	51.67	26.85	720.94
0.3	0.7	51.99	26.39	696.30
0.2	0.8	52.31	26.55	705.39
0.1	0.9	52.629	27.35	748.19
0	1	52.95	28.72	824.84

Source : Appendix

Above presented table states the risk and return portfolio consisting two securities. one is SBI and other one is NIC. In the above table first row shows that the investor invests all of his funds in SBI bank and no portfolio is formed. The return and risk of portfolio is just what the SBI bank has. Sluice, there is no portfolio formation. Second row of table shows that the investor puts 90% of his fund in SBI and 10% of his fund in NIC. Which shows the formation of portfolio and it's return and standard deviation portfolio is 50.06% & 36.74%. Since, in two assets return on SBI is low i.e. 49.74% and return on NIC is high i.e. 52.95%. If the investor is risk seeker then he would be investing entire available fund on the assets of NIC. Here, we assume investor is rational and calculates risk is order to make appropriate

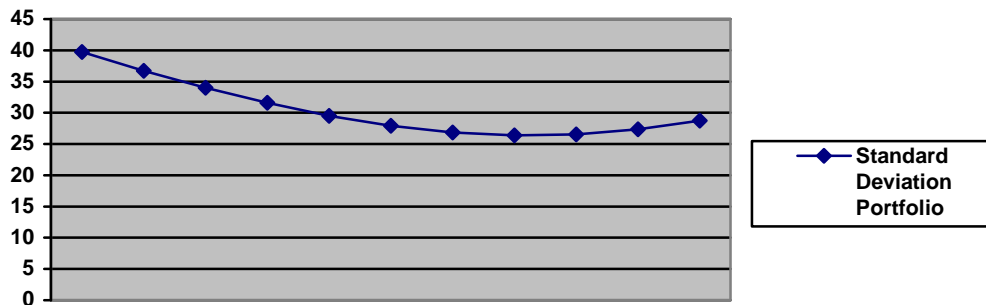
investment decision and prefers to invest in portfolio of the assets where risk is minimum.

From the above calculation we can observe that the portfolio construction of 30% of SBI & 70% OF NIC seems to be least riskier because its standard deviation portfolio (SDP) is lowest amount than other portfolios i.e. 26.39% and E(RP) is 51.99% that why this portfolio is selected as a rational investor.

Table no. 10 can be presented in graphic form too. Such graphs is called efficient frontier. An efficient frontier is focus of all the combination of portfolio risk and return. Graph of efficient frontier is presented below.

Graph No. 11

Risk and return portfolio of stock of SBI and NIC.



The two points at the top of curve is almost desirable point. The two points are called efficient frontier and dominate all other point at given curve. An investor should always try to be at efficient frontier.

Another investor may select two common stocks, one of NCC and other of NIC. The covariance between the stocks return is positive. Following data related to two samples are already calculated.

	NCC	NIC
Expected return	47.82%	52.95%
Variance	13.817%	824.84%

Covariance	2263.99%	
------------	----------	--

The investor investment in NCC is W_x and investor's investment in NIC is $(1 - W_x)$ Following table presented below shows the return and risk portfolio at different level of investment.

Table no. 11

Table showing the expected risk and return portfolio for various levels of investment between the shares of NCCBL and NICBL.

W_x	$1 - W_x$	Expected Return Portfolio E(RP)%	Standard Deviation Portfolio (rp)%	Variance portfolio (VAR)%
1	0	41.82	108.63	11800.26
0.9	0.1	48.33	99.87	9973.98
0.8	0.2	48.85	91.16	8309.64
0.7	0.3	49.36	82.51	6807.24
0.6	0.4	49.87	73.94	5466.78
0.5	0.5	50.30	65.48	4288.27
0.4	0.6	50.90	57.20	3271.70
0.3	0.7	51.41	49.16	2417.07
0.2	0.8	51.92	41.53	1724.38
0.1	0.9	52.43	34.55	1193.64
0	1	52.95	28.72	824.84

Source : Appendix

Above presented table states risk and return portfolio at different level of proportion consisting two securities. The last table shows that the highest return can be achieved by investing the entire fund in NICBL and no portfolio is formed. Hence, the objective of portfolio is not to increase return but to reduce risk. The lowest level of risk is the table can be found out by investing 100% of fund in

NICBL and 0% of fund in NCCBL. The meaning of portfolio cannot be confined with the limit of just two securities. A portfolio can also be more than two securities. An investor can invest his fund in all selected securities of banking sector. In this case the risk and return portfolio can be calculated by selecting the porportionon investment randomly.

4.16. Analysis of undiversified risk/Beta Analysis

The total risk of portfolio has two fold of aspect one is systematic risk and other is unsystematic. Systematic risk is the risk, which cannot be eliminated. Beta coefficient is the index of systematic risk. It is an indicator of the relationship between the individual investment's return and the general market return. The beta is simply the slope of characteristics line and it is indicated by 'B'

Unsystematic risk is the risk, which can be eliminated if properly diversified of investment.

In this part of analysis, the betas for all three selected banks are calculated.

$$\text{Beta (Bj)} = \text{COV (j, m)} / \exists^2\text{m}$$

and

$$\text{Cov (x,y)} = \text{E [Rx - E (Rx)] [Ry - E (Ry)]} / \text{n-1}$$

Where, Cov (x,y) = Covariance of security 'j' with market 'm'

$$\exists^2\text{m} = \text{variance of market}$$

Following table presents the covariance between each sample's return and market return.

Table no. 12:

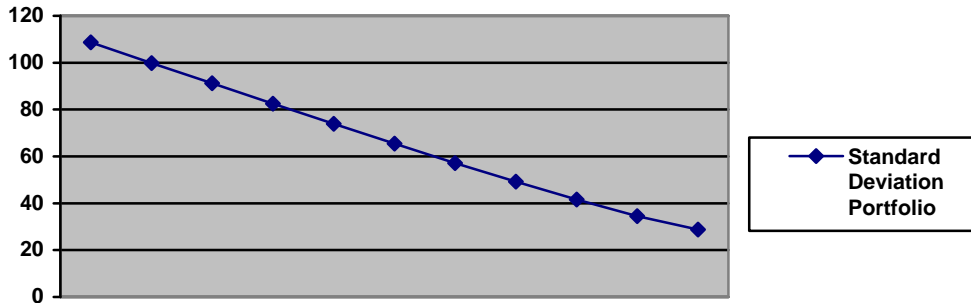
Table showing the covariance between the return of market and other securities during the period of 2002/03 to 2007/08.

<u>Banks and market</u>	<u>Covariance</u>
COV (SBI, M)	386.18
COV (NIC, M)	162.57
COV (NCC,M)	1053.28

The covariance of all selected banks with the market that is listed in the table no 13 is presented in the graph as shown below;

Graph no. 12

Graph showing the covariance between the return of market and other securities during the period 2002/03 to 2007/08.



The variance of market is 1064.06, which is calculated is table no. 3

Table no. 13

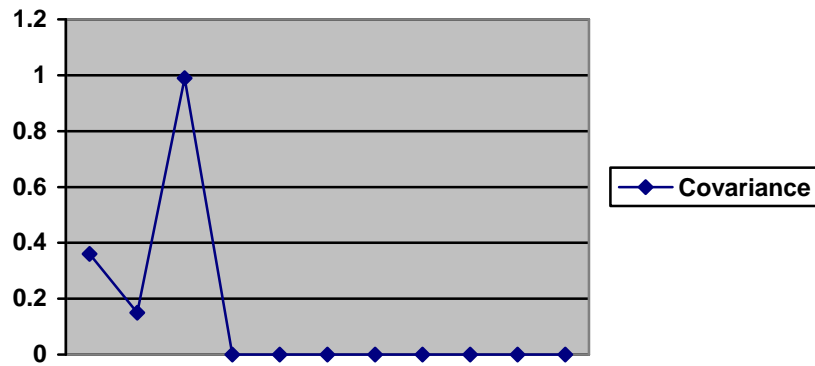
Table showing the beta for all selected sample banks during the period of 2002/03 to 2007/08.

<u>Banks</u>	<u>Beta (Bj) = Cov(j,m)/σ²m</u>
SBIBL	0.36
NICBL	0.15
NCCBL	0.99
Variance of market return (r ² m) = 1064.06	

The following graph presents the overall look of betas for all securities.

Graph o. 13

Graph showing the beta of all selected banks as the sample during the period of 2002/03 to 2007/08.



4.17. Required Rate of Return by Security market line

With the help of SML, the overpriced and under priced stock can be located. If the expected return $E(R_j)$ is more than the required rate of return (RRR) then it is the case of under priced and if the expected return $E(R_j)$ is less than the required rate of return then it is the case of overpriced. In this portion of study the required rate of return is calculated here and compared with the expected rate of return which is calculated in the earlier part for getting the decision about the overpriced and underpriced. overpriced gives the decision to sell the security where as the underpriced give the decision to buy the security.

Security market line is the graphical representation of the CAPM the relationship between an assets return and its systematic risk can be expressed by the CAPM, which is also called the SML. The equation for the CAPM is :

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

The literature on CAPM is already presented in second chapter. For the calculation of RRR the market return (R_m) is 27.86 and risk free rate of return (R_f) is 4.13%, which is calculated in earlier part in the table no.3.

Table no. 14

Table showing the required rate of return of all selected banks as sample during the period of 2002/03 to 2007/08

Banks Required Rate of Return calculated

$$E(R_j) = R_f + [E(R_m) - R_f B_j] \text{ (RRR) \%}$$

SBIBL	$4.13 + [27.86 - 4.13] \times 0.36$	12.67
NICBL	$4.13 + [27.86 - 4.13] \times 0.15$	7.69
NCCBL	$4.13 + [27.86 - 4.13] \times 0.99$	27.62

Table no. 15

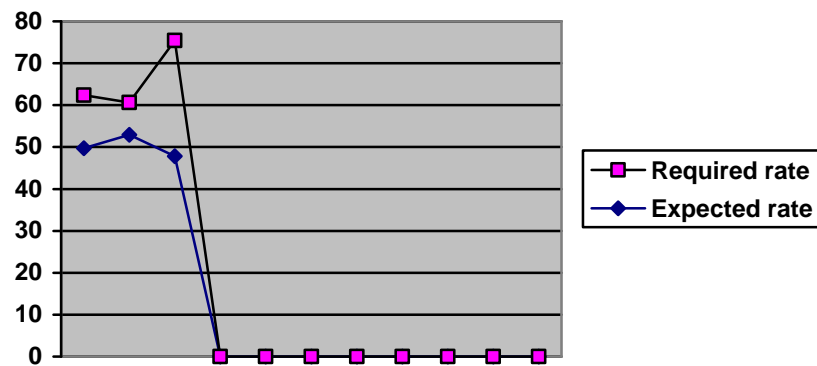
Table showing the comparison between expected rate of return and required rate of return with the buy and sell decision from over priced and under priced of security.

Banks	Expected rate of return E(R _j)%	Required rate of return (RRR)%	Pricing	Pricing decision
SBI	49.74	12.67	Underpriced	Buy
NIC	52.95	7.69	„	„
NCC	47.82	27.62	„	„

A comparative graph between expected rate of return and required rate of return can also be presented which is shown below:

Graph no. 14

Graph showing the comparison between expected rate of return and required rate of return with the buy and sell decision from overpriced and under priced of security.



The above table & graph both shows the expected rate of return and required rate of return. The required rate of return (RRR) on the stock of SBI is 12.67% while the expected rate of return is 49.74%. investors can invest in the stock of SBI as it is offering higher rate than the market. The stock of NIC has the higher rate i.e. 52.95% than the market which required rate is less i.e. 7.69%. Similarly, the expected return of NCC is also Hug i.e. 47.82% and the required rate is 27.62%. Therefore, the expected rate of return is more than the required rate of return of all the three banks. It clearly gives the decision to invest in the stock of these three banks.

For any rational investor the expected rate of return should be more than the RRR. Here, is the above graph the investor would prefer to buy all the stock of these banks.

4.18. Empirical Findings of the Study

The major finding of this part of the study are given below:

- (b) Risk can be reduced by investing the funds in two or more than two securities i.e. by creating portfolio.
- (c) Risk can be reduced through the negative degree of correlation (or negative covariance)
- (d) The creation of portfolio itself needs consideration between / among the stocks it includes.
- (e) Greater the number of stocks in the portfolio lower will be the risk. Never-the less, the degree of correlation will matters for this effect.
- (f) Positive degree of correlation (or positive covariance) is not effective while making a portfolio investment.

- (g) Higher the beta higher will be the systematic risk.
- (h) While making the portfolio positive degree of correlation (or positive covariance) is not effective.
- (i) Any rate of expected rate of return is less than the RRR, investors should not entertain it.

CHAPTER-FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

Portfolio Analysis is the most important factor before any investment in any sector. It has been the central focus of finance. Therefore, before any investment on any security the risk and return analysis is observed. Risk and return are complementary to each other. The return from any investment is realizable cash flows earned by its owner during a given period of time. On the other hand, risk is the possibility that the actual return from an investment will differ from expected return. It is generally believed that higher the return, high will be the risk.

The common stock is the most risky security. An investment in common stock of a company cannot ensure the annual return and the return of principal. Dividends are paid to the stockholders only if there will be earning available to equity shareholders. In Nepal, there are not various types of securities but due to development of banking industry and manufacturing industry, there is sufficient common stock for attracting Nepalese investors.

To summarize the study on portfolio analysis First chapter includes introduction, brief profile on sample of joint venture banks taken under study, focus of study, statement of problem, objective of the study, significance of study, limitation of the study and scheme of the study.

Second chapter includes review of literature where theories of risk and return are including with the concept of portfolio.

Third chapter makes an attempt to review the methodological aspect in brief.

Similarly, in the fourth chapter, analytical exploration and main population of data has been presented within the finance of the research methodology and the analyzed data are presented in suitable forms like tables and diagrams.

Finally, the fifth chapter includes summary of the study, conclusions desired from the study and recommendations.

The main objective of this study is to analyze the risk and return portfolio on common stock investment on Nepalese stock market and it is focused on three joint venture banks listed in Nepal Stock Exchange Limited. Risk and return is not there overnight concept. Risk and return are complementary to each other. A portfolio may contain bonds, preferred stocks and common stocks of various types of enterprises. Since a rational investor always dislike risk the creation of portfolio is the key to avoid such "dislike". It is found that collections of securities can diversity the "Unsystematic" portion of risk. The rate of return expected from any investment proposal paid to the additional level of risk taken. The level of risk is not easy to measure. However, different scholars have suggested various statistical tools like standard deviation, variance, coefficient of variance, residual variance beta coefficient, correlation coefficient, coefficient off determinants, proportion of unsystematic risk to measure the level of risk associated with a particular asset. As the number of stock increases in a portfolio, the risk will decrease. In order to diversify or minimize the risk securities should be carefully selected. To minimize the risk, negative covariance or negative degree of correlation should be preferred between or among the securities of the portfolio. A portfolio cannot reduce the systematic risk of each security. These risks are due to external factor and are permanent nature. These risks are measured by beta. In the course of this study, brief review of related studies has been performed. The sensitivity of the stock of the sample company using the security is compared with the required rate of return. The expected return should always be higher than the required rate of return to perfor many rational investor decision. The collected secondary data has analyzed by using scientific methods and the tables, graphs, diagrams have used to present the data more clearly. The secondary data are collected from the NEPSE web site, Security Board of Nepal, journals and concerned banks. Both qualitative analysis has been made to desire the conclusions.

5.2 Conclusions

This study will enable investors to know about the stock market and process of choosing the common stock or investing into a portfolio. Nepalese stock market is emerging state. The sufficient information about the stock market of Nepal is not available easily. So, people think that the stock market investment is a black and they are afraid of investing in common stocks. The openness and liberalization is rational economy followed by the nation since political change on 1990, has developing the stock market gradually.

The other findings and conclusions in the course to this study is are follows:-

- a) Most of the Nepalese investors invest in simple security due to which the level of risk may increase, and if they invest in more than one banks common stocks, they select the stock on the basic of expectation and assumption that they will provide higher return at lower risk. But analyzing the risk and return portfolio, return at low risk can't be expected.
- b) The frequent change is fiscal and monetary policy, tax policy and inflation also affect the level of risk and return portfolio of common stock.
- c) There are various aspects of risk and return portfolio of common stocks. the lack of adequate information and poor knowledge is one of the aspects due to which the investors cannot earn proper return even behaving the high risk.
- d) SBI bank has 49.74% return, 39.71 % standard deviation and 1576.88 % variance.
- e) NIC bank limited 52.95 % return, 28.72 % standard divination and 824.84 % variance.
- f) NCC bank lose 47.82 % return, 108.63 % standard deviation and 11800 % variance.

- g)** NIC Bank is the best among the sample companies taken under study on the basis of highest return of 52.95 %.
- h)** Standard Deviation of NCC Bank is 108.63 %, which is the highest among the sample companies taken under study.
- i)** The above risk and return of the NIC bank shows that lower the risk higher the return.
- j)** NCC Bank limited has the lowest rate of return.
- k)** NIC Bank limited has the lowest Standard Deviation and Variance.
- l)** The creation of portfolio can diversify the risk. The covariance and coefficient of correlation is the key for a good portfolio.
- m)** Only negative correlated stock can diversify the risk but none of the sample joint venture bank taken under study has negative correlation.
- n)** More and more stocks in a portfolio safeguard the investors preference towards low risk.
- o)** Risk can be of systematic risk and unsystematic risk. Unsystematic risk is the risk, which can be eliminated or reduced. Thus creation of portfolio reduces only unsystematic risk of stock. Systematic risk is the risk which can be eliminated. Systematic risk is due to the external condition on which investor can do nothing.
- p)** Inconsideration to view of systematic risk the stock of NCCBL with 0.99 of beta is the highest among the banking sectors.
- q)** Every investor's have a certain required rate of return. The required rate of return (CAPM) is calculated here by using equation of SML. A very important comparison between the expected rate of return and required rate of return is done here which

provides very vital information to the rational investor about the under-price and overprice of security.

- r) While comparing expected rate of return with required rate of return all of the sample taken banks gives the decision about under pricing of security i.e. to buy the stocks of those banks.
- s) Investor always wants their money to return more and more return. A gambling in stock market makes many people penniless. however, a careful study and analyze can always ensure the return is sure for any investment. The prospectus of the company, the risk free rate of return, the nature of sample banks take under study can be analyzed by the statistics. Published by various source. however, the return, covariance, beta, RRR, is hard to find for each investment because there is no published data in this regard, as it happens in developed countries. The selection of good stock and a better portfolio will always ensure the best return for an investment, a gambling is not taken for sure of a good return.
- t) Investors are very pessimistic to trade their stocks. Whatever the price of stock they tend to hold it for long period without knowing the reason to hold such a long period the frequency of trading is very low among investors.

5.3. Recommendations

-) Mainly this study is made for the partial fulfillment of M.B.S. level. However, this study may be helpful for the individual investors. The following recommendations are prescribed on the basis of data analysis and major findings of this study.
-) The stock market of Nepal is in emerging state and possible investors are afraid of investing in secondary market. So, NEPSE needs to provide clear information about the process of investment, trading rules and regulations, etc. Similarly, NEPSE should develop effective information channel to provide the up to date information. The open cry system of trading can't help to develop the stock market in the modern age of digital technology. Another recommendation to NEPSE is that it should take steps to establish

the stock market in other main cities of the countries. The market is concentrated only in the capital city, which is the main difficulty in development of stock market.
















- J Government also should monitor the activities of stock markets. Manipulation by stock brokers, the company itself should be controlled. The rules and regulations regarding stock market should be amended in time to time and the attempts should be made for implementations of the rules and regulations. The peace and political stability is the current burning issue of the country, which are the main elements of development of stock markets. So, the attempts should also be made to maintain peace and political stability of the country.
- J The market sensitivity of common stock also helps to invest the funds. It is better to invest the common stock of beta less than one i.e. defensive stock. But the higher return can't obtain in such investment. The underpriced common stock should be purchased and the overpriced common stock should be sold. This study recommends buying the common stock of all the banks, which is under priced.
- J Investors want to minimize expected return subject to their tolerance for risk. Return subject to their tolerance for risk. Return is the motivating force and the principal reward is the investment process, and it is the key method available to investor in comparing alternative investment. Forces that contribute to variation in return price or dividend (interest) constitute element of risk. So, investors have to concentrate their mind both on risk and return.
- J Many companies do not disclose their financial statement in the right time to the general public and to present it to the NEPSE. Such activity of company does not give the right idea for the investor to invest their funds. So the concern governing body of the companies should monitor and discourage the cutely disclose and submission of financial statement by a company.
- J The stock of banking sector is lubricative in terms of risk and return. Thus, investors are advised to invest core in banking sector.
- J People widely perceive the market price of stock as a reflector of financial position of a company. The higher the market price of stock, the better is the position of a company from the point of investor. Thus, the company should make every effort to increase the MPs. A regular dividend payment, timely disclosure of financial statement as well dischargement of social responsibilities is some of good steps for the good effect on

stock price. however, a companies own way of functioning and operating all the main point regarding the effect on stock price.

-) Investor should not select the stock having the high positive co varied stock while creating the portfolio. This study shows that the rather than slecting the highly positive co-varied stock it will be better to select the single security for the investment.
-) A company should be concerned with the stock price of its own share. A listed company must regularly monitor the movement of stock price in market and if it is falling, necessary step should be taken in time to know the reason and present the price of stock falling more. Since investors judge a company by its dividend payout policy also, company should be more careful in this regard and if it is possible, company should also explain the shareholders why it doesn't declare any dividend in case of non payment of dividend.
-) The proper analysis of the individual stock, the industry and the whole market is essential to take an investment decision. The general knowledge about general economic condition tax policy of government, peace and political situation is necessary which affect the price of share. Speculation of common stock May provide good benefit rather investing for a long period.

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