CHAPTER – I
INTRODUCTION

1.1 General Background

Nepal has recently adopted capitalized market economy. It has been regulated by the Nepal Stock Exchange Ltd., which was governed by security Board of Nepal. The Investment on banking sector was flourished from 4th decade of B.S. It was broadly institutionalized as a main product for stockholders who are interested to invest the capital on share. To invest on share, it is necessary to know about the whole pros and cons as well as the income and the net assets of the company and the projected activities of the institution.

Recently markets for products and services have developed throughout the world and the competition among the firms has alerted their CEO's to foresee the future preferences of the society. All this has induced businesses to gear up investments in many fields, where investment needs huge amount, which cannot be covered by the firms it selves. Further more, some members of the society undertake additional activities of investment requiring more funds than what they have. Thus, there is no equilibrium in income and expenditure. Similary there members have varying perceptions towards risk and enterprising ability the advent of securities market has successfully served this purpose of fund transfer from one unit to the other.

Return is a prime factor of investment. People invest their belongings with an expectation of getting some reward for leaving its liquidity, they only invest is those opportunities where they can get higher return. So, they want favorable return to yield by their stock investment.

Other hand risks are the facts of investment, where more risks, there is definitely high return and vice versa. Risk is a fact is an indication of chance of losing investment values. So, it can say simply a lack of definite outcome,

which can be any unknown event which may be unfavorable. It is a chance of happening some unfavorable event or danger of losing some material value.

A stock reflects the uncertainty about future returns, so that the actual return may be less than expected. Price is the main source of uncertainty at which the stock will be sold. And also stock price can be affected by economic factors such as interest rates, economic growth, inflation and the strength of dollar; they can also be affected by microeconomic factors. The risk of a stock can be measured by its price volatility. Risk volatility serves as a measure of risk because it may indicate the degree of uncertainty surrounding the stocks future returns.

1.1.1 Commercial Banks in Nepal

In Nepal, Banking activities were started from the establishment of Nepal Bank Limited on 1994, kartik, 30. It was a first financial institution of the nation. Rastriya Banijaya Bank was founded on 2022 B.S. followed by the other Joints Venture Banks (JVBS) from 2040 B.S. First Joint Venture Bank, Nepal Arab Bank Limited (NABIL) was established on in 2040 B.S.

In 2043 B.S. second JVBS named Nepal Indosuez Bank Limited (converted to Nepal Investment Bank (NIBL) was established, than at the same year Nepal Greendleys Bank (Now Standard Chartered Bank Nepal Limited) has been incorporated. The Government of Nepal took the policy of economic liberalization and privatization in the year 1990. Under the policy of Privatization, various public companies have been privatized and that made positive affect on banking sector. So there were many private banks were established in the 50^{th} decade with other JVBS. These JVCS and Private Banks now are going ahead to fulfill the financial needs of Nepalese Industry and commerce as well as the general public of the Nepal. Following are the list of commercial banks in Nepal.

Table 1.1: List of Licensed Commercial Banks in Nepal

S. No.	Commercial bank	Established Date A.D.	Head Office
1	Nepal Bank Limited	1937/11/15	Kathmandu
2	Rastriya Banijya Bank	1966/01/23	Kathmandu
3	Agriculture Development Bank Ltd.	1968/01/02	Kathmandu
4	NABIL Bank Limited	1984/07/16	Kathmandu
5	Nepal Investment Bank Limited	1986/02/27	Kathmandu
6	Standard Chartered Bank Nepal Limited.	1987/01/30	Kathmandu
7	Himalayan Bank Limited	1993/01/18	Kathmandu
8	Nepal SBI Bank Limited	1993/07/07	Kathmandu
9	Nepal Bangladesh Bank Limited	5/6/1994	Kathmandu
10	Everest Bank Limited	1994/10/18	Kathmandu
11	Bank of Kathmandu Limited	1995/03/12	Kathmandu
12	Nepal Credit and Commerce Bank Limited	1996/10/14	Siddharthanagar
13	Lumbini Bank Limited	1998/07/17	Narayangadh
14	Nepal Industrial & Commercial Bank Limited	1998/07/21	Biaratnagar
15	Machhapuchhre Bank Limited	2000/10/03	Pokhara
16	Kumari Bank Limited	2001/04/03	Kathmandu
17	Laxmi Bank Limited	2002/04/03	Birgunj, Parsa
18	Siddhartha Bank Limited	2002/12/24	Kathmandu
19	Global Bank Ltd.	2007/01/02	Birgunj, Parsa
20	Citizens Bank International Ltd.	2007/6/21	Kathmandu
21	Prime Commercial Bank Ltd	2007/9/24	Kathmandu
22	Sunrise Bank Ltd.	2007/10/12	Kathmandu
23	Bank of Asia Nepal Ltd.	2007/10/12	Kathmandu
24	Development Credit Bank Ltd.	2001/01/23	Kathmandu
25	NMB Bank Ltd.	1996/11/26	Kathmandu
26	Kist Bank Limited	2003/02/21	Kathmandu

In Nepal there are altogether 6 joint venture banks; they are:

1. Nepal Arab Bank Limited (NABIL Bank)

NABIL Bank Ltd., the first joint venture bank in Nepal which was established in 1984 under the company act 1964. Dubai bank Ltd (DBL) was the initial foreign joint venture bank partner with 50% equity investment. The share owned by DBL was transferred to Emirate Bank International Ltd. (EBIL) Dubai. Later on EBIL sold its entire stock to National Bank Ltd., Bangladesh (NBL). Hence 50% so the current configuration given of follows;

a. National bank ltd, Bangladesh 50%
b. Nepal Industrial Development Corporation NIDC 10%
c. Rastriya Beema Sunsthan 9.66%
d. Nepal stock exchange (NEPSE) 0.34%
e. Nepalese public 30%

Authorized capital and paid of capital of Nabil Bank Ltd. are Rs.500 million and Rs.491.6544 million.

2. Standard Chartered Bank Nepal Limited

Standard Charted Bank Ltd. the second joint venture bank in Nepal, which was established in 1985 under the company act 1964. ANG Grindlays Bank PLC London was the foreign joint venture partner with 50% equity investment. Now the bank has its partner of annexation of standard chartered, U.K. by standard chartered banking Group. Among the remaining 50% equity share of SCBL Bank Ltd. 33.34% share are held by commercial banks and 16.66% share by Nepalese public and other financial institution. Authorized capital and paid up capital of standard charted bank of Nepal Ltd. are Rs.339.5488 million.

3. Himalayan Bank Limited

Himalayan Bank was established in 18th Jan, 1993 in joint venture with Habib Bank Limited of Pakistan. Despite the cut-throat competition in the Nepalese Banking sector, Himalayan Bank has been able to maintain a lead in the

primary banking activities. Authorized and paid up capital of the Bank is Rs.2000 million and Rs.1216.20 million respectively with head office at Kathmandu. Bank is going to provide full fledge banking services to its customers with ATM, Debit cards, Credit Cards and other core banking services.

4. Nepal SBI Bank Limited

Nepal SBI Bank Ltd. was established in 1993 under the company act 1964 this is the joint venture of State Bank of India and Nepalese promoter. This bank is managed by State Bank of India under the joint venture and technical service agreement signed with Nepali Promoters viz. employee provident fund and agriculture development Bank Nepal. share holding pattern of the bank is 50% share owned by state bank of India Nepalese promoters includes 20% government organization and 30% of general public, the main objective of the bank is to carryout modern banking business on the country. The bank is one of the largest shareholder based company and the bank started its banking operation on 8th July, 1993. The banks authorized capital issued capital and paid up capital were Rs.240, Rs.120 and Rs.119.82 million respectively. In the initial period at the end of year 2001/02 authorized capital, issued capital and paid up capital were Rs.1000, Rs.500 and Rs.424.89 million respectively.

5. Nepal Bangladesh Bank Limited

Nepal Bangladesh Bank Ltd. was established in June, 1994 with an authorized capital of Rs.240 million. Its head office is situated at New Baneshwore, Bijuli Bazar, Kathmandu. Paid up capital of the bank is Rs.744.10 million.

Prime objective of the Bank is to render banking services to the different sectors like industries, traders, businessmen, priority sector, small entrepreneurs and weaker section of the society and every people who need Baking Services.

6. Everest Bank Limited

Everest Bank Limited was established in 18th Oct, 1994 joint venture with Punjab National Bank (PNB) India. PNB holds 20% shares of Everest Bank limited have large networking all over the India. Paid up capital of the bank was 691.40 million at mid Jan. 2009. Central office of the bank is situated at Kathmandu.

1.2 Statement of the Problem

a. How does one know about the magnitude of Risk?
b. How can one make higher return through a lower risk?
c. How can investor diversify the risk?
d. How can one get favorable return through the holding of joint venture banking stock (shares)?

1.3 Objectives of the Study

a. To study return associated with common stock investment in banking sector.
b. to determine the common stock of listed joint venture commercial banks in Nepal in terms of overpriced, under priced or equilibrium by analyzing the risk and return of individual shares.
c. To study systematic and unsystematic risk associated with common stock.
d. To analyze risk and return relationship of individual stock with that of market.
e. To make suitable recommendation on risk and return analysis.

1.4 Importance of the Study

Banking sectors are more sensitive than other sectors like industries services etc. This sector is directly affected by the economic policy of the government and the Regulation of Central Bank (regularity Board of Banking Institution).

So, stakeholders of the Banks are must know about the implementing facts of the banking activities and services.

This study mainly concern about the getting knowledge about the risk factors associated with the banking stock. This study will fruitful for diversification of the risk and get favorable return from the Banking sock. General Public is not able to analyze and interpret the real financial position of the company (Bank). So, On the basis of available data and information, they can reach at the right conclusion. So, due to that kind of reasons thus study may help those investors to know about restructuring their investment portfolio. Like this other potential investors among also get information about making right decision to invest or not a particular company.

1.5 Limitation of the Study

a. This study is based on only six years data.
b. Only Listed Joint venture commercial banks are taken into consideration.
c. Study based on common stock investment and its associated risk and return.
d. This study only taken risk and return leaving other parts.
e. Most of the data are in secondary nature so, the consistency of findings and reliability of the secondary data and information.

1.6 Organizational of the Study

Introduction: This first chapter included the general background of the study, statement of the problem, objectives of the study, importance of the study, Limitation of the study and organizational of the study.

Review of Literature: The second chapter deals with conceptual framework, measuring risk, review of related empirical studies, journals and thesis.

Research Methodology: Research methodology is discussed in chapter three; it deals with research design, population and sample size, nature and sources of data collection procedure, tools and method for analysis.

Presentation and Analysis of Data: In this chapter collected data are tabulated and presented by using table graph etc.

Summary, Conclusion and Recommendations: This chapter is concerned with summary, conclusions and recommendations.

CHAPTER – II
REVIEW OF LITERATURE

2.1 Introduction

Main focus of the study is to analyze and recovered about the portfolio of investment to find increase return by diversify risk. The main purpose of the literature review is to develop some ideas for developing. Significant research design aspect of risk and return is explored in this chapter.

Risk and return analysis of the stock in the present days has been the focus point in the capital market area, in relation with the portfolio management. In the investment process, risk and return aspects and the formation of an optimal portfolio are the major two tasks. The basic requirements of the modern portfolio theory are to avoid risks and to calculate the risk premiums that investors need for involving in the risky investments. Eventually, the analysis helps the investors quantify their tradeoff between risk and return. Capital market is the venue for resource allocation and the source of capital accumulation.

2.2 Conceptual Framework

a. Common Stock (Equity Shares)

Common stock (security) is an ownership of a company. It is a source of long term financing. It is a main source of company financing. Common stock is divided into as many shares 100 per share for the banking purpose. Owner of common stock get dividend when company become in profit. At the time of liquidation, common shareholders get lost change after setting all liabilities and preferred stock.

Common stock holders of a corporation are its residual owners, their claim to income and asset comes after creditors and preference share holders have been paid in full. As a result, a stockholders return on investment is less certain than

the return to lender or to a preferred stockholder's. On the other hand, the share of the common stock can be authorized either with or without par value. The par value of the stock is merely a stated figure in the comported charter and is of little economic significance. A company should not issue stock at a price less than par value would be liable to creditors for the difference between the below are price they paid and the par value. (Van Horne,1997: P. 196) But in Nepal, as per company act 2057, no common stock is allowed to issue less than par value i.e. Rs.100 per share. These common stocks are very much used for speculative motive. Mostly investors can get high price from the secondary market to their common shares by selling them.

b. Main Characteristics of Equity Shares:

a. Priority to assets and earnings.
b. Par value stocks no par value stock.
c. Authorized, issued and outstanding shares.
d. Voting rights
e. No maturity date repaid on the liquidation of the company if amount remaining for ordinary shareholders after settlement of all liabilities.
f. All the common stock shareholders get stock certificate for their ownership
g. Fully control power over the company.

The corporate character of a company specifies (memorandum of Association) the number of authorized shares of common stock that the company can issues maximum without the share that is issue is called issued shares.

c. The Return on Common Stock:

Return is the reward for uncertainty of risk. The concept of return has different meaning to different investor. Return is the main attraction for investors to invest in risky securities as stock accepting a varying degree of risk tolerance.

Return is the total gain or loss experienced on investment over a given period of time.

Returns are defined as the dividend yield plus the capital gain or loss. The relationship between different levels of return on their relative frequencies is called a probability distribution. We can formulate a probability distribution for the relative frequency of a firm's annual return by analyzing its historical return over the previous period. But, we knew that history never repeats itself exactly. Hence after analyzing relative frequencies of historical return for the individual company, we can form & probability distribution based on the historical data plus the analysis for the outlook for the economy and the outlook for the industry, or firm and another factors.

If current price of a share is Po that the expected price at the end of the year is P1 and that the expected dividend per share is DiV1. The rate of return that investors expect from this share over the next year is defined as thee expected dividend per share DiV1 plus the expected price appreciation per share P1-Po. All dividends by the beginning price Po which can be shown as follows:

$$\text{Expected Return } R = \frac{Pi - Po + Div}{Po}$$

The expected rate of return on a security is the sum of the products of possible rate of return and their probabilities, thus,

$E_R = R1P1 + R2P2 + \ldots\ldots\ldots\ldots + R_nP_n$

Or $\Sigma r_i p_j$

Where r_i = rate of return on time i

p_j = probabilities of j period return as (Brealey & Myers, 1997: 68).

For common stock ,we can define single period return as:

$$R = \frac{Dt + (Pt - Pt - 1)}{Pt - 1}$$

Where,

R	=	Expected return
Dt	=	Dividend received at the time t
Pt	=	Stock price at the time period t
Pt-1	=	Stock price at the time period t-1

Above formula can be used to determine both actual one period return as well as expected one period return. The term in the parenthesis in the numerator of above equation represents the capital gain or loss during the period. Holding period return is useful to measure an investment horizon of one year or less. For longer periods, it is better to calculate rate of return as an investment yield. The yield calculation is present value based and this considers the time value of money (Van Horne and Wachowicz, 1997: 90).

Annualized rate of return over several periods can be calculated in two ways;

The first one is simply to take the arithmetic average of the annual holding period returns over a given period and the second one takes account of the compounding effects of cash receipts over different time intervals, is the geometric mean rate of return.

d. Risks on Common Stock:

Risk is defined in Webster's dictionary as a hazard, a peril exposure or loss or injury, thus for most, risk refers to the chance that some unfavorable event will occur. If you invest in speculative stocks for really any stock, you are taking a risk in the hope making an appreciable return (Weston, Besley & Brigham, 1996: 182-183).

Uncertainty and risks are the facts of life to common stock holder. Different people interpret uncertainties and in different ways. For some uncertainties are simply a lack of definite outcome, it is anything that could happen any unknown event, which may be favorable or unfavorable. To other, it is the risk,

many people consider risks as a chance of happening some unfavorable event or danger of losing some values. The trouble of uses them interchangeably.

Uncertainty and risks are treated separately in financial analysis. The practice is to convert uncertainty into the mathematical value, which represents the best estimate of all uncertainty, is taken care by calculating the expected value of all possible uncertain outcomes. But risk is treated differently. Although risk arises from uncertainty, its magnitude depends upon the degree of variability in the uncertain cash flows and it is measured in terms of standard deviation. In project evaluation risk in facts is an indicator of chance of losing investment values. The word chance here refers to the probability of loss in the investment project. In others words, the project risk indicates the probability of return being less the expected values. Higher the probability of such loss and less returns higher the project risk. Risk is complicated subject and needs to be properly analyzed. The relationship between risk and return is described by investor perception about that and their demand for compensation. No investor will like to invest in risky assets unless he is assumed of adequate compensation.

e. Relationship between Risk and Return

The figure represents the higher premium for higher risk in a linear fashion indicating a premium of R1 for r1 of risk, R2 for r2 and so on, backed by the assumption of linear relationship, the risk premium increases or decreases in proportion to the change in level of risk.

f. Areas for Investment Risk

i) Risk on Market Interest Rate:

It is defined as the potential variability of return caused by changes in the market interest rates. If the market interest rate rises, present value of investment will fall and vice-versa. It can more clearly to say that the present value of the common stock moves inversely with changes in the market rate of

interest. This interest rate often affects the prices of bonds, stocks, debentures, real state, gold & silver and other investment assets.

ii) Risk on Purchasing Power:

It is the variability of return an investor suffers because of inflation. Inflation (or a rise in general prices over time) seems to be the normal way of life in most countries today. However, when inflation takes place, financial assets i.e. cash, stocks and bonds may lo0se their ability to command the same amount of real goods and services they did in the past. To put this way, the real rate of return or financial assets may not adequately compensate the financial assets may not adequately compensate the financial assets holders for inflation.

iii) Risk on Bull-Bear Trend of Market:

The risk specially occurs when market is more flexible. Stock market is highly rising or falling. When a security index arises fairly consistently fro a aloe point, called a through, for a period of time, this upward trend is called bull market. The bull market ends when the market index reaches a peak and starts a downward trend. This type of market trend is called bear market.

iv) Default Risk:

It is the risk results from the changes in the financial integrity of the investment. The variability of return that investors experience as a result changes in the credit worthiness of a company in which they invested is their default risk. Due to the falling of financial integrity of a firm that weaken the security prices, the loss on security price called anticipatory losses

v) Liquidity Risk:

Liquidity risks are those risks which arises from the price discount given or sales commission paid in order to sell the assets without delay. This risk affects the return on assets. Liquid assets are often marketable and easy to sales them in a market but fixed and semi fixed assets are not easy to sell when needed.

More the liquid asset is, the larger the price discount or commission in which must be given up by the seller in order to affect a quick sale.

vi) Callability Risk:

Due to the chance of repurchase of bonds and preferred stock which are issued with provision of giving authority to issuer for repurchase, callability risk will emerged. The portion of a security's total variability of return that derives from the possibility that the issue may be called is the callability risk.

vii) Convertibility Risk

Those stocks which are convertible in nature i.e. bonds or a preferred stock will have convertibility risk. This risk will make variability in return.

viii) Political Risk

Political risk arises from the exploitation of a politically weak group for the benefit of politically strong group with the effect of various groups to improve their relative positions increasing the variability of returns from the affected assets. Regardless of whether changes that cause political risk are sought by political or by economic interests, the resulting variability on return is called political risk if it is accomplished through legislative, judicial or administrative branches of the government (Francis, 1997: 3-8).

2.3 Measuring Risk

a. The Standard Deviation

We have already discussed above that the risk is a different concept to grasp, and a great deal of controversy has surrounded attempts to define and measure it to be most useful, any measure of risk should have definite value. We need a measure of the lightness of the probability distribution, one such measure is the standard deviation, the symbol or it (σ) pronounced as sigma.

We can calculate standard deviation for them from the following formula;

$$\sigma j = \sqrt{\frac{\sum (ri - \bar{r})^2}{n}}$$

Where,

ri = expected return at different time

$\bar{r}$ = mean of the expected return

ri- $\bar{r}$ = covariance of expected return with its mean

Another useful measure of risk is coefficient of variation which is calculate from the following ways,

$$\text{Coefficient of Variation (CV)} = \frac{\pm}{\bar{R}}$$

Where,

σ = Standard deviation

$\bar{R}$ = Average of returns.

The degree of risk is highly influenced by the degree of returns higher the return leads higher risks. This implies that risky investment always offer higher expected returns than less risky investment for investment buy and hold them. In short, there is no free lunch when it comes to investment any claims for higher return produced by low risk investment should be viewed skeptically.

b. The Range

The range is known as one of the traditional way of measuring risk and return. It simply shows the difference between the best possible return and the worst possible return but does not provide information about the distribution of the rates of return between the extremes.

Range = Best possible rate of return – Worst possible rate of return.

c. Portfolio Analysis of Risk and Return

The term investment portfolio refers to the various assets of an investor, which are to be considered as a unit. Portfolio is a combination of investment assets. The modern portfolio theory believes in the maximization of return through a combination of securities. Diversification is the process of adding securities to a portfolio in order to reduce the portfolio's unique risk and the portfolios are undertaken with th goal of earning some expected rate of return. Investors seek to minimize inefficient deviations from this expected rate of return. Diversification of risk is essential for the creation of an efficient investment because it can reduce the variability of returns. The portfolio analysis develops a portfolio between various types of assets or investment alternatives that has the maximum returns at whatever levels of risk the investor deems appropriate. The objectives of the portfolio management are:

a. Security of assets value
b. Stability of income
c. Capital growth on investment
d. Marketability of assets
e. Liquidity
f. Diversification of risks
g. Tax advantages
h. Adjustment to the inflation

The portfolio return is calculated by following equations;

E(Rp) = WRx + (1-w)Ry (Two assets)

In case of n securities portfolio the portfolio, the portfolio return will be as follows:

E (Rp)= W1R1 + W2R2 + ----------+ WnRn

Or, $E(Rp) = \sum_{i=1}^{n} wi \times ri$

Where, W_i = Weight of total funds invested in security i

R_i = Expected return for security i

n = Total number of different securities in the portfolio.

The portfolio risk is not merely a weighted average risk. Securities considered in a portfolio are associated with each other. Therefore the portfolio risk also accounts for covariance between the returns of securities. Co-variance is the product of the standard deviation of individual securities times their correlation coefficient. The portfolio risk in the case of two securities can be computed as follows:

$$\sigma^2_p = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + 2w_1 w_2 r_{1.2} \sigma_1 \sigma_2 \quad \text{(Two assets case)}$$

$$\sigma^2_p = w_1^2 \sigma_1^2 + w_2^2 \sigma_2^2 + w_3^2 \sigma_3^2 + 2w_1 w_2 r_{1.2} \sigma_1 \sigma_2 + 2w_1 w_3 r_{1.3} \sigma_1 \sigma_3 + 2w_2 w_3 r_{2.3} \sigma_2 \sigma_3 \quad \text{(Three assets case)}$$

Where,

σ^2_p = Variance of portfolio return

σ_1 = Standard deviation of asset 1

σ_2 = Standard deviation of asset 2

σ_3 = Standard deviation of asset 3

w_1 = The weight of an individual asset 1

w_2 = The weight of an individual asset 2

w_3 = The weight of an individual asset 3

$r_{1.2}$ = Correlation between asset 1 & 2

$r_{1.3}$ = Correlation between asset 1 & 3

$r_{2.3}$ = Correlation between asset 2 & 3

d. The Efficient Frontier

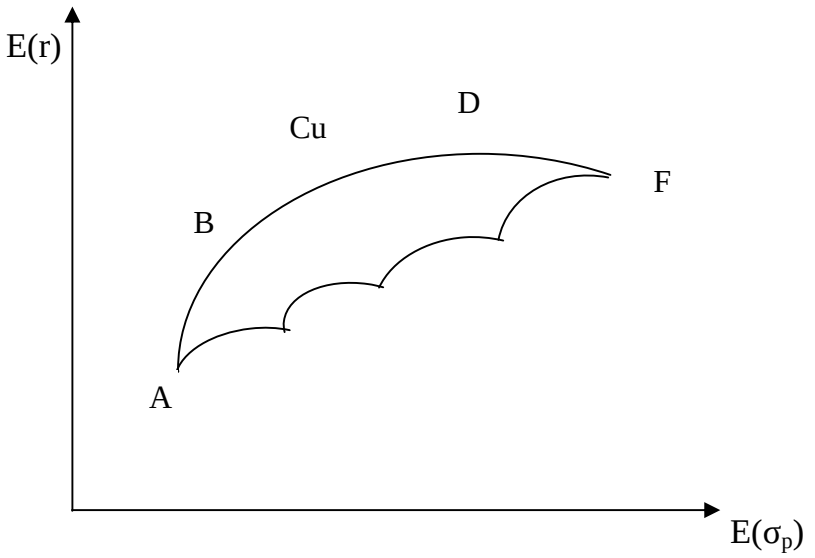
The efficient portfolio theory produces the best possible return for a given return. An investor will choose his/her optimal portfolio from the set of portfolio that:

a. Offers maximum risk for varying levels of risk and return,

b. Offers maximum risk for varying levels of expected return.

The set of portfolios meting these two conditions is known as the efficient set or efficient frontier.

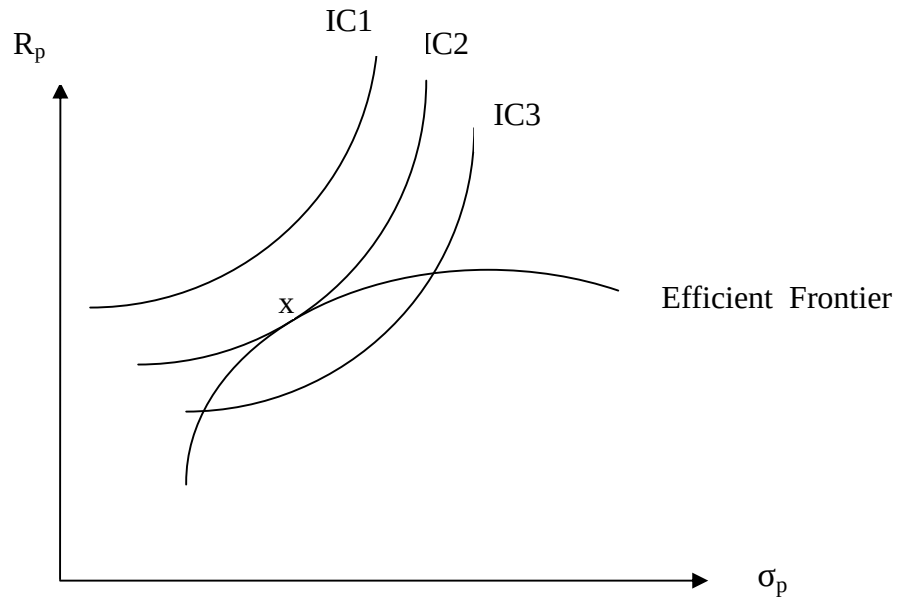
Figure 2.1: The Efficient Frontier



From the above table, the efficient frontier represents the line A, B, C, D and F also and there are many other assets available in this feasible set.

An investor has to select that portfolio which provides optimal return from large number of portfolio in market. For this purpose he/ she have to consider indifferent curves and efficient frontier. It is possible for an investor to determine the various combinations of return and risks to determine the various combinations of return and risks that provides a constant utility.

Figure 2.2: Optimum Portfolio Selection



In the above figure, point x is the optimal portfolio where the efficient frontier tangents with IC2 curve. The investor may not select other alternative because minimum risk and optimal rate of return is impossible in those alternatives. Every investor has a set of indifference curves. The point of tangency between indifference curve and the efficient frontier maximize the investor's utility.

e. Systematic & Unsystematic Risk

Systematic risk is that part of the total risk that risk cannot be reduced through diversification and therefore called systematic risk, market risk or unavoidable risk. The examples of systematic risk are change in interest rate by the government, increase in corporate tax rate, increase in inflation rate, restrictive credit policy introduced by the custom duties on raw materials. The measure of systematic risk permits an investor to evaluate an asset's required rate of return relative to the systematic risk of the stock.

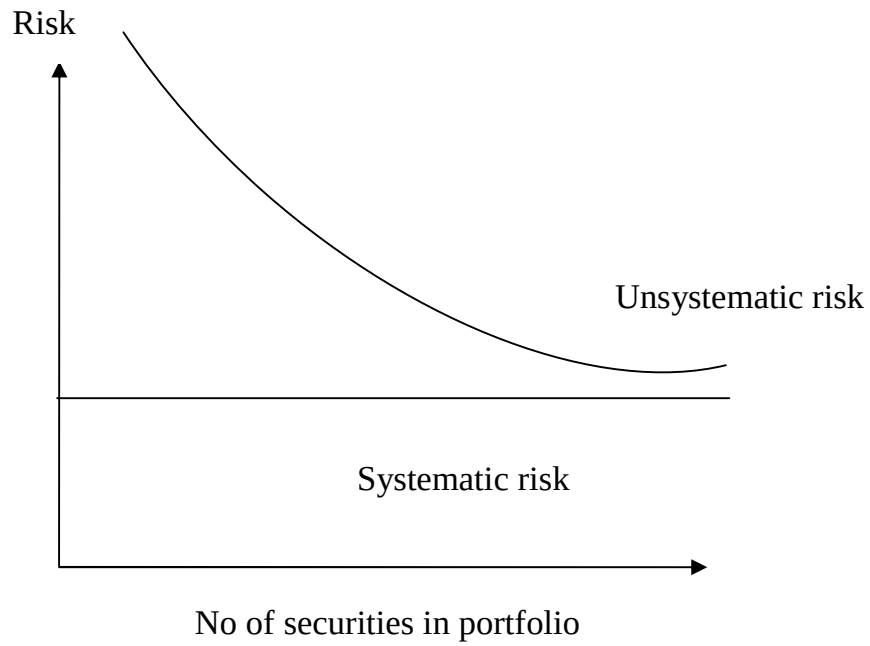
$$\text{Systematic Risk} = \text{Cov}_{jm} / \sigma_p$$

Other hand unsystematic risk is risk unique to a particular company or industry. It is independent of economic, political and other factor that affect all securities

in systematic manner. A wild ear risk may affect only one company a new competitor may begin to produce essentially the same product. Others are increase in the custom duties on raw materials.

Unsystematic risk = $\sigma_j (1-r_{jm})$

Figure 2.3: Systematic & Unsystematic Risk



For most stocks, unsystematic risk accounts for between 60 to 75 percent of stocks total risk or standard deviation (Van Horn and Wachowiez, 1997:91).

f. Capital Assets Pricing Model (CAPM)

The capital assets pricing model was developed by the sharp and linter in 1960. The model explains the relationship between the expected return, risk and valuation of securities. Capital assets pricing model express how the investors require premium for bearing the risk depending upon degree of risk. The required rate of return on all market assets depends in part on risk less rate of return.

"CAPM is the model that describes the relationship between risk and expected return. In this model, a security's expected return is the risk free rate plus a premium base on the systematic risk of the security.

This model is expressed as;

$E(R_j) = R_f + [R_m - R_f] ßj$

Where,

$E(R_j)$ = Expected rate of return

R_f = Risk free rate of return

R_m = Market rate of return

$ß_j$ = Beta coefficient (a measure of the un-diversifiable risk of the j^{th} security)

Beta measures the sensitivity of a stock's return to change in the returns on the market portfolio. The beta of a portfolio is simply a weighted average of the individual stock betas in the portfolio (Van Horne, 1997: 100).

If beta is one then the required rate of return is simply the average return for all situation, that is the return on market portfolio, other wise, the higher the beta, higher the risk premium and the total required rate of return. However, a relatively high beta does not guarantee a relatively high return. The actual return depends partly on the behaviour of the market, which acts as a proxy for general economic factor.

The major implication of the CAPM is that the expected return of an asset will be related to a measure of risk for that asset known as beta. The exact manner in which expected return and beta are related is specified by the CAPM, the model which provides the intellectual basis for a number of the current practices in the investment industry (Sharpe, William 2000: 261-262).

In mid 1960s three economists William Sharpe, John Linter and Jack Trynor, created the CAPM, a theory which began a quest to identify the tendency

portfolio. CAPM is the predominant model used for estimating equity risk and return. It is useful tool for the investment portfolio and for estimating expected rate of return. Comparison between the expected rate of return and required rate of return indicates whether the stock is under priced or overpriced. And when these two returns are equal then it is said to be market equilibrium i.e. all the stocks lay on the security market line (SML).

CAPM model is based on the following assumptions:

a. The capital markets are efficient. The capital market efficiency implies that share price reflect all available information.
b. Investors are risk adverse. They evaluate the securities risk and return in terms of the highest expected returns for a given level of risk.
c. All the investors have the same expectations about the expected return and risk of time period.
d. All investor decision is based on single time period.
e. All investor can lead or borrow at a risk free rate of interest.

Comparison to all above definitions Sir Jack Clark Francis has gave the precise description about the CAPM model in his book Investment Analysis and Management Page 275.

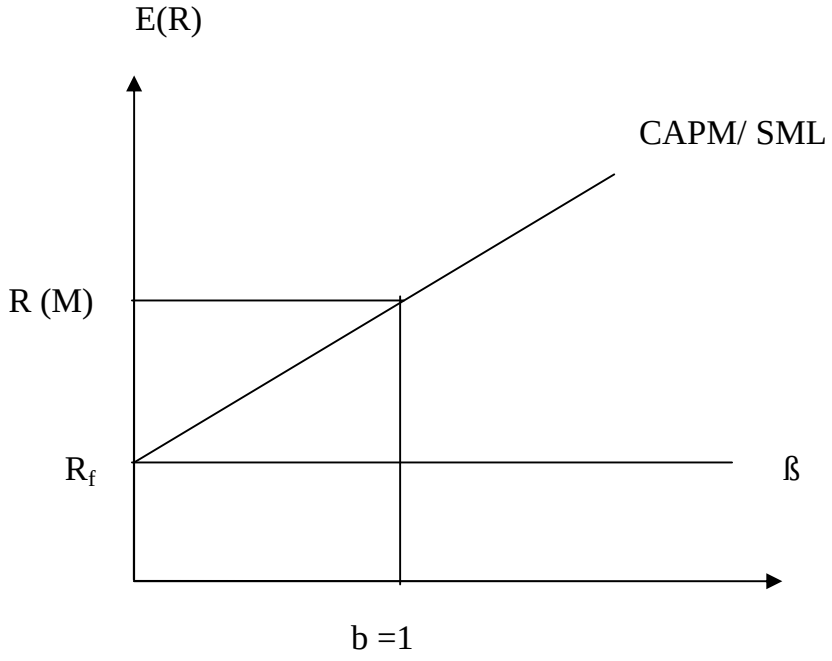
In the Words of Sir Jack Clark Francis;

An old axiom states there are no such things as free lunch. This means that you cannot expect to get something for nothing – a rule that certainty applies to investment returns. Investors who want to earn high rate of return must take high risks and endure the associated loss of sleep. The possibility of ulcers and the chance of bankruptcy, the question to which we now turn is should investors worried about total risk, un-diversifiable risk , diversifiable risk, or all three.

g. Security Market Line (SML)

The graphical version of CAPM is called the security market line (SML) which shows the relation between systematic risk and the required rate of return. The security market line clearly shows that stock A is the increasing function, in fact a linearly increasing function risk. Furthermore it is only market risk that affects return. The investor receives no added return for bearing diversifiable risk.

Figure 2.4: Security Market Line



In above figure in equilibrium no stock can lie below the security market line. For instance, instead of buying stock investors would prefer to lend part of their money and put the balance in the market portfolio. And instead of buying stock they would prefer to borrow and invest in the market portfolio.

An investor can always obtain an expected risk premium of ß (Rm-Rf) by holding a mixture of the market portfolio and a risk free premium of less than ß (Rm-Rf) but, what about the other possibility?

The equation for the SML is;

$E(R_j) = R_f + [R_m - R_f]\ ßj$

Where, $E(R_j)$ = Expected rate of return

R_f = Risk free rate of return

R_m = Market rate of return

$ß_j$ = Beta coefficient

Test of the Stability Beta Coefficient

According to the CAPM, the beta used to estimate a stock's market risk should reflect investor's estimates of the stock's future volatility is relation to that of the market. Robert Levy, Marshall Blame and others have studied the question of beta stability in depth. Levy calculated betas for individual security as well as for portfolio of securities. He concluded that:

a. The betas of individual stocks are unstable; hence the past betas for individual securities are not good estimators of their future risk.

b. The betas of portfolio of ten or more randomly selected stocks are reasonably stable. Hence, the past portfolio betas are good estimators of future portfolio volatility.

h. Test of the CAPM Based on the Slope of the SML

From the figure above about security market line in CAPM model, the CAPM states that a linear relationship between a securities's required rate of return and beta. Further when the SML is graphed, the vertical axis intercept should be Krf and the required rate of return for stock with bi= 1 should be Rm, the market rate of return. There are various researchers who have attempted to test the validity of the CAPM by calculating beta and realized rate of return. Following summary represent the validity of the CAPM by calculating beta and realized rate of return. Following summary represents the validity of the SML.

a. The evidence generally shows a significant positive relationship between realized return and systematic risk. However slope of the relationship is usually less than predicted by CAPM.

b. The relationship between risk and return appears to be linear. Empirical studies give no evidence of significant curvature in the risk/return relationship.

c. The CAPM implies that company specific risk should not be relevant, yet both kinds of risks appear to be positively related to security return that is higher returns seem to be required to compensate for diversifiable as well as the market risk. However, it may be that the observed relationship reflect statistical problems rather than the true nature of capital markets.

d. Richard Roll showed that linear relationship which prior researcher had observed from the mathematical properties of the models being tested. Hence that a linearity proved nothing whatsoever about the validity of the CAPM.

e. If the CAPM were completely valid, it should apply to all financial assets including bonds. In facts, when bonds are introduced into the analysis, they do not plot on SML.

i. Capital Market Line

The capital market line is the efficient frontier when borrowing and lending at the risk less are considered. The CML represents that line on graph where a risk return for trade off efficient portfolio is. The equation for CML is;

$$E(R_p) = R_f + [R_m - R_f] / \sigma_m \times \sigma_p$$

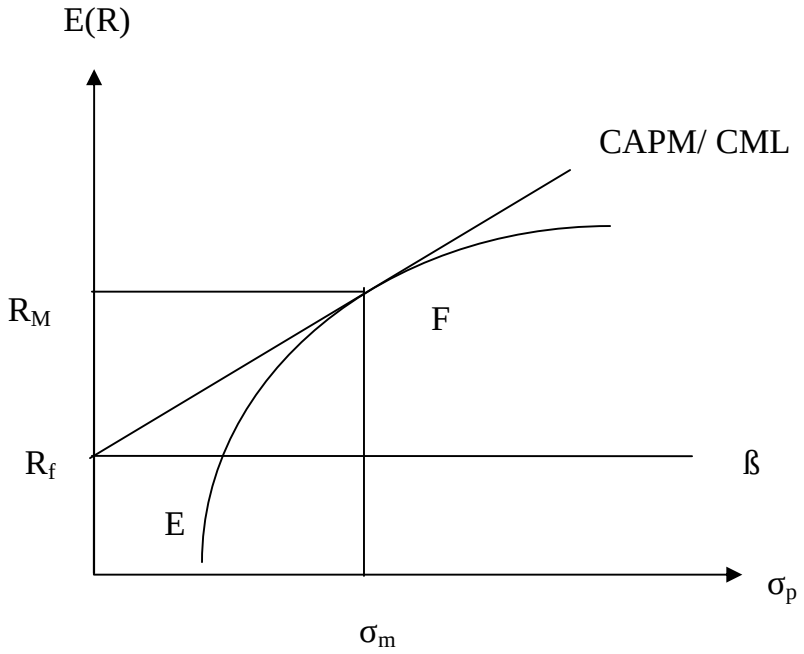
Where,

$E(R_p)$ = Expected rate of return on any efficient portfolio on the CML

σ_m = The s.d. of return on the market portfolio

σ_p = The s.d. of return on the efficient portfolio

Figure 2.5: Capital Market line



The major point of difference between Capital Market line and Security Market line can be expressed as follows:

a. In CML, the risk include total risk while in SML, the risk includes only in diversifiable market related risk.

b. Capital Market line shows the linear relationship between expected rate of return and total risk for efficient portfolios, while SML describes risk return relationship for both efficient and inefficient portfolio.

2.4 Review of Related Empirical Studies

The main focus of the study is about risk and return of common stock investment and its impact on share. There are different studies conducted on risk and return of common stock, so some studies are reviewed on this part of the study;

Sharpe's Study (1964):

William F. Sharpe studies a capital assets pricing model, under this study the total risk can be divided into two main parts; first systematic risk and second

unsystematic risk. An asset with high systematic risk will experience price declines until the expected return is enough to induce investors to assume this un-diversifiable risk. This price level is the equilibrium price and the expected return is the equilibrium rate of return for that risk class. He gives the following formula to test the performance of the portfolios.

$$\text{Sp} = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{\bar{r}_i - R_f}{\pm_i}$$

Where,

Sp = Share portfolio performance Evaluation

r_i = Average return from portfolio P

$\pm_i$ = Standard Deviation of return for portfolio P

R_f = Risk free rate of return

Bodurtha and Mar (1991) tested the CAPM with the time varying risk and return from monthly observation on total equity returns from firms listed in MYSE & monthly treasury bill yield. The estimation period covers 1926 to 1985. They used time series returns for live value weighted portfolios as the assets priced by CAPM and the market return that they used in the CRSP value weighted market return. The paper model estimates and test for the importance of the time varying risk premium and returns variability within the context of a conditional version of the Sharpe-Linter-Mosstion CAPM. Its main contribution is its demonstration of how the generalized method of moments (BMM) can serves as a convenient alternative to maximum likelihood estimation of simultaneous equation system of autoregressive conditionally Hetroskedasticily (ARCH) models. The conditional CAPM allows assets risk premium vary over time as a result of time variation in three components: The market conditional variance. The conditional covariance between the assets risk premium in the conditional CAPM an assets beta is the ratio of conditional variance of the market returns. The major findings they obtained are:

a. The conditional CAPM and purely statistical representation of the conditional first and second moments can not explain the data.
b. Incorporating a January dummy variable in mean-excess return goes a long way in accounting for the effect of committed variables.
c. In final specification of the conditional CAPM augmented by shifting mean excess return in January, significant ARCH components in the betas and previously undocumented quarterly components in volatility of the market portfolio, and
d. A CAPM with constant beta is strongly rejected by data.

Thus, studies on stock returns with respect to beta, dividend yield, earning yield, dividend payout and total capitalization are maximum devoted to examine the performance mutual funds. Higher dividends may forecast higher return unlike higher earning forecast low returns. Moreover both have substantial explanatory at a short horizon. Actually betas and returns have not been found to be related to each other as CAPM suggest.

Manohar Krishna Shrestha's Study:

Prof. Dr. Manohar Krishna Shrestha makes a study on title 'Shareholders democracy an annual general meeting (AGM) feedback'. This study critically analyzed the situation of common stock investors. Shrestha argued the need of separate act regarding the protection of shareholders right.

Company and other financial and industrial sectors have provisioned rights of the shareholders as:

a. Participation in general meeting
b. Right of getting information
c. Electing as a board of director
d. Participation in the profit & loss of the company
e. Transferring shares
f. Proxy representations.

2.5 Review of Thesis

Ojha's (2000) has been conducted in his research paper titled 'Financial Performance and common Stock pricing', concludes that an investment in common stock of a corporate firm neither ensures annual nor ensures the return of principal. Therefore investment in common stock is very sensitive on the ground of risk. Study is focused on the financial performance where financial activity involves decision regarding;

a. Forecasting and planning of financial requirement,
b. Investment decision
c. Financial Decision

Paudel's (2001) has been done in his study 'A study on share price movement of joint Venture Commercial Banks in Nepal', the major objective are to examine Nepal Stock Exchange Market and to judge whether the market shares of different banking indicators (book value per share and other major ratios) explain the price movements and to analyze the scenario why the shares of selected banks emerge as blue chips to the potential investors and to make a conclusion on the basis of financial analysis. His findings are; the market share and the market shares of these banks do not capture the growth rates of different banking indicators used. The ordinary least square equation of book value per share on market value per share reveals that the independent variable does not fully explain the dependent variable on the basis of the above mentioned two points; Nepal Stock Exchange operates in a weak form of efficient market hypothesis. Indicating that the market prices move randomly the market value per share does not accommodate all the available historical information. Having good track record of the financial position, the market potential investors buy the shares of joint venture commercial banks.

Upadhyay's (2001) has been conducted thesis on 'risk and return on common stock investment of commercial banks on Nepal'. He had been taking five commercial banks as sample.

According to his study, its main objects was to assess risk compensating return of listed commercial banks and their positions in the stock exchange and to analyze the volatility of common stocks and other relevant variables as affecting factor on investment portfolios.

He concluded that the Nepalese investors cannot analyze the securities and market properly due to the lack of information and proper knowledge. The common stock of Standard Chartered Bank Nepal Limited (former Nepal Grind lays Bank) bears the maximum realized rate of return and Nepal SBI Bank Limited the minimum. In terms of risk analysis Nepal Grind lays banks has highest risk and common stock of Nepal SBI Bank the lowest, as comparing beta coefficient, it shows common stock of Everest Bank was most volatile and Nepal Indosuez Bank was the least. As a whole common stock of commercial banks were overpriced than other sector.

Sapkota's (2000) has been done in his study on "Risk and return analysis of Joint venture commercial banks in Nepal", he points out that risk and return analysis is important concept of investment decision process. It helps to make good investment opportunity in stock market as well as new issue market, basically, this study analyze risk and return of commercial bank, which are listed in NEPSE. The study period was 2049/50-2055/56. He utilized some historical tools of analysis like: market price of stock and dividend and expected return, standard deviation, co-variance, beta coefficient etc. the major findings of the study are:

a. Nepalese economy is in emerging stage but sue to the lack of proper knowledge and information, Nepalese private investor can not analyze the securities as well as market properly.

b. Banking industry is the biggest one in terms of market capitalization and turnover and return for common stock of commercial banking sectors are more parallel with market return.

c. The portfolio approach of investment is better way to win the stock market investment

2.6 Review of Journals

The journal of finance by American finanace associations for many decades is taken into account. In the volume 54, 4th June, 1999 an article 'the performance of hedge funds: risk return and incentives', by Carl Ackermann, Richard Mc Enally, and David Ravens craft has been reviewed here. Hedge funds may be enhancing returns by taking extra risk. Many hedge funds use tools designed to reduce systematic risk rather than total risk. Though this is obviously true for short sellers and market neutral funds technique such as short sales are employed by most hedge funds. Combination of incentives, alignment and investment flexibility keeps hedge fund a clear performance advantage over funds. Incentive funds are the most important and significant determinants of risk adjusted return. Using 2, 4, 6 & 8 years sample at all ending December 1995 with 547, 272, 150 & 79 respectively hedge fund observation. Main findings of this study are the average hedge fund sharp ratio is higher than comparable mutual fund sharp ratio. This performance advantage increases when we match fund by reign hedge funds achieved. This sharp ratio is superiority despite their higher total risk. In this study, the average total risk is higher for hedge funds. Thus some of the characterizes that enhance hedge funds performance may not be appropriate for mutual funds that attract undiversified, risk averse client.

In the same journal, an article named 'The Theoretical Relationship between Systematic risk and financial variable' by Robert G. Bowman. The purpose of this study was to examine the relationship between risk and financial variable. Systematic risk of livered firm is equal the systematic risk of the same firm without leverage. There is no direct relationship earning variability and market risk. Systematic risk is directly related to the accounting beta. There is no theoretical basis for relationship of dividend payout and beta. There is not only

theoretical relationship between dividend and systematic risk but also size and growth of the firm and systematic risk.

The article 'Characteristics of Risk and Return in Risk Arbitrage' by mark Mitchell and Todd Pulvion to determine weather the returns to risk arbitrage reflects market inefficiencies or rewards for bearing rear event risk over the 1963 to 1986 time period. Using a comprehensive sample of cash and stock for stock mergers, we examine returns generated from risk arbitrage. For constraint mergers, we examine returns generated from risk arbitrage. For constraint merger an investment in any merger can not exceed 10% of the total capital, sizes are limited by the liquidity of the underlined securities. The index fund must have an adequate amount of cash reserves to undertake the investment.

An article published on the business age Oct-Nov 1999 entitled 'Stock market doing pretty well' by Nawaraj Pokharel is reviewed here;

In this study, he has stated that the investment of the shares of manufacturing and processing was more attractive than of the banks. He found that the shares of individual companies showed very good performance from October 1998 to 1999. NEPSE index showed upward trend for all the shares in this period. He gave following reasons behind the appreciation of share price.

a. Companies have rewarded shareholders
b. Reduction of interest rate of money market
c. Healthy speculation and loan has made the market interesting by providing loan to the stock investors their share as collateral
d. Investors are appearing more rational in their investment decision
e. Continuity maintained in the government policy is an added advantage to the market.

Finally he concludes that the capital market needs more infrastructure investment than institution investment once the required infrastructure can

facilitate the market, the size of the market could be made even bigger by introducing new instruments such as government bonds.

An article entitled ‘local return factors and turnover in emerging stock markets’ by K. Great Rouwenhourtst in the year 1999 is also relevant to this study. This paper examines the sources of return variation in emerging stock markets. Compared to the developed markets the correlation between most emerging market and stock market has been historically low and until recently any emerging country restricted investment by foreign investor.

He attempts two sets of question to answer by his solution. Many emerging market have firms with multiple classes of shares carrying different ownership restrictions. Firms with multiple shares classes are treated as single value weighted portfolio of the outstanding equity securities. He concludes that the return factors in emerging markets are qualitatively similar to those in developed markets. The low correlation between the country return factors suggests that the premiums have a strong local character. Furthermore, global exposure can’t explain the average factors returns of emerging markets there is little evidence that the correlation between the local factor portfolios have increased, which suggests that factors responsible for increase of emerging market country relation are separate from those that drive the differences between expected return within these markets. A Bayesian analysis of premium in developed and emerging market shows that, unless one has stronger prior beliefs to the contrary, the empirical evidence favors the hypothesis that size, momentum and value strategies are compensated for expected returns around the world. Finally the paper documents the relationship between expected return and share turnover examines the turnover characteristics of the local return factor portfolio. There is no evidence of a relation between expected return and turnover in emerging market. However, beta, size, momentum and value are positively cross section ally correlated with turnover in emerging markets. This suggests that the return premiums do not simply reflect compensation for liquidity.

Risk and return analysis is a basic criterion for investment. It is more sensitive when investment is going on the commercial banks. In Nepal there are all together 27 commercial banks, within them, only 6 joint venture commercial banks are conducting banking transaction in Nepal.

This study is going on the risk and return analysis of joint venture commercial banks in Nepal. So, basically risk and return related books, journals, different studies and thesis are reviewed for conducting the study in depth. Source of the information indicates about investment in commercial banks are more sensitive in Nepal. More researcher conducted research by taking expected return, Beta coefficient, standard deviation, coefficient of variation, correlation, regression and portfolio risk and return as major analytical tools. They analyze earning per share, market price of the shares, dividend payout ratio, cash dividend etc. No-one considering stock dividend for analysis purpose. In this study, stock dividend is also taken in to consideration which gives us an idea for investment in commercial banks.

CHAPTER – III
RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology refers to the various technical steps that are to be adopted by a researcher during the course of studying a problem with certain objectives. It is a systematic way of solving research problems. It refers to the overall research process from the theoretical foundation to the collection and analysis of the data. As most of the data are quantitative study is based on scientific models. It is the compilation of technical aspect and logical aspect on the basis of historical data. Research is systematic and organizational effort to investigate a specific problem that needs a solution. This process of investigation involves a series of well thought out activities of gathering, recording and analyzing and interpreting the data with the purpose of finding answer to the problem. Hence, the entire process by which we attempt to solve the problem is called research.

Research can be conducted on the basis of primary and secondary data. In this study, all the data are secondary and those data are analyzed using appropriate financial as well as statistical tools. Outcomes are presented in simple way. In this chapter the following aspects of research will be discussed.

3.2 Research Design

“Research design is the plan structure and obtains answer to the questions and to collect variance.”

The study is based on the recent historical data, so simply it is a historical research, which covers five years period 2004/2005 to 2007/2008. It deals with the common stock of the commercial banks on the basis of available information .So the main objectives of this study is to find out how the return can be maximize in term of investment of common stocks of the selected

companies. To achieve these objectives, both the analytical and descriptive research designs have been adopted. But as the title of the study suggest, it is more analytical and empirical and less descriptive.

3.3 Population and Sample

The study is conducted on listed joint venture commercial banks in Nepal. So, population of the total listed commercial banks is 26, they are:

a. Nepal Bank Limited
b. Rastriya Banijya Bank Limited
c. Nabil Bank Limited
d. Nepal Investment Bank limited
e. Standard Chartered Bank Nepal Limited
f. Himalayan Bank Limited
g. Nepal SBI Bank Limited
h. Nepal Bangladesh Bank Limited
i. Everest Bank Limited
j. Bank of Kathmandu Limited
k. Nepal Credit and Commerce Bank Limited
l. Lumbini Bank Limited
m. Nepal Industrial and Commercial Bank Limited
n. Machapuchhre Bank Limited
o. Kumari Bank Limited
p. Laxmi Bank Limited
q. Siddhartha Bank Limited
r. Agricultural Development Bank Limited
s. Global Bank Limited
t. Sunrise Bank Limited
u. Bank of Asia Nepal Limited
v. Prime Commercial Bank Limited
w. Citizens Bank International Limited
x. NMB Bank Limited

y. Development Credit Bank Limited
z. Kist Bank Limited

Out of these 26 commercial banks, there are 6 joint venture bank are currently operating in Nepal. They are:

a. Nepal Arab Bank Limited (NABIL Bank)
b. Standard Chartered Bank Nepal Limited
c. Himalayan Bank Limited
d. Nepal SBI Bank Limited
e. Nepal Bangladesh Bank Limited
f. Everest Bank Limited

3.4 Nature and Sources of Data

This study has been conducted on the basis of secondary data and information. The secondary data are:

a. Information those are relevant to the study available in various websites (especially websites of NEPSE, SEBON, NRB, Ministry of finance, and other related companies (www.nepalstock.com, www.nrb.org.np, www.mof.com.np, www.nabilbank.com.np etc)
b. Relevant books, journals, magazines, reports bulletins etc.
c. Annual reports provided by the related commercial banks.

3.5 Data Collection Procedures

The problem of the study lies in the fact that to what extent the MPS of selected listed joint venture commercial banks is correlated with various financial indicators like EPS, DPS etc and what the degree of risk is that involves in the investment in the selected joint venture commercial banks from the view points of investors. In order to achieve concrete answers to these questions, it needs various information.

Data related to the market prices of stocks, market capitalization, movement of NEPSE index etc. is taken from the report provided by NEPSE. Annual reports of commercial banks are also taken into consideration. The data collecting procedures used for the study are as follows:

a. Selecting and making the topic and finally making the bibliography from the available literatures, Journals and other books.
b. Reviewing these Literature, Journals, and books.
c. For collecting the required data, different types data, unpublished financial statements, records have been collected.

Data so obtained have no meaning unless they are arranged and presented in a systematic way, further they need to be verified and simplified for the purpose of analysis. Moreover, data and information so gathered are to be checked, edited and tabulated in such a ways that provide convenience for computation of required financial indicators and for interpretation of the financial indicators.

The meaningful tables and chart have been formatted from the different relevant data and presented them in the tabular from in the understandable way and unnecessary data have been excluded. It is attempted to find out the conclusion from the available data with the help of various financial as well as statistical tools.

3.6 Analytical Tools Used

3.6.1 Market Price of Stock (P)

Main indicator of the financial strengths of the company is its market price. Of stock aw we follow the market price of the shares of banking companies; it may be three types: high, low and closing price. Among these prices, each year closing price has been taken as the market price of the stock which has specific time of span of one year and the study has been focused in annual basis. To find out real price of the market, it is necessary to take average closing price of the year or by year, but it is tedious and impossible to consider the data

availability and maintenance. Hence, the market price of stock, which has specific time span of one year and the study, has focused in annual basis.

3.6.2 Dividend

Dividend is relevant during the computation of rate of return, which is a reward to the shareholders for their investment. If a company declares only the cash dividend, there are no problems to take the dividend amount. But if the company declares stock dividend, there are no problems to take the dividend amount. But if the company declares stock dividend (Bonus share), it is difficult to obtain the real amount of total earning to the shareholders. To find out actual gain to shareholders, the following formula is appropriate for that purpose;

Total Dividend amount = Cash dividend + stock dividend % × next year's market price per share.

3.6.3 Return on Common Stock Investment (R)

Return is the income received from the investment. It is also included those changes in the price of common stock at the beginning and the transaction time. It is represented by the percentage.

Symbolically,

$$R = \frac{Dt + (Pt - Pt - 1)}{Pt - 1}$$

Where,

R	=	Expected return
Dt	=	Dividend received at the time t
Pt	=	Stock price at the time period t
Pt-1	=	Stock price at the time period t-1

3.6.4 Expected Rate of Return on Common Stock ($\overline{R_j}$)

Expected return on common stock aims to find out the average returns on common stock in the different periods that means it is obtained by the arithmetic mean of the past years returns.

In formula,

Expected Return ($\overline{R_j}$) = $\frac{\sum R_j}{n}$

Where,

$\overline{R_j}$ = Expected rate of return of common stock j

n = Number of years that the return is taken.

R_j = Return of stock j.

3.6.5 Standard Deviation (S.D.)

Standard deviation is used for the measurement of the variability of a distribution of returns. It is measured from the average return. It is the square root of the variances of the returns. So, it measures the total risk of the assets. Standard deviation is calculated from the following formula,

Standard deviation ($\pm_j$) = $\sqrt{\sum_{j=1}^{n} \frac{(R_j - \overline{R_j})^2}{n}}$

Where,

Standard deviation ($\pm_j$) = Standard Deviation of the returns on stocks j during the time period n.

$(R_j - \overline{R_j})^2$ = covariance of the returns from the average return

n = number of years

When probability distribution is given,

Then,

Standard deviation ($\pm_j$) $= \sqrt{\sum_{j=1}^{n} P_j (R_j - \overline{R_j})^2}$

Where,

Standard deviation ($\pm_j$) = Standard Deviation of the returns on stocks j during the time period n.

P_j = probability distribution of the returns j

3.6.6 Coefficient of Variation (C.V.)

It is applicable to determine the risk per unit of the expected return. It is the ratio of standard deviation of returns to the mean of the distribution. It measured the percentage of variability of the risk. Co-efficient of variation can be computed from the following formula;

$$CV_J = \frac{\pm_J}{\overline{R}_J}$$

Where, CV_J = Coefficient of variation of stock j

$\overline{R}_J$ = mean of the returns of the stock j

3.6.7 Beta Coefficient

The term beta coefficient is the indicator for the sensitivity of the market risk. It is an ides of systematic risk. It may used for ranking the systematic risk of different assets. Logically, the systematic risk is the covariance between the returns of an individual asset or portfolio and the returns of the market portfolio. If beta is less than 1 then the assets is considered defensive assets as its price fluctuations are less volatile than the market. On the other hand, if the beta is equal to 1 then the assets is said to be average as its price move proportionate to the market changes. Beta is calculated by the following formula,

$$_{j} = \frac{COV(R_j R_m)^2}{\pm^2_m}$$

Where,

$_{j}$ = Beta coefficient of stock j

$COV(R_j R_m)$ = covariance between returns on stock j

$$COV(R_j R_m) = \sqrt{\sum_{j=1}^{n}(R_j - \overline{R_j})(R_m - \overline{R_m})}$$

$\pm^2_m$ = Variance of market return

Market beta serves as a benchmark or a measuring scale for the evaluation of risk of individual stocks; if that is less than 1 it is considered to be defensive (less risky), greater than 1, then it is considered to be aggressive , Beta coefficient must be equal to 1.

3.6.8 Portfolio Analysis

CAPM Model:

CAPM suggests that any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk the only relevant risk is non diversifiable risk; therefore the investment decision and the pricing of capital assets should be based on undiversifiable risk. The CAPM further suggest that the price of capital asset should determine in a way that to compensate the systematic risk.

The required rate of return to bear certain level of systematic risk can be determined by using following equation:

Required rate of return (K_j)= R_f + (R_m -R_f) β_j

Where,

R_f= Risk free rate of return

R_m= expected return on market portfolio

β_j = beta or systematic risk index of assets j

Analysis of Total Risk:

Total variability of returns of an asset or portfolio is measured by variance and standard deviation. This total risk can be divided into two parts i.e. diversifiable and undiversifiable risk.

Total Risk = Diversifiable Risk + Undiversifiable Risk

Diversifiable Risk:

Diversifiable risk is also known as unsystematic risk. This types of risk id unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. It is caused through the event like, labor strikes, management errors, invention, advertising campaign, and shifts in consumer test, availability of raw materials. It can be stated as:

Unsystematic Risk = Total Risk – Systematic Risk

Var (e) = $\pm_{j}^{2} - {}_{jm}^{2}\pm_{m}^{2}$

Where,

var (e) = variance of standard error

Undiversifiable Risk

Undiversifiable risk is known as the systematic risk. This risk is those portions of total variability in return caused by market factor (also called market risk) that simultaneously affect the price of all securities. This risk creates due to the changes in macro economic factor like, interest rate, inflation, investors' expectations; gross domestic product (GDP) etc. Undiversifiable risk is that part of total risk that can not be eliminated by allocating capital to a diversified portfolio of investment. It can be stated as:

Systematic Risk = ${}_{jm}^{2}\pm_{m}^{2}$

Proportion or percentage of systematic risk is also measured by coefficient of determination. Coefficient of determination is the square of correlation coefficient.

Percentage of systematic risk = $\frac{Systematic\ risk}{Total\ risk} \times 100$

$$= \frac{\pm_{jm}^{2}}{\pm_{j}^{2}} \times 100$$

So, Coefficient of determination = $\frac{Systematic\ risk}{Total\ risk} \times 100$

$$= \frac{\pm_{jm}^{2}}{\pm_{j}^{2}} \times 100$$

CHAPTER – IV

PRESENTATION AND ANALYSIS OF DATA

This chapter includes analysis of data collected and their presentation with interpretation. This chapter presents main body of the study. The analysis of data consists of organizing tabulation and assessing financial and statistical result. This chapter also describes the detail data of stock price and dividend of each bank and NEPSE index of joint venture bank and the market is presented an their analysis are included. The basis objective of the chapter is to analyze and elucidate the collected data following the conversion of unprocessed data to and understandable presentation. Thus, this chapter is devoted to the presentation, analysis, interpretation and scoring the empirical findings out the study through definite course of research methodology. Various financial and statistical tools have been used in this of the study of achieve objective of study.

In this chapter effort has been made to analyze the various portfolios by find out the optimal weight of each stock that give minimum portfolio risk of joint venture banks of Nepal.

First data summarized and presented in tabulated form and there after they are analyzed in terms of risk, return, and coefficient of variation, beta calculation, correlation and covariance. Finally, the minimum risk portfolio weight is calculated by various correlated assets and tries to find out the optimum solution of the study as to constructing portfolio that will result in maximum return at its same level of risk or minimum risk at its same level or return. This chapter is sub-divided into nine parts and each part gives the clear presentation and analysis figure and facts of the calculation.

4.1 Presentation of Data

Table 4.1: Closing Price of Stock and Cash Dividend of Listed Joint Venture Banks

FY	SCBNL		NABIL		NSBIBL		HBL		Everest		NBBL		NEPSE
	Stock Price	Cash Dividend	Stock Price	Cash Dividend	Stock Price	Cash Dividend	Stock Price	Cash Dividend	Stock Price	Cash Dividend	Stock Price	Cash Dividend	
1999/00	1985	100	1400	55	562	15	1700	50	995	130	1502	0	360.70
2000/01	2144	100	1500	40	1500	0	1500	27.50	650	0	1100	5.04	348.13
2001/02	1575	100	700	30	401	0	1000	25	405	0	510	0	227.54
2002/03	1640	110	740	50	255	8	836	1.32	445	20	360	0	204.84
2003/04	1745	110	1000	65	307	0	840	0	680	20	290	0	222.04
2004/05	2345	120	1505	70	420	0	920	11.58	870	0	270	0	287.67
2005/06	3775	130	2240	85	612	5	1100	30	1379	25	199	0	386.83
2006/07	5900	80	5050	100	1176	10	1760	15	2430	10	550	0	683.95

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

The above table shows that the stock price of Standard Chartered Bank Nepal Ltd (SCBNL) has increasing trend since 2001/02. It has the highest stock price in 2006/07. But stock price of NABIL has been fluctuating by various years. However, stock price of HBL has fluctuating with highest of Rs.1760 in the Fiscal year 2006/07. EBL and NBBL have smallest figure of stock price comparing to other joint venture banks.

Other-side statement of dividend payout shows that, SCBNL has paid cash dividend above 100% in every fiscal years. Like that, NABIL bank is rated as second position in dividend payer. Everest bank is also sound to the payment of dividend to its shareholders. It paid 130% cash dividend in Fiscal year 1999/00 and 10% in previous year. HBL has fourth position in dividend payout and NBBI and NBBL are both in fifth and sixth position in this regards.

Table 4.2: Analysis of Market Risk, Return and Coefficient of Variation

Fiscal Year	NEPSE Index	$r_m = nepse - nepse_{t-1} / nepse_{t-1}$	$r_m - E(r_m)$	$[r_m - E(r_m)]^2$
1999/00	360.70	-	-	-
2000/01	348.13	-0.0348	-0.1793	0.0321
2001/02	227.54	-0.3464	-0.4909	0.2410
2002/03	204.84	-0.0998	-0.2443	0.0597
2003/04	222.84	0.0840	-0.0605	0.0037
2004/05	287.67	0.2956	0.1511	0.0228
2005/06	386.83	0.3447	0.2002	0.0401
2006/07	683.95	0.7681	0.6236	0.3889
	Total (N=7)	$\sum r_m = 1.0114$		$\sum[(r_m - E(r_m)]^2$ =0.7883

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

Calculation of Market Risk and Return and Coefficient of Variation

Expected Return $E(r_m)$ $= \frac{\sum r_m}{N} = \frac{1.0114}{7} = 0.1445$ or 4.05%

Standard Deviation $(\pm_m)$ $= \sqrt{\frac{\sum[(r_m - E(r_m)]^2}{N-1}} = \sqrt{\frac{0.7883}{7-1}} = \sqrt{0.1314}$

$= 0.3625$ or, 36.25

Coefficient of Variation $(C.V.)_m$ $= \frac{(\pm_m)}{E(r_m)} \times 100 = \frac{0.3625}{0.1445} \times 100 = 250.87\%$

From the above calculation, markets return decrease with negative return since FY 2000/01 to 2003/04, where the standard deviation of market return is 36.25 % and Coefficient of Variation is 250.87% and the return is 14.45%.

4.2 Analysis of Individual Assets of Joint Venture Bank

4.2.1 Standard Chartered Bank Nepal Limited (SCBNL)

Market price and dividend records of common stock of SCBNL are shows in table 4.3; Market Price per Share (MPS) was found extra high in FY 2006/07. Closing price figure movement is shown in figure 4.2 and expected rate of return, S.D. and C.V. are calculated in table 4.4 below and Covariance, beta coefficient are shown in table 4.5 in the next pages.

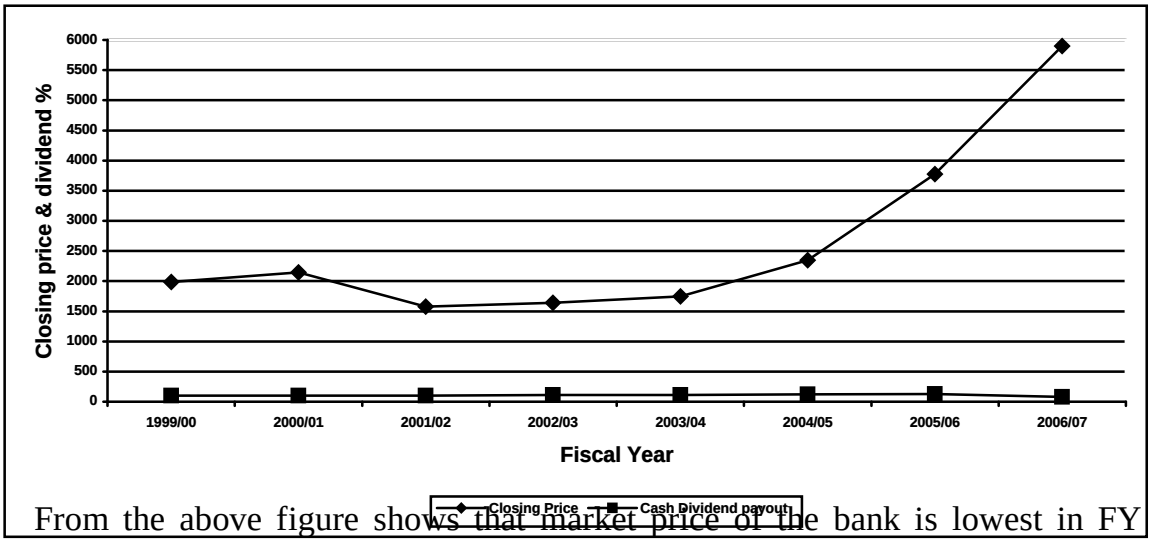
Table 4.3: MPS and Dividend Distribution of SCBNL

Fiscal Years	Market Price per share (Rs.)			Cash Dividend
	High	Low	Closing	
1999/00	2050	1181	1985	100
2000/01	3111	1860	2144	100
2001/02	2100	1000	1575	100
2002/03	1760	1380	1640	110
2003/04	1780	1553	1745	110
2004/05	2350	1730	2345	120
2005/06	3775	2200	3775	130
2006/07	5900	3058	5900	80

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

Graphical analysis of the share price and dividend payout is presented in the next page.

Figure 4.1: Closing Price & dividend Movement of SCBNL



From the above figure shows that market price of the bank is lowest in FY 2001/02 and that is going to slightly increasing trend and it was highest in FY 2006/07 with Rs.5900.Dividend payout is also constant by FYs, i.e. 100% in FY1999/00 and 80% in FY 2006/07.

Table 4.4: Calculation of Expected Rate of Return, Standard Deviation and C.V. of SCBNL

Fiscal Year	**Closing MPs**	**Cash Dividend**	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r_0 - E(r_{0)}$	$[r_0 - E(r_{0)}]^2$
1999/00	360.70	100	-	-	-
2000/01	348.13	100	0.1305	-0.1289	0.0056
2001/02	227.54	100	-0.2187	-0.4781	0.2286
2002/03	204.84	110	0.1111	-0.1483	0.0220
2003/04	222.84	110	0.1311	-0.1283	0.0165
2004/05	287.67	120	.4126	0.1532	0.0235
2005/06	386.83	130	0.6652	0.4058	0.1647
2006/07	683.95	80	0.5841	0.3247	0.1054
	Total (N=7)		$\sum r_0 = 1.8159$		$\sum[(r_0 - E(r_0)]^2 = 0.5773$

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

Expected Return $E(r) = \frac{\sum r_0}{N} = \frac{1.8159}{7} = 0.2594$ or 25.94%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r_0 - E(r_0)]^2}{N-1}} = \sqrt{\frac{0.5773}{7-1}} = \sqrt{0.0962}$

$= 0.3102$ or, 31.02 %

Coefficient of Variation (C.V.) $= \frac{(\pm)}{E(r)} \times 100 = \frac{0.3102}{0.2594} \times 100 = 119.58\%$

From the calculation of the standard deviation, Expected return & C.V. of SCBNL, it is 25.94% as Expected return 31.02% as Standard deviation and 119.58% as C.V.

Table 4.5: Calculation of Co-variance, Beta Coefficient of SCBNL

Fiscal Year	$[r_{SCBNL} - E(r_{SCBNL})]$	$r_m - E(r_{m)}$	$[r_{SCBNL} - E(r_{SCBNL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{SCBNL} - E(r_{SCBNL})] \times [r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	-0.1289	-0.1793	0.0166	0.0321	0.0231
2001/02	-0.4781	-0.4909	0.2286	0.2410	0.2347

2002/03	-0.1483	-0.2443	0.0220	0.0597	0.0362
2003/04	-0.1283	-0.0605	0.0165	0.0037	0.0078
2004/05	0.1532	0.1511	0.0235	0.0228	0.0231
2005/06	0.4058	0.2002	0.1647	0.0401	0.0812
2006/07	0.3247	0.6236	0.1054	0.3889	0.2025
	Total (N=7)				$\sum [r_{SCBNL} - E(r_{SC}$ x$[r_m - E(r_{m)}]$ =0.6086

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

Covariance $[r_{SCBNL} . r_m] = \frac{\sum [r_{SCBNL} - E(r_{SCBNL})][r_m - E(r_{m)}]}{N-1}$, $= \frac{0.6086}{7-1}$, $= 0.1014$

Beta Coefficient (ß) $= \frac{Cov(r_{SCBNL}, r_m)}{\pm^2_m}$, $= \frac{0.1014}{0.1314}$, $= 0.7717$

Correlation coefficient between SCBNL and Market [Cor(P_{SCBN},m)]

$$= \frac{Cov(r_{SCBNL}, r_m)}{\pm_{SCBNL} \times \pm_m} = \frac{0.1014}{0.1124} = 0.9021$$

As we know that beta is the index of systematic risk, which normally arouses by market forces and cannot be diversified. SCBNL has beta coefficient of 0.7717, which indicates that it is a defensive type of assets, which seems to less volatile than the market. Correlation coefficient is 0.9021 indicates the lower than perfectly positively correlation of SCBNL with market and therefore it is a less risky assets.

Other side, trend analysis of the return on common stock of SCBNL also conducted to analyze the future trends of the returns which are calculated through least square methods as follows.

Table 4.6: Calculation of Year-wise Trend Values of SCBNL

Fiscal	Coded	Rate of	X (Y-4)	XY	X^2	Estimated

Year	Year	Return (Y)				Value
2000/01	1	0.1305	-3	-0.3915	9	-0.1081
2001/02	2	-0.2187	-2	0.4374	4	0.0144
2002/03	3	0.1111	-1	-0.1111	1	0.1369
2003/04	4	0.1311	0	0	0	0.2594
2004/05	5	0.4126	1	0.4126	1	0.3819
2005/06	6	0.6652	2	1.3304	4	0.5044
2006/07	7	0.5841	3	1.7523	9	0.6269
	N=7	$\sum y = 1.8159$	$\sum x = 0$	$\sum xy = 3.4301$	$\sum x^2 = 28$	

Source: NEPSE website www.nepalstock.com and Annual Report of Banks.

From above table,

As $\sum x = 0$, $a = \frac{\sum y}{N} = \frac{1.8159}{7} = 0.2594$

$b = \frac{\sum xy}{\sum x^2} = \frac{3.4301}{28} = 0.1225$ (i.e. +ve increasing trend)

We know that, trend line Y = a + bx

In this way, Y = 0.2594 + 0.1225x

Here,

X = -3, then, Y = 0.2594 + 0.1225 x -3 = -0.1081

X = -2, then, Y = 0.2594 + 0.1225 x -2 = 0.0144

X = -1, then, Y = 0.2594 + 0.1225 x -1 = 0.1369

X = 0, then, Y = 0.2594 + 0.1225 x 0 = 0.2594

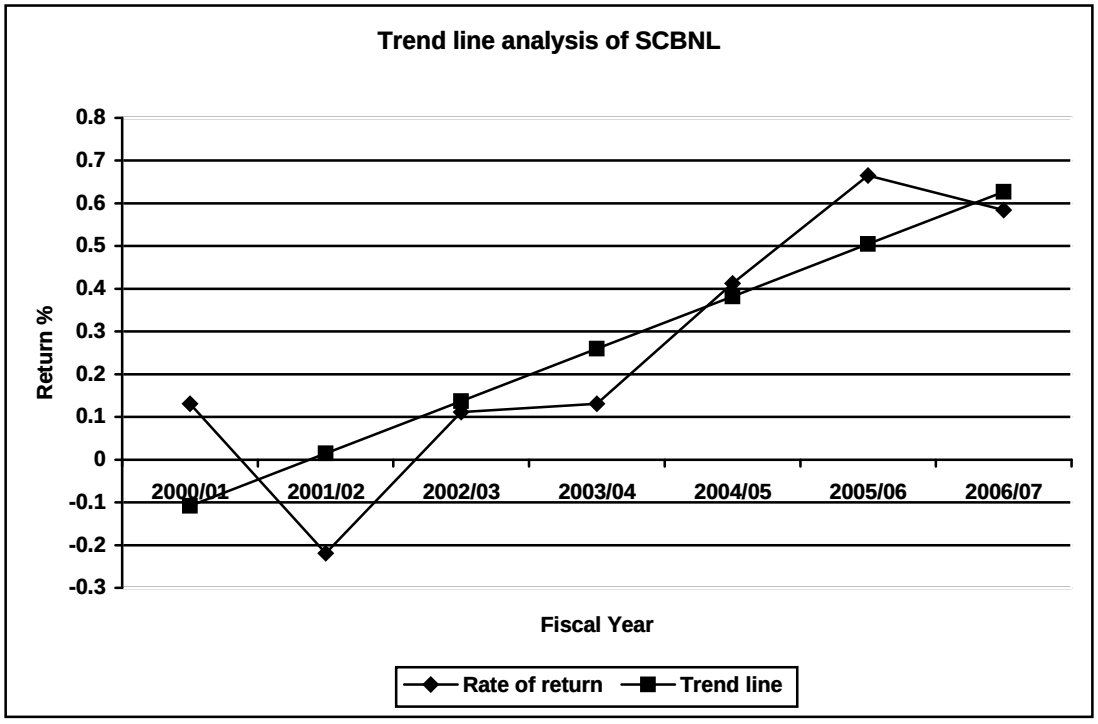
X = 1, then, Y = 0.2594 + 0.1225 x 1 = 0.3819

X = 2, then, Y = 0.2594 + 0.1225 x 2 = 0.5044

X = 3, then, Y = 0.2594 + 0.1225 x 3 = 0.6269

Movement of Stock Rate of Return and Trend Line of SCBNL

Figure 4.2: Trend Analysis of Return of SCBNL



The above figure shows that the movement of common stock of SCBNL's original rate of return and trend line of return. In fiscal year 200/01, the rate of return is 0.1305 after that it was started to move downward into negative figure up to fiscal year 2001/02 then it was in increasing trend i.e. 0.1111 in 2002/03 and 0.5841 in 2006/07. Trend line shows that left to right upward trend line from 2000/01 to 2006/07.

4.2.2 Nepal Arab Bank Ltd. (NABIL)

Market price and cash dividend records of common stock of NABIL are shown in the table 4.7 market price of shares in 2006/07 were to much high as compared to other FYs. Closing price movement is shown in the figure 4.4.

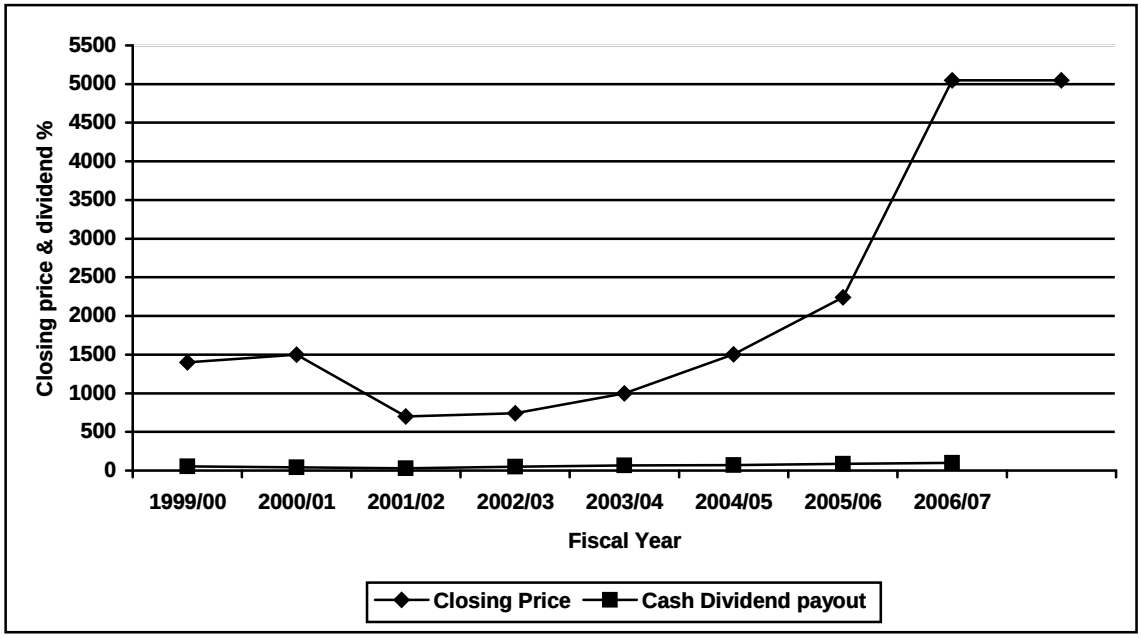
Table 4.7: MPS and Dividend Distribution of NABIL

Fiscal	Market Price Per Share (Rs.)	Cash

Years	High	Low	Closing	Dividend
1999/00	1495	700	1400	55
2000/01	2301	1310	1500	40
2001/02	1500	465	700	30
2002/03	875	700	740	50
2003/04	1005	715	1000	65
2004/05	1515	985	1505	70
2005/06	2300	1500	2240	85
2006/07	5050	2025	5050	100

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

Figure 4.3: Closing Price and Dividend Movement of NABIL



From the above analysis, closing prices of the NABIL were increasing from 1999/2000 to 2006/07 reducing to 700 in 2001/02 then increased to 5050 in last FY 2006/07, where as dividend payout also increasing form 55% to 65% in 2003/04 and 100% in 2006/07. It shows outstanding cash dividend payout.

Table 4.8: Calculation of Expected Rate of Return, Standard Deviation and C.V of NABIL

Fiscal Year	**Closing MPs**	**Cash Dividend**	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r - E(r)$	$[r - E(r)]^2$
1999/2000	1400	55	-	-	-
2000/01	1500	40	0.10	-0.2715	0.0737
2001/02	700	30	-0.5133	-0.8848	0.7829
2002/03	740	50	0.1286	-0.2429	0.0590
2003/04	1000	65	0.4662	0.0947	0.0089
2004/05	1505	70	0.575	0.2035	0.0414
2005/06	2240	85	0.5448	0.1733	0.03
2006/07	5050	100	1.2991	0.9276	0.8604
	Total (N=7)		$\sum r_0 = 2.6004$		$\sum[(r_0 - E(r_0)]^2$ = 1.8563

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

Expected Return $E(r) = \frac{\sum r_0}{N} = \frac{2.6004}{7} = 0.3715$ or 37.15%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r_0 - E(r_0)]^2}{N-1}} = \sqrt{\frac{1.8563}{7-1}} = \sqrt{0.3094}$

$= 0.5562$ or, 55.62 %

Coefficient of Variation (C.V.) $= \frac{(\pm)}{E(r)} \times 100 = \frac{0.5562}{0.3715} \times 100 = 149.72\%$

From the calculation of the Standard deviation, Expected return & C.V. of NABIL, it was 37.15% as Expected return, 55.62% & 149.72% as Standard Deviation and C.V.

Table 4.9: Calculation of Co-variance, Beta Coefficient of NABIL

Fiscal Year	$[r_{NABIL} - E(r_{NABIL})]$	$r_m - E(r_{m)}$	$[r_{NABIL} - E(r_{NABIL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{NABIL} - E(r_{NABIL})]$ x $[r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	-0.2715	-0.1793	0.0737	0.0321	0.0487
2001/02	-0.8848	-0.4909	0.7829	0.2410	0.4343
2002/03	-0.2429	-0.2443	0.0590	0.0597	0.0593
2003/04	0.0947	-0.0605	0.0090	0.0037	-0.0057
2004/05	0.2035	0.1511	0.0414	0.0228	0.0307
2005/06	0.1733	0.2002	0.0300	0.0401	0.0347
2006/07	0.9276	0.6236	0.8604	0.3889	0.5785
	Total (N=7)				$\sum [r_{NABIL} - E(r_{NABIL})]$ x $[r_m - E(r_{m)}]$ = 1.1805

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

Co-variance $[r_{NABIL} . r_m] = \frac{\sum [r_{NABIL} - E(r_{NABIL})][r_m - E(r_{m)}]}{N-1} = \frac{1.1805}{7-1} = 0.1968$

Beta Coefficient (ß) $= \frac{Cov(r_{NABIL}, r_m)}{\pm^2_m} = \frac{0.1968}{0.1314} = 1.4977$

Correlation coefficient between NABIL and Market [Cor (P_{NABIL}, market)]

$$= \frac{Cov(r_{NABIL}, r_m)}{\pm_{NABIL} x \pm_m} = \frac{0.1968}{0.5562 x 0.3625} = 0.9761$$

From the above calculation, beta coefficient of NABIL is 1.4977 which is greater than 1. Beta greater than 1, shows that the stock of NABIL is more volatile that of market. So it seems aggressive about risk & return.

Other-side, trend analysis of the return on common stock of NABIL also conducted to analyze the future trends of the returns which are calculated through least square methods as follows.

Table 4.10: Calculation of Yearwise Trend Values of NABIL

Fiscal Year	Coded Year	Rate of Return (Y)	X (Y-4)	XY	X^2	Estimated Value
2000/01	1	0.10	-3	-0.30	9	-0.2885
2001/02	2	-0.5133	-2	1.0266	4	-0.0685
2002/03	3	0.1286	-1	-0.1286	1	0.1515
2003/04	4	0.4662	0	0	0	0.3715
2004/05	5	0.575	1	0.575	1	0.5915
2005/06	6	0.5448	2	1.0896	4	0.8115
2006/07	7	1.2991	3	3.8973	9	1.0315
	N=7	$\sum y = 2.6004$	$\sum x = 0$	$\sum xy = 6.1599$	$\sum x^2 = 28$	

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

As $\sum x = 0$, $a = \frac{\sum y}{N} = \frac{2.6004}{7} = 0.3715$

$b = \frac{\sum xy}{\sum x^2} = \frac{6.1599}{28} = 0.22$ (i.e. +ve increasing trend)

We know that, trend line Y = a + bx

In this way, Y = 0.3715 + 0.22x

Here,

X = -3, then, Y = 0.3715 + 0.22 x -3 = -0.2885

X = -2, then, Y = 0.3715 + 0.22 x -2 = -0.0685

X = -1, then, Y = 0.3715 + 0.22 x -1 = 0.1515

X = 0, then, Y = 0.3715 + 0.22 x 0 = 0.3715

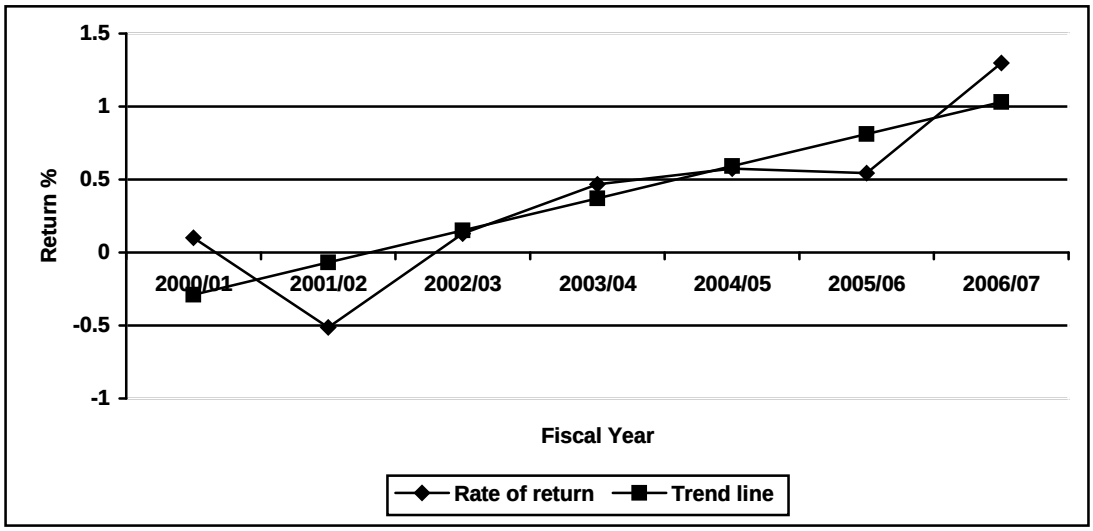
X = 1, then, Y = 0.3715 + 0.22 x 1 = 0.5915

X = 2, then, Y = 0.3715 + 0.22 x 2 = 0.8115

X = 3, then, Y = 0.3715 + 0.22 x 3 = 1.0315

Movement of stock rate of return and Trend Line of NABIL

Figure 4.4: Trend Analysis of Return of NABIL



The above figure shows the movement of stock of NABIL's original rate of return and trend line rate of return. In the beginning year 2000/01 the rate of return is 0.10 after that it started to move downward in fiscal year 2001/02 is -0.5133. And then the rate of return movement is going upward and is top in 2006/07 as 129.91%.

4.2.3 Nepal SBI Bank Ltd. (NSBIBL)

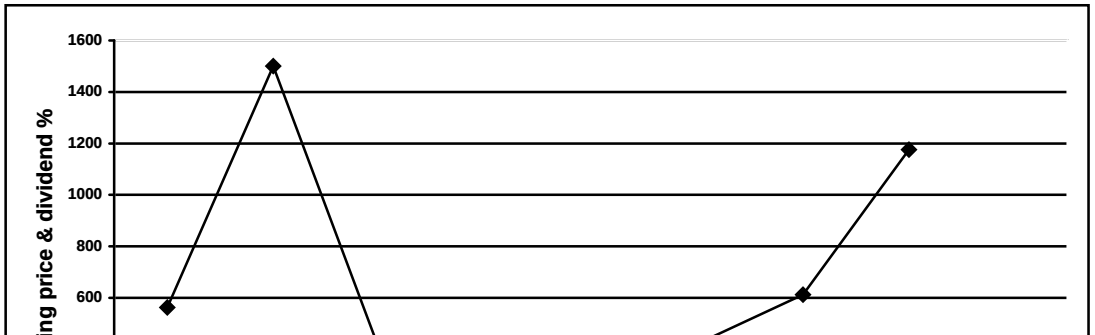
Market price and cash dividend records of common stock of Nepal SBI Bank Ltd. are shown in table below which are much flexible than NABIL & SCBNL.

Table 4.11: MPS and Dividend distribution of NSBIBL

Fiscal Years	Market Price Per Share (Rs.)			Cash Dividend
	High	Low	Closing	
1999/00	670	435	562	15
2000/01	2699	1150	1500	0
2001/02	1600	300	401	0
2002/03	410	255	255	8
2003/04	500	400	307	0
2004/05	590	410	420	0
2005/06	689	335	612	5
2006/07	1176	505	1176	10

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

Figure 4.5: Closing Price and Dividend Movement of NSBIBL



From the above table, MPS was high in FY 2000/01 and continuously falling to 255 in 2002/03 and again stock price were upward trend as gain to Rs.1176 in FY 2006/07 that also be shown in figure 4.6. Likewise dividend payout also minor as maximum payout is 15% in 1999/2000.

Table 4.12: Calculation of Expected Rate of Return, Standard Deviation and C.V of NSBIBL

Fiscal Year	**Closing MPs**	**Cash Dividend**	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r - E(r)$	$[r - E(r)]^2$
1999/00	562	15	-	-	1.6944
2000/01	1500	0	1.6690	1.3017	1.2100
2001/02	401	0	-0.7327	-1.100	0.5061
2002/03	255	8	-0.3441	-0.7114	0.5061
2003/04	307	0	0.2039	-0.1634	0.0267
2004/05	420	0	0.3681	0.0008	0.0000
2005/06	612	5	0.4690	0.1017	0.0103
2006/07	1176	10	0.9379	0.5706	0.3256
	Total (N=7)		$\sum r_0 = 2.5711$		$\sum[(r - E(r)$ = 3.7731

Source: NEPSE website www.nepalstock.com and Annual Report of Bank.

Expected Return $E(r) = \frac{\sum r_0}{N} = \frac{2.5711}{7} = 0.3673$ or 36.73%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r - E(r))]^2}{N-1}} = \sqrt{\frac{3.7731}{7-1}} = \sqrt{0.6289}$

= 0.7930 or, 79.30 %

Coefficient of Variation (C.V.) $= \frac{(\pm)}{E(r)} \times 100 = \frac{0.7930}{0.3673} \times 100$ = 215.9%

From the calculation of the Standard deviation, Expected return & C.V. of NSBIBL, it was 36.73% as Expected return, 79.30% & 215.9 as Standard Deviation and C.V.

Table 4.13: Calculation of Co-variance, Beta Coefficient of NSBIBL

Fiscal Year	$[r_{NSBIBL} - E(r_{NSBIBL})]$	$r_m - E(r_{m)}$	$[r_{NSBIBL} - E(r_{NSBIBL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{NSBIBL} - E(r_{NSBIBL})] \times [r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	1.3017	-0.1793	1.6944	0.0321	-0.2334
2001/02	-1.100	-0.4909	1.2100	0.2410	0.5310
2002/03	-0.7114	-0.2443	0.5061	0.0597	0.1738
2003/04	-0.1634	-0.0605	0.0267	0.0037	0.0099
2004/05	0.0008	0.1511	0.0000	0.0228	0.0001
2005/06	0.1017	0.2002	0.0103	0.0401	0.0204
2006/07	0.5706	0.6236	0.3256	0.3889	0.3558
	Total (N=7)				$\sum [r_{NSBIBL} - E(r_{NSBIBL})]$ x$[r_m - E(r_{m)}]$ = 0.8576

Co-variance $[r_{NSBIBL} . r_m] = \frac{\sum[r_{NSBIBL} - E(r_{NSBIBL})][r_m - E(r_{m)}]}{N-1}, = \frac{0.8576}{7-1}, = 0.1429$

Beta Coefficient (ß) $= \frac{Cov(r_{NSBIBL}, r_m)}{\pm^2_m}, = \frac{0.1429}{0.1314}, = 1.0875$

Correlation coefficient between NSBIBL and Market [Cor (P_{NSBIBL}, Market)]

$$= \frac{Cov(r_{NSBIBL}, r_m)}{\pm_{NSBIBL} x \pm_m} = \frac{0.1429}{0.7930 x 0.3625} = 0.4971$$

From the above calculation, beta coefficient of SBI is 1.0875 which is greater than 1. It shows that the stock that the stock of the SBI is more volatile than the market or stock seems to be an aggressive.

Rate of return (trend values) for each year are calculated on the basis of rate of return on common stock of NSBIBL respective year it using least square method as follows.

Table shows the calculation of year wise rate of returns or trend value.

Table 4.14: Yearwise Rate of Return of NSBIBL

Fiscal Year	Coded Year	Rate of Return (Y)	X(Y-4)	*XY*	X^2	Estimated Value
2000/01	1	1.6690	-3	-5.007	9	0.26860
2001/02	2	-0.7327	-2	1.4654	4	0.3015
2002/03	3	-0.3441	-1	0.3441	1	0.3344
2003/04	4	0.2039	0	0	0	0.3673
2004/05	5	0.3681	1	0.3681	1	0.4002
2005/06	6	0.4690	2	0.938	4	0.4331
2006/07	7	0.9379	3	2.8137	9	0.4660
	N=7	$\sum y = 2.6004$	$\sum x = 0$	$\sum xy = 6.1599$	$\sum x^2 = 28$	

As $\sum x = 0$, a = $\frac{\sum y}{N} = \frac{2.5711}{7} = 0.3673$

b = $\frac{\sum xy}{\sum x^2} = \frac{0.9223}{28} = 0.0329$ (i.e. +ve increasing trend)

We know that, trend line Y = a + bx

In this way, Y = 0.3715 + 0.22x

Here,

X = -3, then, Y = 0.3673 + 0.0329 x -3 = 0.2686

X = -2, then, Y = 0.3673 + 0.0329x -2 = 0.3015

X = -1, then, Y = 0.3673 + 0.0329 x -1 = 0.3344

X = 0, then, Y = 0.3673 + 0.0329 x 0 = 0.3673

X = 1, then, Y = 0.3673 + 0.0329 x 1 = 0.4002

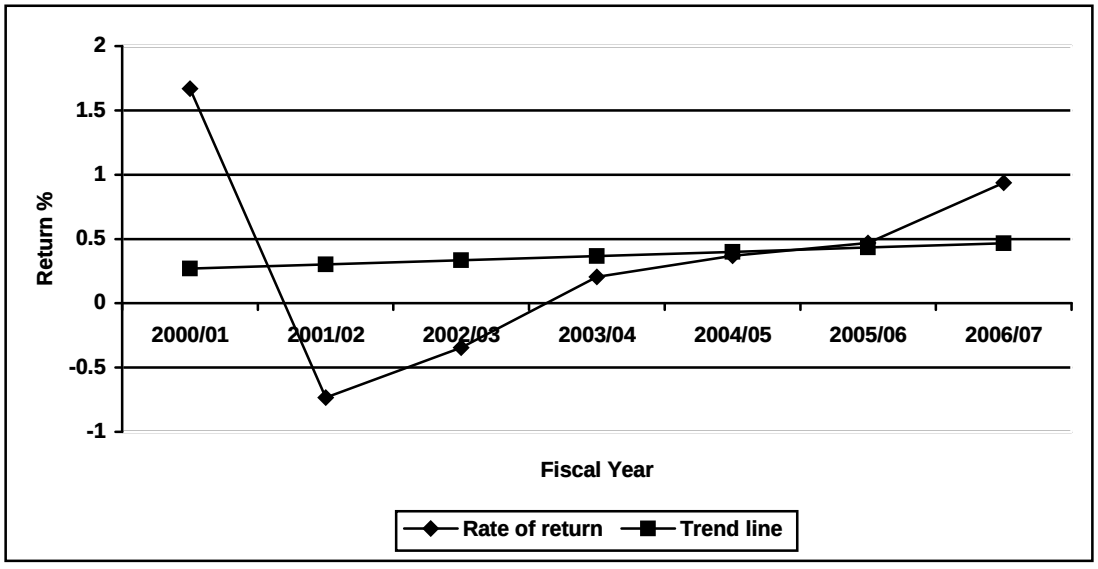
X = 2, then, Y = 0.3673 + 0.0329 x 2 = 0.4331

X = 3, then, Y = 0.3673 + 0.0329 x 3 = 0.4660

Above values can be format following trend line.

Movement of Stock Rate of Return and Trend Line of NSBIBL

Figure 4.6: Trend Analysis of Return of NSBIBL



In figure above shows that the movements of common stock of NSBIBL's original rate of returns and trend line rate of return. In FY 2000/01 the return is highest and FY 2001/02 the rate of return most negative and after that the movement of rate of return is upward sloping up to fiscal year2006/07. Similarly the trend line started downward from left to right in decreasing trend with FY 2006/07.

4.2.4 Himalayan Bank Ltd. (HBL)

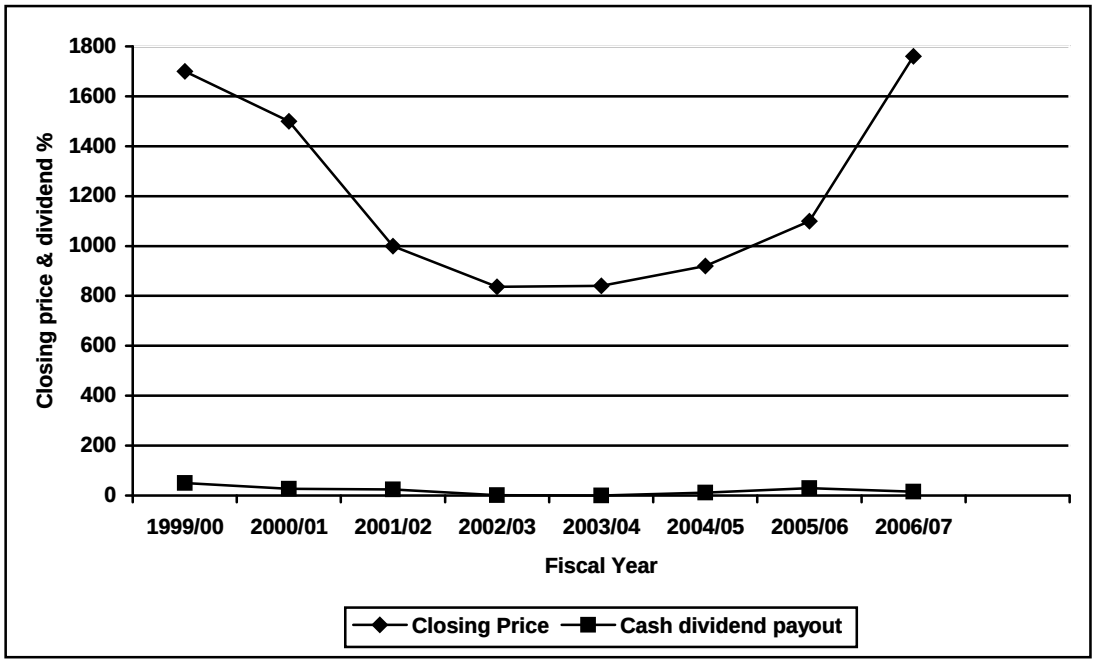
Market price and dividend records of common stock of HBL are shown in table 4.14 MPS of HBL is very high at 1999/2000. Closing price movement and dividend payout are shown in the figure 4.8.

Table 4.15: MPS and Dividend Distribution of HBL

Fiscal Years	Market Price Per Share (Rs.)			Cash Dividend
	High	Low	Closing	
1999/00	1780	1000	1700	50
2000/01	2726	1325	1500	27.50
2001/02	1530	610	1000	25
2002/03	950	750	836	1.32
2003/04	1010	630	840	0
2004/05	1150	907	920	11.58
2005/06	1200	900	1100	30
2006/07	1760	950	1760	15

Source: NEPSE [www.nepalsotck.com.]

Figure 4.7: Closing Price & Dividend Movement of HBL



From the above figure, it shows that the MPS of HBL has decreasing trends from FY 1999/2000 to 2002/03 but thereafter slowly increasing from 2003/04 up to 2005/06, MPS of FY 2006/07 is 1760 which is more than other FYs.

Table 4.16: Calculation of Expected Rate of Return, Standard Deviation and C.V. of HBL

Fiscal Year	**Closing MPs**	**Cash Dividend**	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r - E(r)$	$[r - E(r)]^2$
1999/00	1700	50.00	-	-	-
2000/01	1500	27.50	-0.1015	-0.1550	0.0240
2001/02	1000	25.00	-0.3167	-0.3702	0.1370
2002/03	836	1.32	-0.1627	-0.2162	0.0467
2003/04	840	0.00	0.0048	-0.0487	0.0024
2004/05	920	11.58	0.1090	0.0555	0.0031
2005/06	1100	30.00	0.2283	0.1748	0.0306
2006/07	1760	15.00	0.6136	0.5601	0.3137
	Total (N=7)		$\sum r_0 = 0.3748$		$\sum[(r - E(r)]^2 = 0.5575$

Expected Return $E(r) = \frac{\sum r_0}{N} = \frac{0.3748}{7}$, = 0.0535 or 5.35%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r - E(r)]^2}{N-1}}$, $= \sqrt{\frac{0.5575}{7-1}}$, $= \sqrt{0.0929}$

= 0.3048 or, 30.48 %

Coefficient of Variation (C.V.) $= \frac{(\pm)}{E(r)} \times 100$, $= \frac{0.3048}{0.3748} \times 100$, = 81.3%

The above calculation shows that the return of HBL is 5.35% and standard deviation is 30.48% and coefficient of variation 81.3%.

Table 4.17: Calculation of Co-variance, Beta Coefficient of HBL

Fiscal Year	$[r_{HBL} - E(r_{HBL})]$	$r_m - E(r_{m)}$	$[r_{HBL} - E(r_{HBL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{HBL} - E(r_{HBL})]$ **x** $[r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	-0.1550	-0.1793	0.0240	0.0321	0.0278
2001/02	-0.3702	-0.4909	0.1370	0.2410	0.1817
2002/03	-0.2162	-0.2443	0.0467	0.0597	0.0528
2003/04	-0.0487	-0.0605	0.0024	0.0037	0.0029
2004/05	0.0555	0.1511	0.0031	0.0228	0.0084
2005/06	0.1748	0.2002	0.0306	0.0401	0.0341
2006/07	0.5601	0.6236	0.3137	0.3889	0.3493
	Total (N=7)				$\sum [r_{HBL} - E(r_{HB}$ x$[r_m - E(r_{m)}]$ = 0.657

Co-variance $[r_{HBL} . r_m] = \frac{\sum [r_{HBL} - E(r_{HBL})][r_m - E(r_{m)}]}{N-1} = \frac{0.657}{7-1} = 0.1095$

Beta Coefficient (ß) $= \frac{Cov(r_{HBL}, r_m)}{\pm^2_m} = \frac{0.1095}{0.1314} = 0.8333$

Correlation coefficient between HBL and Market [Cor (P_{HBL} , Market)]

$$= \frac{Cov(r_{HBL}, r_m)}{\pm_{HBL} x \pm_m} = \frac{0.1095}{0.3048 x 0.3625} = 0.9910$$

Here, beta coefficient of HBL is found 0.8333, i.e. <1, so, this is a defensive type of assets, correlation between the HBL and market is 0.9910. So, it is less volatile than the market return. Beta is an index of systematic risk and that is found tot be minimum. So, this is a defensive type of assets and found to be less risky.

Rate of return expected through different years of HBL are presented in trend line below. Estimated values are getting under the method of least square.

Table 4.18: Yearwise Rate of Return of HBL

Fiscal Year	Coded Year	Rate of Return (Y)	X (Y-4)	XY	X^2	Estimated Value
2000/01	1	-0.1015	-3	0.3045	9	-0.3224
2001/02	2	-0.3167	-2	0.6334	4	-0.1971
2002/03	3	-0.1627	-1	0.1627	1	-0.0718
2003/04	4	0.0048	0	0	0	0.0535
2004/05	5	0.1090	1	0.1090	1	0.1788
2005/06	6	0.2283	2	0.4566	4	0.3041
2006/07	7	0.6136	3	1.8408	9	0.4294
	N=7	$\sum y = 0.3748$	$\sum x = 0$	$\sum xy = 3.507$	$\sum x^2 = 28$	

As, $\sum x = 0$, a = $\frac{\sum y}{N} = \frac{0.3748}{7} = 0.0535$

b = $\frac{\sum xy}{\sum x^2} = \frac{3.507}{28} = 0.1253$ (i.e. +ve increasing trend)

We know that, trend line Y = a + bx

In this way, Y = 0.0535 + 0.1253x

Here,

X = -3, then, Y = 0.0535 + 0.1253 x -3 = -0.3224

X = -2, then, Y = 0.0535 + 0.1253 x -2 = -0.1971

X = -1, then, Y = 0.0535 + 0.1253 x -1 = -0.0718

X = 0, then, Y = 0.0535 + 0.1253 x 0 = 0.0535

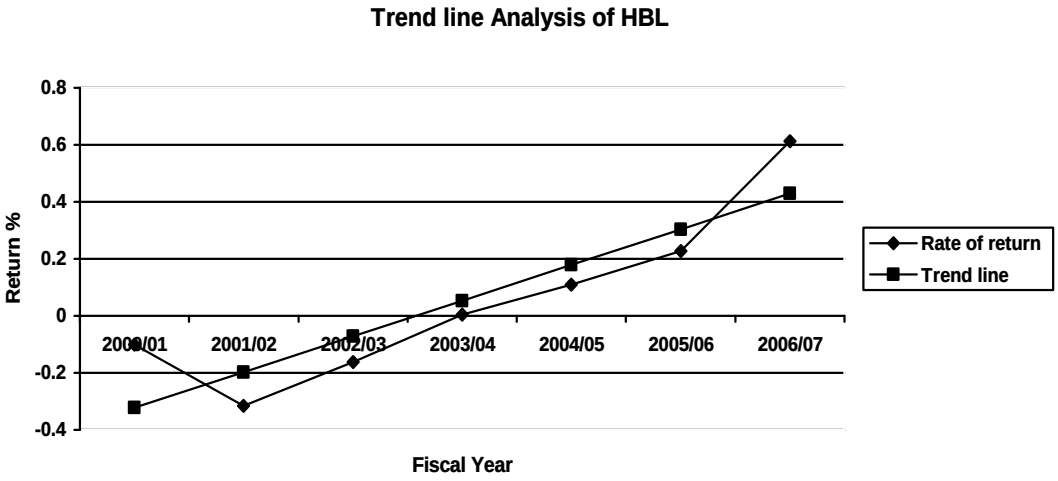
X = 1, then, Y = 0.0535 + 0.1253 x 1 = 0.1788

X = 2, then, Y = 0.0535 + 0.1253 x 2 = 0.3041

X = 3, then, Y = 0.0535 + 0.1253 x 3 = 0.4294

Above values can be format following trend line.

Figure 4.8: Trend Analysis of Return of HBL



The above figure shows the movement of common stock of HBL's actual rate of return and its estimated values. In FY 2006/07, it was high with rate of return 61.36%. In Fiscal Years 2000/01, 2001/02, 2002/03 return was negative, there after it was improved to FY 2006/07 which shows upward trend line. Similarly the trend line downward slopping from 2000/01 to 2001/02, after that it is upward till 2006/07.

4.2.5 Everest Bank Limited (EBL)

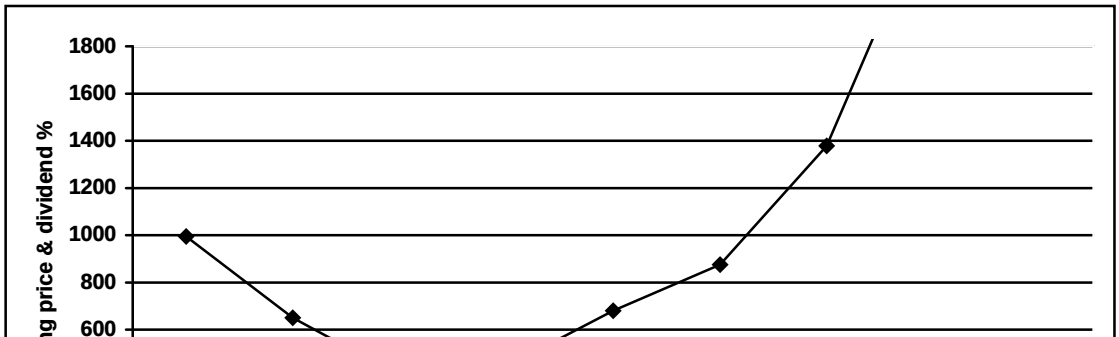
Since, EBL was listed in NEPSE on 1196-04-07, market price and cash dividend data of EBL are given in table 4.19.

Table 4.19: MPS and Dividend Distribution of EBL

Fiscal Years	Market Price Per Share (Rs.)			Cash Dividend
	High	Low	Closing	
1999/00	980	400	995	130
2000/01	1850	670	650	0
2001/02	740	325	405	0
2002/03	490	349	445	20
2003/04	723	400	680	20
2004/05	905	625	876	0
2005/06	1410	800	1379	25
2006/07	2430	1100	2430	10

Source: NEPSE [www.nepalsotck.com.]

Figure 4.9: MPS and Dividend Distribution of EBL



From the above table and figure, it is clear that EBL paid high dividend in FY 1999/00 and had high market price in FY 2006/07 with 2430. Minimum closing price was on FY 2001/02 with Rs.405 with zero dividend payout.

Table 4.20: Calculation of Expected Rate of Return, Standard Deviation and C.V. of HBL

Fiscal Year	**Closing MPs**	**Cash Dividend**	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r - E(r)$	$[r - E(r)]^2$
1999/00	995	130	-	-	-
2000/01	650	0	-0.3467	-0.5835	0.3405
2001/02	405	0	-0.3769	-0.6137	0.3766
2002/03	445	20	0.1481	-0.0887	0.0079
2003/04	680	20	0.5730	0.3362	0.1130
2004/05	876	-	0.2882	0.0514	0.0026
2005/06	1379	25	0.6027	0.3659	0.1339
2006/07	2430	10	0.7694	0.5326	0.2837
	Total (N=7)		$\sum r_{EBL} = 1.6578$		$\sum[(r_{EBL} - E(r_{EBL})]^2$ = 1.2582

Expected Return $E(r) = \frac{\sum r_{EBL}}{N} = \frac{1.6578}{7} = 0.2368$or 23.68%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r_{EBL} - E(r_{EBL})]^2}{N-1}} = \sqrt{\frac{1.2582}{7-1}} = \sqrt{0.2097}$

= 0.4579 or, 45.79 %

Coefficient of Variation (C.V.) = $\frac{(\pm)}{E(r)} \times 100$, = $\frac{0.4579}{0.2368} \times 100$, = 193.37%

The result shows that the expected rate of return of EBL is 23.68% which is the sum of single rate of return dividend by no of observation, where standard deviation of EBL is 0.4579 which is due to the variation in single period rate of return, where coefficient of variation of EBL is 193.37%.

Table 4.21: Calculation of Co-variance, Beta Coefficient of EBL

Fiscal Year	$[r_{EBL} - E(r_{EBL})]$	$r_m - E(r_{m)}$	$[r_{EBL} - E(r_{EBL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{EBL} - E(r_{EBL})]$ **x** $[r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	-0.5835	-0.1793	0.3405	0.0321	0.1046
2001/02	-0.6137	-0.4909	0.3766	0.2410	0.3013
2002/03	-0.0887	-0.2443	0.0079	0.0597	0.0217
2003/04	0.3362	-0.0605	0.1130	0.0037	-0.0203
2004/05	0.0514	0.1511	0.0026	0.0228	0.0078
2005/06	0.3659	0.2002	0.1339	0.0401	0.0733
2006/07	0.5326	0.6236	0.2837	0.3889	0.3321
	Total (N=7)				$\sum [r_{HBL} - E(r_{HBL})]$ x$[r_m - E(r_{m)}]$ = 0.8205

Co-variance [r_{EBL} . r_m] = $\frac{\sum [r_{EBL} - E(r_{EBL})][r_m - E(r_{m)}]}{N-1}$, = $\frac{0.8205}{7-1}$ = 0.1368

eta Coefficient (ß) = $\frac{Cov(r_{EBL}, r_m)}{\pm^2_m}$, = $\frac{0.1368}{0.1314}$, = 1.0411

Correlation coefficient between HBL and Market [Cor (P_{EBL} , m)]

= $\frac{Cov(r_{EBL}, r_m)}{\pm_{EBL} \times \pm_m}$ = $\frac{0.1368}{0.4579 \times 0.3625}$ = 0.82

From the above calculation beta coefficient of EBL is 1.0411 which is greater than 1, it shows that the stock of the EBL is more volatile then the market or stock to be an aggressive.

Rate of return (trend values) for each year are calculated on the basis of rate of return on common stock of EBL respective year by using least square method as follows. Table no. 4.22 shows the calculations of year wise rate of return or trend value.

Table 4.22: Yearwise Rate of Return on EBL

Fiscal Year	Coded Year	Rate of Return (Y)	X (Y-4)	XY	X^2	Estimated Value
2000/01	1	-0.3467	-3	1.0401	9	-0.347
2001/02	2	-0.3769	-2	0.7538	4	-0.1524
2002/03	3	0.1481	-1	-0.1481	1	0.0422
2003/04	4	0.5730	0	0	0	0.2368
2004/05	5	0.2882	1	0.2882	1	0.4314
2005/06	6	0.6027	2	1.2054	4	0.626
2006/07	7	0.7694	3	2.3082	9	0.8206
	N=7	$\sum y = 1.6578$	$\sum x = 0$	$\sum xy = 5.4476$	$\sum x^2 = 28$	

As, $\sum x = 0$, a = $\frac{\sum y}{N} = \frac{1.6578}{7} = 0.2368$

b = $\frac{\sum xy}{\sum x^2} = \frac{5.4476}{28} = 0.1946$ (i.e. +ve increasing trend

We know that, trend line Y = a + bx

In this way, Y = 0.2368 + 0.1946x

Here,

X = -3, then, Y = 0.2368 + 0.1946 x -3 = -0.347

X = -2, then, Y = 0.2368 + 0.1946 x -2 = -0.1524

X = -1, then, Y = 0.2368 + 0.1946 x -1 = 0.0422

X = 0, then, Y = 0.2368 + 0.1946 x 0 = 0.2368

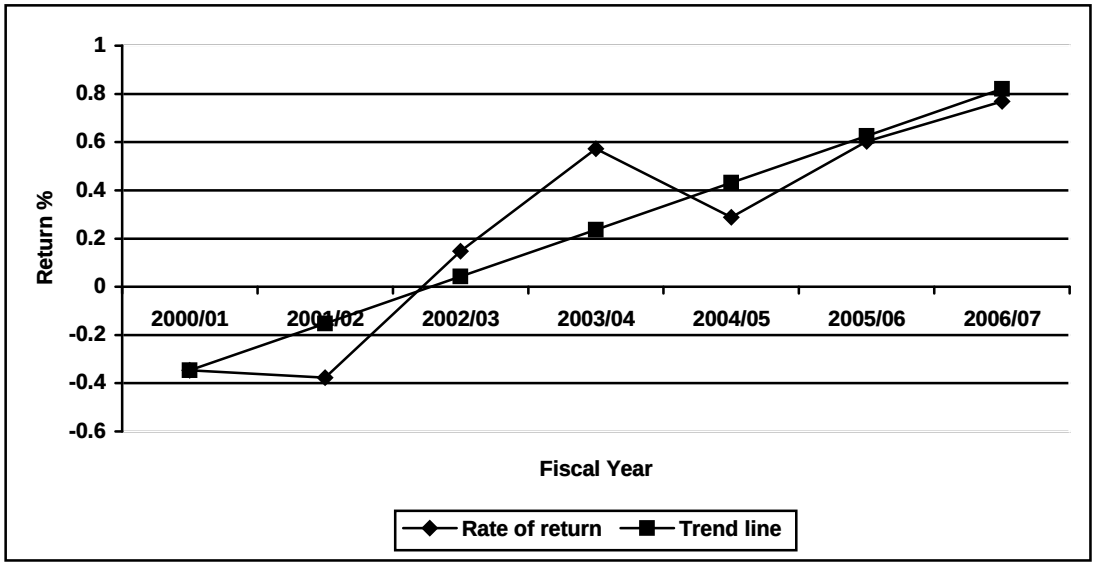
X = 1, then, Y = 0.2368 + 0.1946 x 1 = 0.4314

X = 2, then, Y = 0.2368 + 0.1964 x 2 = 0.626

X = 3, then, Y = 0.2368 + 0.1964 x 3 = 0.8206

Above values can be format following trend line.

Figure 4.10: Trend Analysis of Return of EBL



The above figure shows the movement of common stock of EBL's original rate of return and trend line rate of return in FY 2006/07 rate of return in very high. In FY 2000/01 and 2001/02 is negative. After that the return is upward in increasing trend up to FY 2003/04.Again decrease in FY 2004/05.The trend line is slowly upward in FY 2000/01 to 2001/02. After that it is increasing up to FY 2006/07.

4.2.6 Nepal Bangladesh Bank Limited (NBBL)

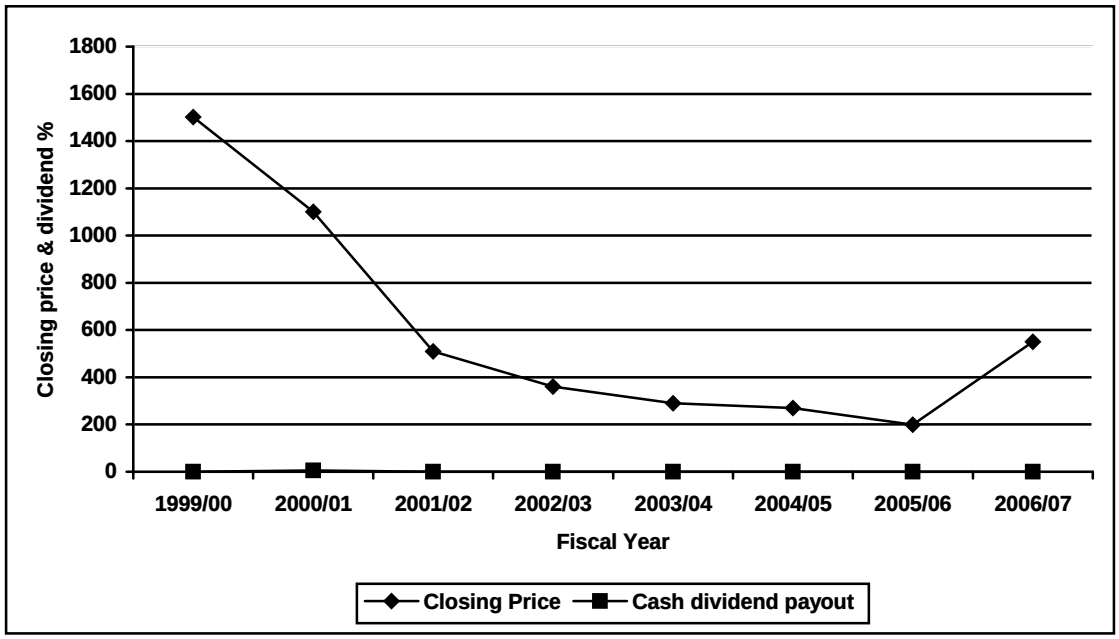
Since, NBBL was listed in NEPSE only on 24/12/1995. Market price and dividend records of common stock of NBBL are shown in Table 4.23. MPS of NBBL is very high at 1999/2000. Closing price movement is shown in the figure 4.12.

Table 4.23: MPS and Cash Dividend Data of NBBL

Fiscal Years	Market Price per share (Rs.)			Cash Dividend
	High	Low	Closing	
1999/00	1505	800	1502	-
2000/01	2430	950	1100	5.04
2001/02	1200	340	510	-
2002/03	535	341	360	-
2003/04	475	290	290	-
2004/05	324	215	270	-
2005/06	300	152	199	-
2006/07	550	198	550	-

Source: NEPSE [www.nepalsotck.com.]

Figure 4.11: Closing Price and Dividend Movement of NBBL



From, the above figure and table, we can see that the MPS of NBBL has increase up to FY 1999/2000, but thereafter decreasing trend, NBBL has declared cash dividend to its shareholders in the year 2001. Among the other joint venture banks NBBL has smallest figure of MPS since 1996.

Table 4.24: Calculation of Expected Rate of Return, Standard Deviation and C.V. of NBBL

Fiscal Year	Closing MPs	Cash Dividend	$r_0 = \frac{p_1 - p_{t-1} + D_1}{p_{t-1}}$	$r - E(r)$	$[r - E(r)]^2$
1999/00	1502	-	-	-	-
2000/01	1100	5.04	-0.2643	-0.2935	0.0861
2001/02	510	-	-0.5364	-0.5656	0.3199
2002/03	360	-	-0.2941	-0.3233	0.1045
2003/04	290	-	-0.1944	-0.2236	0.0499
2004/05	270	-	-0.0069	-0.0361	0.0013
2005/06	199	-	-0.2630	-0.2922	0.0854
2006/07	550	-	1.7638	1.7346	3.0088
	Total (N=7)		$\sum r_{NBBL} = 0.2047$		$\sum[(r_{NBBL} - E(r_{NBBL})]^2$ = 3.6907

Expected Return $E(r) = \frac{\sum r_{NBBL}}{N} = \frac{0.2047}{7} = 0.0292$or 2.29%

Standard Deviation $(\pm) = \sqrt{\frac{\sum[(r_{NBBL} - E(r_{NBBLL})]^2}{N-1}} = \sqrt{\frac{13.6907}{7-1}} = \sqrt{0.6151}$

= 0.7843 or, 78.43 %

Coefficient of Variation (C.V.) $= \frac{(\pm)}{E(r)} \times 100 , = \frac{0.7843}{0.0292.} \times 100 , = 2685.96\%$

The result shows that mean return of NBBL is 2.92% which is sum total of single return dividend no of observation. The variation of return i.e. standard deviation of NBBL is 78.43% and consequently C.V. is 2685.96%.

Table 4.25: Calculation of Co-variance, Beta Coefficient of NBBL

Fiscal Year	$[r_{NBBL} - E(r_{NBBL})]$	$r_m - E(r_{m)}$	$[r_{NBBL} - E(r_{NBBL})]^2$	$[r_m - E(r_{m)}]^2$	$[r_{NBBL} - E(r_{NBBL})]$ x $[r_m - E(r_{m)}]$
1999/00	-	-	-	-	-
2000/01	-0.2935	-0.1793	0.0861	0.0321	0.0526
2001/02	-0.5656	-0.4909	0.3199	0.2410	0.2777
2002/03	-0.3233	-0.2443	0.1045	0.0597	0.0789

2003/04	-0.2236	-0.0605	0.0499	0.0037	0.0135
2004/05	-0.0361	0.1511	0.0013	0.0228	-0.0055
2005/06	-0.2922	0.2002	0.0854	0.0401	-0.0585
2006/07	1.7346	0.6236	3.0088	0.3889	1.0817
	Total (N=7)				$\sum [r_{NBBL} - E(r_{NBBL})]$ $[r_m - E(r_{m)}] = 1.4404$

Co-variance$[r_{NBBL} . r_m]$ $= \frac{\sum [r_{NBBL} - E(r_{NBBL})][r_m - E(r_{m)}]}{N-1} = \frac{1.4404}{7-1} = 0.240$

Beta Coefficient (ß) $= \frac{Cov(r_{NBBL}, r_m)}{\pm^2_m} = \frac{0.2400}{0.1314} = 1.8270$

Correlation coefficient between HBL and Market [Cor(P_{NBBL} , m)]

$$= \frac{Cov(r_{NBBL}, r_m)}{\pm_{NBBL} \times \pm_m} = \frac{0.2400}{0.7843 \times 0.3625} = 0.8442$$

The result shows that the correlation of NBBL with the market is positive i.e. 0.8442 less than perfectly correlated. NBBL has beta of 1.8270 which is greater than beta 1. It indicates that is an aggressive type of assets of NBBL, which is more volatile than the market. So, it is risky type of assets.

Table 4.26: Year wise rate of return on NBBL

Fiscal Year	Coded Year	Rate of Return (Y)	X (Y-4)	XY	X^2	Estimated Value
2000/01	1	-0.2643	-3	0.7929	9	-0.7121
2001/02	2	-0.5364	-2	1.0728	4	-0.465
2002/03	3	-0.2941	-1	0.2941	1	-0.2179

2003/04	4	-0.1944	0	0	0	0.0292
2004/05	5	-0.0069	1	-0.0069	1	0.2763
2005/06	6	-0.2630	2	-0.526	4	0.5234
2006/07	7	1.7638	3	5.2914	9	0.7705
	N=7	$\sum y = 0.2047$	$\sum x = 0$	$\sum xy = 6.9183$	$\sum x^2 = 28$	

As, $\sum x = 0$, a = $\frac{\sum y}{N} = \frac{0.2047}{7} = 0.0292$

b = $\frac{\sum xy}{\sum x^2} = \frac{6.9183}{28} = 0.2471$ (i.e. +ve increasing trend)

We know that, trend line Y = a + bx

In this way, Y = 0.0292 + 0.2471x

Here,

X = -3, then, Y = 0.0292 + 0.2471 x -3 = -0.7121

X = -2, then, Y = 0.0292 + 0.2471 x -2 = -0.465

X = -1, then, Y = 0.0292 + 0.2471 x -1 = -0.2179

X = 0, then, Y = 0.0292 + 0.2471 x 0 = 0.0292

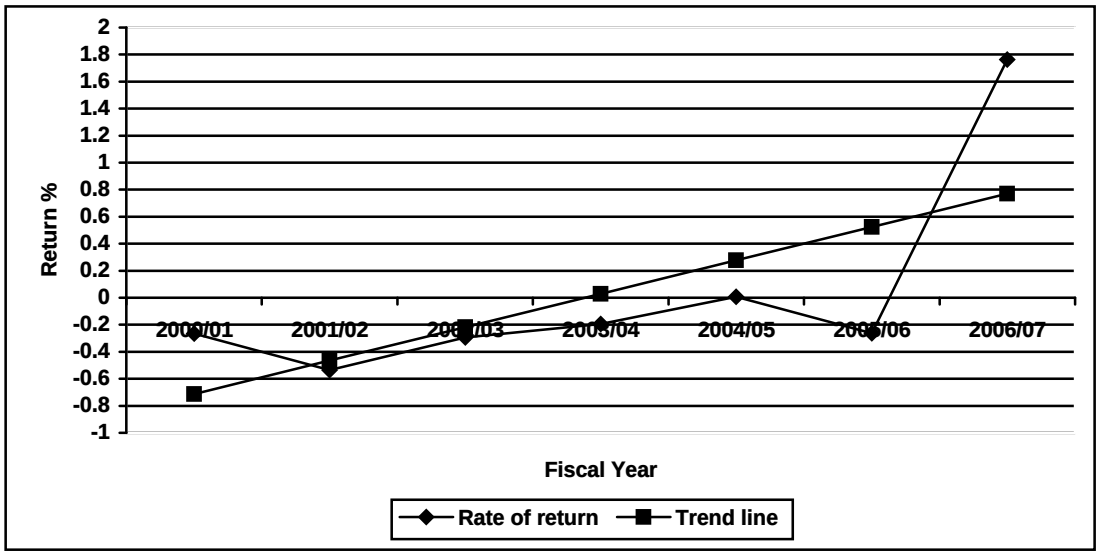
X = 1, then, Y = 0.0292 + 0.2471 x 1 = 0.2763

X = 2, then, Y = 0.0292 + 0.2471 x 2 = 0.5234

X = 3, then, Y = 0.0292 + 0.2471 x 3 = 0.7705

Above values can be format following trend line.

Figure 4.12: Movement of Stock Rate of Return and Trend Line of NBBL



The above figure shows that the movement of common stock of NBBL's original rate of return and trend line rate of return. The rate of return is negative up to FY 2006/07 and the estimated value is negative FY 2000/01 to 2002/03 and thereafter it moves increasing trend up to 2006/07.

4.3 Inter Bank Comparison of Risk and Return

From the all above tables and calculations, the expected return, standard deviation and C.V. of inter Banks are given in table 4.27 in the next page.

Table 4.27: Expected Rate of Return, Standard and C.V. of each Bank

Bank	Expected Return	S.D.	C.V. %	Correlation Coefficient with Market
SCBNL	25.94	31.02	119.58	0.9021
NABIL	37.15	55.62	149.72	0.9761
NSBIBL	36.73	79.30	215.90	0.4971
HBL	5.35	30.48	81.30	0.9910
EBL	23.68	45.79	193.37	0.82
NBBL	2.92	78.43	2685.96	0.8442
NEPSE (Market)	14.45	36.25	250.87	-

From the above result, expected return is highest of NABIL Bank and then NSBIBL, SCBNL, EBL respectively. Because of changing closing price of the stocks expected return of NBBL & HBL are low. Further researches know that the expected return and standard deviation from any security is the objects of choice for any investor. Ultimately most investor is risk averter and they prefer highest return low risk. So, therefore investor should concentrate about both risk and return but it is difficult to say that which security is best for investment point of view C.V. gives the clear idea about risk for any security per unit or return

4.4 Partitioning the Total Risk

Total risk can be measured by the variance of return; denoted by Var (r) total risk can be partition into systematic risk and unsystematic risk. Systematic risk can not be eliminated through diversification. Beat coefficient is the index of systematic risk in other word market sensitivity of stock can be defined by term "beta coefficient".

Var (r) = Total risk of the assets

$= ß^2 Var(R_m) + Var(e)$

= Systematic risk + Unsystematic risk.

The unsystematic risk measure, Var (e) is called the residual variance (or standard error squared) in regression terms.

4.4.1 Un-diversifiable Proportion

The percentage of total risk, systematic risk can be measured by the coefficient of determination (p2) i.e. the characteristics lines squared correlation coefficient.

Un-diversifiable Proportion $= \frac{\text{Systematic Risk}}{\text{Total Risk}}$

$= \frac{{}_j^2 Var(R_m)}{Var(R_j)} = P^2$

4.4.2 Diversifiable Proportion

The percentage of total risk that is unsystematic risk can be measured by the coefficient of non-determination is equals $(1\text{-}p^2)$

Diversifiable proportion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$

= $\frac{Var(R_m)}{Var(R_j)} = (1- P^2)$

Table 4.28: Beta Coefficient of Each Bank

Bank	Beta
SCBNL	0.7717
NABIL	1.4977
SBI Bank	1.0875
HBL	0.8333
EBL	1.0411
NBBL	1.8270

4.4.3 Summary of Beta Calculation

Above table shows that beta of NABIL, NSBIBL, EBL and Nepal Bangladesh Bank Limited has greater than one beta i.e. ß>1. Therefore these assets indicate aggressive type of assets. These banks's stocks are more volatile than market. In other hand SCBNL and HBL has less than one beta i.e. ß<1, which indicates the defensive type of assets and these assets volatile less than the market.

4.4.4 Partitioning of total Risk into Systematic and Unsystematic Risk

a. Standard Chartered Bank Nepal

Total Risk = Systematic Risk + Unsystematic Risk

Var (r_{SCBNL}) = ($_{SCBNL}$)$^2 \times Var(r_m) + Var(e)$

$(0.3102)^2 = (0.7717)^2 \times (0.3625)^2 + Var(e)$

$0.0962 = 0.5955 \times 0.1314 + Var(e)$

$0.0962 = 0.0782 + Var\ (e)$

0.0962-0.0782 = *Var (e)*

0.018 = *Var (e)*

$\therefore$ Unsystematic Risk Var (e) = 0.018

Systematic Risk = 0.0782

Un-diversifiable Proportion $= \frac{\text{Systematic Risk}}{\text{Total Risk}} = P^2$

$= \frac{0.0782}{0.0962}$ = 0.8129 = 81.29%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$

$= \frac{0.018}{0.0962}$ = 0.1871 or, 18.71%

b. NABIL Bank Limited

Total Risk = Systematic Risk + Unsystematic Risk

Variance (r_{NABIL}) = $(\ _{NABIL})^2 \times Var(r_m) + Var(e)$

0.3094 = $(1.4977)^2$ x 0.1314 + Var(e)

0.3094 = 2.2431 x 0.1314 + Var(e)

Var(e) = 0.0147

$\therefore$ Unsystematic Risk, Var(e) = 0.0147

Systematic Risk = 0.2947

Un-diversifiable Proportion = $\frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{0.2947}{0.3094}$, = 0.9525 or, 95.25%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}} = \frac{0.0147}{0.3094}$ = 0.0475 or, 4.75%

c. Nepal SBI Bank Limited

Total Risk = Systematic Risk + Unsystematic Risk

Variance (r_{NSBIBL}) = $(\ _{NSBIBL})^2 \times Var(r_m) + Var(e)$

0.6289 = $(1.0875)^2$ x 0.1314 + Var (e)

0.6289 = 0.1554 + Var (e)

Var (e) = 0.6289 – 0.1554

Var (e) = 0.4735

$\therefore$ Unsystematic Risk, Var (e) = 0.4735

Systematic Risk = 0.1554

Un-diversifiable Proportion = $\frac{\text{Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.1554}{0.6289}$, = 0.2471 or, 24.71%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.4735}{0.6289}$ = 0.7529 or, 75.29%

d. Himalayan Bank Limited

Total Risk = Systematic Risk + Unsystematic Risk

Variance (r_{HBL}) = ($_{HBL}$)$^2 \times Var(r_m) + Var(e)$

0.0929 = $(0.8333)^2$ x 0.1314 + Var (e)

0.0929 = 0.0912 + Var (e)

Var (e) = 0.0929 – 0.0912

Var (e) = 0.0017

$\therefore$ Unsystematic Risk, Var (e) = 0.0017

Systematic Risk = 0.0912

Un-diversifiable Proportion = $\frac{\text{Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.0912}{0.0929}$, = 0.9817 or, 98.17%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$ = $\frac{0.0017}{0.0929}$ = 0.0183 or, 1.83%

e. Everest Bank Limited

Total Risk = Systematic Risk + Unsystematic Risk

Variance (r_{EBL}) = ($_{EBL}$)$^2 \times Var(r_m) + Var(e)$

0.2097 = $(1.0411)^2$ x 0.1314 + Var (e)

0.2097 = 0.1424 + Var (e)

Var (e) = 0.2097 – 0.1424

Var (e) = 0.0673

$\therefore$ Unsystematic Risk, Var (e) = 0.0673

Systematic Risk = 0.1424

Un-diversifiable Proportion = $\frac{\text{Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.1424}{0.2097}$, = 0.6791 or, 67.91%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.0673}{0.2097}$, = 0.3209 or, 32.09%

f. Nepal Bangladesh Bank Limited

Total Risk = Systematic Risk + Unsystematic Risk

Variance (r_{NBBL}) = $(\ _{NBBL})^2 \times Var(r_m) + Var(e)$

0.6151 = $(1.8270)^2$ x 0.1314 + Var (e)

0.6151 = 0.4386 + Var (e)

Var (e) = 0.6151 – 0.4386

Var (e) = 0.1765

∴ Unsystematic Risk, Var (e) = 0.1765

Systematic Risk = 0.4386

Un-diversifiable Proportion = $\frac{\text{Systematic Risk}}{\text{Total Risk}}$, = $\frac{0.4386}{0.6151}$, = 0.7131 or, 71.31%

Diversifiable Portion = $\frac{\text{Un - Systematic Risk}}{\text{Total Risk}}$ = $\frac{0.1765}{0.6151}$ = 0.2869 or, 28.69%

Table 4.29: Total Risk and Its Partition

Banks	Total Risk	Systematic Risk	Un-systematic Risk	Coefficient of Determination	Coefficient of non-Determination
SCBNL	0.0962	0.018	0.0782	0.8129	0.1871
NABIL	0.3094	0.2947	0.0147	0.9525	0.0475
NSBIBL	0.6289	0.4735	0.1554	0.2471	0.7529
HBL	0.0929	0.0912	0.0017	0.9817	0.0183
EBL	0.2097	0.1424	0.0673	0.6724	0.3276
NBBL	0.6151	0.4386	0.1765	0.7131	0.2869

The above table 4.29 shows that the total risk of NSBIBL is highest i.e. 0.6289 and total risk of HBL is lowest i.e. 0.0929 among six joint venture banks. Systematic risk is market risk and that can't eliminate through diversification. HBL and NABIL has highest coefficient of determination, which indicates that the total risk of them has consist with systematic risk that can't be eliminated unsystematic risk of NABIL and HBL can be diversified away. In other hand NSBIBL has highest total risk and lower coefficient of determination, which shows that there is huge part of unsystematic risk on total risk.

4.5 The Security Market Line

The capital assets pricing model is also called security market line (SML). SML is an equilibrium which gives the idea about how to set price and measure risk. The logic of the security market line equation is that the required return on any investment is the risk free return plus a risk-adjusted factor. The risk adjusted factor is obtained by multiplying the risk premium required for the market rate of return to the individual investment.

Here, $E(R) = R_f + [R_m - R_f]$ ß

Thus, the required rate of return for joint venture bank could be calculated by SML equation. Where risk free rate of return is taken as weighted average return of Treasury bill rate published by Nepal Rastra Bank (NRB).

So, R_f = 6.63 (According to NRB treasury bills rate)

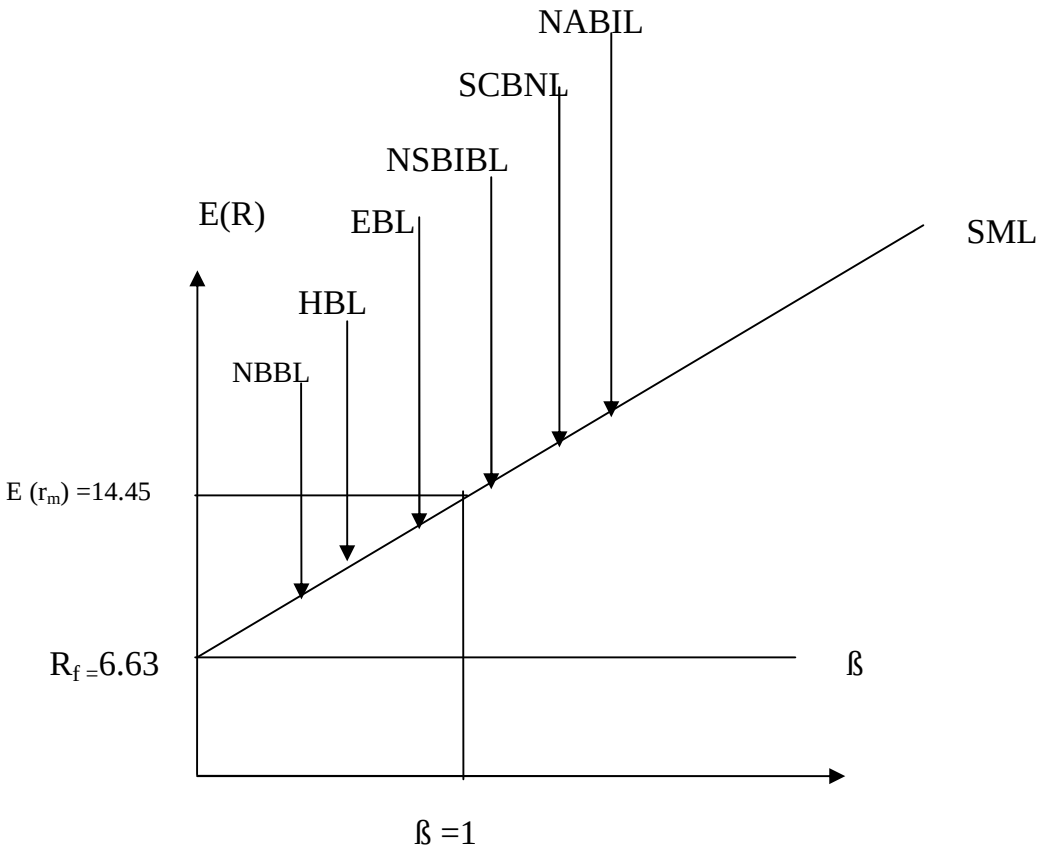
ß = Beta coefficient of different banks

Market Rate of Return E (r_m) = 14.45%

Table 4.30: Comparative Analysis of ERR and RRR of Different Joint Venture Banks

Banks	R_f	E (r_m)	ß	RRR = $R_f + [R_m - R_f]$ ß	ERR	Remarks
SCBNL	6.63%	14.45%	0.77	12.65%	25.94%	Under-priced
NABIL	6.63%	14.45%	1.50	18.36%	37.15%	Under-priced
NSBIBL	6.63%	14.45%	1.09	15.15%	36.73%	Under-priced
HBL	6.63%	14.45%	0.83	13.12%	5.35%	Over-priced
EBL	6.63%	14.45%	1.0411	14.77%	23.68%	Under-priced
NBBL	6.63%	14.45%	1.83	20.94%	2.92%	Over-priced

Figure 4.13: Security Market Line



Above table and figure shows that the stocks of joint venture bank are not equilibrium on the CAPM. Assets are undervalued and, therefore, a very desirable assets to own. Above banks price will rise in the market as more investors purchase it. However, as assets price goes up, their return falls. The return consistent with its beta on the SML, equilibrium is attained.

4.6 Analysis of Portfolio Risk and Return

From all above calculation and analysis, we can see that there are some risk factors in various assets. Risk can be reflected by standard deviation of different assets construction portfolio can diversify some of the risk, which is unsystematic.

In low stock portfolio, the optimal weight of assets can find out by the help of minimum risk portfolio weight. Minimum risk portfolio is the portfolio with the lowest level of risk in the efficient frontier. It is also called risk minimizing weight or optimal weight. The table 4.30 shows that every joint venture bank, which is taken as sample has some unsystematic risk and that, can reduce by diversifying with construction of two assets.

a. Optimal Weight of each stock can find outs by using the equation of SCBNL

$$W_A = \frac{\pm_B^2 - P_{AB}\pm_A\pm_B}{\pm_A^2 + \pm_B^2 - 2 \times P_{AB} \times \pm_A\pm_B}$$

Where,

$\pm_A = \pm_{SCBNL} = 0.3102$ $\quad E(r_{SCBNL}) = 0.2594$

$\pm_A = \pm_{nepse} = 0.3625$ $\quad E(r_m) = 0.1445$

Cov $(r_{SCBNL,} r_m) = 0.1014$

Correlation Coefficient $(\Pr_{SCBNL,\ r_m})$ $= \frac{Cor(r_{SCBNL} r_m)}{\pm_{SCBNL} \times \pm_m}$

$$= \frac{0.1014}{0.3102 \times 0.3625},$$

$$= 0.9021$$

Correlation coefficient between market and SCBNL is 0.9021. The correlation coefficient of SCBNL and market is positive correlation process is not some unsystematic risk could be reduced.

Optimal Weight of SCBNL

$$W_{SCBNL} = \frac{(\pm_m)^2 - Cov(_{SCBNL,m})}{(\pm_{SCBNL})^2 + (\pm_m)^2 - 2Cov(_{SCBNL,m})}$$

$$= \frac{0.1314 - 0.1014}{0.0962 + 0.1314 - 0.2029}$$

$$= \frac{0.03}{0.0247} = 1.2146$$

Thus optimal weight of SCBNL (W_{SCBNL}) = 1.2146

$\therefore$ $W_m = 1 - W_{SCBNL}$

= 1-1.2146 = -0.2146

Portfolio return E (r_p) $= W_{SCBNL} \times E(r_{SCBNL}) + W_m \times E(r_m)$

$= 1.2146 \times 0.2594 + (-0.2146) \times 0.1445$

$= 0.3151 - 0.0310$

$= 0.2841$ or, 28.41%

Portfolio Risk $(\pm_p)$

$= \sqrt{W^2_{SCBNL} \pm^2_{SCBNL} + W_m{}^2 \pm_m{}^2 + 2 \times Cov(r_{SCBNL,m}) \times W_{SCBNL} \times W_m}$

$= \sqrt{(1.2146)^2 \times (0.3102)^2 + (-0.2146)^2 \times (0.3625)^2 + 2 \times 0.1014 \times 1.2146 \times (0.2146)}$

$= \sqrt{0.0951}$

= 0.3084, or 30.84%

b. Optimal Weight of each stock can be finding out by using the equation of NABIL.

Where,

$\pm_{NABIL} = 0.5562$ $E(r_{NABIL}) = 0.3715$

$\pm_{nepse} = 0.3625$ $E(r_m) = 0.1445$

Cov ($r_{NABIL,} r_m$) = 0.1968

Correlation Coefficient ($\Pr_{NABIL,\ r_m}$) = 0.9761 (From previous calculation)

Here, we can see that correlation coefficient between market and NABIL itself is nearly perfectly positively correlated. So, diversification process is not so beneficial. Hence, some unsystematic risk could be reduced.

Optimal weight of NABIL (W_{NABIL})

$$W_{NABIL} = \frac{(\pm_m)^2 - Cov(_{NABIL,m})}{(\pm_{NABIL})^2 + (\pm_m)^2 - 2Cov(_{NABIL,m})}$$

$$= \frac{(0.3625)^2 - 0.1968}{(0.5562)^2 + (0.3625)^2 - 2 \times 0.1968}$$

$$= \frac{0.1314 - 0.1968}{0.4408 - 0.3936} \qquad = \frac{-0.0654}{0.0472} \quad = -1.3856$$

Thus optimal weight of NABIL (W_{NABIL}) = -1.3856

$\therefore$ W_m = 1- W_{NABIL}

= 1-(-1.3856) =2.3856

Portfolio return E (r_p) $= W_{NABIL} \times E(r_{NABIL}) + W_m \times E(r_m)$

$= (-1.3856) \times 0.3715 + 2.3856 \times 0.1445$

= -0.5148 + 0.3447 = -0.1701 or, 17.01%

Portfolio Risk ($\pm_p$)

$$= \sqrt{W^2_{NABIL} \pm^2_{NABIL} + W_m{}^2 \pm_m{}^2 + 2 \times Cov(r_{NABIL,m}) \times W_{NABIL} \times W_m}$$

$$= \sqrt{(-1.3856)^2 \times (0.5562)^2 + (2.3856)^2 \times (0.3625)^2 + 2 \times 0.1968 \times (-1.3856) \times 2.3856}$$

$$= \sqrt{0.5939 + 0.7478 - 1.3010}$$

= 0.2017, or 20.17%

Above calculation of portfolio return and risk shows that the unsystematic risk is reduced by constructing portfolio. Consisting stock of NABIL and market NEPSE, but that is not beneficial for those investors, who prefer high return with risk seeker because there is negative return from market.

c. Optimal Weight of each stock can be finding out by using the equation of NSBIBL

Where,

$\pm_{NSBIBL}$ = 0.3673 $E(r_{NSBIBL})$ = 0.1445

$\pm_{nepse}$ = 0.7930 $E(r_m)$ = 0.3625

Cov ($r_{NSBIBL,} r_m$) = 0.1429

Correlation Coefficient ($Pr_{NSBIBL,\ r_m}$) = 0.4971 (From previous calculation)

So,

Optimal weight of NSBIBL (W_{NSBIBL}), can be calculating from the way of given below:

$$W_{NSBIBL} = \frac{(\pm_m)^2 - Cov(_{NSBIBL,m})}{(\pm_{NSBIBL})^2 + (\pm_m)^2 - 2Cov(_{NSBIBL,m})}$$

$$= \frac{(0.3625)^2 - 0.1429}{(0.7930)^2 + (0.3625)^2 - 2 \times 0.1429}$$

$$= \frac{0.1314 - 0.1429}{0.7602 - 0.2858}$$

$$= \frac{-0.0115}{0.4744} = -0.0242$$

Thus optimal weight of NABIL (W_{NSBIBL}) = -0.0242

$\therefore$ W_m = 1- W_{NSBIBL}

= 1-(-0.0242) = 1.0242

Portfolio return E (r_p) $= W_{NSBIBL} \times E(r_{NSBIBL}) + W_m \times E(r_m)$

$= (-0.0242) \times 0.3673 + 1.0242 \times 0.1445$

= -0.0089 + 0.1480

= 0.1391 or, 13.91%

Portfolio Risk $(\pm_p)$

$$= \sqrt{W^2{}_{NSBIBL} \pm^2{}_{NSBIBL} + W_m{}^2 \pm_m{}^2 + 2 \times Cov(r_{NSBIBL,m}) \times W_{NSBIBL} \times W_m}$$

$$= \sqrt{(-0.0242)^2 \times (0.7930)^2 + (1.0242)^2 \times (0.3625)^2 + 2 \times 0.1429 \times (-0.0242) \times 1.0242}$$

$$= \sqrt{0.0004 + 0.1378 - 0.0071}$$

$= \sqrt{0.1312}$ = 0.3622 or, 36.22%

Using the diversification, we can reduce the unsystematic risk. There is diversification portfolio risk reduce36.25% where portfolio return is 13.91%.

d. Optimal weight of each stock can find out by using the equation of HBL.

Where,

$\pm_{HBL}$	= 0.3048	$E(r_{HBL})$	= 0.0535
$\pm_{nepse}$	= 0.3625	$E(r_m)$	= 0.1445

Cov ($r_{HBL,} r_m$) = 0.1095

Correlation Coefficient ($\Pr_{HBL,} r_m$) = 0.9910 (From previous calculation)

So,

Optimal weight of HBL (W_{HBL}), can be calculating from the way of given below:

Here,

Correlation coefficient between market and HBL is nearly perfectly positive correlated. So, diversification process is not so beneficial. Hence some unsystematic risk could be reduced.

Optimal Weight of HBL (W_{HBL}) is:

$$W_{HBL} = \frac{(\pm_m)^2 - Cov(r_{HBL,m})}{(\pm_{HBL})^2 + (\pm_m)^2 - 2Cov(r_{HBL,m})}$$

$$= \frac{(0.3625)^2 - 0.1095}{(0.3048)^2 + (0.3625)^2 - 2 \times 0.1095}$$

$$= \frac{0.0219}{0.0053} \qquad = 4.1321$$

Thus optimal weight of HBL (W_{HBL}) = 4.1321

$\therefore$ W_m = 1- W_{HBL}

= 1-(4.1321) = -3.1321

Portfolio return E (r_p) $= W_{HBL} \times E(r_{HBL}) + W_m \times E(r_m)$

$= (4.1321) \times 0.0535 + (-3.1321) \times 0.1445$

= 0.2315 or, 23.15%

Again,

Portfolio Risk $(\pm_p) = \sqrt{W^2{}_{HBL} \pm^2{}_{HBL} + W_m{}^2 \pm_m{}^2 + 2 \times Cov(r_{HBL,m}) \times W_{HBL} \times W_m}$

$= \sqrt{(4.1321)^2 \times (0.3048)^2 + (-3.1321)^2 \times (0.3625)^2 + 2 \times 0.1095 \times (4.1321) \times (-3.1321)}$

$= \sqrt{0.041}$ = 0.2025 or, 20.25%

Using the diversification, we can reduce the unsystematic risk. Since there is 30.48% and 36.25% risk respectively in individual assets and the market. By diversification of the assets using portfolio it can be reduced to 20.25% from the portfolio return expect -23.15 %(negative).

e. Optimal weight of each stock can find out by using the equation of EBL.

Where,

$\pm_{EBL}$ = 0.4579 $E(r_{EBL})$ = 0.2368

$\pm_{nepse}$ = 0.3625 $E(r_m)$ = 0.1445

Cov ($r_{EBL,} r_m$) = 0.1368

Correlation Coefficient ($\mathrm{Pr}_{EBL,\ r_m}$) = 0.82 (From previous calculation)

So,

Optimal weight of EBL (W_{EBL}), can be calculating from the way of given below:

Correlation coefficient between market and EBL is nearly perfectly positive correlated. So, diversification process is not so beneficial. Hence some unsystematic risk could be reduced.

Optimal Weight of EBL (W_{EBL}) is:

$$W_{EBL} = \frac{(\pm_m)^2 - Cov(r_{EBL,m})}{(\pm_{EBL})^2 + (\pm_m)^2 - 2Cov(r_{EBL,m})}$$

$$= \frac{(0.3625)^2 - 0.1368}{(0.4579)^2 + (0.3625)^2 - 2 \times 0.1368}$$

= -0.08

Thus optimal weight of EBL (W_{EBL}) = -0.08

$\therefore$ W_m = 1- W_{EBL}

= 1-(-0.08) = 1.08

Portfolio return E (r_p) $= W_{EBL} \times E(r_{EBL}) + W_m \times E(r_m)$

$= (-0.08) \times 0.1484 + (1.08) \times 0.1445$

= 0.1372 or, 13.72%

Again,

Portfolio Risk $(\pm_p) = \sqrt{W^2{}_{EBL}\pm^2{}_{EBL} + W_m{}^2\pm_m{}^2 + 2\times Cov(r_{EBL,m})\times W_{EBL}\times W_m}$

$= \sqrt{(-0.08)^2\times(0.4579)^2 + (1.08)^2\times(0.3625)^2 + 2\times 0.1368\times(-0.08)\times(1.08)}$

$= \sqrt{0.133}$ = 0.3647 or, 36.47%

From the above calculation, a rational investor invests their funds with diversification between Everest Bank Limited and market, he /she will reduce their risk sufficiently. Before the diversification, individual stock has 45.79% and market 36.25% risk and 23.68% and 14.45% as return respectively.

After diversification of risk using portfolio, they can reduce risk to 36.47% with portfolio return of 13.72%. This portfolio of EBL and market is beneficial for risk averter investors.

f. Optimal weight of each stock can find out by using the equation of NBBL

Where,

$\pm_{NBBL}$ = 0.7843 $E(r_{NBBL})$ = 0.0292

$\pm_{nepse}$ = 0.3625 $E(r_m)$ = 0.1445

Cov ($r_{NBBL,} r_m$) = 0.240

Correlation Coefficient ($\Pr_{NBBL,\ r_m}$) = 0.8442 (From previous calculation)

So, Optimal weight of EBL ($\pm_i$), can be calculating from the way of given below:

$$W_{NBBL} = \frac{(\pm_m)^2 - Cov(r_{NBBL,m})}{(\pm_{NBBL})^2 + (\pm_m)^2 - 2Cov(r_{NBBL,m})}$$

$$= \frac{(0.3625)^2 - 0.240}{(0.7843)^2 + (0.3625)^2 - 2\times 0.240}$$

= -0.4075

Thus optimal weight of EBL (W_{NBBL}) = -0.4075

$\therefore$ W_m = 1- W_{EBL}

= 1-(-0.4075) = 1.4075

Portfolio return E (r_p) $= W_{NBBL} \times E(r_{NBBL}) + W_m \times E(r_m)$

$= (-0.4075) \times 0.0292 + (1.4075) \times 0.1445$

= 0.1915 or, 19.75%

Again,

Portfolio Risk $(\pm_p)$

$$= \sqrt{W^2{}_{NBBL} \pm^2{}_{NBBL} + W_m{}^2 \pm_m{}^2 + 2 \times Cov(r_{NBBL,m}) \times W_{NBBL} \times W_m}$$

$$= \sqrt{(-0.4075)^2 \times (0.7843)^2 + (1.4075)^2 \times (0.3625)^2 + 2 \times 0.240 \times (-0.4075) \times (1.4075)}$$

$= \sqrt{0.0871}$ = 0.2951 or, 29.51%

In above calculation, it shows that if investors invest their funds with diversification between NBBL and market. He/ She could reduce their risk sufficiently. Before the diversification individual stock has 78.43% risk and 2.92% return but after diversification risk has been minimized to 29.51% and return increased to 19.15%. This type of combination will be suitable for those investors which have risk adverting capacity.

Combination of all the calculation and summarized them in a table which is easy to understand the idea about diversification of risk and maximizing the return using suitable portfolios.

Table 4.31: Optimal Portfolio of different Joint Venture Banks with Market and Effectiveness of Diversification

Portfolios	**Assets**	**Weight**	**Individual risk $(\pm_j)$**	**Individual Return E(r)**	**Portfolio Risk $(\pm_p)$**	**Portfolio Return $E(r_p)$**

A	**SCBNL** **Market**	1.2146 -0.2146	0.3102 0.3625	0.2594 0.1445	0.3084	0.2841
B	**NABIL** **Market**	-1.3856 0.3856	0.5562 0.3625	0.3715 0.1445	0.2017	-0.1701
C	**NSBIBL** **Market**	-0.0242 1.0242	0.7930 0.3625	0.3673 0.1445	0.3622	0.1391
D	**HBL** **Market**	4.1321 -3.1321	0.3048 0.3625	0.0535 0.1445	0.2025	-0.2315
E	**EBL** **Market**	-0.08 1.08	0.4579 0.3625	0.2368 0.1445	0.3647	0.1372
F	**NBBL** **Market**	-0.4075 1.4075	0.7843 0.3625	0.0292 0.1445	0.2951	0.1915

Above table shows that the optimal weight of individual assets of joint venture commercial bank and market portfolio that gives the minimum risk.

a. First portfolio consists of SCBNL and Market with the optimal weight of 1.2146 & -0.2146 respectively is more preferable than B, C, D, E and F portfolios because portfolio A have high portfolio return and has low risk compare to other portfolios.
b. Second portfolio consists of NABIL and market which minimize the risk from 55.62 % and 36.25% to portfolio risk as 20.17%, but have negative portfolio return i.e.-17.01%. These types of portfolios are suitable for those investors which are waiting for future return on the assets. This portfolio supports risk seekers.
c. In the third portfolio, it is the composite of NSBIBL and the market. In the individual investment, investors can take 36.73% return from the banks with higher risk as 79.30%, if it is diversify through portfolio investment, then the risk will fall to 36.22% and the return ultimately decreased to 13.91%. This portfolio dominates the other portfolios except A & F. Risk averter investment chose this type of portfolio.

d. Fourth portfolio represents market and HBL, HBL has weight of 4.1321 with -3.1321 for the market. They have risk of 30.48% and 36.25% respectively. After using portfolio investment, it will decreased to 20.25% but portfolio returns has negative with -0.2315, so this portfolio is not suitable for recent transaction purpose may be benefited in the future with positive returns.
e. Fifth portfolio consists of EBL and the market. There are -0.08 and 1.08 weights for each. This portfolio has risk of 36.47% with return of 13.72%. So investor can choose this portfolio after the portfolio A & C.
f. Considering portfolio NBBL and the market which minimize the risk 78.73% to 29.51% and individual return 2.92% to 19.15% as portfolio. This portfolio has sufficient return with minimum risk, so this portfolio is acceptable to the investors, which have passion to get return in future.

4.7 Portfolio Performance Evaluation

In the process of evaluation of risk and return of the portfolios, it is better to consider Sharpe performance evaluation method for ranking.

$$\text{Sp} = \frac{\text{Risk Premium}}{\text{Total Risk}} = \frac{\overline{r_i} - R_f}{\pm_i}$$

Sp = Share portfolio performance Evaluation

r_i = Average returns from portfolio i

$\pm_i$ = Standard Deviation of return for portfolio i

R_f = Risk free rate of return

Table 4.32: Sharpe Performance Evaluation showing with Ranking of Portfolio

Portfolios	$S = \frac{\overline{r_p} - R_f}{\pm_P}$	Result	Ranking

A	$\frac{0.2841 - 0.0663}{0.3084}$	0.7062	First
B	$\frac{-0.1701 - 0.0663}{0.2017}$	-1.1720	Fifth
C	$\frac{0.1319 - 0.0663}{0.3622}$	0.2010	Third
D	$\frac{-0.2315 - 0.0663}{0.2025}$	-1.4706	Sixth
E	$\frac{0.1372 - 0.0663}{0.3647}$	0.1944	Fourth
F	$\frac{0.1915 - 0.0663}{0.2951}$	0.4295	Second

Above table shows that the performance of portfolio A i.e. portfolio between SCBNL and assets from market has best performance (0.7062) among the six portfolios. Portfolio A has higher return and higher risk i.e. C.V. is 1.1958 and hence performed as best portfolio. Portfolio F ranked as second because of higher return and less risk as compare to other portfolios. NBBL bank has not satisfactory in the last 2, 3 years but was high ranked in other past years. This portfolio has 0.4295 risk premium, so it ranked second position. Portfolio C (market with NSBIBL) ranked as third, it has 0.2010 risk premium and portfolio return is 13.19 with C.V. 2.1590 for NBSIBL. This portfolio has sufficient risk and adequate return also. Portfolio E (market with EBL) ranked as fourth because of 0.1944 as risk premium and 19.15% as portfolio return. Portfolio B (market with asset of NABIL) ranked as fifth which have negative risk premium of -1.1720 with negative portfolio return of -17.01%. Portfolio D ranked as least of among portfolios. This portfolio has assets of HBL with market with negative risk premium of -1.4706 and -23.15% as portfolio return.

4.8 Major Findings of the Study

a. Expected return of NABIL is highest i.e. 37.15% and NBBL has lowest expected rate of return i.e. 2.92%. NSBIBL has second position in expected rate of return i.e.36.73%.

b. SCBNL has 25.94% expected rate of return and 31.02% as standard deviation. NSBIBL also has maximum standard deviation of 79.30%.NBBL has second rank in terms of standard deviation of 78.43%.
c. Expected rate of return and standard deviation cannot give the appropriate comparison. So, we have to consider Coefficient of Variation.
d. Coefficient of variation of NBBL is highest i.e. 2685.96 concludes as most risky assets. Similarly NSBIBL has also CV of 215.90 and resulted as risky assets.
e. Expected rate of return of market 14.45% and standard deviation is 36.25% with C.V. of 250.87. Standard deviation is the segregate the total risk and here NSBIBL has variance of 0.6289 where systematic risk is 0.4735 and unsystematic portion is 0.1554. Similarly, NBBL has second large portion of total risk where systematic risk is 0.4386 and unsystematic risk is 0.1765. As we know that unsystematic risk is diversifiable risk and could be eliminated through diversification.
f. Coefficient of determination is the proportion of systematic risk to the total risk. Coefficient of determination of HBL and NABIL, have highest portion of that risk.
g. Beta is the index of systematic risk. NABIL, NSBIBL, EBL and NBBL have beta greater than one (ß>1).So, these are the aggressive type of assets. SCBNL and HBL are defensive type of assets with beta of less than one (ß<1).
h. The correlation coefficient of different banks to the market (NEPSE) indicates that they are dependent to each other. As we know that by perfectly positive correlated stock, we can not eliminate risk. All joint venture banks are highly correlated with market except NSBIBL . The correlation between market and banks SCBNL, NABIL, NSBIBL, HBL, EBL and NBBL are 0.9021, 0.9761, 0.4971, 0.9910, 0.82 and 0.8442 respectively.

CHAPTER – V

SUMMARY, CONCLUSION AND RECOMMENDATIONS

In this section an attempt has been made to summarize some of the major accomplishment of the study this chapter is complete conclusive and suggestive package, which contains summary, conclusion of the findings and actionable plans i.e. suggestion for further improvement its planed goal conclusion for the bank to perform daily action and achieve the planed goal conclusion of the findings are based on the consequences of the analysis of relevant data by using various financial as well as statistical tools which presents the strengthens, weakness, opportunities and threats of JVBs. The recommendations are presented in terms of suggestions which are prepared on the basis of findings and conclusion.

5.1 Summary

The shares of commercial banks in Nepal are heavily traded in the stock exchange. Share plays a vital role in the determination of stock exchange indicators. Institutional set up of securities market began along with the establishment of security exchange

enter in 1977. Rational investor must be motivated providing investment related and good knowledge to analysis risk and return behavior of stock and portfolio to develop stock market in Nepal. All these activities ultimately help them to be confidence and to improve stock investment and efficiency.

Common stock is most risky security and lifeblood of an organization. Investor dreams capital gain and dividend from an investment but they are not always able to fulfill their expectation because there is risk too. So, risk and return is the objects of choice for any individual investor. In the context of Nepal, investor is not able to determine risk-return-trade-off in investment. They use to invest their funds randomly or by their personal preferences. Some investor invests their funds in only one security but some of them invest in more than two assets without having the knowledge about portfolio selection or diversification. Investors are unknown about the correlated stocks.

The main objectives of this study was to analyze the risk and return characteristics of stocks and find out level of portfolio risk and return on common stock of joint venture banks. The data used in this study are mainly secondary in nature. For analysis financial tools such as portfolio risk, portfolio return, portfolio performance and statistical tools such as mean, standard deviation, coefficient of variation, covariance, correlation and coefficient of determination are used. The data and results are tabulated and presented in figures as the requirement of the study.

5.2 Conclusion

From all above calculation, tables and graphs figures the researcher comes to conclude the following points. But, these all conclusion and recommendation is completely based on sample study.

a. Expected rate of return of maximum joint venture banks which are taken as sample have higher return than market expected rate of return.
b. NABIL bank has the highest expected rate of return and NBBL has the lowest expected rate of return. So, investor can get the highest rate of return in NABIL bank which is little point above than the expected rate of return of NSBIBL and return of SCBNL is behind the NSBIBL. Only

expected rate of return can not gives appropriate comparison between the assets for that investors have to consider both risk and return and C.V. So, investor must be decided to invest by observing coefficient of variation where NSBIBL and NBBL have highest C.V. and concluded as most risky assets.

c. Correlation coefficient measures the degree of relationship between two stocks correlation coefficient always lie between -1 to +1. A value +1 represents of perfectly correlation and -1 represents the perfectly negatively correlated with the market and it is beneficial to diversify the risk.
d. The beta itself measures the index of systematic risk of stock and it is found that the stock of NABIL, NSBIBL, EBL and NBBL are aggressive type of assets and SCBNL and HBL are defensive type of assets.
e. Coefficient of determination reveals the proportion of systematic risk to the total risk. HBL and NABIL have nearly 1 coefficient of determination and it is concluded that there is low proportion of un-diversification of risk compare to NBBL, NSBIBL, EBL and SCBNL have higher proportion of diversification risk with low coefficient of determination.
f. All joint venture banks have less required rate of return than the expected rate of return except NBBL and concluded as undervalue and investor will be beneficial by investing their stocks.
g. According to the sample study of portfolio analysis, the diversification between SCBNL & market is most preferable where as portfolio between market with NSBIBL and NBBL are better but market with NABIL & HBL are worst portfolios.
h. According to share portfolio performance, evaluation portfolio between SCBNL and market is ranked as best performance.

5.3 Recommendations

Based on the above study and conclusion, the researcher prescribed the following recommendations and suggestion.

a. Expected rate of return from NABIL and NSBIBL is highest among the joint venture bank, which are greater than required rate of return. So, it is suggested to purchase the stock of JVB's that will beneficial in future.
b. NSBIBL and SCBNL may have some internal risk factor such as management errors, inventions, advertising campaigns, and shift in consumer taste etc. So, to reduce the unsystematic risk NSBIBL have to improve their management to increase their stock prices.
c. NEPSE need to modernize the trading system and effective information channel to enhance to investor attraction towards the investment.
d. To expand and growth of capital market there should effective information channel to enhance to investor attraction towards the investment.
e. To expand and growth of capital market there should effective consumer awareness programs towards the investment and its opportunities.
f. Stock exchange facilities should be expanded in each development region based on feasibility to participate and attract the unproductive funds of the country.
g. No, electronic system has been used yet that could help the investor to participate in the transaction electronically from different parts of the nation. So, further step of improvements should be implementing to expand the capital market.
h. It is now time that the concept of stock split is introduced in Nepali market too. It is beneficial to develop the capital market. To attract the small investors towards capital market and to increase the liquidity of the market.
i. Without proper analysis of individual security and overall market investment on common stock will not beneficial. So, investor should concentrate the risk and return characteristics of individual security before investment.

j. Investment on common stock has both risk and return, so investor should be acquainted with associated risk and work out their attitude towards the risk ness of various investment strategies.

k. Now, it is right time to expand the economy of Nepal by its own resources and capital, so for that there should exercise of political stability and good governance.