CHAPTER 1

INTRODUCTION

1.1 Background of the study

The proper mobilization and utilization of domestic research become indispensable for any developing countries aspiring for a sustainable economic development. Similarly, integrated and speedy development of the impossible only when competitive banking and financial services reach every note book and corners of the country. Bank and other financial institution are playing vital role in the economic development of the country. Successful formulation and effective implementation of investment policy is the prime requisite for the successful performance of banks and other financial institution. Good investment has a positive impact on economic development of the country and vice- versa.

Investment operations are very risky one. Investment policy is one facet of overall spectrum of policies that guides bank's investment operation. A healthy development of any bank depends heavily upon its investment policy. A sound and viable investment policy can be effective one for the economy to attain the economic objectives directed towards the acceleration of the pace of development. A good investment policy attracts both borrower and lenders, which helps to increase the volume and quality of deposits, loan and investment. Investment management of a bank is guided by the investment policy adopted by the bank. The investment policy of the bank helps the investment operation of the bank to be efficient and profitable by minimizing the inherent risk.

The development of any country largely depends upon its economic development. Thus, the primary goal of any nation including Nepal is rapid economic developing to promote the welfare of the people and the nation as well. Nepal being listed among least developed country is trying to embark upon the path of economic development by economic growth rate and developing all sectors of economy. Even though the process of economic development depends upon various factors, the economists are now convinced the capital formation and its proper utilization plays a paramount role for rapid economic development of resources.

The network of a world-organized financial system of the country has great bearing in capital formation. It collects scattered financial resources from the masses and invests them among those engaged in commercial and economic activities of any country can hardly be carried forward without the assistance and support of financial institution. Financial institutions have catalytic role in the process of economic development. Commercial bank are major financial institutions provide capital for the development of industry, trade, business and other resource deficit sectors by investing the saving collected as deposits. All the economic activities of each and every country are greatly influenced by the commercial banking business of the country. Thus, commercial banks have become the hearts of financial system. A key factor in the development in the country is the mobilization of domestic resources and their investment for productive policies which helps maximize quality and quantity of investment and eventually contribute to the economic growth of a country.

1.1.1 Commercial banks and investment portfolio

Commercial banks are those financial institutions which deal in accepting deposits of persons and institutions and giving loans against securities. They provide working capital needs to trade industry and even to agricultural sectors. Moreover commercial banks also provide technical and administrative assistance of industries, trade and business enterprises. Commercial banks pull together the saving of the community and arrange them for the productive use. They transfer monetary sources from savers to users. In addition of above the main purpose is to uplift the backward sector of economy.

Commercial bank is a corporation which accepts demand deposits subject to check and makes short term loans to business enterprises, regardless of the scope of its other services’2.

The commercial banks play an important role in the modern economy. Accepting deposits from individual and institution and providing loans to the needy persons and business are its two important functions. Besides, it performs many other services of functions such as payment of subscriptions insurance credit instructions, purchase and scales of securities, remittance of money, advisory, services, assist in foreign trade etc.

Commercial banks are the heart of the financial system. They make fund available through their lending and investing activities to borrowers, individuals, business firm and services, for producers to customers and financial activities of the government. So, commercial bank in those financial institutions which are collected loan against proper security for their productive purpose. Commercial banks must mobilize its deposits and other funds to profitable, secured, stable and marketable sector. As a result, it can earn a handsome profit as well as it should be secured and can be converted into cash whenever needed. Investment policy provides the bank several inputs through which they can handle their investment operation efficiently ensuring that maximum returns with minimum risk which ultimately leads the banks to the path of success. Thus, investment is the most important function of commercial banks. It is the long term commitment of bank in the uncertain and risky environment. It is a very challenging task for commercial banks. So, a bank has to very cautious while investing their funds in various sectors i.e. investments portfolio. The success of a bank heavily depends upon the proper management of its investable funds.

Investment portfolio is the one in which the income or profit of the bank depends upon directly. Hence, the bank should never invest its fund in those securities which are subject it much depreciation and fluctuations because a little difference may cause a great loss. It must not incest it fund into speculative businessman who may be bankrupt at once and who may earn million in a minute, the bank should accept that type of securities which are commercial, durable, marketable, stable, transferable and high market price. A commercial bank can maximize its volume of wealth through maximization of return on their investment and lending. So, they must invest their funds where they gain maximum profit. The profits of CBs mainly depend on the interest rate, volume, period of loan and nature of investment in different securities. While investing excess funds in different securities of at the lending period, the bank should keep in mind that people deposit money at the bank in different account with confidence that the bank will repay their money when they need. Similarly a bank should not lay all its eggs ion the same basket i.e. to minimize risk, a bank must diversify its investment to different sectors. Diversification of loan or investment helps to sustain loss according to the low of average because if securities of company deprived, there may be appreciation in the securities of other companies.

Commercial banks must follow the rules and regulations as well as different direction issued by central bank, ministry of finance, ministry of law and other while mobilizing its finds. So, the banks should invest its funds in legal securities only. The loan provided by commercial bank is guided by several principles such as length if time, their purpose profitability, safety etc. these fundamental principles of commercial banks investment are fully considers while making investment portfolio. The investment portfolio should be carefully analyzed so that the investment should ensure minimum risk and maximum profit. So, CBs should incorporation several elements such as regulatory environment, the availability of funds, the selection of risk, investment portfolio balance term structure of the liabilities etc. while making investment decision.

1.1.2 Investment pattern of Nepalese Commercial Banks

The evolution of the organized financial system in Nepal has a more recent history than in other countries of the world. Banking history of Nepal is not more than of seven decade, the concept of banking system was introduced in Nepal with the establishment of Nepal bank ltd. In 1937A.ED. It was established to help government's policy to develop economic and business activities in the country. After realizing the need of another bank, later in 1956, the first central bank named as the "Nepal Rastra Bank" was set up with an objective of supervising, protecting and directing the function of commercial banking activities. After realizing the need of another bank, Rastriya Banijya Bank was set up in 1966 A.D. to spread banking service to both rural and Durban areas. As the country moves towards economic liberalization in 1980A.D. foreign banks were invited to operate in Nepal. The financial scenario has changed with the introduction of Joint Venture Banks in 1984. the number of commercial banks has been increasing. Since then, various financial institutions like, JVB's, Domestic commercial banks, Development banks, Finance companies, Co-operative Banks, Credit Guarantee Corporation, Corporation, Employee provident fund, National Insurance Corporation, Nepal Stock Exchange have come into existence to cater the financial needs of the country thereby assisting financial development of the country.

After restoration of democracy in the country in 1990, government highlight the agenda of economic liberalization polices were announced and emphasized to invite

foreign direct investment (FDI) in the banking sectors of Nepal. Therefore the development of CBs in Nepal is categorized in three phases on the basis of financial institutions policies adopted by the country from time to time they are

→CBs Prior to 1980s →CBs of 1980s →CBs post 1990s

There are only two banks prior to 1980s they are NBL and RBB. All the three CBs of 1980s were established as joint venture bank. Similarly six commercial banks of past 1990s also came into operations as joint venture banks. Latest seven banks also came into operations as joint venture.

The banking sectors in Nepal stated with the establishment of Nepal Bank Limited. Today we have got 32 commercial banks in operation. The commercial banks of Nepal can be categorized into two types- public sectors and private sectors. Public sector bank includes the two old banks NBL and RBB. Private Sector comprises the other 30 banks.

Table 1.1 Commercial Banks in Nepal

S.No.	**Names**	**Operation Date (A.D.)**	**Head Office**	**Paid up Capital** *(Rs. '00 Thosands)*
1	Nepal Bank Ltd.	1937/11/15	Kathmandu	3804
2	Rastriya Banijya Bank Ltd.	1966/01/23	Kathmandu	3853
3	Agriculture Development Bank Ltd.	1968/01/02	Kathmandu	94375
4	Nabil Bank Ltd.	1984/07/16	Kathmandu	20298
5	Nepal Investment Bank Ltd.	1986/02/27	Kathmandu	24091
6	Standard Chartered Bank Nepal Ltd..	1987/01/30	Kathmandu	16102
7	Himalayan Bank Ltd.	1993/01/18	Kathmandu	20000
8	Nepal SBI Bank Ltd.	1993/07/07	Kathmandu	18693
9	Nepal Bangladesh Bank Ltd.	1994/06/05	Kathmandu	20103
10	Everest Bank Ltd.	1994/10/18	Kathmandu	11196
11	Bank of Kathmandu Ltd.	1995/03/12	Kathmandu	13595
12	Nepal Credit and Commerce Bank Ltd.	1996/10/14	Siddharthanagar, Rupandehi	13997
13	Lumbini Bank Ltd.	1998/07/17	Narayangadh, Chitawan	13000
14	Nepal Industrial & Commercial Bank Ltd.	1998/07/21	Biaratnagar, Morang	13116
15	Machhapuchhre Bank Ltd.	2000/10/03	Pokhara, Kaski	16272

16	Kumari Bank Ltd.	2001/04/03	Kathmandu	14850
17	Laxmi Bank Ltd.	2002/04/03	Birgunj, Parsa	16140
18	Siddhartha Bank Ltd.	2002/12/24	Kathmandu	15610
19	Global Bank Ltd.	2007/01/02	Birgunj, Parsa	15000
20	Citizens Bank International Ltd.	2007/06/21	Kathmandu	19223
21	Prime Commercial Bank Ltd	2007/09/24	Kathmandu	22457
22	Sunrise Bank Ltd.	2007/10/12	Kathmandu	18554
23	Bank of Asia Nepal Ltd.	2007/10/12	Kathmandu	15175
24	DCBL Bank Ltd.	2008/05/25	Kamaladi, Kathmandu	19209
25	NMB Bank Ltd.	2008/06/05	Babarmahal, Kathmandu	16517
26	Kist Bank Ltd.	2009/05/07	Anamnagar, Kathmandu	20000
27	Janata Bank Nepal Ltd.	2010/04/05	New Baneshwor, Kathmandu	14000
28	Mega Bank Nepal Ltd.	2010/07/23	Kantipath, Kathmandu	16310
29	Commerz & Trust Bank Nepal Ltd.	2010/09/20	Kamaladi, Kathmandu	14000
30	Civil Bank Ltd.	2010/11/26	Kamaladi, Kathmandu	12000
31	Century Commercial Bank Ltd.	2011/03/10	Putalisadak , Kathmandu	10800
32	Samina Bank Ltd	2012	Naxal, Kathmandu	20160

Source: WEB SIDE

Bank and financial institutions operate under various other acts before the promulgation of bank and financial institution ordinance 2005; have been categorized into A, B, C and D class. According, development bands, financial companies and micro-credit development banks are categorized into “B, C and D” class commercial Banks are the “A” class. By mid July 2011, there are 87 development banks of class “B”, 79 finance companies of class “C”, 21 micro-credit development banks of class “D” including 16 saving and credit co-operative owned jointly by Government of Nepal. They are registered under the cooperative act. Due to the conflict situation and the losses tat e branches, Rastriya Banijya Bank. Nepal Bank Ltd and Agriculture Development Bank closed and merged several of their branches in rural areas due to which banking services were squeeze in those places. Hence, in those places, co-operative societies, micro credit development bank and NGOs are rapidly coming up

to provide such banking facilities. But there are many other co-operatives society operates banking function with out getting any approval from Nepal Rastra bank.

institution have to gain prosperity without delay, they should immediately start to improve customer service quality at high standards to reflect tremendous opportunities in the market for their costumes' benefits like managing their risk, giving them the advantage of global strength, insights and philosophy, because this can make the customers take full confidence to expand their transaction further more with best approach and feel secured for each investment made to earn superior return over time. Therefore, commercial banks should be aware at every moment while providing service to other customers and should have better judgment on the quality of service whether they could satisfy their customers up to their expectation and have ability to attract others and many to meet the objectives or not as a result of the quality in service delivered. Actually, for commercial banks, the customers act as the soul which helps in correcting the problem of service providers with which the providers can identify the defects of the gaps to minimize them in time through strong and intensive analysis of their service market research team.

Nepal being listed among least developed countries, the commercial banks has played a catalytic role in the economic growth. Its investments range from small scale cottage industries to all typed of s0cial and commercial loans and large industries. Generally the investment of CBs includes the investment on Government securities like treasury bills, development bonds, national saving bonds, foreign Government securities, shares on owned companies and non-government companies and investment on debenture. Similarly, the CBs used their funds as loans and advances.

The guideline given by Nepal Rastra Bank plays a significant role on the composition of bank portfolio. Since the constraints framework provided by the central bank is for economic enhancement. It can be hypothesized that the composition of bank portfolio has a considerable Impact on national economy. Portfolio management activities of Nepalese banks are in developing stage, however, on the other hand, most of the joint venture banks are nit doing such activities so far.

1.1.3 Profiles of the banks under study

In this section general introduction of the banks under study is being attempted to furnish the easy reference of the samples to the research.

i. **Nabil bank Ltd**: Nabil bank ltd is the first joint venture commercial bank in Nepal which was established in 1984 under the company act 1964, Dubai Bank Ltd (DBL) was the initial foreign joint venture partner with 50% equity investment. The shares owned by DBL were transferred to Emirates Bank international Ltd (EBIL), Dubai. Later on, EBIL sold its entire stock to National Bank Ltd, Bangladesh (NBLB). HENCE, 50% of equity share of Nabil Bank Ltd were held by National Bank Ltd, Bangladesh an out of another 50% share, financial institutions has taken 20% and remaining 30% were issued to general public of Nepal.

   NBLB is managing the bank in accordance with the technical service agreement signed between NBL Bank the bank on June 1995. At present, 49 branches of the bank are operating in different pares of the country. Authorizes capital and paid up capital of Nabil bank ltd are 2010/11 was NRP 21000 and 20298 million while the yearly trade mount of the bank was 315.46.

ii. **Standard chartered Bank Nepal Ltd**: Standard chartered Bank Nepal ltd was incorporated in 1987 as a second foreign joint venture bank under the company act 1954, initially, ANZ. Grindlays Banks PLC London was the foreign joint venture partner with 505 equity investment. Now the bank has its partner, Standard chartered, UK by the virtue of annexation of ANZ, Grindlays Banks by Standard Chartered group. The bank has 14 branches all over the country. Today the Bank is an integral part of Standard Chartered Group having an ownership of 75% in the company with 25% share owned by the Nepalese public.

   Authorized capital and paid up capital of Standard chartered Bank Nepal Ltd are RS 2000000000 & 1610168000, the main objective of the bank is to collect deposits and provide loans to agricultural, commercial, industrial sectors and to provide modern banking services to the people.

The bank was listed in the NEPSE on 04 July 1983. Per value per shares of the bank is Rs100 and number of shareholders is 16101680. Market capitalization of the bank in the year 2010/11is 28948.61 million and traded amount of the bank is Rs 601.01 million. In the same year, the average share value of the bank was Rs 1479.

iii. **Nepal Investment Bank Ltd:** Nepal Investment Bank Ltd (Nepal Indosuez Bank Ltd) was established on 21'st Jan, 1986 as a third joint venture bank under the company act 1964. Initially the bank is mange by Banque Indosuez, Paris in accordance with joint venture and technical services. Fifty percent of the shares of Nepal Indosuez Bank Ltd held by Credit Agricole Indosuez were sold to the Nepalese promoters on April 25, 2002 as per the transaction record of NEPSE. After the is divestment of share by Nepalese owner, her name of the company was changed Nepal Investment Bank ltd. 50% shares are held by a group of companies, 15% by commercial banks another 15% by financial institution and remaining 20% by general Public. Authorized capital of NIBL is RS 270 million and issued and paid up capital are RS169.9845 million.

NIBL was listed in NEPSE on 22July 1986. Per value per share of the bank is Rs100 and the number of shareholders is 2953000. Market capitalization of the bank in the year 2010/11 is Rs12396.40 million, traded amount of the bank is 159.94 million.

iv. **Himalayan Bank Ltd**: Himalayan Bank Ltd was incorporated in 1992 by a few distinguished business personalities of Nepal in partnership with Employees Provident Fund and Habib Bank Ltd, Pakistan. The bank commenced its operation from January 1993. At present the bank has 40 branches in various parts of country. The bank also operates a counter in the promises of the Royal Palace. It is the first commercial bank of Nepal with maximum shares holding by the Nepalese private sector. Besides commercial activities, the bank also offers industrial and merchant banking. Authorized capital HBL is Rs3000 million and issue and paid up capital are Rs2000 Million

The bank was listed in NEPSE on 05 July 1993. Per value per share of the bank is Rs100. Market capitalization of the bank in the year 2010/11is Rs 11500 million and treaded amount of the bank is Rs 60.39 million.

v. **Bank of Kathmandu:** Bank of Kathmandu Ltd is the also joint venture bank listed in BWPSE. It was established in 1995 in collaboration with the SIAM Commercial bank Pcc, Thailand under the company act. The major objective of the bank was to operate commercial banking activities through out the country with the approval of NRB. The SLAM Commercial Bank diluted its holding to the Nepalese citizens in 1998, hence, Nepalese public hold 97.72% of the equity shares of the BOKL and remaining shares are hold by financial institution (0.9)% and organized institution(1.38)%. Authorized capital and paid in of bank of kathmandu Ltd are Rs1000 million and Rs463.58 million respectively. The bank has 45 Branches located in the various cities.

The bank was listed in NEPSE on 17 July 1997. par value per share of the bank is Rs100 and the number of shareholders is 1635810. Marker capitalization of the bank in the year 2010/11 is Rs7749.04 million

1.2 Focus of the study

Investment decision is vary difficult for general people. Where there is investment there exist risk, therefore doing any investment decision investor should calculate return and risk investing in shares is more risky and return would be comparatively high in Nepalese context, stock market definitely drags the attention of every body. Stock market is familiar in society but not popular. People think investment in commercial banks shares is ever winning game without knowing any reality. Investment in shares is risky, so investor must think about the risk and return before making investment decision.

The portfolio analysis begins where the security analysis end this fact has important consequences for investors. Therefore this study is focused on the analysis of risk and return how an investor should take investment decision in shares of commercial bank in Nepal. Among the listed commercial banks into (5) are as sample, which are A graded listed organized institutions by SEBO. Analysis has focused price movement

of share of single Stock, risk and returns associated with them, risk and return on portfolio and movement of market.

To conclude, this study id focused in analyzing the risk and return attributes of the investment in shares of the commercial bank.

1.3 Statement of problem

Stock market is one of the very volatile sectors of the financial system. Any fluctuation in the stock market has a significant bearing to the financial system as a whole. The Nepal Stock Exchange (NEPSE) has been performing dismal nowadays. The dismal of stock market has been extreme. And the causes are both domestic as well as international, due to which the MEPSE index, investor's confidence and secondary market indicator has fallen drastically. On this domestic front various new directive issued by the control bank introducing more stringent provision forcing banks, finance companies and even the co-operatives to greater provision for loan there by resulting in downsizing net profits have put caused the investors confidence to wane.

Commercial bank's shares are highly treaded in Nepal stock exchange Ltd. The commercial banks occupy a lion's shares of the stock trading any fluctuation in their price is directly reflected in the index. Like that, increasing number of listed companies investors are interested to participate in share market as well. But small investors are investing in a share as shareholders without any knowledge. Investors invest their valuable resources with the hope of getting good return. But due to many reasons they lose their expected return as well as capital. Most of the investor invests in bank's shares as a speculative motive. They have nit made and investment policy. It is difficult to get expected return without any per-planned and good managed investment process.

Investment decision in common stock is a long-term investment. Investors investing there hardly earned money in shares. Due to many internal or external factors share market has been some time bearish and some times bullish. In the time of bullish investors would happy and bearish time they become afraid. For that reason, at the time of selling they hold shares and vice-versa. Most of the investors are least familiar with the financial activities. They do not have the idea of risk and return. Awareness

regarding the financial activities, investment policy, making portfolio etc is very little. Most of the investors having neither theoretical knowledge of risk and return nor they take services of expert which has made the securities market unbalanced and unfair. If any bank or financial institution issues primary shares, there becomes huge demand rather then necessity. Rational decision making to incest in common stock is not being due to lack of analytical knowledge and studies in this field.

Although there are SEBO, Merchant Banks and other institutions, their effectiveness in disseminating information requited by investors are very poor and unsatisfactory. Government policy is less encouraging in promoting common stock investment. The Nepalese stock market is characterize by an absence of professional brokers, early stage of growth, limited movement of shares prices and limited information available to investors.

Under such situation, thus the present study will try to analyze investment of commercial banks, portfolio management of CBs in their investment, return on various types of investment, portfolio risk and return and performance towards investment. Therefore, this study will deal with the following issues:

1) What is the risk and return position of sample banks?

2) What is the systematic and unsystematic risk of sample banks?

3) What is share price movement?

4) How is price of shares of commercial banks in Nepal priced and whether they are priced correctly or not?

5) Is there any relationship of return with market? If yes, in which direction are they correlated?

1.4 Objective of the study

Investment decision is one of the major decision functions of financial management. Under the prevailing competitive environment in financial sectors, the CBs face so many duplicities to mobilize their deposit funds on the profit making investment. Taking this regards, the main objectives of the study is to analyze, examine and interpret portfolio technique followed by CBs on their investment in various sectors.

This study focuses whether the CBs properly followed portfolio concepts to take investment decision or not. Hence, the main objectives of the study are given below:

1 To analyze risk and return position of sample banks.

2 To point out the systematic and unsystematic risk of the commercial banks.

3 To examined risk and return of the common stock and their portfolio.

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4 To analyze the risk and return relationship of individual stock with that of market.

5 To indicate the share price market of sample banks.

1.5 Significance of the study

The significance of the study is to point out the risk and return position of investment in shares of commercial banks in Nepal. It is helpful to the investors as well as managers with to help of portfolio analysis to determine future risk and return in holding various blends of individual securities. It also provides proper guidelines for making choices of stocks alternative on the basis of risk and return. This study will also help securities exchange board as well as Nepal Stock Exchange (NEPSE) to improve and regulate the share market. This study also provides guidelines to formulated strategies planes in achieving the organizational objectives for the concerned authorities. It is also helpful for the persons who are interested to know about share market.

Very few studies have been made in relation to investment decision making of commercial banks shares regarding risk and return elements. So, this study is significant in this regard.

1.6 Limitation of study

This study simply is a partial for the fulfillment of MBS degree, which has to be finished within limited period. Hence, this study is not far from several limitations of its own kind, which is the heart of the study. This study is limited to the investment in shares of commercial banks in Nepal.

Some of such limitations are as follows:

a) There are many factors that affect investment decision of commercial banks. However, this study concentrates only on those factors, which are related with investment portfolio analysis and available in the form required for analyzing the different issues.

b) The reason will be based on the data provided by Nepal Stock Exchange and concerned banks their published reports and website of related organization. Thus data will not be verified.

c) Keeping in view this study does not examine the factors affecting risk and return on investment in different sectors as well as limited factors are selected to examine portfolio behavior.

d) Even the financial statement of all commercial banks published by them is mot readily available. By, considering this fact, only five banks i.e. Nepal Bank Ltd, Standard Chartered Bank Ltd, Nepal Investment Bank Ltd, Bank of Kathmandu Ltd and Himalayan Bank Ltd are taken for the study.

e) Given the unavailability of various relevant return and investment. It has not been possible to estimate portfolio risk and return. However, an alternative, the return on various investments has estimated from the data available in the financial statement of banks.

f) This study mainly based on secondary data collected from different sources and the study period begins from 2006/11. Hence, this study covers 5 years period i.e. from 2006 to 2011.

g) The study would limit only the listed commercial banks in NEPSE and stock market of Nepal.

h) This Study is limited from the point of view of submission in partial fulfillment of the requirement fro the Master of Business Studies, (MBS).

1.7 Organization of the study

The whole study has been divided into five chapters.

First is introduction chapter, which includes background of the study, statement of the problem, focus of the study, significance of the study, objectives of the study and the limitation of the study.

Second chapter deals with the review of available literature in the field of the study being conducted. This includes theoretical review of the concerned topic, review of supportive text, review of books, review of various empirical studies conducted inside and outside the country, review of related articles and review of legislation related to commercials banks.

Third chapter explains the research methodology employed to conduct the study and tools and techniques used in analysis of data as well. This chapter includes research design, population and sample, source of data, method of data analysis, various financial and statistical tools.

Fourth chapter is derived to the presentation, analysis, interpretation and scoring the empirical findings out of the study through definite courts of research methodology. In this study, investment operations of CBs. Risk and Return on investment and test of portfolio performance and mentioned. This chapter also contains major findings of the study.

Fifth and the last chapter is conclusive and suggestive chapter. It includes summary of the study, conclusion of the main finding and recommendation for the improvement.

Besides these, bibliography and appendices are also presented at the end of the thesis. Similarly, acknowledgement, table of contents, list of tables, list of diagram, abbreviations are included in the front part of the thesis report.

CHAPTER 2

LITERATURE REVIEW

This chapter provides some glimpses on the literature that is available in the topic. Especially it covers a comprehensive review of publishes and unpublished work by academician and scholars. The purpose of the literature review is to ensure that no important variable is ignored has past been found repeatedly to have had an impact on the problem. This chapter is divided into three sections.

2.1 Theoretical Review

Theoretical review, the first diction of this chapter is devoted mainly to describe theoretically the risk and return characteristic of the investment.

2.1.1 Investment

For most of our life, we will earn and spending money. Rarely, though, will our current money once exactly balance with our consumption desires, sometimes, we may have more than we want to spend at other times, we may want to purpose more than we can afford. When current income exceeds current consumption desires, people tend to save the access. Another possibility is that they can give up the immediate possession of these saving for a further larger amount of money that will be available for future consumption. This trade off of present consumption for a higher level of future consumption is the reason for saving. What we do with the saving to make them increase over time is investment.

Specially, an investment is the current commitment of dollar of a period of time in order to derive future payment that will compensate the investor for 1) the time the funds are committed, 2) the expected rate of inflation and 3) the uncertainty of the future payment. The “investor can be individual, a government, a pension fund, or a corporation.” Similarly, investment can be; investment by corporation in plant and equipment and investments by individuals in stock, bonds, commodities, or real estate.

“Investment in its broadest sense means the sacrifice of current dollar for future dollars. Two different attributes are generally involves time and risk. The sacrifice takes place in the present and is certain. The reward comes later, if all, and the magnitude is generally uncertain. In some case time predominates and in some cases risk is the dominant attributes. Yet time and risk are important.

Thus, the investors is trading a known certain amount for some expected future stream of payment that will be greater than the current outlay. Investment is about risk and expected return.

2.1.2 Risk

The oxford English dictionary defines risk as the “chance or possibility of a danger, loss or injury”. For investment purpose, this has been translated to the “chance that the actual outcome from an investment will digger from the expected outcome. Here “differ” does not just mean differ negatively, it also, means positively. In other words, an investment can turn out to be better than expected and still be defining as risky.

This is because of the way that risk is qualified for investment purposes. Risk is almost always defined as the price volatility of the investment in question. An investment whose price has historically been violated bounces around a lot but it bounce up as well as down. However, the statistical formulae that are used to measure risk can not distinguish between upward moves and downward moves. All they can do is qualify the degree of movement from an average and conclude that a lot of movement. Whichever way, equals lots of risk; little movement equals too little risk.

Risk is the flipside of return. Risk is the uncertainty that an investor will earn its expected rate of return. No one likes risk and the higher and investments’ expected return the higher will be the risk. Most investors require higher rates of return in investments if they perceive that there is any uncertainly about the expected rate of return. This increase in the required rate of return over the nominal risk free rate is the risk premium. Although the required risk premium represents all uncertainty, the most fundamental sources of uncertainties are:

a) Business Risk: Business risk is the uncertainty of income flows caused by the nature of a firm's business. The less certain the income of the firm, the less certain the income flows to the investor. Therefore, the investor will demand the risk premium that is based on the uncertainty caused by the business of the firm. As an example, a retail food company would typically experience stable sales and earning growth over time and would low business risk compared to a firm in the auto industry where sales and earning fluctuate substantially over the business cycle, implying high business risk.

b) Financial Risk: Financial risk is the uncertainty introduces by the methods by which the firm finance its investment. If a firm uses only common stock to finance investment, it incurs only business risk. Of a firm borrows money to finance investments, it must pay fix financing charge 9 in the firm of interest to creditor prior to providing income to the common stock holders, so the uncertainty of returns to the equity investor increase. This increase in uncertainty because of fixed-cost financing is called financial risk or financial leverage and causes an increase in the stock's risk premium.

c) Liquidity Risk: liquidity risk is the uncertainty introduced by the secondary market for an investment. When an investor acquires assets, he or she expects that the investment will mature or that is saleable to someone else. The investor expects to be able to convert the security into cash and use the proceeds for current consumption or other investment. The more difficult it is to make this conversion, the greater the liquidity risk.

d) Exchange rate risk: Exchange rate risk is the uncertainty of return to an investor who acquires securities denominated in a currency different from his or her own. The likelihood of incurring this risk is becoming greater as investors buy as sells assets around the world, as opposed to only assets within their own countries. The more volatile the exchange rates between two countries, the greater the exchange rate risk.

e) Country risk: country risk, is also called political risk, is the uncertainty of return caused by the possibility of a major change in the political or economical

environment of country. The analysis of country risk is much moue subjective and must be based on the history and current environment of the country.

2.1.3 Return

Return can be defining as the gain or loss for a security in a particular period, consisting of income plus capital gain relative to investment; it is usually quoted as percentage. The general rule is more risk investor takes the greater the potential for higher return.

The question arises why people invest and what they want from their investments. The answer is they invest to warn from saving due to their deferred consumption. Thus, return is the reward or compensation to the investors for the time, the expected rate of inflation and the uncertainty of the return.

The return is the total gain or loss experienced on an investment over a given period of time. It is commonly, measured as the change in value plus any cash distributions during the period, expressed as a percentage of the beginning of period investment value.

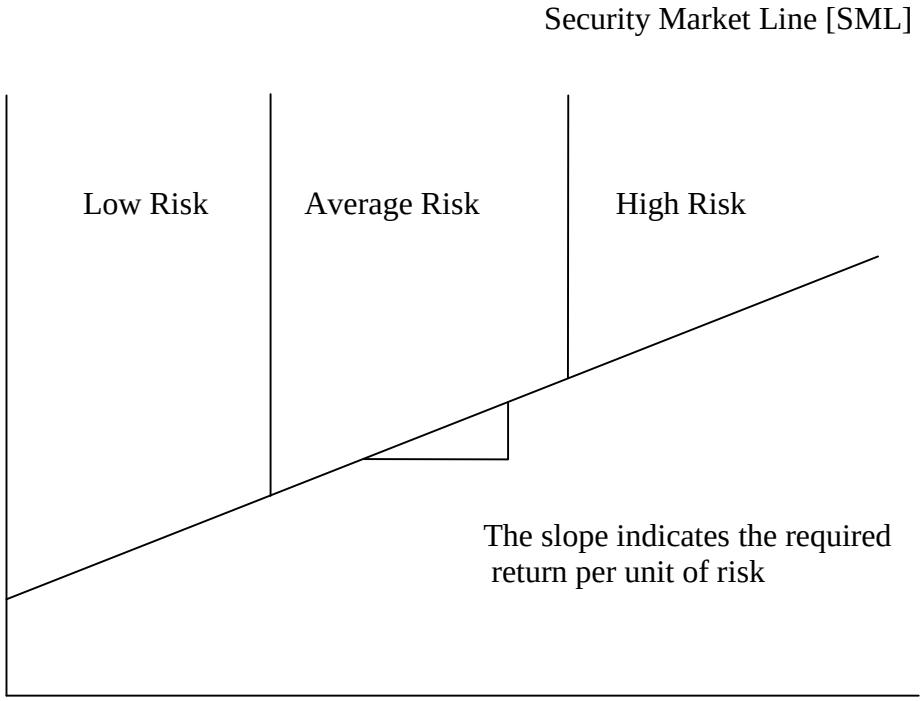
2.1.4 Relationship between Risk and Return

The risk-reward concept states that the higher the risk of a particular investment, the higher the possible return. But it is hard to determine the level of risk the individual stock or portfolio to bear. Anytime investors invest money into something there is risk, whether large or small that investments may be. Return on the other hand is the compensation or reward for bearing this risk. In theory, the higher the risk, the more investors should receive for holding the investment, and the lower the risk, less he or she should receives.

The fig.2.1 shows the expected relationship between risk and return. It shows that investors increase their required rates of return as perceived risk (uncertainty) increases. The line that reflects the combination of risk and return available on alternative investments is referred to as there security market line (SML).

Fig.2.1

Relation between Risk and Return



Source: Reilly & Brown. “Investment Analysis and Portfolio Management”

The SML reflects the risk-return combinations available for all risky assets in the capital markets at a given time. Investors would select investments that are consistent with their risk preferences; some would consider only low-risk investments, whereas others welcome high-risk investments.

Beginning with an initial SML, three changes can occur. First, individual investments can change positions on the SML because in the perceived risk of the investments, second, the slope of SML can change because of the change in the attitudes of investors towards risk; that is, investors can change there turns they require per unit of risk. Thus, the SML can experience a parallel shift sue to a change in the NRFR. The slope of the SML indicated the return per unit of risk required by all investors.

Investors place alternative investments somewhere along the SML based on their perceptions of the risk investment. Obliviously, if an investment’s risk changes due to a change in one of its risk sources (Business risk and such) it will move along the SML. For example, of a firm increases its financial risk by selling a large bond issue that increase its financial leverage, investors will perceive its common stock as riskier

and the stock will move up the SML to a higher risk position. Investors will require a higher rate of return, as the common stock become riskier; it changes its position on the SML. Any changes in an asset that affects its fundamental risk factors or its market risk (that is, its bets) will cause the assets to move along the SML.

2.1.5 Measure of Return

Investors should choose among alternative investment assets. The selection process requires as estimation and evaluation of the expected risk-return trade-off the alternative investments available.

The first measure is the historical rate of return on an individual investment over the time period the investment is held (that is, its holding period). Next, investors could consider measurement if average historical rate of return for an individual investment over a number of time period. Then, in another way investors can estimate the expected rate of return for an investment.

2.1.5.1 Computing Historical Rate of Return

When investor are evaluating investments for inclusion in his/her portfolio, it will require comparing investments with widely different prices or alive. As an example, investors want to compare a stock with low price that pays no dividend to a stock selling at high price that pays a dividend.

When we talk about a return on an investment, we concerned with the change in wealth resulting from that investment. This change in wealth can be either sue to cash inflow, such as interest or dividends, or caused by change in the price of the assets (positive or negative). The period during which investors own an investment is called its holding period, and the return for that period is the holding period return (HPR)

$$\text{HRP}=\frac{EndingValueOfInvestment}{BeginingValueOfInvestment}$$

2.1.5.2 Computing Mean Historical Return

Over p number of year, a single investment is likely give high rate of return during some years and low rates of return, or possibly negative rates or return, during other,

investors' analysis should consider each of these returns, but he, she also want to summary figure that indicates this investment's typical experience. In turn, computing the mean annual return investors can get the expected rate of return if he/she owned the investment over an extended period of time.

Given a set annual rate of return (HPR) for an individual investment, there are two measures of return performance. The first is the air thematic mean return, the second the geometric mean return.

To find the Arithmetic mean (AM), the sum of annual HPR is divided by the number of years (n) as follows:

$$AM= \frac{\sum HPR}{n}$$

an alternative computation, the Geometric mean (GM),is the nth root of the product of the HPRs for n years.

$$GM= \left[®HPR\right]^{\frac{1}{n}} -1$$

Where π = the product of the annual holding period returns as follows:

(HPR1)*(HPR2) …….. (HPRn)

2.1.5.3 Calculating Expected Rates of Return

An investor who is evaluating a future investment alternative expects or anticipates a certain rate of return. An investor determines how certain the expected rate of return on an investment is by analyzing estimates of expected return. To do this, the investors as assigns probability value to all possible return. These probability values range from xerto, which means no chance of return, to one, which indicates completed certainty that the investment will provide the specified rate of return. These probabilities are typically subjective estimates based on the historical performance of the investment or similar investments modified by the investor's expectations for the future.

The expected return an investment is defined as:

$$\text{Expected Return} = \sum_{t=1}^{n} \text{(Probability of Return)} * \text{(Possible Return)}$$

$$E(R_1) = (P_1)(R_1) + (P_2)(R_2) + (P_3)(R_3) + \ldots\ldots\ldots\ldots\ldots + (P_n)(R_n)]$$

$$E(R_i) = \sum_{t=1}^{n} (P_1)(R_1)$$

2.1.6 Measuring the Risk

Investors can quantify the risk (uncertainty) by using statistical measures. Two possibke measures of risk have received support in theoretical work on portfolio theory; variance and the standard deviation of the estimated distribution of expected returns.

2.1.6.1 Variance

The larger the variance for expected rate of return, the grater the dispersion of expected return and grater the uncertainty, or risk, of the investment.

$$\text{Variance } \pm_i^2 = \sum_{t=1}^{n} \text{(Probability x Possible Return- Expected Return)}^2$$

$$= \sum_{t=1}^{n} (P_i)\left[(R) - E(R_i)\right]^2$$

$$\text{Variance } \pm_i^2 = \frac{\sum \left(R_i - \overline{R_i}\right)}{N-1}$$

Where, $\pm_i^2$ = Standard deviation of return on stuck 'I' during the time period n

R_i = Realized rate of return on stock 'I' at time 'n'

$\overline{R_i}$ = Expected Rate pf return on stuck 'I'

2.1.6.2 Standard Deviation

The standard deviation is defined as the positive square root of average sum of square of deviation from the arithmetic mean of distribution. Simply, the standard deviation is the square root of the variance:

$$\text{Standard Deviation } \pm_i = \sum_{t-1}^{n} \left(\sqrt{(P_i)[R_i - E(R_i)]} \right)^2$$

$$\text{Or Standard deviation } \pm_i = \sqrt{\frac{\sum \left(R_i - \overline{R_i}\right)^2}{N-1}}$$

2.1.6.3 A relative measure of Risk (Coefficient of variation)

In some case, an unadjusted variance or standard deviation can be misleading. If condition for two or more investment alternatives is not similar-that is, if there are major differences in the expected rates of return-it is necessary to use a measure of relative variability to indicate risk per unit of expected return.

$$\text{Coefficient of Variation (c.v)} = \frac{S\tan dardDeviationOf\ \mathrm{Re}turn}{ExpectedRateOf\ \mathrm{Re}turn}$$

$$= \frac{\pm_i}{E(R_i)}$$

This measure of relative variability and risk is used by financial analyst to compare alternative investments

2.1.7 Development in Investment Theory

The following are the major development in investment theory that has influences how investor specify and measure risk in the valuation process.

2.1.7.1 Efficient Capital Market

The concept of efficient capital market hypothesizes that the security prices reflect of all information. “An efficient capital is one in which security adjust rapidly to the arrival of new information and therefore, the current prices of securities reflect all information about the security.” Some of the interesting sans important academic

research during the past20 years have analyzed whether our capital markets are efficient. Moreover, the questions of whether our capital market is efficient are one of the most controversial areas in investment research.

The idea of an efficient capital market is relatively straightforward, but the question arises why capital markets should be efficient? The following are the set of assumptions implement efficient capital market:

1) An initial and important premise of an efficient market requires that a large number of profit- maximizing participants analyze and value securities, each independently of the others.

2) A second assumption is that new information regarding securities comes to the market in a random fashion, and the timing of one announcement is generally independent of others

3) The third assumption is profit-maximizing investors adjust security prices rapidly to reflect the effect of a new information. This means that sometimes the market wick over adjust and other times it will under adjust, but no one predicts will occur at any given time.

The combined effect of information came in a random, independent, unpredictable fashion and numerous investors adjusting stock prices rapidly to reflect this information means that one would expect price changes to be independent and random. This adjustment process requires a large number of new information on its value, and buying or selling the security until its price adjusts to reflect the new information. This scenario implies that information all efficient market require some minimum amount of trading and that more trading by numerous competing investors should cause a faster price adjustment, making the market more efficient.

Finally, security prices to all new information, these security prices should reflect all information that is publicly available at any given point. Therefore, the security prices that prevail at any time should be an unbiased reflection of all currently available information, including the risk involves in owing the security. Therefore, in an efficient capital market, the expected return implicitly in the current price of the security should reflect its risk. Which mean that investors who buy at these

informational efficient prices should receive a rate of return that is consistent with the perceive risk of the stock.

2.1.7.1.1 Alternative Efficient Market Hypothesis

Most of the early related to efficient capital market was based on the random walk hypothesis, which contended that changes in stock prices occurred randomly. This early academic work contained extensive empirical analysis without much more theory behind it. An article by fame attempted to formulize the theory and organize the growing empirical evidence. In the original article, fame divided the overall efficient market hypothesis (EMH) and the empirical tests of the hypothesis into three sub- hypothesis on the information set involved: 1) Weak from EMH, 2) Semi Strong-form EMH and 3) strong-form EMH.

1) Weak from efficient market hypothesis: The weak-form EMH assumes that current price fully reflect all security market information, including the historical sequence of prices, rates of return, trading volume date and other market-generated information. This hypothesis implies that past rates of return as other historical market data should have no relationship with future rates of return. Therefore, it contends that investors gain little form using any trading rule that decides whether to buy or sell a security based on past rate or return or any other market data.

2) Semi strong-form efficient market hypothesis: The strong-form EMH asserts that security prices adjust rapidly to the release of all public information; that is current security prices fully reflects all public information. Public information includes market information like stock prices, rates of return, trading volume and non market information such as earning and dividend announcements, price-to–earning (P/E) ratio, dividend Yield (D/Y) ratios, Price/ Book value (P/BV) ratio, stock splits news about the economy and political news. This hypothesis implies the investors who base their decision on important news information after it is published should not derive above average risk – adjusted profit from their transaction considering the cost of trading because the security price already reflects all such news public information.

3) Strong from efficient market hypothesis: The strong EMH contends that stock price fully reflect all information from public and private sources. This means that no group of investors has monopolistic aces to information relevant to the formation of price. Therefore this hypothesis contends that no group of investors should be able to consistently derive above- average risk adjusted rates of return. It encompasses both the weak- from and the semi- strong EMH. Further, the strong from EMH extends the assumption of efficient markets in which prices adjust rapidly to the release of new public information to assume perfect market, in which all information to cost – free and available to everyone at the same time.

   Like most hypothesis in finance and economics, the evidence on the EMH is mixed. Some studies have supported the hypothesis and indicate that capital markets are efficient. Results of other studies have revealed some anomalies related to this hypothesis indicating results that do not support the hypothesis.

2.1.7.1.2 Implications of Efficient Capital Markets

Overall, the results of many studies that the capital markets are efficient as related to numerous sets of information. At the same time, research has uncovered as substantial number of instance where the market fails adjust price rapidly to public information. Given these mixed results regarding the existence of efficient capital market, it is important to consider the implication of this contrasting evidence of markets, it is important to consider the implication of this means to individual investors, financial analyst, portfolio manager, and institution. Specially, given result that support the EMH, the investors should consider what technique will not work and what he/she does is not possible to beat the market. In contrast, because of the evidence that fails to support the EMH, the investors should know what information and psychological biased should be considered when attempting to drive superior investment results through active security valuation and portfolio management.

2.1.7.2 Portfolio management

Most securities available for investment have uncertain outcome are thus risky. The basic problem facing each investor is to determine which particular risky securities to own. Because a portfolio is a collection of securities, this problem is equivalent to the

investors selecting the optimal portfolio from a set of possible portfolios. In other words, the creation of an optimum investment portfolio is not simply a matter of combining a lot of unique indini9dual securities that have desirable risk-return characteristics. Hence, a good portfolio is not simply a collection of individually good investments. The recognition of what is important is creating a portfolio was demonstrated in the derivation of portfolio theory.

2.1.7.2.1 Markowitz Portfolio theory

The portfolio model was developed by Harry Markowitz, who derived the expected rate of return for a portfolio of assets and an expected risk measure. Markowitz showed that the variance of the rate of return was a meaningful measure of portfolio risk under a reasonable set of assumptions, and he derived the formula for computing the variance of a portfolio. This portfolio variance formula indicated the importance of diversifying the investments to reduce the total risk of portfolio but also showed to effectively diversify. Markowitz showed that the expected rate of return of a portfolio is the weighted average of expected return for the individual investments in the portfolio. The standard deviation of a portfolio is a function not only of the standard deviations for the individual investments but also of the covariance between rates of return for all pair of assets in the portfolio. The Markowitz model is based on several assumptions regarding investing behavior.

1) Investors consider each investment alternative as being represented by a probability distribution of expected return over some holding period.

2) Investors maximize one-period expected utility, and their utility curves demonstrate diminishing marginal utility of wealth.

3) Investors estimate the risk of the portfolio on the basis of the variability of expected return.

4) Investors base decisions solely on expected return and risk, so their utility curves are a function of expected return and the expected variance (or standard deviation) of the return only.

5) For a given risk level, investors prefer return to lower return. Similarly, for a given level of expected return, investor prefer less risk to more risk.

Under these assumptions, a single assets or portfolio of assets is considered to be efficient if no other asset or portfolio of assets offer higher expected return with the same (or lower risk) or lower risk with the same (or higher) expected return.

2.1.7.2.1.1 Expected Rate of Return

The expected rate of return for a portfolio of investment is simply the weighted average of the expected rate of return for the individual investment in the portfolio. The weights are the proportion of total values for the investment.

$$E(P_p) = W_i\, W(R_i) + W_j\, E(R_j)$$

Where P_p = Expected Return on portfolio of stock i and j

W_i = Weight of wealth invested in stock i

W_j = Weight of wealth invested in stock j

2.1.7.2.1.2 Covariance of Return

Covariance of measure of the degree to which two variables “move together” relative to their individual for two mean value over time. A positive covariance means that the rate of return for two investments tends to move in the same direction relative to their individual means during the same time period. In contrast, a negative covariance indicates that the rates of return for two investments tend to move in different directions relative to their means during specified time interval over time.

For a two assets, i and j, the covariance of rates of return is define as:

$$Cov_{ij} = E\ \{\ [\ R_i - E(R_i)]\ [\ R_j - E\ (R_j)\ ]\}$$

2.1.7.2.1.3 Correlation Coefficient of Return:

Correlation analysis refers to the techniques used in measuring the relationship between two variables. Standardizing the covariance by the individual standard deviation yield correlation coefficient. Which is only -1 to +1 a value of +1 indicates the return of the stock move together in completely linear manner. A value of -1

indicates a perfect negative relationship between the two return series. The formula of correlation for efficient is

$$\rho_{ij} = \frac{Cov_{ij}}{\sigma_i \sigma_j}$$

Where ρ_{ij} = Correlation coefficient of return of stock i & j

Cov_{ij} = Covariance of the rate of return of stock i & j

σ_i = The standard deviation of the return of stock i,

σ_j = The standard deviation of the return of stock j

2.1.7.2.1.4 Portfolio Standard Deviation

The standard deviation of return for a portfolio of assets is the measure of risk for a portfolio. Harry Markowitz derived the formula for computing the standard deviation of a portfolio of assets. The formula indicates that the standard deviation for portfolio assets is function of the weighted average of the individual variance (where the weight is squared, plus the weighted covariance between all the assets in the portfolio). The standard deviation for a portfolio of assets encompasses not only the variance of the individual assets but also includes the covariance between pairs of individual assets in the portfolio. The general formula derived by Markowitz for the standard deviation is as follows.

$$\sigma_{port} = \sqrt{\sum_{t-1}^{n} W_i^2 \sigma_i^2 + \sum_{i=1}^{n} \sum_{j=1}^{n} W_i W_j Cov_{ij}}$$

$$i \neq j$$

Where σ_{port} = Standard Deviation of Portfolio

W_i = proportion (weight) of investment in security i

σ_i^2 = the variance of rates of returns for assets i.

Cov_{ij} = the covariance between the rates of return for assets I and j

Where $Cov_{ij} = \rho_{ij} \sigma_i \sigma_j$

$$\pm_p = \sqrt{\left(W_i^2 \pm_i^2 + W_j \pm_j + 2Cov.W_i.W_j\right)}$$

2.1.7.2.1.5 Beta Coefficient

Beta coefficient is the standardized measure of systematic risk which is the covariance of an asset with portfolio dividend by the variance of the market portfolio.

Thus, Beta Coefficient $(\quad) = \frac{Cov[R_i R_m]}{\pm_m^2} = \frac{Cov_{im}}{\pm_m^2}$

If beta coefficient is exactly one the stock is classified as average stock and the degree of risk is equally as the market. If the beta coefficient is grater than one the stock is classified as aggressive stock and the degree of risk is more than the market. And if beta coefficient is less than one the stock is classified as defensive stick and the degree of risk is less than the market.

2.1.7.2.2 Efficient Frontier

Efficient frontier is the line or chart which marks out the best combination of risk and return available to investors in a particular market. Specifically, the efficient frontier represents than set of portfolio that was maximum rate of return for every given level of risk, or the maximum risk for every level of return. The theory is that rational investors would buy assets which lie of the efficient frontier. Such assets are said to "dominate" all other, which either have less return or carry more risk. Plotting the efficient frontier therefore becomes a key aim of portfolio theory, as originally formalized by Harry Markowitz in the 1990's, the efficient frontier is arc shaped because. At the margins, investors could seek extra return only by assuming disproportionate amounts of risk or sacrifice marginal return as the price pf shedding risk.

2.1.7.3 Capital Market Theory

Capital Market Theory extends portfolio theory and develops a model for pricing all risky assets. The final products, the capital assets pricing model (CAPM), allows investors to determine the required rate of return for any risk assets. The main assumptions that underline the development of capital market theory are:

1) All investors are Markowitz efficient investors who want to target point on the efficient frontier. The expect location on the efficient frontier and, therefore the specific portfolio selected will depend on the individual investor's risk-return utility function.

2) Investors can borrow or lend any amount of money at the risk-free rate of return (RFR).

3) All investors have homogeneous expectations; that is, they estimate identical probability distributions for future rates of return.

4) All investors have the same one-period time horizon such as one month. Six months, one year.

5) All investors are infinitely divisible. Which means that is possible to buy or sell fractional shares of any assets or portfolio.

6) There are no taxes or transaction costs involves in buying or selling assets.

7) There is no inflation or any change in interest rates, or inflation in fully anticipates.

8) Capital Markets are in equilibrium. This means that investors begin with all investments properly priced in the line with risk levels.

The major factors that allowed portfolio theory to develop in capital market theory is the concept of risk-free assets. Following the development of Markowitz portfolio model, several authors consider the implications of assuming the existence of risk-free asset. That is an asset with zero variance. The assumption allows us to derive a generalized theory of capital assets pricing under conditions of uncertainty form the Markowitz theory. This achievement is generally attributed to William sharpe, for which he received the Nobel Prize.

2.1.7.3.1 The Capital Assets Pricing Model

The Capital Pricing (CAPM), allow investors to determine the required rate of return for risk assets. CAPM is an influential formula for modeling the theoretically correct

price of assets and portfolio. It is elegant theory which possesses important question about the extent to which investors can generate above-average return form most investment selection techniques.

Basically, the CAPM says that the return from an investment will equal the risk-free rate of return plus the excess over the risk-free rate offered by the particular market in which the investment traders, in turn geared up the sensitivity of the investment to market return. The CAPM model indicates what should be the expected or required rates of return on risky assets. This transition is important because it helps investors to value assets by providing an appropriate discount rate to use in any valuation model. Alternatively, if investors have already estimate the rate or return an he/she thinks will earn on an investment, he/she can compare this estimate rate of the required rate implied by the CAPM and determine whether her asset is undervalued, over valued or properly valued. The capital market line, separation theorem and security market line are the important features of the CAPM model.

2.1.7.3.1.1 The CML and The Separation Theorem

The CML is the graphical of the trade off between the risk and return for an efficient portfolio. In other words, it is a chart line which shows how much extra return investors would expect for taking on extra risk.

Prospectively, the chart line must slope upward because investors would not assume extra risk if the through they were not going to get extra reward, although actual return shows that it can slope downwards for a while. This means that in the real world investors are not always rewarded for taking or higher risks.

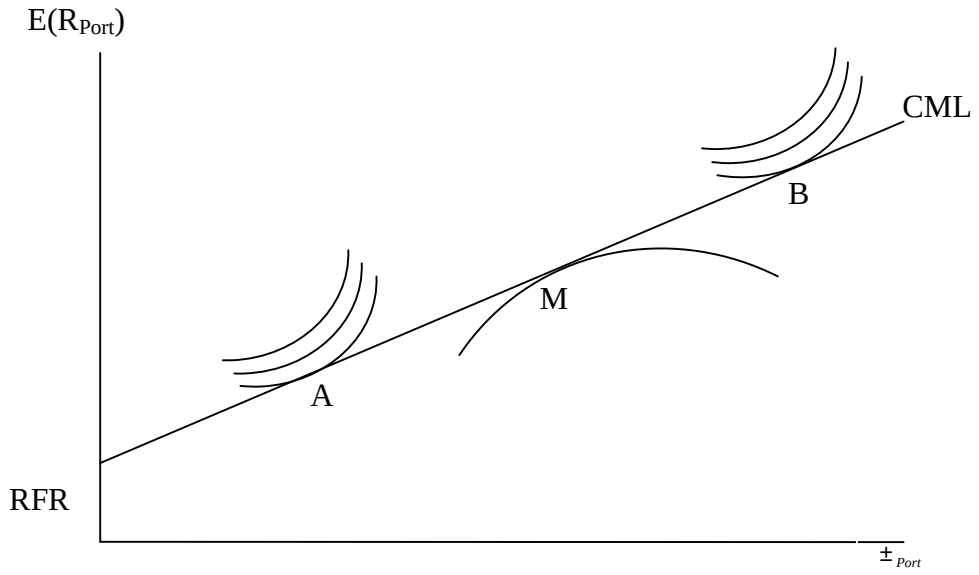
The existence of the risk-free asset resulted in the derivation of capital market line (CML) that became the relevant efficient frontier. If there are no opportunities to borrow or lend at the risk free rate, the efficient set would be the curve and many combinations of risky securities would be efficient. All inventors want to be the CML.

All investors face the same efficient set, the only reason they will choose dissimilar portfolios is that they have different indifference curves, resulting in distinct preferences toward risk and return. This means that each investor will spread his/her funds among risky securities in the same relative proportions, adding risk-free

borrowing or lending in order to achieve a personally preferred overall combination of risk and return. This feature of the CAPM is referred to a separation theorem. In other words, the division of the investment decision form the financing decision is the separation theorem.

Fig 2.2

Choice of Optimal Portfolio combination on the CML



Really & Borwn "Investment Analysis and portfolio Management"

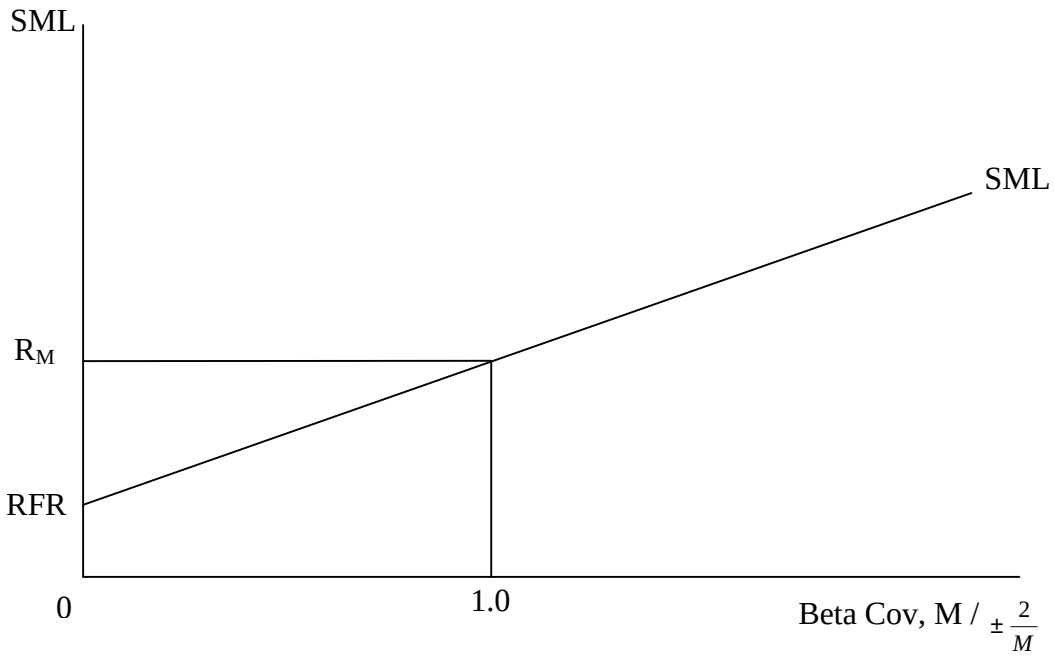
The CML leads all investors to invest in the same risk assets portfolio, the M portfolio. Individual investors should only differ regarding their position on the CML, which depends on the risk preferences. In turn, how they get to a point on the CML is based on their financing decision. In case of relatively risk averse investors, he/she will lend some pare of portfolio at the RFR by buying come risk-free securities and investing the remainder in the market portfolio of the risk assets. For example, he/she might invest in the portfolio combination at point A, in contrast if investors prefer more risk he might borrow funds at point B. this financing decision provides more risk but greater returns than the market portfolio. Because portfolio on the portfolios, and investors decide where they want to be along this efficient frontier. This process is attributed by the separation theorem.

2.1.7.3.1.2 The Security Market Line (SML)

SML is the chart line that illustrates the ides that investors are rewarded only for the risks they take in relation to overall market risk (Systematic risk) as such, it is the linear representation of the Capital Assets Pricing model.

Fig 2.3

SML with Normalized Systematic Risk,



Source: Reilly & Brown, "Investment Analysis and portfolio management"

The figure reveals that the expected rate of return for a risky asset is determines by RFR plus is risk premium for the individual asset. In turn, the risk premium is determined by the systematic risk of assets (Bi) and the prevailing market risk premium (Rm-fr). And this expected or required rate of return can be compared with the estimated rate of return of the investment to determine if the investment is undervalued or overvalued.

This relationship cam be stated in the equation form;

$$E(R_i) = R_f + [E(R_m) - R_f]\ \beta_i$$

Here, Beta is a standardized measure of systematic risk. The covariance of any asset I with the market portfolio (Cop vim) is the relevant risk measure. Beta is standardized measure of risk because it relates this covariance to the variances of the market portfolio. As a result, the market portfolio has a beta 1. Therefore if the B_i for assets is

above 1.0, the asset has higher normalized systematic risk than the market, which means that it is more volatile than the overall market portfolio.

2.1.7.3.1.3 Empirical Test of the CAPM

CAPM model is based in certain assumption. However theory should not be judged on the basis of assumption, but how well it explains the relationships that in the real words. When testing the CAPM, there are tow major questions. First, how stable is the measure of systematic risk (beta)? Second, is there a positive linear relationship as hypothesized between beta and the rate or return on risky asset?

Numerous studies have examines the stability of beta ands generally concluded that her risk measure was not stable for individual stocks but the stability of the beta for portfolio of stocks increased dramatically. Another factor that affects testability of beta is how many months are used to estimate the original beta and the test beta. Empirical studies have indicated stable portfolio betas, especially when enough observations were used to derive the betas and there was adequate volume. There was mixed support for a positive linear relationship between rated of return and systematic risk for portfolio of stock, with some recent evidence indicating the need to consider additional risk variable.

The Fame-French study considered most of the variable suggested and concluded that beta was not related to average return on stocks when included with other variables or when considered alone. Fama and French contended that during the period 1963-1999, beta was not relevant. In their study, the most significant variables were book-to-market value (BE/ME) and size. Subsequent studies both supported their findings and differed with them because some more recent authors have found a significant relationship between beta and rates pf return on stuck.

Another problem has been raised by Roll, who contends that is not possible empirically derived a turn portfolio, so it is not possible to trust the CAPM model properly or the use model to evaluate performances. A study by Reily and Aktar provided empirical support for this contention by demonstrating significant differences in betas, AMLs, and expected return with alternative benchmarks.

To conclude, however, there is a mixed result in the empirical testing of the CAPM, the relevancy of this model is beyond doubt. Markowitz portfolio their and the assets pricing model (CAPM), collectively represent the foundation for understanding the connection between risk and expected return in financial markets.

2.1.7.4 Sharpe: The Single Index Model

The Markowitz model was theoretically elegant and conceptually sound. However, its serous limitation was that is related each security to every security in the portfolio, demanding the sophistication and volume of work well beyond the capacity of all. Consequently, its application remained several limited until William F Sharpe published a model simplifying the mathematical calculations required by the Markowitz Model. Sharpe assumed that, for the sake of simplicity, the return on a security could be regarded as being linearly related to a single index like market index.

Theoretically, the market index should consist of all securities on the market. However, a popular average can be traded as a surrogate for the market index. Acceptance pf the idea pf a market index, Sharpe argued would obviate the need for the calculating thousand of covariance to movements in the single underlying factor being measure by the market index. The simplification of the Marlowitz Model has come to be known as the Market model or Single-index model (SIM).

The single model measures the desirability of including a security in the optimal portfolio. The desirability of any security related to its excess return to beta ratio. If securities are ranked by excess return to beta (From Highest to Lowest), the ranking represents the desirability of any security's inclusion in the portfolio. The number of securities selected depends on a unique cut-off rate such that all securities with higher excess return to beta ratio will be included and all securities with lower rates excluded.

The formula requires calculating possible cut-off rate (C_i) and weight assets in portfolio as follows:

$$C_i = \frac{\pm_m^2 \sum_{i=1}^{i} \frac{(R_i - R_f)_i}{\pm_{er}^2}}{1 + \pm_m^2 \sum_{i=1}^{i} \frac{i}{\pm_{er}^2}}$$

to find the percentage or weight of each security, first calculation of the Z value of each assets. We have,

$Z_i = \frac{i}{\pm_{er}^2}\left\{\frac{R_i - R_f}{i} - c^*\right\}$, Now, % invested in security or weight = $\frac{Z_i}{\sum Z_i}$

2.1.8 Security Analysis

Security analysis is one of the steps performed in the investment process. It involves examining several individual or group of securities to identify those that seem miss-priced. In the case of behaviour of stock market prices, there are mainly two approaches i.e. classical approach and efficient market theory approach. Since analysis will be reviewed in this section. Classical approach considers the market as inefficient whereas the efficient market theory argues that there exists the efficient market.

2.1.8.1 Fundamental Analysis

In its simplest form, fundamental analysis begins with assertion that the true value of any financial asset equals the present value of all cash flows the owner of the assets accepts to forecast the timing and size of these cash flows and then converts the cash flows to their equivalent present value using an appropriate discount rate.

In the broadest term, fundamental analysis involves looking at any date, besides the trading pattern of the stock itself that can be expected to impact the price or perceived value of stock. Fundamental analysis involves making investment decisions based on the examination of the company, an industry variables that lead to an estimate of value for an investment.

After estimating the turn value of stock of a particular-firm, it is compared with the current market price of the common stock is fairly priced. Stock whose estimated value or true value is less than current market price are known as overvalued and vice

versa. Fundamental analyst believes that any notable cases of miss pricing will be corrected by the market in the near future, meaning that prices of overvalued stocks will show unusual appreciation and prices of under valued stocks will show unusual depreciation.

The objective of fundamental analysis is to appraise the intrinsic value of a security. The intrinsic value is the true economic work of financial assets. Therefore, fundamental analysis works to find new information before other investors, so they can into a position to profit from price changes they anticipate. This theory assumes that knowledge about the future of companies is not perfect, same stocks are under-priced and other is over-priced. The investor's task is to study certain fundamental factors that may be enable tem to select undervalued stocks for purchase and sell overvalued stocks.

Fundamental analysis use different models like top-down versus bottom up forecasting, probabilistic forecasting, econometric models, financial statement analysis etc to examine the value of security in an appropriate manner for making investment decision. Some of the indicators used by fundamental analyst to assess the company position include: cash flow, return on assets, history of profit retention for funding future growth, and soundness of capital management for the maximizing of shareholder earning and return.

Some limitation of the fundamental analysis approach is as follows:

1. The approach through sound and based on basic financial figures, does suffer from drawbacks and to make this approach work effectively one must be aware of them.

2. The entire fundamental approach is based on a rational scientism analysis of data, the market is rarely rational.

3. The information and analysis itself may be incorrect.

4. Many companies with the help of creative/innovative accounting and accounting cosmetics disguise rear earning.

5. The fundamentalist's estimate the intrinsic value may be incorrect. This is not possible but probable than not he has to often forecast growth, profit and other factor without having in his grasp all the facts.

6. The fundamentalists may nit fully understand the economy of the industry, as there are several external factors.

Therefore, fundamental analysis is a never-ending process because values changes over time. Ideally, revision in analysis should occur whenever new information affecting the future benefit to security holder becomes available.

2.1.8.2 Technical Analysis

In its simplest form, technical analysis involves the study of stock market prices in an attempt to predict the future price movements. Past prices are examined to identify recurring trends or patterns in price movements. Then more recent stock prices are analyzed to identify emerging trades of patterns that are similar to past ones. This analysis is sine in the belief that trends of pattern repeat themselves. By identifying an emerging trend or pattern, the analyst hopes to predict accurately future price movements for a particular stock.

Technical analysis is the method of evaluating securities by analyzing statistics generated by market activity, past prices, and volume. Technical analyst do not attempt to measure a securities intrinsic value, instead they look for patterns and indicators on stock charts that will determine a stick future performance.

Technical analyst is based on the widely accepted premise that security prices are determined by the supply of, and the demand for, securities. The tools of technical analysis are therefore designed to measure certain aspects of supply and demand.

Technical analyst is base treading decisions on examinations of prior price and volume data to determine past market trends from which they predict future behavior for the market as a whole and for individual securities.

The basic assumption underlying technical analyses are as follows:

1. The market value of any good of service is determined solely by the interaction of supply and demand.

2. Supply and demand are governed by numerous and irrational factors. Included in these factors are those economic variables relied on by the fundamental analyst as well as opinions, moods, and guesses. The market weighs all thee factors continually and automatically.

3. Disregarding manor fluctuations, the prices for individual securities and the overall value of the market tend to move in trends, which persist for appreciable lengths of time.

4. Prevailing trends change in reaction to shifts in supply and demand relationships.

Price and volume are the primary tools of technical analyst. Technical analyst believes that the forces of supply and demand show up in patterns of price and volume. Volume data are used to gauge the general condition in the market and to help assess its trend. The evidence seems to suggest that rising (falling) stock does not keep pace, technicians would be skeptical about the upward trend. A downside movement from some pattern of holding point, accomplished by heavy volume, would be taken as bearish sing.

Thus technical analysis see no need to study the multitude of economic, industry and company variables to arrive at an estimate of future value because they believe that past price movements will signal future price movement. A fundamental analysis must process new information correctly and quickly to derive a new intrinsic value for the stock or bond before the other investors can. Technicians, on the hand, only need to quickly recognize a movement to a new equilibrium value for whatever reason-that is, they do not need to know about an event and determine the effect of the event on the value of the firm and its stock. Finally, a fundamental analyst determines that a given security is under or overvalued a long time before other investors. He or she still must determine when to make the purchase and sell. On the other hand, technical analyst, can answer the question “when”.

Various studies evidenced that technical analysis is enabling investors to beat the market. In general tomorrow stock price is influenced by today’s price. The direction

of the price change is important as the relevant size of change. With the application of various tools, the technicians attempt to correctly catch changes in trend and take advantage of them.

2.2 Review of Related Studies

In Nepalese context, there are few studies on the risk and return characteristics of the common stock of the commercial bank. Some of the available relevant studies are reviewed in this part.

Bhattarai (1990) has carried out a study on share market in Nepal. In which, he emphasized the historical background and the analysis of various financial affecting the smooth operation of share market applying both financial and statistical tools in his study. The study was mainly based on secondary data obtain from various sources. He has applied both financial and statistical tools in his study. He found that out of 12 sample companies. Only 2 companies were useful to cross over the average price-earning ratio, as a result, market prices of share are highly skewed. Moreover, there was mismatch between calculated and quoted price. However, he calculated that the involvement of more and more institution as well as individual investors in capital market through brokers networks raised the transaction volume. Rumors spread by brokers, and create genuine speculation. Fair play of bulls and bears makes the market equilibrium resulting price stabilization; speculation on the trading of share is encouraged. Thus, the market starts to walk randomly reflecting true value of shares. Investors are facilitated by providing alternatives to make diversified portfolio.

Bhatta (1995) has conducted a study on assessment of the performance of listed companies in Nepal. The study was based on 10 listed companies with data from 1990 to 1995. In this study, he has focused on the performance of listed companies in term of i) companies performance on market, in PE multiplies, dividend yield, liquidity, leverage, and profitability ii) risk and return in terms of expected rate of return and interest rate of return, significant positive correlation-ship between risk and return characters of the company. Investors expect higher return from those stock which associates higher risk. Nepalese stock market is not efficient one so that prices do not contain all the information relation to market and company itself. Investors in Nepal have not yet participated it invest portfolio of securities. An analysis of the two

securities portfolio shows some the risk can be minimized if the correlation is perfectly negative. The analysis shows some have negative correlation and some have positive one. Negative correlation between securities return is preferred for diversification of risk. On the basis of findings, he concluded that many companies have higher unsystematic or specific risk. There is a need pf expert institution which will provide consultancy service to the investors to maximize their wealth through rational investment decision.

Bhatta (1997) conducted research on the topic "Dynamics of stock Market in Nepal" with the objective to diagnose and compare sartorial financial status of the stock in Nepalese stock market and to analyze the market share price of the Nepalese stock market. The main conclusion of his research was that the stock market and economic activities move in similar direction and EPS and ROE have a decisive effect on the market share of corporate sector though the stock market in the Nepalese economy. It is necessary to develop the entrepreneurship and encourage entrepreneurs to start the productive venture as soon as possible. Development of manufacturing sector is the backbone of an economy, which in turn, assists to foster banking, finance and insurance sector. Unfortunately, the manufacturing sector doesn't have good performance in the Nepalese economy. The secondary aspect of stock market is not also functioning well in Nepal. There is almost no liquidity in the stock market for shares expect that of banking as some finance and insurance sectors. Although it has become late to take steps to overcome such problems of the Nepalese stock market in order to make it active and supportive, the stock market has good prospect for the resources mobilization to finance the productive enterprise in Nepalese economy.

Bharratai (2002) has performed study on efficiency of Nepalese stock market. The objectives of his study were to find the level of efficiency of NEPSE and to find out some facts about the Nepalese investors and their behavior. He found out that the market return of today in NEPSE is affected by the return of yesterday. The stock price movement is not independent rather it has some relationship with the past price sequences. The subjective analysis of Nepalese investor's behavior shows some serious problems in their side, which is responsible for the market to be such inefficient. Investment decisions of Nepalese investors are based on the rumors and speculations. They do not compare the yield of their investment with other

opportunity, rather they look at the market movement and if they found stock to be increasing, they buy security and if it is decreasing they sell the security. Nepalese investors are not familiar with investment banking. They do not have an7y idea about the mutual fund so they making direct investment towards the companies. Thus, he concluded that the average Nepalese investors are behaving irrationally and the market inefficiency is also consequence of irrational behaviour of Nepalese investors.

Pandey (2002) conducted research on the topic, "Risk and Return analysis of Common Stock Investment" concluded that among all the securities common stock are the most risky security: therefore most of the investors are attracted to common stock because of its higher expected return. She found out that the proper allocation of assets can reduce risk and even be eliminated if well diversified. She recommended analyzing each investment comparing to potential return with the risk.

Pordel (2002) conducted research on the topic, "Investment in share of commercial Banks in Nepal: An assessment of Return and Risk Element" with the objective to determine whether the shares of commercial Banks of Nepal are correctly priced and to trace their future movements when striving towards equilibrium. He further analyzed the correlation coefficients between the returns on individual shares and the return on market portfolio with the objective of decomposing total risk into systematic and unsystematic components. The main conclusion of his research is that the analyzed shares examined appear to be attractive to the potential investors since they provide higher rates of return than that of the average stock, the various shares have different degree of risk with some shares being unable to generate the minimum rate of return. (i.e. the sum of the risk-free rate plus a premium for additional risk bearing).

He found that the shares with larger standard deviation seem too able to produce higher rates of return. The portion of unsystematic risk is very high with the shares have negative beta coefficient. The risk per unit of return, as measured by the co-efficient of the variation, is less than that of the market as a whole for all the individual shares. Most of the shares fall under the category of defensive stock, except the shares of Bank of Kathmandu Ltd. Form the analysis; it was found that none the shares are correctly priced.

Manandhar (2003) in her thesis entitled "Analysis of Risk and Return on Common Stock investment of Commercial Bank in Nepal" conducted that stock have greater volatility risk than other investment, which takes a random and unpredictable Path. On the basis of sector wise comparison, expected return on banking sector is higher and other sector is least. In her study she found out that the stock of all the banks are under priced and are best for the investment. She recommended investors to diversify their fund to reduce risk with the help of optimal portfolio concept.

Khadka (2004) has conducted a study on Risk and Return analysis of selected NEPSE commercial banks in Nepal. The study was based on 7 listen companies with data from FY 1997/98 to 2001/02. From the study he found that there is hardly very few companies published timely information resulting frustration amongst the investor's retarding disclosure of financial information. He recommended for the formulation and prompt implementation of the policies for available investment environment so that the large number of individual investor can benefit and the institutional investors can thrive.

Joshi (2004) conducted the research on the topic "Risk and Return analysis of common stock of five listed commercial bank" with the objective to assets the risk associated with return on common stock investment of the selected listed commercial bank on the basis of selected tools. The study covers five years from 1998/99 to 2003/2004. Though the analysis he found that regarding the market capitalization of selected companies. SCB has the maximum market capitalization and NBBL has minimum market capitalization. Further he concluded that the market capitalization as well as NEPSE index is heavily influenced by Banking Sector, even in banking sector joint venture bank have heavy influence on NEPSE index. When return in considered, the return of SEBL is high but its risk is also high. Analyzing the stock for the point of beta coefficient, all the stocks of selected banks have beta grater than 1, so they all are stock. But, while that of NIBL has least beta for choosing among them.

Under the CAPM model, price pf the stock are analyzed, and the facts that the price of the stocks of selected companies are under priced which indicates that the investors should select these securities and Implement the buy and hold strategy. With the principals of finance these stock should show upward price movement but the actual market condition dose not seem so due to the present economic and political

condition. He further recommended the NEPSE to make and strictly follow some standard for enlisting a company in the stock exchange so that investors may feel secure viewing that the listed company has passed some criteria for enlisting the NEPSE. Investors are suggested to make their investment decision based on financial parameters of the company rather than rush over the rumors.

Adhikari (2004) has also carried out a study on "Risk & Return Analysis with reference to listed commercial banks". The study was based on 6 companies with data demo FY 1997/98 2002/03, he found that the most of the people considered stock market investment as a black art that they have unrealistically optimistic or pessimistic expectation about stock market investment or perhaps a fear of the unknown. He further added, Nepalese stock market is in effect of openness and liberalization in national economy. But, Nepalese individual investor's cannon analyze the securities will as market properly because of the lack of information and poor knowledge about the analysis of securities for investment.

Most of the Nepalese private investors invest in single security. Some of the investors use their fund in two or more securities but it was found that they don't make any analysis of portfolio before selecting security. They invest their fund in different securities on the basis of expectations and assumption of individual securities rather than analysis of the effect of portfolio. It seems that they don't have knowledge of the risk diversification by using portfolio of their investment.

He recommended for the proper analysis of individual security, industry and overall market which are always essential to make possible to conquer the stock market. Also general knowledge about economic, political as well as technological trend will be advantageous. To win the market, sell share when the market is rising and buy shares when market falling and hold shares, which will perform better than market. He further suggested for the investment clubs which are good way to exchange and share investment ideas which are lack in Nepal. Finally, he recommended NEPSE to initiate to develop different programs for private investors such as investor's meeting and seminars in different subjects matter like "trading rules and regulations". On the other hand NEPSE is following "open cry system" of trading even in the age of digital technology. It should be modernized and needs to develop efficient and effective information channel and to provide up dated data.

Thus, various studies have been conducted in the field of risk and return analysis of common stock of commercial banks. This study is continual effort to analyze the returns patterns and risk involved in common stick investment of commercial banks. The new aspect of this study is to construct as optimal portfolio using Sharp Single Index Model.

2.2.1 Review from Thesis

Prior to this study, several research works have done by various students regarding the various aspects of risk and return underlying the capital assets pricing model, especially on the common shares of commercial banks. In this study only relevant subject matters are reviewed. Which are as follows:

Deepak Adhikari (2002), his main theme is that, "to evaluated common stock of listed commercial banks in terms of risk and return determined whether the shares of commercial banks in Nepal are over-priced of under-priced,"

Punya Parsad Poudel (2003) in his thesis, he analyzed that "Risk and Return on Commercial Stock Investment of Finance Companies in Nepal where all Finance Companies have positive expected return , majority number of finance companies have the expected return and risk less than their average.

Traka Raj Bhatta (2003), in his study, he found out that, "Risk and return characterizes do not seem to be the fame for all the shares reviewed and the portion of unsystematic risk is very high shares having negative beta coefficient." Beside this, it also finds and conclude that most of the share category of aggressive stock (Having beta coefficient more than one).

Ptamina Pandey, Risk and Return Analysis of Common Stock Investment (2000 Sep) in his thesis, he analyzed that, "the risk and return and other relevant variables that help in making decision about stock and investment in insurance companies."

Khagendra Prasad Ojha (2000), in his thesis, "Financial performance and common stock pricing" concludes that: "an investment in common stock of a corporate from neither ensures annual return nor ensures the return of principle". And also he added

that the stock price in Nepal is determined more by the other factors rather than the financial performance of the concerned company.

Sudip Upadhya (2001), in his thesis paper, “risk and return on common stock investment of commercial banks in Nepal”, Conclude that, “in general most people see stock market investment as a blank art that they know little about.” He also added, “a proper analysis of individual security, industry and overall market is always needed. Generally knowledge about economic, political and technological trend will be advantageous.”

Konaju (2007), pointed that Common stock is the most risky security and lifeblood of stock market because of the higher expected return; common stock holders are the passive owners of the company

Sharma (2008), stated that there is high degree of positive correlation between banks therefore the investors should try to formulate portfolio with other trading and manufacturing firms

Yadav (2008), reported that banking return is not so significantly differ with market portfolio so, the first hypothesis of the study is accepted in different level of significance (i.e. 10%, 5% and 1%).

Bajracharya (2009), indicated that the relationship is not statistically significant different at level of significance. The acceptance of null hypothesis shows that MPS and DPS are not significantly correlated such a situation is not a healthy indicator for the entries sector in the country. Alternative hypothesis shows that MPS and DPS are significantly correlated which can be recognized as a positive indicator of the development of the entire sector in the country.

Erwin (2010), reported that currency risk, or exchange rate movements, has a major effect on the performance of foreign currency denominated assets. The returns of interest bearing liabilities are related with the returns of the currencies forward and spot rates, leading to lower hedge ratio for relative returns.

2.2.2 Reviews of Journals

There are many articles and journals which are available and published. Here some of most important and useful articles and journals which are reviewed in the section.

Ghimire published an article in business age magazine “Nepal Share Market and investor’s prospect” in which has pointed out some important trends of Nepal capital market. He has mentioned many unbalanced factors like political instability, terrorism as the main cause of decreasing trend of share price. He has observed fluctuation in NEPSE index is due to banking sector and declaration of bonus and dividend is the main cause of price change of stock. He has defined Nepalese capital market as lame, weak and perhaps works for vested interest.

K.C. in the article entitles “Development of Stock market and economic growth in Nepal” concluded to improve the situation of the country in order for investor to be eager to invest more confidently. He points put that the investors have lost their confidence on the secondary market not only because the existing few listed companies are not performing well but also due to fear of internal unrest that could further deteriorate the economic conditions of the country. He recommended increasing opportunities to invest in the secondary market.

Thapa in his article “Managing Banking Risk” Published in the Kathmandu Post dated March 9, 2003, mentioned that risk management of the banks is not only crucial for optimum tread pff between risk and profitability, but is also one of the deciding factors for the overall business investment leading to growth of the economy. Managing such risks not only needs sheer professionalism at the organizational level but an appropriate environment also needs to be developed. Some of the major environmental problem of Nepalese banking sector is undue government intervention in the state-owned banks, relatively weak regulatory frame, bed corporate governance and lack of professionalism. The only solution to mitigate the banking risk is to develop the badly needed commitment, eradication of corrupt environment especially in the disbursement of lending and to formulate prudent and conductive regulatory framework.

Mr. Narayan Poudel , in his theses “Investment in shares of Commercial Bank in Nepal: An assessment of Risk and Return Elements” have come up with the

conclusion that the risk-return characteristic so not seem to be same for the shares review. He also include that the shares with larger standard deviations seen to able to produce higher rate of return. The portion of unsystematic risk is vary high with the shares having negative beta coefficient.

Kouwenberg and Ziemba (2004), evaluated that incentives and risk taking in hedge funds, returns of hedge funds with incentives fees are not significantly more risky than the returns of funds without such a compensation contract

Tarawneh (2006), concluded that there is a significant positive correlation between financial performance and the independent variables with correlation coefficient of among return on assets. The bank with higher predictors of total assets, credits, deposits, or shareholder equity does not always mean that it has better profitability performance.

K Greet Rouwenhorst, in his paper “Local Return Factors and Turnover in Emerging stock market” has defined that “there is growing empirical that multiple factor is cross sectional correlation with average return in the united state. It showed that value of stock with high book to market earning to price (E/P) on cash flow price (C/P) out performed growth stock with B/M, E/P, C/P.

The first conclusion is that the return factors is emerging market are qualitatively similar to those in developed market small stock outperform growth stocks and emerging market stock exhibit momentum. Furthermore, global exposure cannot explain the average factors of emerging markets. A Bayesian analysis of premium in developed and emerging, market show that unless one has strong prior belief the contrary the empirical evidence favor the hypothesis that size momentum and value strategies are compensated for expected return and share turnover and examines the turnover characteristic of the local return factor portfolios. There is no evidence of relation between expected return and turnover in emerging markets however beta size momentum and value is positively in emerging market. Hence the article contributes in the area of risk and return analysis in common stock investment.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

Any systematic research study requires a proper methodology to achieve the set objectives. Research methodology is the systematic method of finding solution to a problem i.e. systematic collection, recording, analysis, interpretation and reporting of information. This chapter deals about the research methodology by which the collected data are analyzed to get the result.

3.2 Research Design

This study is carried out to get the empirical result of the investment on shares of the commercial banks from risk and return perspective. Analytical and descriptive research approach is adopted in this study for the readily available historical data.

3.3 Population and Sample

All the commercial banks listed in NEPSE till data (33) are considered to be the total population of the study. Out of them five listed commercial bank are considered as the sample of the study, namely,

1 Nabil Bank Ltd,
2 Standard Chartered Bank Ltd,
3 Nepal Investment Bank Ltd,
4 Himalayan Bank Ltd and
5 Bank of Kathmandu Ltd.

3.4 Source of Data

All the data used in report are secondary data these are collected from report of NEPSE, SEBON and the annual report respective banks since FY 2010/11.

3.5 Method of Data Analysis

This study is based on the data collected from different source. In analyzing and processing of the data classification and tabulation of data was carried out. The data analyzed to test the defined objectives. To analyze the data, following descriptive and analytical tools are used.

3.5.1 Annual rate of return

For a one-year holding, the problem includes the dividend paid during the year and capital gain realized at the end of the year. The prevailing tax rate and inflation rate do affected the annual rate of return of the investment. In this study, both the tax and inflation rate are not taken into consideration in the computation of the rate of return. Also the effects of the right issue by the company on the rate of return of the investment are included due to impracticability on the calculation part. Thus,

$$R = \frac{D + (EP - BP)}{BP}$$

Where, R = Annual Rate

D = Total Dividend

EP = Ending Price

BP = Beginning Price

Here, total dividend is equal to cash dividend + stock dividend. Total dividend is calculated as follows:

Cash Dividend % + Stock Dividend % × Next year ending price

3.5.2 Average Rate of Return

Over a number of years, a single investment will likely give high rate of return during some years and low rate of return, or possibly negative rate of return, during other. In turn, computing the average rate of return investors can get the expected rate of return if he/ she owned the investment over and extended period of time. To find the average rate of return, the sum of rate of return is dividend by the number of year (n) as follows.

$$\overline{R_j} = \frac{\sum R_j}{n}$$

Where, $\overline{R_j}$ = Average Rate of Return of security J

$\sum R_j$ = The Sum of annual rate of return.

3.5.3 Portfolio Return

The expected return on a portfolio is simply the weighted average of expected returns on the individual assets in the portfolio with weights being the fraction of the total portfolio invested in each asset.

$$E(R_P) = W_i\, E(R_i) + W_j\, E(R_j)$$

Where,

$E(R_P)$ = Expected return on portfolio stock I and j

W_i = Weight of wealth invested in stock i

W_j = Weight of wealth invested in stock j

$E(R_i)$ = Expected return on stock i.

$E(R_j)$ = Expected return on stock j

3.5.4 Covariance of Return

Covariance is a measure of the degree of which two variables "move together" relative to their individual mean values over time. A positive covariance means that the rate for two invested tend to move in the same direction relative to their individual means during the same time-period and vice versa. For a two assets, i and j, covariance of rate of return is define as:

$$Cov_{ij} = \frac{\sum \left(Ri - \overline{Ri}\right)\left(Rj - \overline{Rj}\right)}{n-1}$$

3.5.5 Correlation Coefficient of Return

Two variables are correlated when they are related that the change in the value of one variable is accompanied by change in the value of other. Correlation may be positive or negative. If return on two securities is negatively correlated which combined in

portfolio reduces the risk. If securities are positively correlated risk cannot be reduced.

Correlation coefficient measures the relationship between two variables in quantitative terms. Correlation coefficient always lies in the range of +1 to -1. A positive correlation coefficient indicates that the returns from two securities generally move in the same direction and vice versa.

Correlation coefficient and covariance are related by the following equation.

$$\rho_{ij} = \frac{\text{Covij}}{\sigma_i \sigma_j}$$

Where

ρ_{ij} =Correlation coefficient of return of stick I and j

Cov_{ij}= Covariance of the rate of return of stock I and j

σ_i = The standard deviation of the return of the stock i

σ_j = The standard deviation of the return of the stock j

3.5.6 Variance

The most commonly used measure of risk is variance root is the standard deviation. The symbol is σ^2, pronounced “sigma square”. It is the measure of total risk. Smaller the variance, lower the risk of the stock and vice-versa.

Using ex-post (past data

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

$$= \frac{\left[r_1 - \sum (r)\right]^2 + \left[r_2 - \sum (r)\right]^2 + ...\left[r_n - \sum (r)\right]^2}{n}$$

Where, var(r) = variance of return

r_1 = Single period return at time t

$\sum (r)$ = Expected return over the period.

n = Number of observation

Alternative

Var (r) or, σ^2 = Square of Standard deviation

3.5.7 Standard Deviation

Standard deviation is a statistical measure and is widely used to measure risk from holding a single asset. It is also a statistical measure of the variability of a set of observations. The standard deviation represents a large dispersion of return and is a high risk and vice versa. The symbol is called (σ) sigma. It is the measure the total risk on stock investment.

Or, Standard Deviation, $\sigma_i = \sqrt{\frac{\sum\left(R_i - \overline{R_i}\right)}{N-1}}$

Where, R_i =Annual Rate of Return of Security i

$\overline{R_i}$ = Average rate of security i

N = Number of years.

3.5.8 Coefficient of Variation:

It is the relative measurement of risk and return. It measures the risk per unit of return. It provides a more meaningful basis for comparison when the expected returns on two alternatives are not the same. The higher coefficient of variation is the higher risky.

Coefficient of variation (C.V) = $\frac{S\tan dard\ \ deviation\ \ of\ \ retunn}{Expected\ \ Rate\ \ of\ \mathrm{Re}turn}$

$$C.V. = \frac{\sigma_i}{E(R_i)}$$

Where,

C.V. = Coefficient of variation of stock.

σ_i = Standard deviation of return on stock i.

$E(R_i)$ = Expected rate of return on stock i.

3.5.9 Beta coefficient

Market sensitivity of stock is explained in terms of beta coefficient. Higher the beta, greater will be the sensitivity and reaction to the market moment. Logically, the

systematic risk is the covariance between the returns of an individual asset or portfolio and the returns of the market portfolio. The measure of systematic risk is represented by beta (β).

$$\beta_j = \frac{COV(R_j, R_m)}{\sigma_m^2} = \frac{Cov_{jm}}{\pm_m^2}$$

$$COV(R_j, R_m) = \frac{\sum[R_j - E(R_j)][R_m - E(R_m)]}{n-1}$$

Where,

β_j = Beta coefficient of stock j.

$COV(R_j, R_m)$ = Covariance between return on stock j and return on market.

σ_m^2 = Variance of market return.

3.5.10 Total Risk

The total risk is taken as the systematic risk plus unsystematic risk. Systematic risk has its source factors that all marketable risk assets and cannot be diversified. The unsystematic risk also called or specific risk can be reduced or eliminated through diversification. The total risk is calculated as follows:

Total risk (TR) = Systematic Risk (SR) + Unsystematic Risk (UR)

$$\pm^2_i = {}^2_i\pm^2_m + Var(e_o)$$

3.5.11 Portfolio Risk

The standard deviation of return for a portfolio of assets is the measure is the measure of risk for a portfolio. The general formula derived by Markowitz for the

(A statistical measure of total risk is the variance or its square root, the standard deviation. The standard deviation or the variance of returns from an using the following equation)

$$\pm_{port} = \sqrt{\sum_{i=1}^{n} w^2{}_i \pm^2_i + \sum_{i=1}^{n}\sum_{j=1}^{n} w_i w_j Cov_{ij}}$$

$I \neq j$

Where,

$\pm_{port}$ = Standard deviation of the portfolio

W_i = proportion (weight) of investment in security i

W_j = proportion (weight) of investment in security j

$\pm_i$ = The variance of rates of return fpr assets i.

Cov_{ij} = The covariance between the rates of return for assets i &j

3.5.12 Capital Assets Pricing Model (CAPM)

Capital Assets Pricing Model (CAPM) allow investor top determine the required rate or return for any risky assets. The CAPM model indicated what should be the expected or required rate of return on risky assets. Basically, the CAPM says that return form an investment will equal the risk-free rate of return plus the excess return over the risk-free rate by the particular market in which the investment treads, in turn geared up the sensitivity of the investment to market returns.

3.5.13 Construction of an Optimal Portfolio

In this research an optimal portfolio is constructed based on sharp: single index model. The formula requires calculating possible cut-off (Ci) and weight of the each asset in portfolio is as follows:

$$C_i = \frac{\pm^2_m \sum_{i=1}^{i} \frac{\left(R_i - R_f\right)_{\ i}}{\pm^2_{ei}}}{1 + \pm^2_m \sum_{i=1}^{i} \frac{^2_i}{\pm^2_{ei}}}$$

To find the percentage or weight of each security, first calculation of the Z value of each asset. We have Zi = $\frac{_i}{\pm^2_{ei}} \left\{ \frac{\left(R_i - R_f\right)}{_i} - C* \right\}$ Now, % invested in security or weight = $\frac{Z_i}{\sum Z_i}$

3.5.14 ime Series Analysis

“Time series analysis shows the relation between two variables, on being the time. It helps in understanding the pass behavior of a variable in the time series. Further, it helps in future forecasting and evaluating the present accomplishment.”

Of the four components of time series, we use the secular trend, or simply trend, to show the relation between EPS of each Commercial Bank & time.

For the measurement of trends, a widely & most commonly used method- Least Square method, is used. By the principle of least square, the line of best fit is used obtain when the sum of the square of the differences E_i between observe values Y_i and the corresponding calculated values.

a +X b_1, is minimum, i.e. when $\sum_{i-1}^{N} E^2{}_i = \sum_{i=1}^{N} (Y_i - a - bX_i)^2$ is minimum.

When $\sum_{i-1}^{N} E^2{}_i$ is minimum, we obtain the normal equation.

$$\sum Y = Na + b\sum X \quad \text{and} \quad \sum XY = a\sum X + b\sum X^2$$

Solving these two equation, a and b can determined, and substituting these values of a and b the equation, Y = a+ b X, the required equation of the straight line trend is obtained.

CHAPTER 4

DATA PRESENTATION & ANALYSIS

This chapter deals with the main body of the study i.e. analysis and finding of the collected data. The collected data are tabulated, analyzed, interpreted and presented to meet the objective of the research. And all the calculation are shown in the appendices. Where the method of calculation is as mentioned in the research has methodology chapter. The first section of this chapter provides the picture about the risk and return characteristic of common stock of individual Bank. The second section consists of a comparative analysis of risk and returns of the individual Banks and inters industry comparison. The third section analyzes the risk & return relationship of individual stock and different sector with that of market. The fourth section measures the systematic and unsystematic risk of the individual bank. The fifth section examines whether the shares of commercial bank are correctly priced, the sixth section is focused to construct a optional portfolio. The last section highlights the empirical findings of the analysis.

4.1 Risk and Return of Common Stock of Individual Commercial Bank:

The study is focused on the five commercial Banks, each bank is introduced and their common stock's risk & return are computed in this section. The data and result are tabulated, interpreted and presented in the figure for more simplicity and clarity.

4.1.1 Nabil Bank Ltd:

Nabil Bank Limited, the first foreign joint venture bank of Nepal established in July 1984, today is a pioneer in introducing many innovative products and services in the domestic banking sector representing a milestone in the banking history of Nepal. It started an era of modern banking with customer satisfaction as a focal point for doing business. With 49 points of representation across the nation and multiple correspondent banks around the globe, the Bank is serving a wider clientele.

4.1.2 Data

Market price and dividend records of common stock of the bank are shown in table 4.1. Here, only the year- end MPS is taken for the analysis. The total dividend is

calculated as the method mentioned in the research methodology in Chapter III and shown in the Annex I-A.

Table 4.1 MPS, Dividend, EPS and P/E Ratio of NABIL

Fiscal Year	Closing MPS(Rs.)	Cash DPS(Rs.)	Stock Dividend (%)	Total Dividend (Rs.)	EPS (Rs.)	P/E Ratio
2001/02	735	20	40	316	59.30	6.20
2002/03	740	50	50	550	84.66	8.74
2003/04	1000	65	65	1043.25	92.61	10.80
2004/05	1505	70	70	1638	105.49	14.27
2005/06	2240	85	85	4377.50	129.21	17.34
2006/07	5050	140	100	5415	137.08	36.84
2007/08	5275	100	60	3039.40	115.86	45.53
2008/09	4899	85	35	919.4	113.44	43.19
2009/10	2384	70	30	445.6	83.81	28.75
2010/11	1252	30	30	-	70.67	17.72

Data Source: Annual Report of NABIL

Total dividend = Cash Dividend + Stock Dividend (%) × Next Year MP

= $20 + 0.40 \times 740 = 316$

The market price of Banks was highest in the year 2007/08 while the lowest was recorded in the year 2001/02. From the year 2001/02, the MPS increase to the year 2007/08. But, after the year 2007/08, the MPS goes on decreasing. The movement of the MPS is presented graphically in the diagram 4.1.

Diagram 4.1 Closing MPS movement of Nabil Bank ltd.

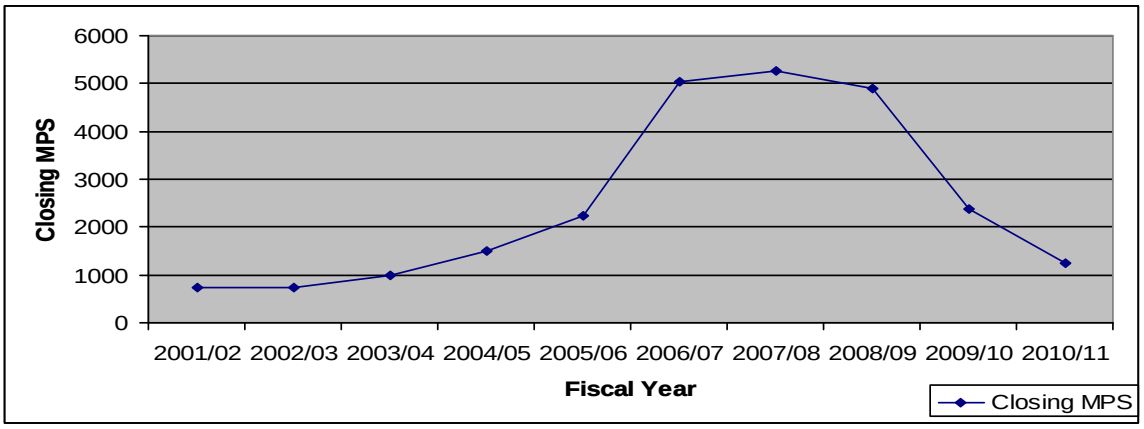


Diagram 4.2 DPS of Nabil Bank ltd.

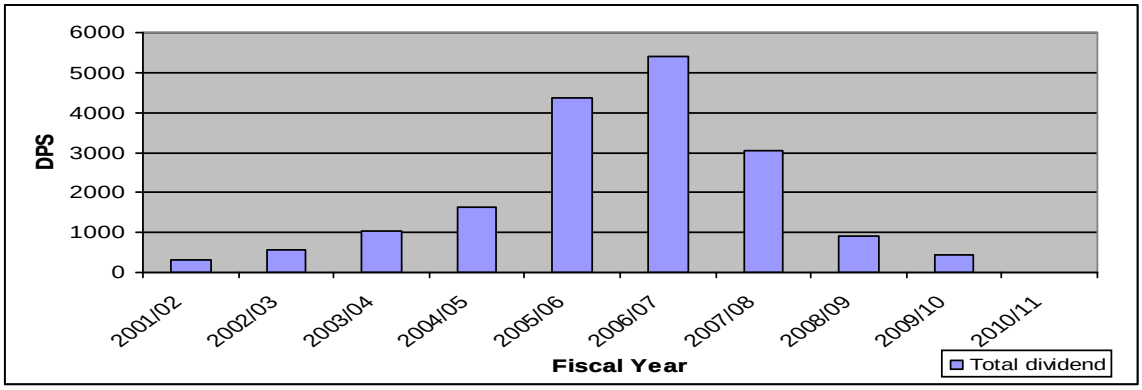


Diagram 4.2 indicates the movement of DPS of Nabil Bank ltd.

4.1.3 Realized Return, its Standard Deviation and Expected Return/ Variance.

Closing market price of shared and total dividend of the bank are used to calculate annual return of the bank for each year using the method mentioned in chapter III. Similarly, standard deviation, Variance and Expected Return are also calculated. The calculation is shown in the Table 4.2

Table 4.2 Realized Rate of Return, Expected Return, Variance and Standard Deviation

Fiscal year	Closing MPS	Dividend (D)	$R_j = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	735	316.00	-0.2993	-1.4275	2.0378
2002/03	740	550.00	0.7551	-0.3731	0.1392
2003/04	1000	1043.25	1.7611	0.6329	0.4006
2004/05	1505	1638.00	2.1430	1.0148	1.0298
2005/06	2240	4377.50	3.3970	2.2688	5.1475
2006/07	5050	5415.00	3.6712	2.543	6.4668
2007/08	5275	3039.40	0.6464	-0.4818	0.2321
2008/09	4899	919.40	0.1030	-1.0252	1.051
2009/10	2384	445.60	-0.4224	-1.5506	2.4044
2010/11	1252	-	-0.4728	-1.601	2.5632
			11.2823		21.4724
	Expected Return $(\overline{R}_j)$		1.1282		

- Closing stock of NABIL in the year 2000/2001 is Rs. 1500

Where,

P_t = This year closing price

P_{t-1} = Previous year closing MPS

D_t = This year dividend

R = Return

Expected Return $(\bar{R}_j)$ = $\frac{\sum R_j}{n} = \frac{11.2823}{10} = 1.1282$

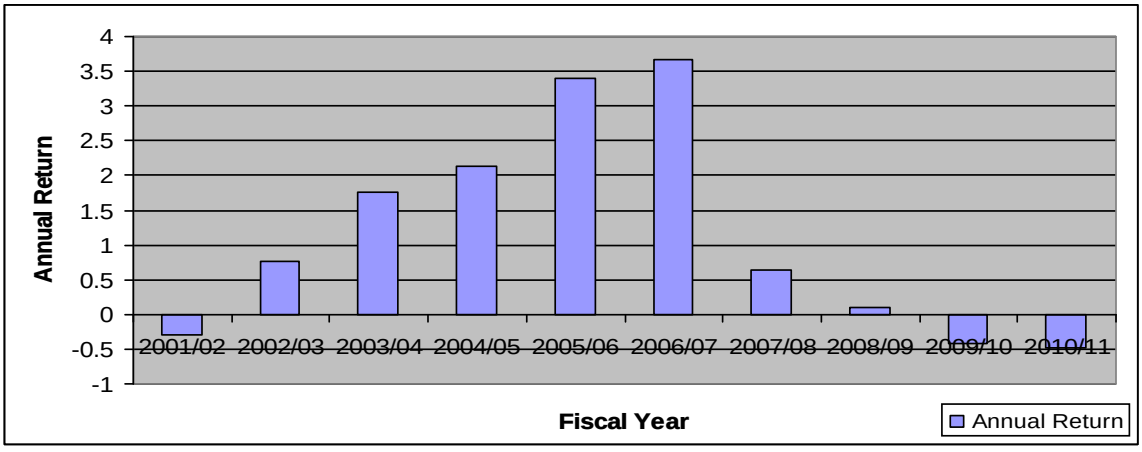
Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{21.4724}{10-1}} = 1.5446$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(1.5446)^2 = 2.3858$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\bar{R}_j} \times 100\% = \frac{1.5446}{1.1282} \times 100\% = 136.91\%$

Table 4.2 implied that, in the FY 2005/06, the realized rate of return was high while in the FY 2010/11, it was the lowest. Expected return of the bank is 1.1282, its variance is 3.0525 and standard deviation is 1.7471. Similarly, coefficient of variation of the common stock of the bank is 154.86%. The annual return of the bank is presented graphically in the diagram 4.3

Diagram 4.3 Annual Return of the common stock of the Nabil



4.2 Standard Chartered Bank Nepal Ltd. (SCBNL)

Standard Chartered Bank Nepal Limited has been in operation in Nepal since 1987 when it was initially registered as a joint-venture operation. Today the Bank is an integral part of Standard Chartered Group who has 75% ownership in the company with 25% shares owned by the Nepalese public. With 11 points of representation (7 Branches) and 9 ATMs across the Kingdom and with over 300 local staff, Standard Chartered Bank Nepal Ltd. is in a position to service its customers through a large

domestic network. It is the first Bank in Nepal that has implemented the Anti-Money Laundering policy and applied the "Know Your Customer" procedure on all the customer accounts.

4.2.1 Analysis of Total Dividend

The year end return of SCBL over the study period, closing price of common stock per share and total dividend which is sum of cash and stock dividend converted into monetary value based on market price of respective year, EPS and P/E ratio have been presented in Table 4.3

Table 4.3 MPS, Dividend, EPS and P/E Ratio of SCBL

Fiscal Year	Closing MPS (Rs.)	Cash DPS (Rs.)	Stock Dividend (%)	Total Dividend (Rs.)	EPS (Rs.)	P/E Ratio
2001/02	1575	100	100	1740	141.13	11.16
2002/03	1640	110	120	2204	149.30	10.98
2003/04	1745	110	110	2689.50	143.55	12.16
2004/05	2345	120	120	4650	143.93	16.29
2005/06	3775	130	140	8390	175.84	21.47
2006/07	5900	80	130	8959	167.37	35.25
2007/08	6830	80	130	7893	131.92	51.77
2008/09	6010	50	100	3329	109.99	54.64
2009/10	3279	55	70	1315	77.65	42.23
2010/11	1800	50	50	-	69.51	25.90

Table 4.3 Source: SCBNL Annual report 2010/11

The market price share of the bank was highest in the year 2007/08 and while the lowest was recorded in the year 2001/02. In the beginning year, the MPS increases until 2007/08. But, from the year 2007/08, the MPS goes on decreasing trend. The movement of the MPS is presented graphically in the diagram 4.4.

Diagram 4.4 MPS of SCBNL

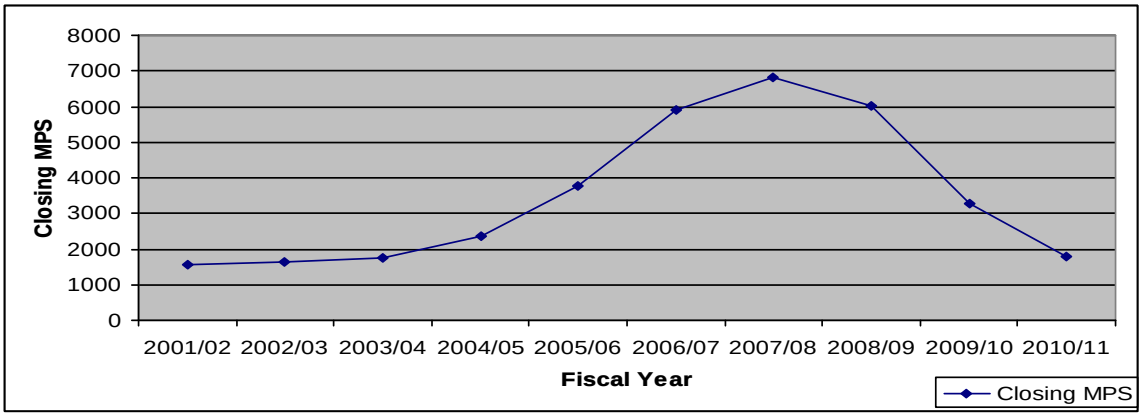


Diagram 4.5 DPS of SCBNL

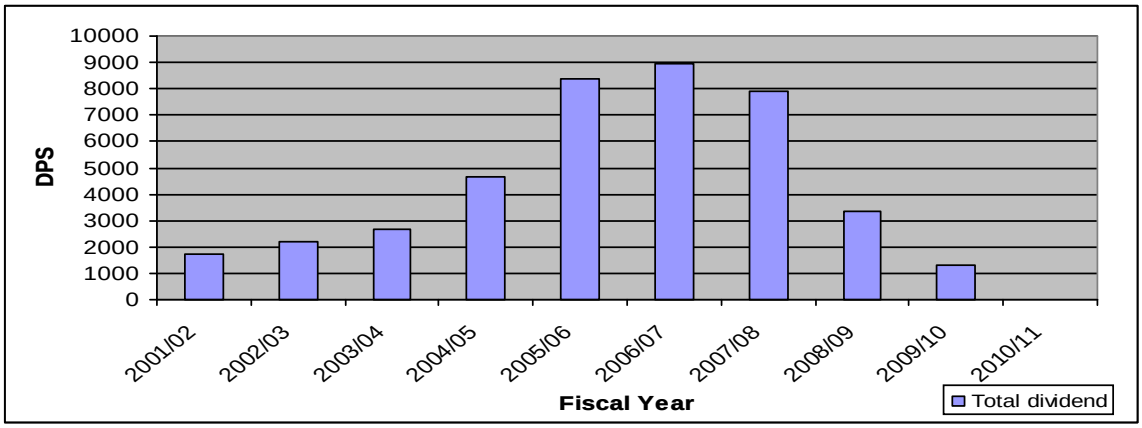


Diagram 4.5 implies the movement of DPS of SCBNL.

4.2.2 Realized Return, Standard Deviation, expected return and Variance of SCBNL

Closing market price of the shares and total dividend of the bank are used to calculate annual rate of the bank for each year using the method mentioned in Chapter III. Similarly, variance, standard deviation and expected return are also calculated. The calculation is shown in the table 4.4

Table 4.4 Realized Rate of Return, Expected Return, Variance and SD of SCBL.

Fiscal year	Closing MPS	Dividend (D)	$R_j = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	1575	1740	0.5462	-0.97449	0.9496
2002/03	1640	2204	1.4406	-0.08009	0.0064
2003/04	1745	2689.50	1.7040	0.18331	0.0336
2004/05	2345	4650	3.0086	1.48791	2.2139
2005/06	3775	8390	4.1876	2.66691	7.1124
2006/07	5900	8959	2.9362	1.41551	2.0037
2007/08	6830	7893	1.4954	-0.02529	0.0006
2008/09	6010	3329	0.3673	-1.15339	1.3303
2009/10	3279	1315	-0.2356	-1.75669	3.086
2010/11	1800	-	-0.2434	-1.76369	3.1106
	Total		15.2069		19.8471
	Expected Return $(\overline{R}_j)$		1.52069		

- Closing stock of SCBL in the year 2000/2001 is Rs. 2144

Where,

$$\text{Expected Return } (\overline{R}_j) = \frac{\sum R_j}{n} = \frac{15.2069}{10} = 1.52069$$

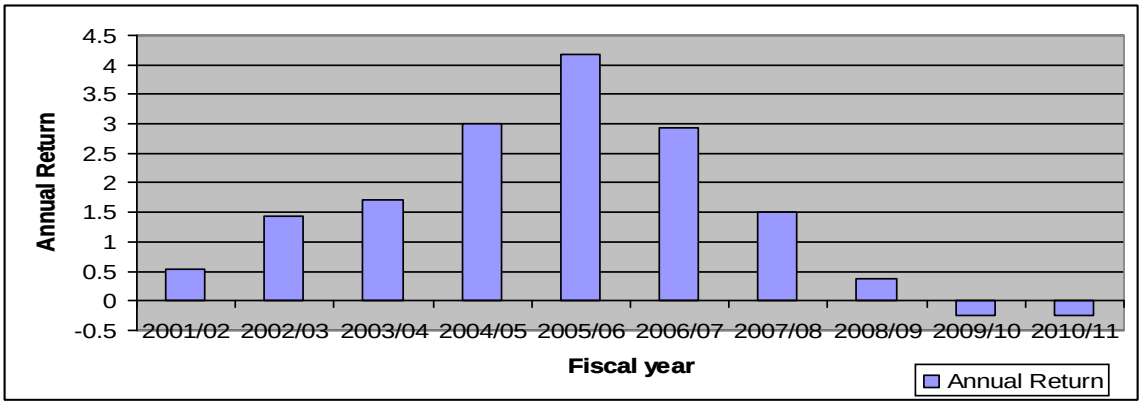
$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\sum (R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{19.8471}{10-1}} = 1.4850$$

$$\text{Variance } (\sigma_j)^2 = (\text{standard deviation})^2 = (1.4850)^2 = 2.2052$$

$$\text{Coefficient of Variation (C.V.)} = \frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{1.4850}{1.52069} \times 100\% = 97.65\%$$

Table 4.4 implies that, in the FY 2005/06, the realized rate of return was high while in the FY 2010/11, it was the lowest. Expected return of the bank is 1.52069, variance is 2.2052. Similarly, coefficient of variation of the common stock of the bank is 97.65%. The annual rate of the bank is presented graphically in the diagram 4.6

Diagram 4.6 Annual Return of the Common Stock of the SCBNL



4.3 Nepal Investment Bank Ltd. (NIBL)

Nepal Investment Bank Ltd. (NIBL), previously Nepal Indosuez Bank Ltd., was established in 1986 as a joint venture between Nepalese and French partners. The French partner (holding 50% of the capital of NIBL) was Credit Agricole Indosuez, a subsidiary of one the largest banking group in the world.

With the decision of Credit Agricole Indosuez to divest, a group of companies comprising of bankers, professionals, industrialists and businessmen, had acquired on April 2002 the 50% shareholding of Credit Agricole Indosuez in Nepal Indosuez Bank ltd.

The name of the bank has been changed to Nepal Investment Bank Ltd. upon approval of bank's Annual General Meeting, Nepal Rastra Bank and Company Registrar's office with the following shareholding structure.

- A group of companies holding 50% of the capital
- Rashtriya Banijya Bank holding 15% of the Capital.
- Rashtriya Beema Sansthan holding the same percentage.
- The remaining 20% being held by the General Public (which means that NIBL is a Company listed on the Nepal Stock Exchange).

4.3.1 Analysis of Total Dividend

The year end return of NIBL over the study period, closing price of common stock per share and total dividend which is sum of cash and stock dividend converted into monetary value based on market price of respective year, EPS and P/E ratio are tabulated in Table

Table 4.5 MPS, Dividend, EPS and P/E Ratio of NIBL

Fiscal Year	Closing MPS(Rs.)	Cash DPS (Rs.)	Stock Dividend (%)	Total Dividend (Rs.)	EPS (Rs.)	P/E Ratio
2001/02	760	-	30.00	238.50	33.59	22.63
2002/03	795	20.00	20.00	208	39.58	20.10
2003/04	940	15.00	15.00	135	51.70	18.18
2004/05	800	12.50	12.50	170	39.50	20.25
2005/06	1260	20.00	55.46	978.90	59.35	21.23
2006/07	1729	5.00	30.00	740	62.57	27.63
2007/08	2450	7.50	40.83	574.22	57.87	42.34
2008/09	1388	20.00	20.00	201.25	37.42	37.10
2009/10	705	25.00	25.00	153.00	52.55	13.42
2010/11	515	25.00	50.00	-	48.84	10.54

Data Sources: Annual Reports of NIBL

For calculating the total dividend of fiscal year 2010/11, its need closing MPS of fiscal year 2011/12, which was not available in the concerned banks and/or stock records.

The market price share of the bank was highest in the year 2007/2008 while the lowest was recorded in the year 2010/2011. After distributing the 40.83% bonus shares in the year 2008/09 the MPS has decreased drastically. However, in the subsequent year, the MPS seems to be in the decreasing trend. The movement of the MPS is presented graphically in the diagram 4.7.

Diagram 4.7 MPS of NIBL

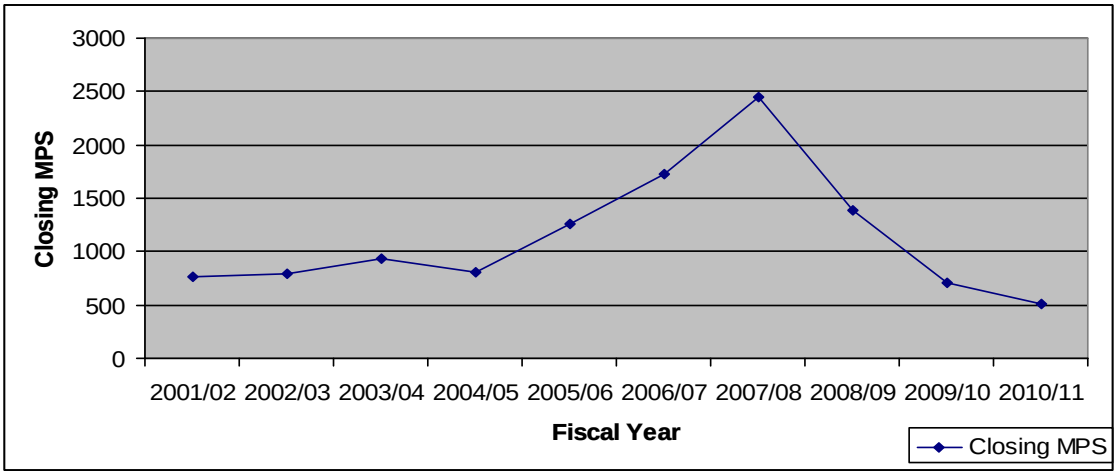
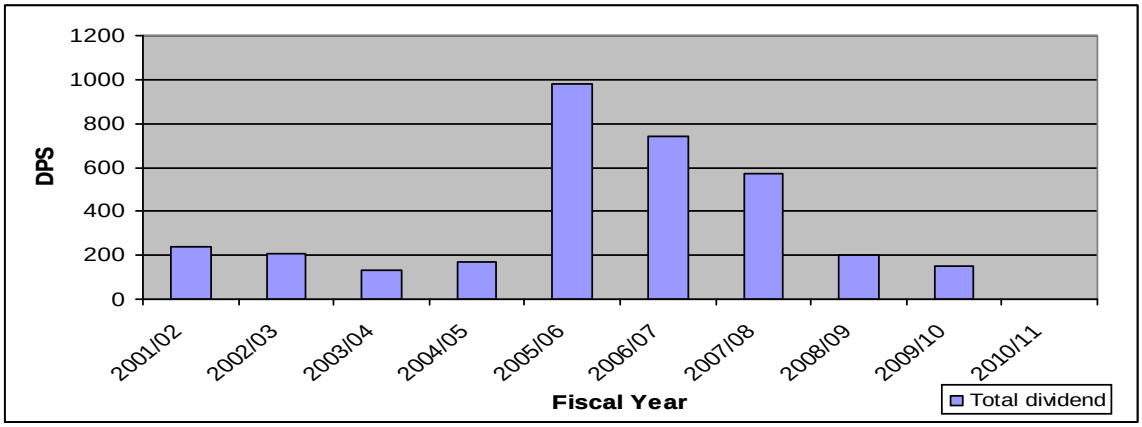


Diagram 4.8 DPS of NIBL



4.3.2 Realized Return, its Standard Deviation and Expected Return/ Variance.

Closing market price of share and total dividend of the bank are used to calculate annual return of the bank for each year using the method mentioned in chapter III. Similarly, standard deviation, variance and expected return are also calculated. The calculation is shown in the table 4.6.

Table 4.6 Realized Rate of Return, Expected Return, Variance and Standard Deviation of NIBL.

Fiscal year	Closing MPS	Total dividend	$R_j = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	760	238.50	-0.1317	-0.4394	0.1931
2002/03	795	208.00	0.3197	0.0117	0.0001
2003/04	940	135.00	0.3522	0.0445	0.0020
2004/05	800	170.00	0.0319	-0.2758	0.0761
2005/06	1260	978.90	1.7986	1.4909	2.2228
2006/07	1729	740.00	0.9595	0.6518	0.4248
2007/08	2450	574.22	0.7491	0.4414	0.1948
2008/09	1388	201.25	-0.3513	-0.6590	0.4343
2009/10	705	153.00	-0.3818	-0.6895	0.4754
2010/11	515	-	-0.2695	-0.5772	0.3332
	Total		3.0767		4.3566
	Expected Return $(\overline{R}_j)$		0.30767		

*Closing stock of NIBL in the year 2000/01 is Rs.1150

Where,

P_t = This year closing price

P_{t-1} = Previous year closing MPS

D_t = This year dividend

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{3.0767}{10} = 0.30767$

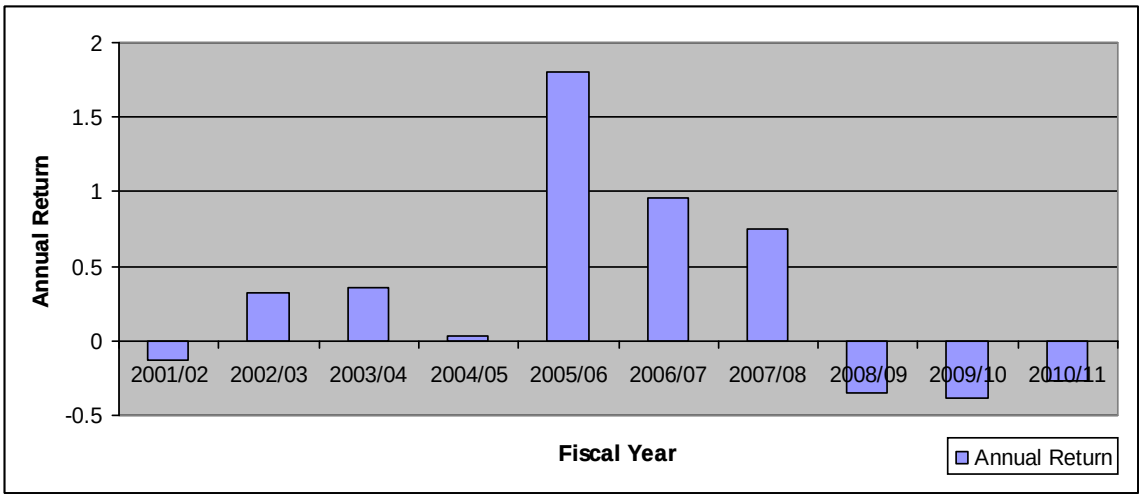
Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum(R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{4.3566}{10-1}} = 0.6957$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.6957)^2 = 0.4840$

Coefficient of Variation (CV) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.6957}{0.30767} \times 100\% = 226.12\%$

Table implied that, in the FY 2005/06, the realize rate of return was high while in the FY 2009/10, it was the lowest expected rate of return of the bank is .30767, Variance is 0.4840 and its standard deviation is 0.6957. The annual return of the bank is presented graphically in the diagram 4.9.

Diagram 4.9 Annual Return of the common stock of the NIBL



4.4 Himalayan Bank Ltd. (HBL)

Himalayan Bank Ltd is another joint venture bank Established under company act of Nepal. Major portion of share is covered by Habib bank limited Pakistan. The bank was incorporated in 1993 AD. The central office of the organization is in Sanchayakosh building Thamel. It has 41 branches allover the country. Its authorized capital is 3000 million; issued capital is 2000 million and paid up capital is also 2000 million. Both the par value and paid up value per share is Rs 100. The Bank was listed in the NEPSE in 1993 (2050/02/03 B.S.).

4.4.1 Analysis of Total Dividend

The year end return of HBL over the study period, closing price of common stock per share and total dividend which is sum of cash and stock dividend converted into monetary value based on market price of respective year, EPS and P/E ratio are tabulated in Table 4.7

Table 4.7 MPS, Dividend, EPS and P/E Ratio of HBL

Fiscal Year	Closing MPS(Rs.)	Cash DPS (Rs.)	Stock Dividend (%)	Total Dividend (Rs.)	EPS (Rs.)	P/E Ratio
2001/02	1000	25.00	35.00	317.60	60.26	16.59
2002/03	836	1.32	25.00	211.32	49.45	16.91
2003/04	840	-	20.00	184.00	49.05	17.12
2004/05	920	11.58	31.58	358.96	47.91	19.20
2005/06	1100	30.00	35.00	639.00	59.24	18.57
2006/07	1740	15.00	40.00	807.00	60.66	28.69
2007/08	1980	25.00	45.00	817.00	62.74	31.56
2008/09	1760	12.00	43.56	367.45	61.90	28.43
2009/10	816	11.84	36.84	223.67	31.80	25.66
2010/11	575	16.84	36.84	-	44.66	12.88

Data Source: AGM Report of HBL

The market price shares of the bank were highest in the year 2007/08 while the lowest was recorded in the year 2010/11. After recording the highest value, the MPS of the bank seemed to catch the decreasing trend. The movement of the MPS is presented graphically in the diagram 4.10.

Diagram 4.10 Closing MPS Movement of HBL

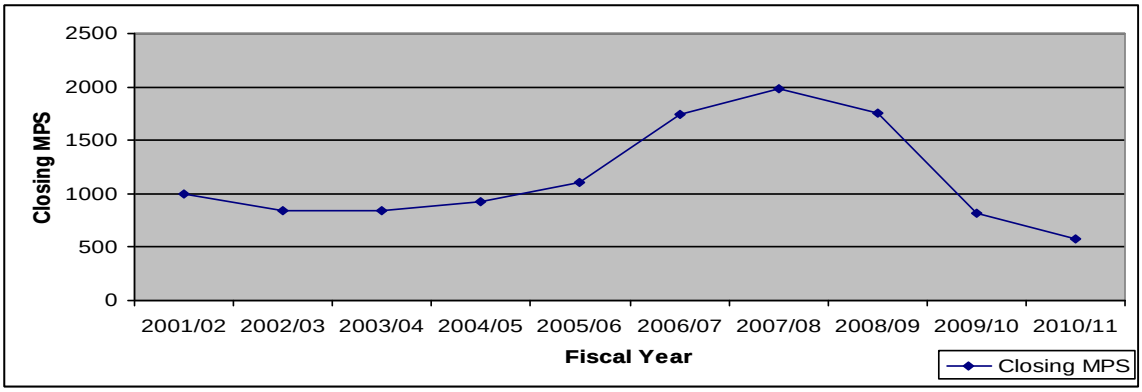
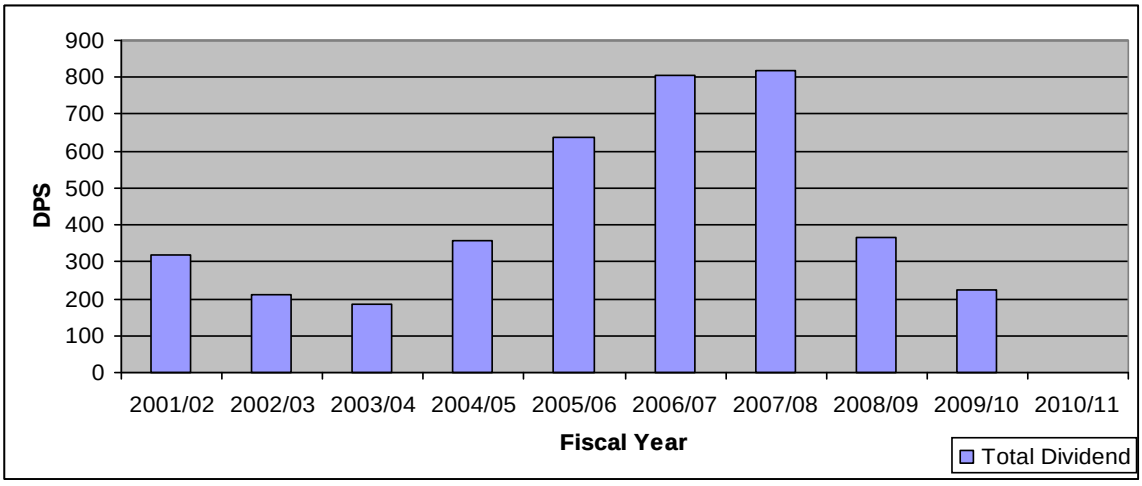


Diagram 4.11 DPS of HBL



4.4.2 Realized Return, its Standard Deviation, Expected Return and Variance.

Closing market price of shares and total dividend of the bank are used to calculate annual return of the bank for each year using the method mentioned in chapter III. Similarly, Standard Deviation, Variance and Expected Return are also calculated. The calculation is shown in the table 4.8.

Table 4.8 Realized Rates of Return, Expected Return, Variance and Standard Deviation of HBL

Fiscal year	Closing MPS	Total dividend	$R_j = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	1000	317.60	-0.1216	-0.4072	0.1658
2002/03	836	211.32	0.0473	-0.2383	0.0568
2003/04	840	184.00	0.2249	-0.0607	0.0037
2004/05	920	358.96	0.5226	0.237	0.0562
2005/06	1100	639.00	0.8902	0.6046	0.3655
2006/07	1740	807.00	1.3155	1.0299	1.0607
2007/08	1980	817.00	0.6075	0.3219	0.1036
2008/09	1760	367.45	0.0745	-0.2111	0.0446
2009/10	816	223.67	-0.4093	-0.6949	0.4829
2010/11	575	-	-0.2953	-0.5809	0.3374
	Total		2.8563		2.6772
	Expected Return $(\overline{R}_j)$		0.2856		

*Closing stock of HBL in the year 2000/01 is Rs.1500

Where,

P_t = This year closing price

P_{t-1} = Previous year closing MPS

D_t = This year dividend

R = Return

$$\text{Expected Return}(\bar{R}_j) = \frac{\sum R_j}{n} = \frac{2.8563}{10} = 0.2856$$

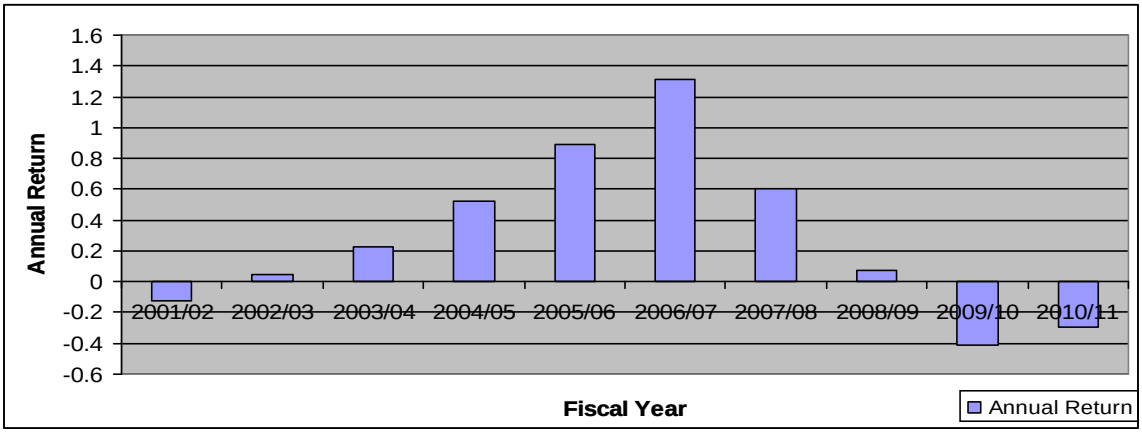
$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\sum(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{2.6772}{10-1}} = 0.5454$$

$$\text{Variance } (\sigma_j)^2 = (\text{standard deviation})^2 = (0.5454)^2 = 0.2975$$

$$\text{Coefficient of Variation (CV)} = \frac{\pm_j}{\bar{R}_j} \times 100\% = \frac{0.5454}{0.2856} \times 100\% = 190.97\%$$

Table implies that, in the FY 2006/07, the realized rate of return was high while in the FY 2009/10, it was the lowest. Expected return of the bank is 0.2856, variance is 0.2975. Similarly, coefficient of variation of the common stock of the bank is 190.97%. The annual return of the bank is presented graphically in the diagram 4.12.

Diagram 1.12 Annual Return of the Common Stock of HBL



4.5.1 Bank of Kathmandu Ltd. (BOKL)

BOK started its operation in March 1995 with the objective to stimulate the Nepalese economy and take it to newer heights. BOK also aims to facilitate the nation's economy and to become more competitive globally.

4.5.2 Analysis of Total Dividend

Market price and the dividend recorded of common stock of the bank are shown in table 4.9 here only the year-end MPS are taken for the analysis. The total dividend is

calculated as the method in the research methodology in chapter III and shown in the annex I-E.

Table 4.9 MPS, Dividend, EPS and P/E Ratio of BOKL

Fiscal Year	Closing MPS(Rs.)	Cash DPS (Rs.)	Stock Dividend (%)	Total Dividend (Rs.)	EPS (Rs.)	P/E Ratio
2001/02	254	10.00	10.00	29.80	2.00	126.96
2002/03	198	5.00	5.00	19.75	17.72	11.18
2003/04	295	10.00	10.00	53	27.5	7.20
2004/05	430	15.00	15.00	142.50	30.1	14.29
2005/06	850	18.00	48.00	678.00	43.67	19.46
2006/07	1375	20.00	20.00	490.00	43.50	31.61
2007/08	2350	2.11	42.11	770.62	59.94	39.21
2008/09	1825	7.37	47.37	405.28	54.68	33.37
2009/10	840	15.00	30.00	186.00	43.08	19.50
2010/11	570	16.75	34.75	-	44.51	12.81

Data Source: AGM Report of HBL

The market price per share of the bank was highest in the year 2007/08, while the lowest was recorded in the year 2002/03. After recording the highest value, the MPS of the bank seemed to catch the decreasing trend. The movement of the MPS is presented graphically in the diagram 4.13.

Diagram 4.13 Closing MPS Movement of BOKL

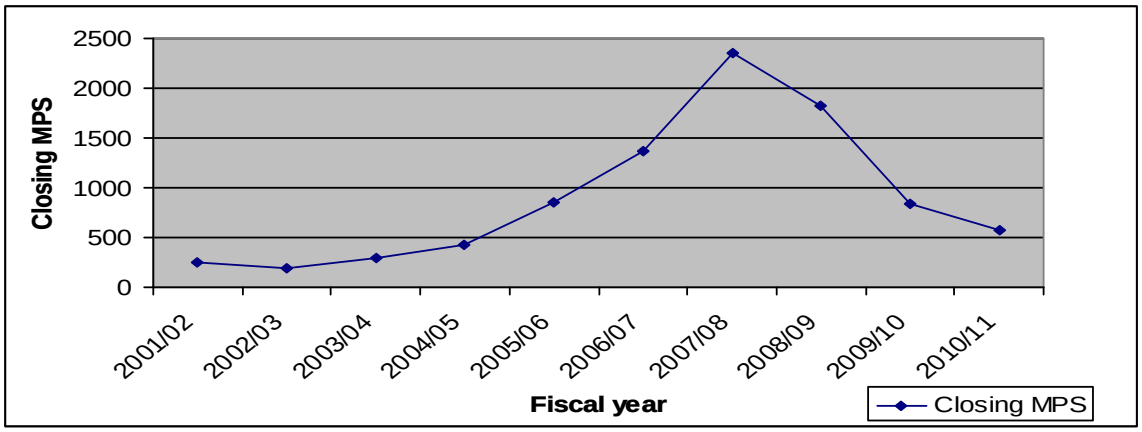
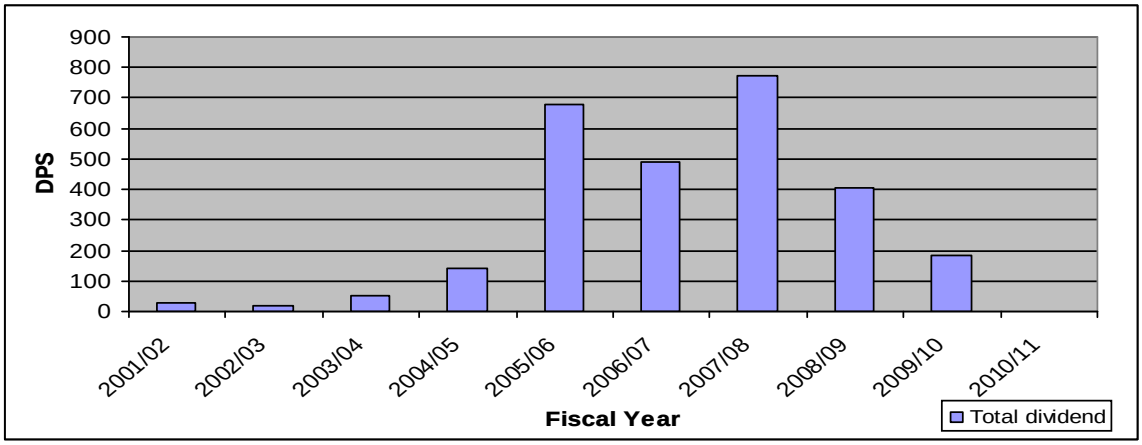


Diagram of 4.14 DPS of BOKL



4.5.2 Realized Return, its Standard Deviation, Expected Return and Variance of BOKL.

Closing market price share and total dividend of the bank are used to calculated annual return of the bank for each year. Using the method mention in Chapter III. Similarly, Standard Deviation, Variance and Expected Return are also calculated. The calculation is shown in the table 4.10.

Table 4.10 Realized Rate of Return, Expected Return, Variance and Standard Deviation of BOKL.

Fiscal year	Closing MPS	Total dividend	$R_j = \frac{(P_t - P_{t-1}) + D_t}{P_{t-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	254	29.80	-0.6661	-1.1749	1.3804
2002/03	198	19.75	-0.1427	-0.6515	0.4245
2003/04	295	53	0.7576	0.2488	0.0619
2004/05	430	142.50	0.9407	0.4319	0.1865
2005/06	850	678.00	2.5535	2.0447	4.1808
2006/07	1375	490.00	1.1941	0.6853	0.4696
2007/08	2350	770.62	1.2695	0.7607	0.5787
2008/09	1825	405.28	-0.0594	-0.5682	0.3229
2009/10	840	186.00	-0.4378	-0.9466	0.8961
2010/11	570	--	-0.3214	-0.8302	0.6892
	Total		5.088		9.1906
	Expected Return $(\overline{R}_j)$		0.5088		

*Closing stock of BOKL in the year 2000/01 is Rs.850

Where,

P_t = This year closing price

P_{t-1} = Previous year closing MPS

D_t = This year dividend

R = Return

$$\text{Expected Return}(\bar{R}_j) = \frac{\sum R_j}{n} = \frac{5.088}{10} = 0.5088$$

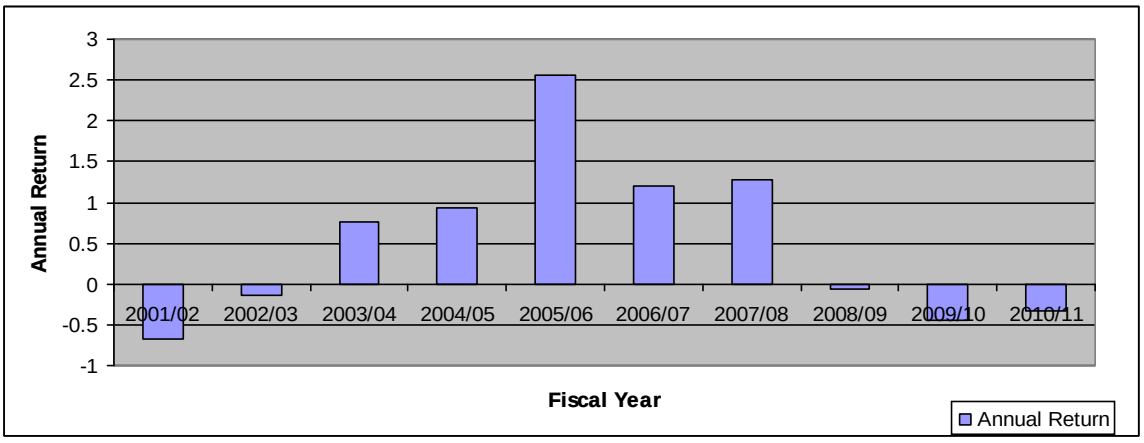
$$\text{Standard Deviation } (\sigma_j) = \sqrt{\frac{\sum(R_j - \bar{R}_j)^2}{n-1}} = \sqrt{\frac{9.1906}{10-1}} = 1.0105$$

$$\text{Variance } (\sigma_j)^2 = (\text{standard deviation})^2 = (1.0105)^2 = 1.0211$$

$$\text{Coefficient of Variation (CV)} = \frac{\pm_j}{\bar{R}_j} \times 100\% = \frac{1.0105}{0.5088} \times 100\% = 198.60\%$$

Table implies that, in the FY 2005/06, the realized rate of return was high while in the FY 2001/02, it was the lowest. Expected Rate of Return of the bank is 0.5088, Variance id 1.0211 and the Standard Deviation is 1.0105. Similarly, Coefficient of Variance of the Common Stock of the bank is 198.60%. The Annual Return of the bank is presented graphically in the diagram 4.15.

Diagram 4.15 Annual Rate of Return of the Common Stock of the BOKL



4.6 Inter Bank Comparison

The comparative analysis of expected return, variance, standard deviation and the coefficient of the variance of the selected commercial banks is performed here. The comparative analysis is tabulated in the table 4.11.

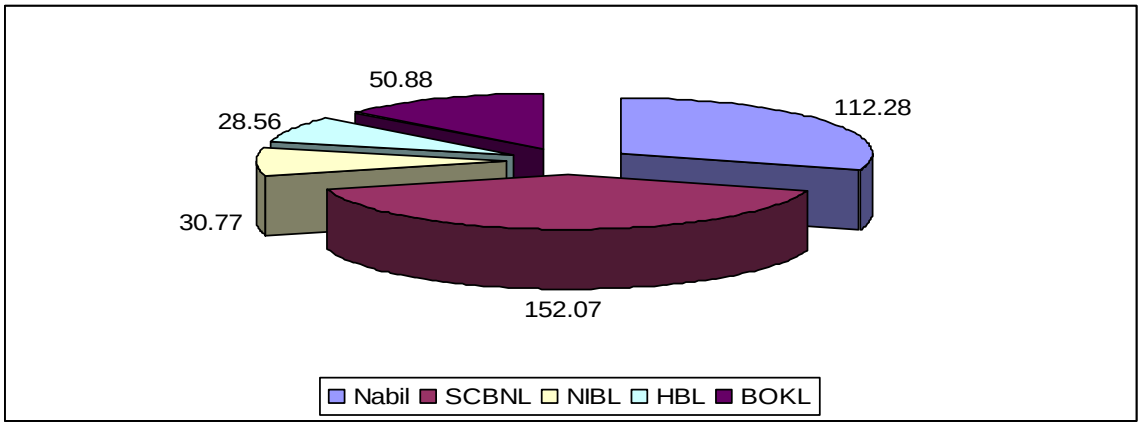
Table 4.11. Comparative Analysis of selected Commercial Banks.

Banks	Expected return (%)	Variance (%)	Standard Deviation (%)	Coefficient of variance	Return	Variance	S.D	C.V	Rank based on C.V
Nabil	112.28	238.58	154.46	1.3691		Highest	Highest		2
SCBNL	152.07	220.52	148.50	0.9765	Highest			Lowest	1
NIBL	30.77	48.41	69.57	2.2612				Highest	5
HBL	28.56	29.75	54.54	1.9097	Lowest	Lowest	Lowest		4
BOKL	50.88	102.11	101.05	1.8960					3

Source: Table 4.2, Table 4.4, Table 4.6, Table 4.8 and 4.10

Table 4.11 shows that SCBNL has lowest coefficient of variation, resulting that it is the less risky stock than others. NIBL is the most risky because it has highest coefficient of variation. After the SCBNL, the expected return of Nabil is highest. Similarly, the return of HBL is lowest among the selected Banks. The above data we graphically presented in the diagram 4.16.

Diagram 4.16 Expected return of Sampled Commercial Bank



4.7 Market Capitalization of Sampled Banks

Inter Bank Comparison of selected banks are made according to their respective market capitalization at the end of the Fiscal Year 2010/11 and their calculated risk and return Market capitalization indicated the present value of the investment or the total value of the company at specific time period. It means the value of market

capitalization is related with market price of the share. The value of market capitalization changes due to the changing sentiments of capital market. In the market condition is favorable, the market value of assets increases substantially. So, that the value of the company is increased and vice versa. The increased market value further suggests the good performance of the concerned companies. So, the investors are highly interested to such companies. The market capitalization of the sampled banks at 16th July 2011 is shown in following table 4.12 and figure 4.17

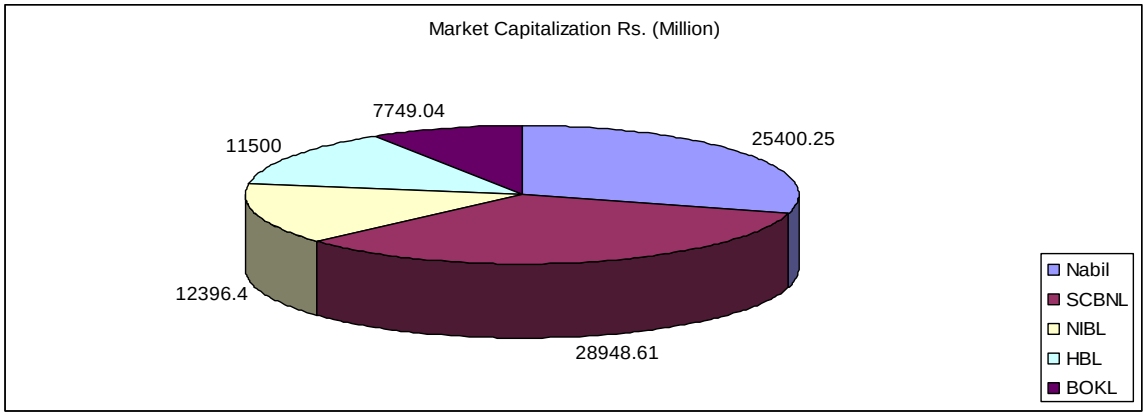
Table 4.12 Market Capitalization of Sample Bank at 16th July 2011.

Banks	Market Capitalization Rs. (Million)	Percentage (%)	Rank
Nabil	25400.25	29.54	2
SCBNL	28948.61	33.66	1
NIBL	12396.40	14.42	3
HBL	11500.00	13.37	4
BOKL	7749.04	9.01	5
Total	85994.30	100	

Source: NEPSE Index

The table 4.12 implies the market capitalization of sampled Banks stock at the 16th July 2011. The Standard Chartered Bank has highest Market Capitalization (33.66%) and Bank of Kathmandu Ltd, has lowest market capitalization (9.01%). It is noteworthy to mention that investors are highly interested to companies which have high or increased market capitalization is made among the companies based on market capitalization to find the best one. So, in terms of market capitalization the ranking of the sampled Bank from highest to lowest is SCBNL, Nabil, NIBL, HBL and BOKL.

Diagram 4.17 Market Capitalization of Sampled Bank



The diagram 4.17 shows the market capitalization of the selected Banks. The highest market capitalized was of SCBNL and lowest of BOKL. The percentage of Market capitalization of other selected Banks from highest to lowest was of SCBNL, Nabil, NIBL, HBL and BOKL.

4.8 Inter sector wise Company Comparison

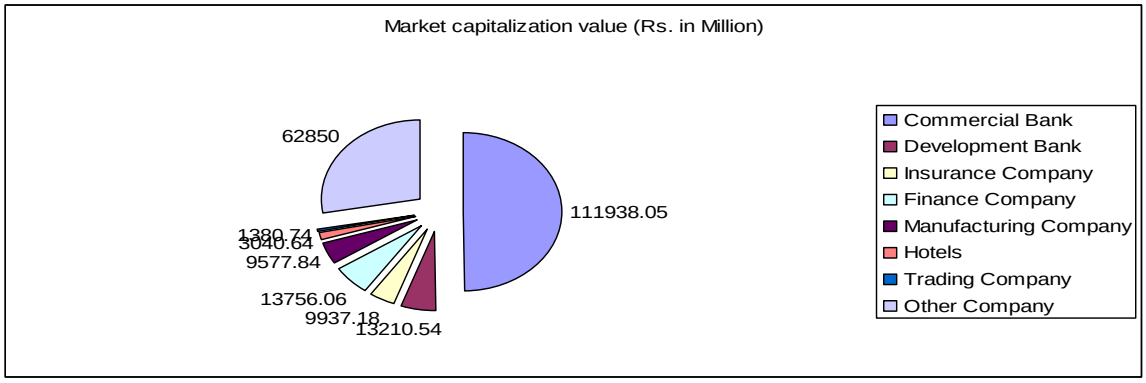
Besides, commercial banks, there are other sectors also who actively participate in the stock market, namely, manufacturing and processing company, finance company, insurance company, hotel etc, the market capitalization of these sectors including commercial banks are presented in the table 4.13.

Table 4.13 Sector-wise Company Market Capitalization.

S.N	Sector	Market capitalization value (Rs. in Million)	Percent
1	Commercial Bank	111938.05	49.60
2	Development Bank	13210.54	5.85
3	Insurance Company	9937.18	4.40
4	Finance Company	13756.06	6.10
5	Manufacturing Company	9577.84	4.24
6	Hotels	3040.64	1.35
7	Trading Company	1380.74	0.61
8	Other Company	62850.00	27.85
	Total	225691.05	100

The table 4.13 implies that, Commercial Banks have the majority value of total market share, while most of other sector excluding commercial banks is not able to touch the double digit percentage. This shows that Nepal's only stock market is totally dominated by a trading of the shares of commercial banks.

Diagram 4.18 Sector-Wise Company Market Capitalization



Sector-wise NEPSE Index

The sector-wise NEPSE index is presented in the table 14 given below. This will be use to calculate the expected return, Standard deviation, Variance and the coefficient of variance of each sector. The calculation is shown in the Annex II A-F. Since, the sector, development bank, is recently differentiated, it is not used in the calculation and the sectors finance company and Insurance Company are calculated jointly.

Table 4.14 Sector-Wise NEPSE Index

Fiscal Year	Commercial Bank	MFG & Proc Company	Hotel	Trading Company	Fin & Ins. Company	Other
2001/02	219.35	273.67	216.51	102.50	288.76	77.34
2002/03	199.90	250.13	196.68	94.56	224.39	48.56
2003/04	231.97	255.58	184.41	95.01	216.81	142.65
2004/05	328.14	240.21	214.33	287.93	310.32	206.90
2005/06	490.84	312.20	291.12	344.63	371.93	499.70
2006/07	789.21	348.63	251.47	155.37	542.14	181.12
2007/08	985.65	423.66	370.88	204.08	985.00	768.26
2008/09	780.87	434.32	367.42	295.83	677.01	738.99
2009/10	456.93	427.89	400.26	282.08	472.95	540.48
2010/11	328.70	591.52	412.59	241.97	355.46	492.31

Table 4.14 shows the movement of NEPSE index of each industry and weighted of all, which we call NEPSE index. Index of commercial banks in FY 2001/02 is 219.35 and decreased in FY 2002/03. After FY 2002/03 index of commercial banks increases up to FY 2007/08 and decreases to FY 2010/00. The index of Mfg and Proc has been increasing trend from FY 2001/02 to FY 2010/11. The index of Hotel is decreases from FY 2001/02 to FY 2003/04 and increases up to FY 2010/11.

The index of Trading Company in FY 2001/02 is 102.50 and decreases up to FY 2003/04. Then after increased two years and decrease one year. And again increased from fy 2007/08 to FY 2009/10, and then decreased to FY 2010/11. The index of Finance and Insurance Company had Decreasing trend to FY 2003/4 and has increasing trend to FY 2007/08. then after goes on decrease from FY 2008/09 to FY 2010/11. The index of Other Sector in beginning is 77.34 and decreased to 48.56. After the FY 2002/03, it increases up to FY 2005/06. And then decrease to FY 2006/07 then again increase one year and goes on decreasing trend up to FY 2010/11.

From the observation of the sectors wise NEPSE index, it was found that Manufacturing and Processing Companies index is constant and moves along with the aggregate market index. Thus, the investors can use market index to measure Mfg and Proc Company. Security movement and examine the factors that influence the security price movement although the market index is aggregate market.

The sector wise comparison is again made in this section based on variance, standard deviation and coefficient of variation. The comparison of the common stock investment of different sectors is made on the bases of relative dispersion, coefficient of variation.

The comparison of the common stock investment of different sector is shown in the following Table 4.15.

Table 4.15 Comparison of the Common Stock Investment of Different Sector.

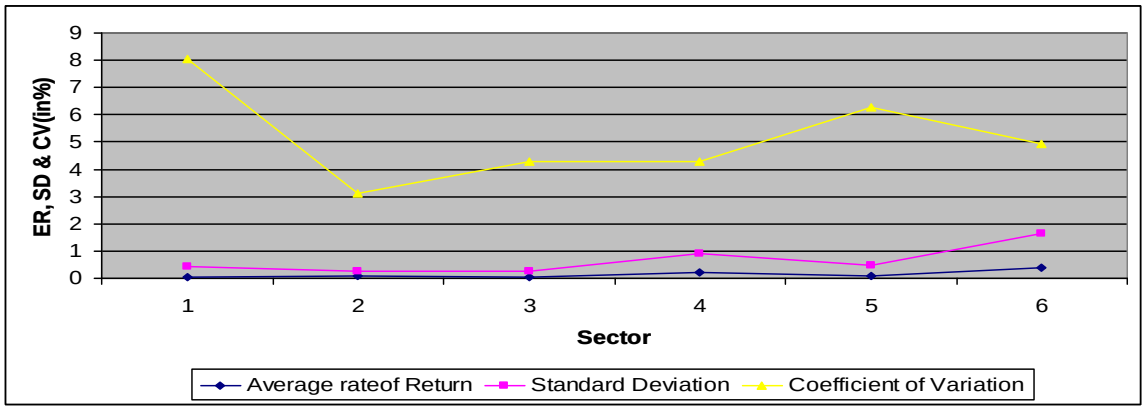
Sector	Average Rate of Return	Variance	Standard Deviation	Coefficient of Variation	Ranking of Investment based on CV.	Remarks
Banking	0.0507	0.1484	0.3852	7.5976	6	Highest Risk
Mfg and Proc.	0.0684	0.0343	0.1851	2.8523	1	Lowest Risk
Hotel	0.0559	0.0505	0.2248	4.0215	4	
Trading	0.2067	0.4864	0.6974	3.3707	3	
Fin. & ins.	0.0671	0.1524	0.3904	5.8182	5	
Others.	0.3767	1.6515	1.2496	3.3172	2	

Table 4.15 shows that Mfg and Proc company sector had the lowest risk and banking sector has the highest risk. The Mfg and Proc Company has lowest C.V. and the commercial bank has highest C.V. It can be seen that because of the extraordinary increment in NEPSE index of other sector in FY 2010/11, The average rate of return of Others Company has been greatest than other. Apart from that, we still can find that Trading are the best while expecting the good return from the investment, while the risk associated with it is also big.

The risk associated with Mfg & Proc, company is the lowest however its average rate of return is high expect Trading. Similarly, according to the analysis of Standard Deviation, Trading Company are the most risky sector compared to the Other Sectors.

From the analyses of variance, other sector is the most risky sector compared to the other sectors. The graphical diagram is shown in 4.19.

Diagram 4.19 Comparative Analysis of Sector-wise Company



4.9 Analysis of Stock Market

In Nepal there is only one market where stock is traded and that is Nepal Stock Market (NEPSE). Overall market movement is represented by market index (i.e. NEPSE Index), Market portfolio return. Its variance, standard deviation and coefficient of variation are shown in the table 1.16.

Table 4.16 Calculation of Expected Return, Variance, S.D. and C.V. of Overall Market

Fiscal Year	Market Index	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$(R_m - \overline{R}_m)$	$(R_m - \overline{R}_m)^2$
2001/02	227.54	-	-0.0976	0.0095
2002/03	205.46	-0.0970	-0.1946	0.0379
2003/04	222.04	0.0807	-0.0169	0.0003
2004/05	286.67	0.2911	0.1935	0.0374
2005/06	386.83	0.3494	0.2518	0.0634
2006/07	683.95	0.7681	0.6705	0.4496
2007/08	963.36	0.4085	0.3109	0.0967
2008/09	749.10	-0.2224	-0.3200	0.1024
2009/10	477.76	-0.3622	-0.4598	0.2114
2010/11	362.85	-0.2405	-0.3381	0.1143
		$\sum R_m = 0.9757$		$\sum (R_m - \overline{R}_m)^2 = 1.1229$

We have,

Expected Return $(\overline{R}_m)$ $= \frac{\sum R_m}{n} = \frac{0.9757}{10} = 0.0976$

Standard Deviation (σ_m) $= \sqrt{\frac{\sum(R_m - \overline{R}_m)^2}{n-1}} = \sqrt{\frac{1.1229}{10-1}} = 0.3532$

Variance $(\sigma_m)^2$ = (standard deviation) ^{2} = $(0.3532)^2 = 0.1248$

Coefficient of Variation (C.V.) = $\frac{\pm_m}{\overline{R}_m} \times 100\% = \frac{0.3532}{0.0976} \times 100\% = 361.89\%$

The NEPSE index was 227.54 in the year 2001/02. But decrease in 2002/03 year again the NEPSE index was increased from the FY 2003/04 to 2007/08. But decreased two year and again NEPSE increased to FY 2010/11. Similarly the expected return of the market is 9.76%, its variance is 12.48%, while its standard deviation i.e. risk is 35.32% and coefficient of variance is 361.89%. The movement of the NEPSE is given in the diagram 4.20.

Diagram 4.20 Annual return of the stock Market

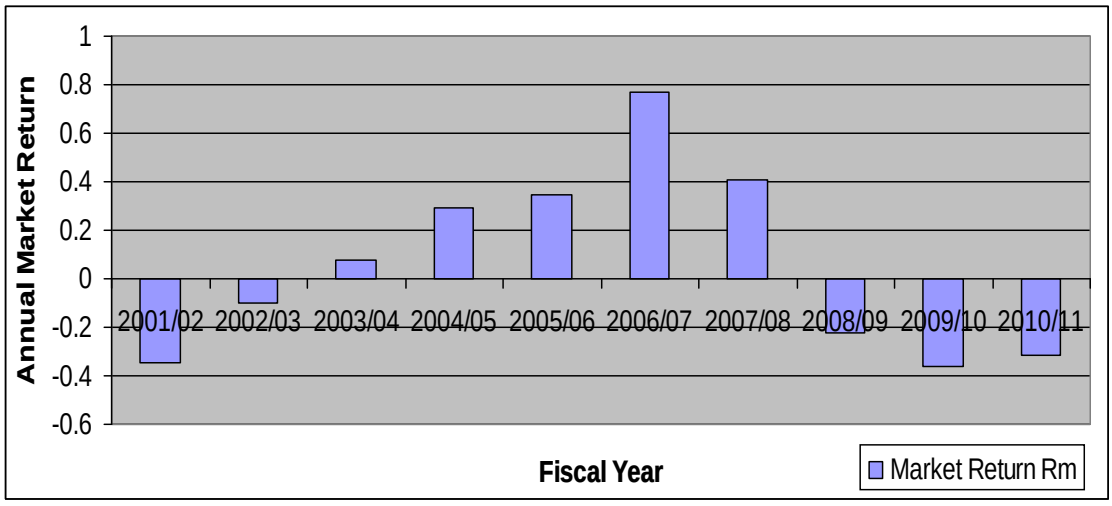
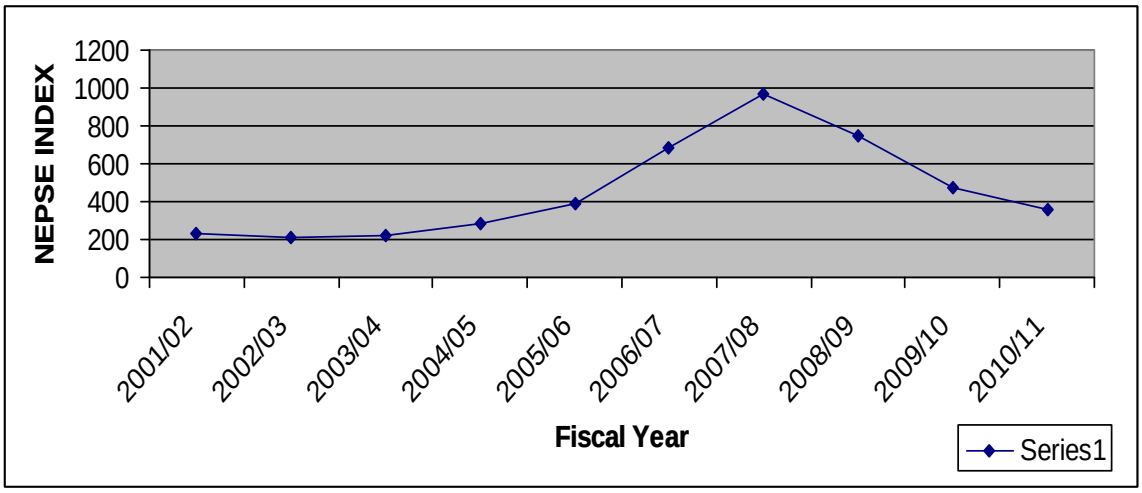


Diagram 4.21 Movement of NEPSE Index



4.10 The Beta Coefficient, Correlation Coefficient and the Total Risk of the Banks.

In the following table, the beta coefficient Systematic Risk and Unsystematic Risk of each selected banks are presented. Calculations of these measures are presented in the Annex A-E. The first part of the section analyzes the beta coefficient of the individual banks. And the second part decomposes the total risk into systematic and unsystematic risk.

Standard deviation measure the total risk of an investment and the coefficient of variation measure the risk per unit of return. But the beta coefficient measures the market sensitivity or systematic risk of an investment. The beta coefficient of an individual stock provides the clear pictures about the stock with market. It measure the stock volatility relative to that of the average stock.

An average stock is that which tends to move up or down with the general market as measured by some index. Here, NEPSE index is taken into consideration to measures the movement of the general market regarding the stock of listed commercial Banks. Higher beta indicated the greater reaction by individual common stock will the given movement in the market status, thus they are aggressive stock and vice-versa. Thus, beta coefficient shows the degree of risk ness of each stock in relation to the general market.

Table 4.17 Beta Coefficient and Total Risk of selected commercial banks & Correlation coefficient between markets return and return of sample banks.

Commercial Bank	Beta Coefficient	Correlation Coefficient	Systematic Risk	Unsystematic Risk
NABIL	3.6562	0.7395	1.2920	0.4551
SCBNL	3.3670	0.8011	1.1896	0.2954
NIBL	1.4776	0.7504	0.5221	0.1736
HBL	1.4776	0.9572	0.5221	0.0233
BOKL	2.1627	0.7562	0.7641	0.2464

Table 4.17 shows that all the banks have the greater beta coefficient, implying that these banks stock are highly sensitive with market and are aggressive. Accordingly to the beta calculation, NABIL and SCBNL stocks are highly aggressive, so 1% increase in market return will rise these bank's return by 3%.

Similarly, all the banks stocks return are positively correlated with the return of the market, which explains the positive nature of the beta coefficient. However, the correlation coefficient of HBL is almost about +1, which implies that the diversification of the stock wick not reduce risk significantly.

By analyzing the Table 4.17 all banks have beta coefficient more than one, which shows that they are much more sensitive to the market in comparison to the average stock in the market. Therefore, the stocks of listed commercial banks are much more risky as compared to the average stick in the market, it is also be said that the banks that have been established in the early Period to have more or less stable beta. In contrast, bank which were established lately do have higher valued of beta, beta coefficient being more than 3 in a normal level of income generation by firm and non-peculiar growth in the capitalization might be misleading which is also a fact in this analysis.

The second part of this section divides the total risk into systematic and unsystematic risk. Systematic risk measures the variability of return that is due to microeconomic factors that affects all risky assets. Because it affects all risky assets, it cannot be eliminated by diversifiable risk. Unsystematic risk measures the risk that is unique to assets, derived from its particular characteristic. It can be eliminated in a diversified portfolio, thus also called diversifiable risk.

The table 4.17 shoes all the shares of the sampled banks have systematic risk more than unsystematic risk.

4.11 Examining a whether the shares of the Commercial Bank are fairly priced.

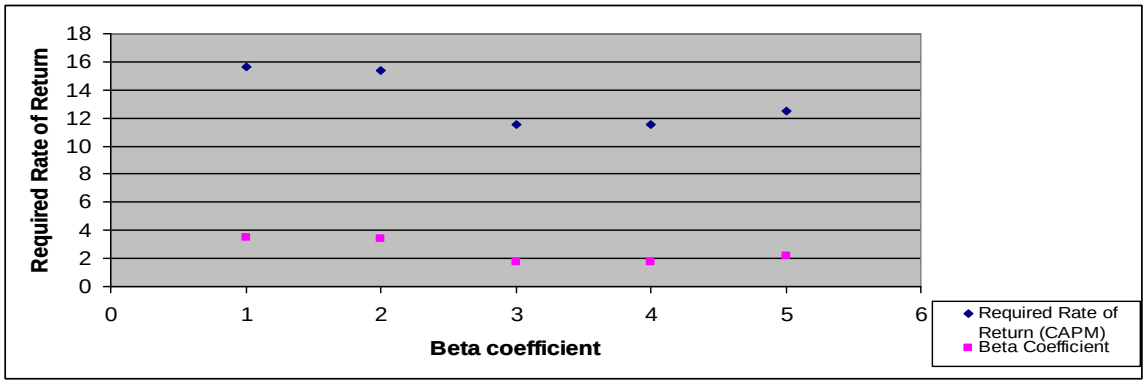
The CAPM Modal was used to determine the required rate of return. And the required rate of return implied by CAPM was compared with the computed expected or average rate of return to determine whether the share is overpriced, under priced or properly priced. The result obtained from the model is presented in table 4.18.

Table 4.18 Result obtained from the CAPM Model.

Name of Sampled Bank	Required Rate of Return (CAPM)	Average Rate of Return	Priced Situation	Beta Coefficient
NABIL	15.64	112.82	Under Price	3.50
SCBNL	15.34	152.07	Under Price	3.37
NIBL	11.50	30.77	Under Price	1.74
HBL	11.50	28.56	Under Price	1.74
BOKNL	12.49	50.88	Under Price	2.16

Table 4.18 shows all the shares of the examined Banks are not in equilibrium or fairly priced. All the shares have average rate of return greater than required rate of return and are under priced. So, all the shares of examined commercial Banks are attractive for investment since there return is higher than the market. Also, there is possibility of positive long term priced trend because theoretically the market price of an over priced/Under priced shares will fall/rise in order to increase the average or expected return equals the required return.

Diagram 4.22 Scatter of relationship between risk and return.



4.12 Construction of an Optimal Portfolio

The Construction of an optimal portfolio is made on the Single index model. Then the portfolio return and risk are calculated. The date needed to find optimal portfolio is show on table 4.19.

Table 4.19 Data needed to find optimal portfolio.

Name of the Banks	Average return R_i	Excess Return $(R_i - R_f)$	Beta i	Unsystematic Risk $\pm^2_{ei}$	Excess Return over $(R_i - R_f)/_i$	Possible cut-off rate, C_i
Nabil	112.82	105.41	3.50	45.51	30.12	23.2160
SCBNL	152.07	144.66	3.37	29.54	42.94	33.5365
NIBL	30.77	23.36	1.74	17.36	13.43	29.6732
HBL	28.56	21.15	1.74	2.33	12.16	19.3601
BOKL	50.88	43.47	2.16	24.64	20.13	19.4199

Table 4.20 The Risk and Return of the Optimal Portfolio is as follows:

Return	Total Risk	Systematic Risk	Unsystematic
0.3009	0.4159	0.3945	0.0214

Table 4.20 shows the risk and return of an optimal portfolio. The total risk has been decomposed into systematic and unsystematic risk. By comparing with the risk of individual Bank of the portfolio it has been decreased after construction of an optimal portfolio.

4.13 Relation among the Returns of Selected Banks

It was found that, the relation of returns between individual stocks with the market return is positively correlated as shown in the table 4.17. Meanwhile, in this section, the relation among the returns of selected banks itself is tried to analyzed. For this the correlation coefficient is widely used and its calculation is given in the Annex III. The table shows bellows clearly depicts the result of diversification of these stocks.

Table 4.21 Relation among the Return of Selected Banks

	Nabil	SCBNL	NIBL	HBL	BOKL
Nabil	1	0.8325	0.7192	0.8083	0.7496
SCBNL		1	0.8499	0.8654	0.8940
NIBL			1	0.8131	0.9069
HBL				1	0.2355
BOKNL					1

Table 4.21, it was found that relation among the return of selected banks was positively correlated implying that diversification will reduce the risk associated with each stock.

4.14 Analysis of EPS with respect to Time Series Analysis

In this section the study tried to analyze a relation between EPS with respect to time, by using the least square method. The calculation is shown in the Annex-V-A-E. in some case, when the number of year is even, to avoid fractions, in the calculation the units X as $\frac{1}{2}$ year (or 6 months) is taken. Otherwise, the middle year is taken as the unit X, the time series analysis of each bank.

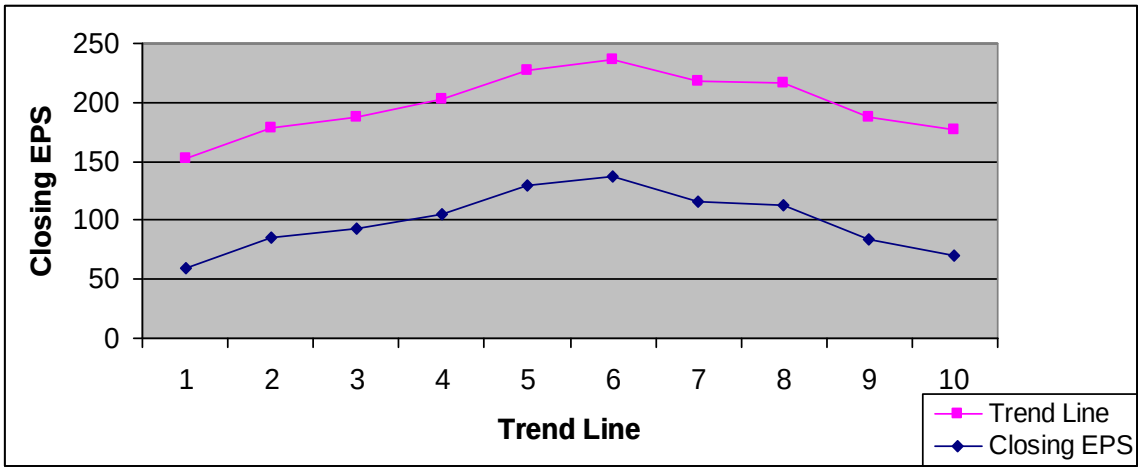
A. Nabil Bank Ltd.

Table 4.22. Calculation of Trend Line of Nabil Bank Ltd.

Fiscal Year	Closing EPS	X (X=2 Year Mid, Year)	Trend Line (Y = 99.21 + 0.7258 X)
2002	59.30	-9	92.68
2003	84.66	-7	94.13
2004	92.61	-5	95.58
2005	105.49	-3	97.03
2006	129.21	-1	98.48
2007	137.08	1	99.94
2008	115.86	3	101.39
2009	113.44	5	102.84
2010	83.81	7	104.29
2011	70.67	9	105.74

The EPS of Nabil Bank is highest on the year 2007 and less in the FY 2002. The table shows that, EPS of Nabil Bank increasing from 2002 to 2007. After the year 2007, EPS goes in decreasing. But, the trend line of the Nabil Bank is increasing.

Diagram 4.23 Trend Line of EPS of Nabil Bank Ltd.



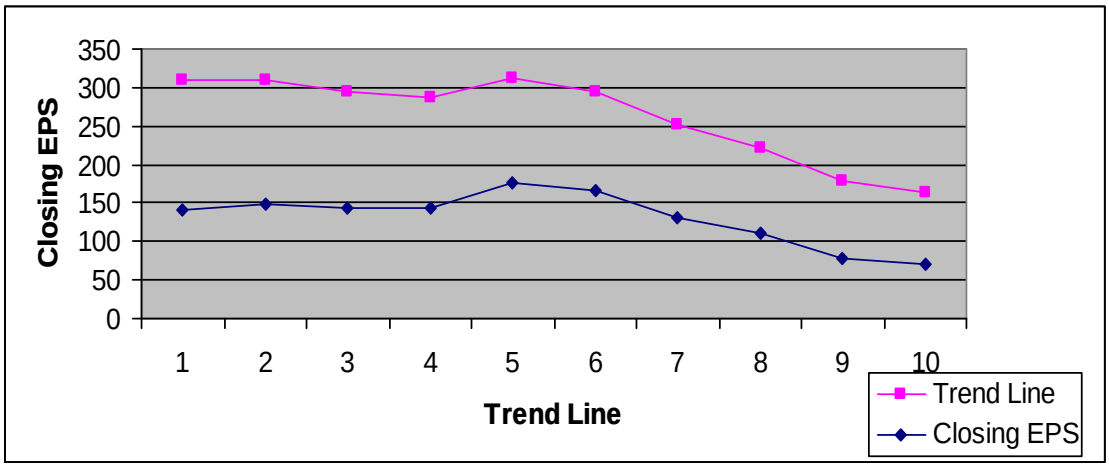
B. Standard Chartered Bank Nepal Ltd.

Table 4.23 Calculation of Trend Line of SCBNL

Fiscal Year	Closing EPS	X (X=2 Year Mid, Year)	Trend Line (Y = 131.02 – 4.1165X)
2002	141.13	-9	168.0685
2003	149.30	-7	159.8355
2004	143.55	-5	151.6025
2005	143.93	-3	143.3695
2006	175.84	-1	135.1365
2007	167.37	1	126.9035
2008	131.92	3	118.6705
2009	109.99	5	110.4375
2010	77.65	7	102.2045
2011	69.51	9	93.9715

The EPS of SCBNL is highest on the year 2006. Apart from that year, all the year has measure the less EPS which is the reason why the trend line is decreasing pattern. The decreasing trend of the bank on EPS is clearly depicted by the diagram 4.24

Diagram 4.24 Trend Line of EPS of SCBNL



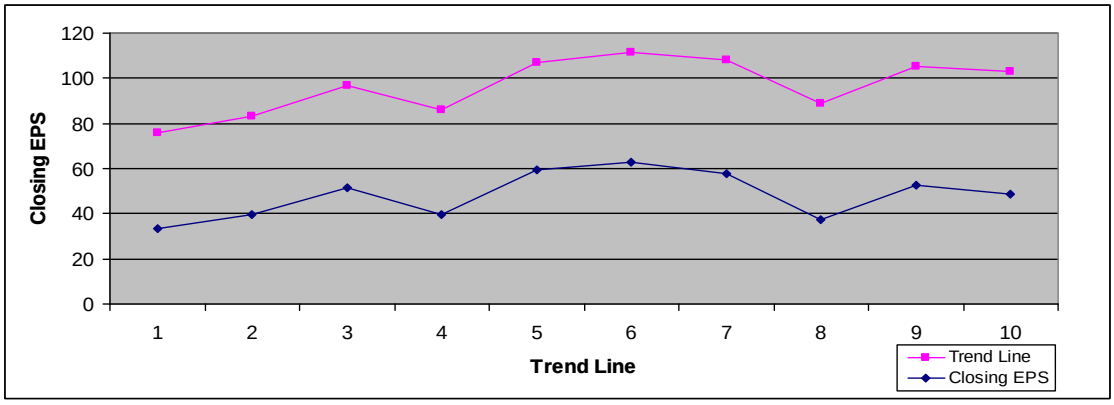
C. Nepal Investment Bank Ltd.

Table 4.24 Calculation of Trend Line of NIBL.

Fiscal Year	Closing EPS	X (X=2 Year Mid, Year)	Trend Line (Y = 48.30 + 0.6514 X)
2002	33.59	-9	42.44
2003	39.58	-7	43.74
2004	51.70	-5	45.04
2005	39.50	-3	46.35
2006	59.35	-1	47.65
2007	62.57	1	48.95
2008	57.87	3	50.25
2009	37.42	5	51.56
2010	52.55	7	52.86
2011	48.84	9	54.16

The EPS of NIBL was highest in 2007 and lowest 2002. Even though, after the year 2002, its EPS start to increase. Because of this, it shows the positive trend pattern. The positive trend of NIBL Bank is clearly shown by diagram 2.25.

Diagram 4.25 Trend Line of EPS of NIBL



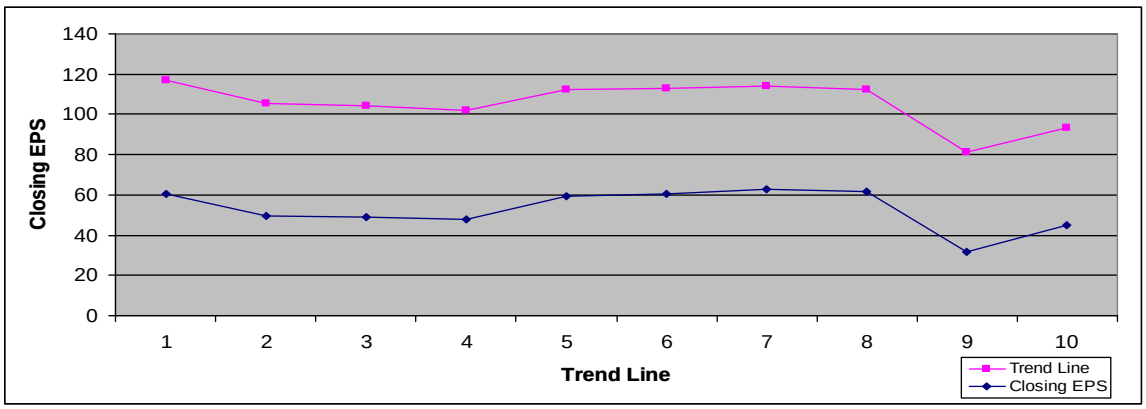
D. Himalayan Bank Ltd.

Table 4.25 Calculation of Trend Line of HBL.

Fiscal Year	Closing EPS	X (X=2 Year Mid, Year)	Trend Line (Y = 52.77 – 0.4660 X)
2002	60.26	-9	56.96
2003	49.45	-7	56.03
2004	49.05	-5	55.10
2005	47.91	-3	54.17
2006	59.24	-1	53.24
2007	60.66	1	52.30
2008	62.74	3	51.37
2009	61.90	5	50.44
2010	31.80	7	49.51
2011	44.66	9	48.58

The EPS of HBL was lowest in the year 2010/11. Apart from that year, all the year has measure the more EPS which is the reason; the trend line goes on decreasing pattern. The decreasing trend of the bank on EPS is clearly shown on diagram 4.26

Diagram 4.26 Trend Line of EPS of HBL.



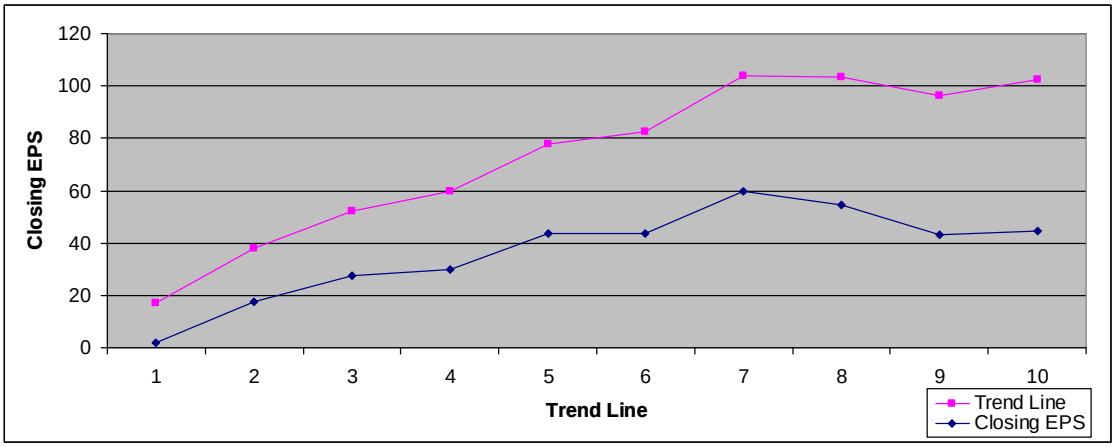
E. Bank of Kathmandu Ltd.

Table 4.26 Calculation of Trend Line of BOKNL.

Fiscal Year	Closing EPS	X (X=2 Year Mid, Year)	Trend Line (Y = 36.67 + 2.3799 X)
2002	2.00	-9	15.25
2003	17.72	-7	20.01
2004	27.50	-5	24.77
2005	30.10	-3	29.53
2006	43.67	-1	34.29
2007	43.50	1	39.05
2008	59.94	3	43.81
2009	54.68	5	48.57
2010	43.08	7	53.33
2011	44.51	9	58.09

The EPS of BOKL is lowest on the year 2002. Apart from that year, all the year has measured the more EPS which is the reason why the trend line is increasing pattern. The increasing trend of the bank on EPS is clearly depicted by the diagram 4.27.

Diagram 4.27 Trend Line of EPS of BOKNL.



4.15 Findings

Based on the analysis of data and their interpretation, the major findings of the study in relation to the objectives set could be summarized as follows:

- Through NEPSE was established in 1983. its foundation was already installed in 1976 with the establishment of securities market center, which was later changed into SEC in 1984 after the securities exchange act was promulgated. Between 1984 to1993, the capital market was not fully developed as expected but after the economic, liberalization in the 90s: a true capital market was evolved. In this backdrop, Nepalese stock market is regarded as an emerging market in LDCs. However, the capital market in Nepal has witnessed high growth in those periods of late, the market capitalization in the FY 2010/11was recorded at 323484.34 million rupees.

- The number of companies listed in NEPSE increased to 333 in FY 2010/11 from 135 in FY 2005/06. Stock market activities in terms of total amount of listed shares.

- Common stock of SCBNL is yielding the highest average rate of return of 152.07% lowest is 28.56% in the case of HBL. Regarding the total risk, common stock of NIBL consists of highest of 2.2612 which is riskiest among the sample whereas the stock of HBL is found least risky as it has only 54.54 of total risk.

- Though the coefficient of variation, it is found that there is highest per unit of risk of return for the stock of NIBL and lowest of SCBNL. Stock of Nabil Bank Ltd and BOKNL has less per unit of Risk than HBL.

- Common stock of Other Sector is yielding the highest average rate of return 37.67% whereas it is lowest in the case of stocks of Banking. Regarding the risk based on standard deviation, common stock of Other Sectors has the highest risk and Lowest is of the stock of Manufacturing and Processing Sectors.

- From the analysis it is found that all the individual sampled banks have more average rate of return than market. And the relative measure of risk, CV.

discloses that all the sampled banks have less per unit of risk of return than overall market. Further, it was found that the risk of common stock of all the sampled banks is less than market.

- Return on all the shares of the sampled commercial banks has positive correlation of less than +1 with the returns on market. this implies that return on individual shares move little less than the proportionate movements of the returns on market portfolio consisting all shares.

- While comparing risk and return of different sector with market, it is found that only a Trading and Other's sectors have more average return than market. But, the Standard Deviation Banking, Trading Company Finance and Insurance Company and Others Sectors have more than market. The C.V. suggests that Mfg and Proc Company Trading and Others sectors have less per unit of risk of return than market.

- Return on the shares of the different sectors has positive correlation of less than +1 with the returns on market.

- The stock of sampled banks excluding NIBL and HBL are more aggressive to market changes since their respective beta coefficients are higher than that of average market.

- The stocks of sampled banks have systematic risk more than unsystematic risk.

- The CAPM model suggests that all the shares of individual banks have average rate of return is greater than required rate of return and are under-priced.

- By using shape single index model an optimal portfolio is made consisting of shares of HBL and BOKL. The portfolio return is of 0.3009 and risk 0.4159.

- Although the overall objective is to study about investment in shares of commercial bank in Nepal from the perspective of general investors, it is mainly concentrated on the risk and return elements of the stocks. Since it is the two most important factors for investment. The capital market for Nepal has grown significantly, so investor's investment opportunity has also been increased.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter deals with the finding and conclusion derived from the study of risk and return of the common stock of five sampled commercial banks. This chapter consists of three sections which are below in systematic form, first section provides the summery of the study and second section draws the contusion of the study, finally, the third section purposes recommendations to deal the problem observed on the basis of finding.

5.1 SUMMARY

Common stockholders of a company are tradeoff between risk and return. Risk and return is the part of the business world for the analysis. There is positive relationship between risk and return. If there is no risk, there is no return. Risk and return measures the performance on any corporate house. It is the key factor in the financial sector and could be a good indicator to the prospect who one to make investment on the securities of enterprises. For any investment decision, investors want to the expected rate of return from the investment and risk associated with in investment. The economy is growing rapidly, which forces the change in the variable of world economy in galloping manner. No investors would like to make their investment in the risky asset which holds higher risk and yield lower rate of return.

Banking sector is the most dynamic part of the economy which collects unused funds and mobilizes it in needy sector. It is heart of trade, commerce and industry. In Nepal joint venture and private sector bank has performed sound results than the government sector bank because high skill management, efficiency and proper risk management. Capital market plays vital role to develop the economic world. NEPSE in Nepal is the heart of capital market. Most of the investor is least aware about the risk and return factor associated in each investment. They make their investment in hunches and their own intuition rather than calculating the expected rate of return and comparing it market rate of return. The present study has been analyzed the risk and return parameter of common stock investment. Common stock is regarded most risky security and one of the major paper asset, traded in security market.

The study was about all 33 commercial banks listed in NEPSE. Our of them only five listed commercial banks were considered as the sample of the study which are Nabil Bank Ltd. Standard Chartered Bank Ltd. Nepal Investment Bank Ltd. Himalayal Bank Ltd. and Bank of Kathmandu Ltd. to conduct the study, analytical and descriptive research approach was adopted for the reading available historical data which was collected form annual report of NEPSE, SEBON, and respective sampled Banks. The study covered the relevant date of only 10 years. This study was conducted wish the main objective of analyzing the risk and return attributes of the investment in share of the commercial bank. The study was also focused on analyzing whether risk and return of share of sampled bank are correctly priced and constructing and optional portfolio. The study also aimed to enhance the analytical power of the investors in capital market.

The study covered a comprehensive review of the published and unpublished work by different academicians and scholars to build the conceptual framework. In addition methods and tools used to analyze the defined objectives. Then the collected date was tabulated, analyzed, interpreted and presented in next chapter to meet the objectives of the research.

According to total risk, it was found that Nabil Bank Ltd was mostly riskiest than other sampled Bank and low riskiest bank was Himalayan Bank Ltd. but, the highest return was of common stock of Standard Chartered Bank Ltd. and lowest return on sample commercial bank of Himalayan Bank Ltd. The common stock of SCBNL had lowest per unit of risk of return and highest was NIBL from the analysis it was found that all the common stick of sampled banks had higher average rate of return and lesser per unit of risk of return and market return and risk. In additional the return on shares of sampled commercial banks was positively correlated with the market return.

The result showed that common stock of Others Sector had highest average rate of return when compared with the market only Banking sector, Trading Company and Other Sector’s average rate of return was higher than market. Further only manufacturing and processing, Trading and other Sector have less per unit of risk than market. The common stock of all sampled banks was aggressive stock.

The common stocks of all sample banks are found not to be fairly priced and are under priced. An optimal portfolio was constructed consisting of shares of SCBNL and NIBL where risk reduction was made possible. The result of time series showed there was decreasing trend of EPS of all banks except HBL and BOKL.

Finally, conclusions have been drawn and several recommendations have made based on empirical findings of the study.

5.2 CONCLUSION

The study tries to get the empirical result of the investment on shares of the commercial banks from risk and return objective. The shares of commercial banks of Nepal are heavily treaded in the stock market and therefore, these shares play a key role in determination of stock exchange indicators.

The average mean return of market portfolio, as measured by the percentage change in was index is 9.76% over the sampled period. All the shares of sampled banks produced higher rate of return and has lesser per unit of risk of return than market portfolio. The common stock investment of SCBNL is best because of the lowest relative dispersion and of NIBL lowest due to highest relative dispersion among sampled banks. Standard deviation shows that Nabil Bank Ltd returns has most fluctuated and of HBL least fluctuated.

The empirical result shows that return on shares of the sampled banks are positively correlated with the return on market with a value of less than +1. it implies that the returns on individual shares move little less than the proportionate movement of the returns on markets and risk reductions is possible by making the portfolio.

The shares of the sampled bank have systematic risk more than unsystematic risk. On systematic risk Nabil Bank and SCBNL are more than 1 and other are less than 1.

The common stock of all sample banks have Beta coefficient more than 1 so that they are aggressive stocks. Comparing the sample data NIBL and HBL have lowest beta coefficient and Nabil bank has the highest beta coefficient. The result shows that the stock of NIBL and HBL is the least defensive stock revealing least risky than market and Nabil Bank Ltd is most aggressive stick revealing most risky in the market

further, it is observed that the banks that have been established in the early period do have higher values of beta.

In comparison is made among the banks based on market capitalization to find the best one. In terms of market capitalization the ranking of the sampled banks from highest to lowest is SCBNL, Nabil, NIBL, HBL and BOKL from the observation of the sector-wise.

From the analysis it appears that none of the shares are fairly priced. All the shares have average rate of return greater than required rate of return and are under priced. So, all the shares of examined commercial banks are attractive for investment and also there is possibility of positive long term priced trend because theoretically the market price of and under priced share will rise.

An optimal portfolio is made consisting of shares of HBL and BOKL. The total risk has been decreased after construction of an optimal portfolio.

Thus, conclusion remarks that investing in shares of commercial bank is risky in the sense that its return varies depending on how the company prospers. The result of this study shows investment in common stock of commercial banks has less risk and more return when compared with the market risk and return. This is due to the regular disclosure of the financial position; market penetration and extension and continual declaration of dividend with encourage the investors to buy the shares of Commercial Banks.

5.3 RECOMMENDATION

The recommendation is made on the empirical findings of the study and observation of the Nepal stick market. The following recommendation is made:

Investors are recommended nit to invest too much, too fast without doing the necessary study and preparation on acquiring the essential methods and skills of investment.

The investors are recommended to determine a value of share based on the fundamental earnings, dividend position and risks inherent in company.

Before making investment decisions in securities, it is recommended to analyze value of trading, breadth of the market, behavior of major stock group and behavior of new issues.

All the stock in the sampled are under priced. So, investors are recommended to buy those securities.

It is recommended to make portfolio investment for diversifying and therefore, reducing the risk based on developed portfolio construction model.

The regulatory bodies are recommended to make effective control mechanism to stoop excessive price fluctuation in the stock market.

Till today, risk free security like treasury bills are managed by NRB. It should be managed by NEPSE instead of NEB and trading of these securities in NEPSE would provide opportunity to general investors to diversify their fund properly to construct optimal portfolio. This will also increase the strength of stock market and more specifically NEPSE as well. Furthermore, Treasury bill will be more popular among the general investors.

It is recommended to continue the research study on risk and return characteristic of common stock investment.

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Document of World Bank Report, 2002

ANNEX I

Calculation of Expected Return, Variance, Standard Deviation and Coefficient of Variation of each sector in the Stock Market,

A. Commercial Bank

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	219.35	-0.4289	-0.4796	0.2300
2002/03	199.90	-0.0887	-0.1394	0.0194
2003/04	231.97	0.1604	0.1097	0.0120
2004/05	328.14	0.4146	0.3639	0.1324
2005/06	490.84	0.4958	0.4451	0.1981
2006/07	789.21	0.6079	0.5572	0.3105
2007/08	985.65	0.2489	0.1982	0.0393
2008/09	780.87	-0.2078	-0.2585	0.0668
2009/10	456.93	-0.4148	-0.4655	0.2167
2010/11	328.70	-0.2806	-0.3313	0.1098
		0.5068		1.3351
	Expected return $(\overline{R}_j)$	0.0507		

* Closing NEPSE index of commercial Banks in the year 2000/2001 is Rs. 384.08

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{0.5068}{10} = 0.0507$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum (R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{1.3351}{10-1}} = 0.3852$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.3852)^2 = 0.1484$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.3852}{0.0507} \times 100\% = 759.76\%$

B. Manufacturing and Processing Company

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$

2001/02	273.67	-0.2164	-0.2848	0.0811
2002/03	250.13	-0.0859	-0.1543	0.0238
2003/04	255.58	0.0218	-0.0466	0.0022
2004/05	240.21	-0.0603	-0.1287	0.0166
2005/06	312.20	0.2997	0.2313	0.0535
2006/07	348.63	0.1167	0.0483	0.0023
2007/08	423.66	0.2152	0.1468	0.0216
2008/09	434.32	0.0252	-0.0432	0.0019
2009/10	427.89	-0.0148	-0.0832	0.0069
2010/11	591.52	0.3823	0.3139	0.0985
	Total	0.6835		0.3084
	Expected return $(\overline{R}_j)$	0.0684		

* Closing NEPSE index of Mfg and Proc Co. in the year 2000/2001 is Rs. 349.3

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{0.6835}{10} = 0.0684$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum(R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{0.3084}{10-1}} = 0.1851$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.1851)^2 = 0.0343$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.1951}{0.0684} \times 100\% = 285.23\%$

C. Hotel

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	216.51	-0.2568	-0.3127	0.0978
2002/03	196.68	-0.0916	-0.1475	0.0218
2003/04	184.41	-0.0624	-0.1183	0.0140

2004/05	214.33	0.1622	0.1063	0.0113
2005/06	291.12	0.3583	0.3024	0.0914
2006/07	251.47	-0.1362	-0.1921	0.0369
2007/08	370.88	0.4748	0.4189	0.1755
2008/09	367.42	-0.0093	-0.0652	0.0043
2009/10	400.26	0.0894	0.0335	0.0011
2010/11	412.59	0.0308	-0.0251	0.0006
	Total	0.5592		0.4547
	Expected return $(\overline{R}_j)$	0.0559		

* Closing NEPSE index of Hotel in the year 2000/2001 is Rs. 291.34

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{0.5592}{10} = 0.0559$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum(R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{0.4547}{10-1}} = 0.2248$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.2248)^2 = 0.0505$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.2248}{0.0559} \times 100\% = 402.15\%$

D. Trading Company.

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	102.50	-0.1129	-0.3196	0.1021
2002/03	94.56	-0.0775	-0.2842	0.0808
2003/04	95.01	0.0048	-0.2019	0.0408
2004/05	287.93	2.0305	1.8238	3.3262
2005/06	344.63	0.1969	-0.0098	0.0001
2006/07	155.37	-0.5492	-0.7559	0.5714

2007/08	204.08	0.3135	0.1068	0.0114
2008/09	295.83	0.4496	0.2429	0.0590
2009/10	282.08	-0.0465	-0.2532	0.0641
2010/11	241.97	-0.1422	-0.3489	0.1217
		2.0670		4.3777
	Expected return $(\overline{R}_j)$	0.2067		

* Closing NEPSE index of Trading Co. in the year 2000/2001 is Rs. 115.55

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{2.0670}{10} = 0.2067$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum(R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{4.3777}{10-1}} = 0.6974$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.6974)^2 = 0.4864$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.6974}{0.2069} \times 100\% = 337.07\%$

E. Finance and Insurance Company

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	288.76	-0.1139	-0.181	0.0328
2002/03	224.39	-0.2229	-0.29	0.0841
2003/04	216.81	-0.0338	-0.1009	0.0102
2004/05	310.32	0.4313	0.3642	0.1326
2005/06	371.93	0.1985	0.1314	0.0173
2006/07	542.14	0.4576	0.3905	0.1525
2007/08	985.00	0.8170	0.7499	0.5624
2008/09	677.01	-0.3127	-0.3798	0.1442
2009/10	472.95	-0.3015	-0.3686	0.1359
2010/11	355.46	-0.2484	-0.3155	0.0995
		0.6712		1.3714
	Expected return $(\overline{R}_j)$	0.0671		

* Closing NEPSE index of Fin and Ins Co. in the year 2000/2001 is Rs. 325.89

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{0.6712}{10} = 0.0671$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum (R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{1.3714}{10-1}} = 0.3904$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(0.3904)^2 = 0.1524$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{0.3904}{0.0671} \times 100\% = 581.82\%$

F. Others.

Fiscal year	NEPSE Index (NI)	$R_j = \frac{N_{It} - N_{It-1}}{N_{It-1}}$	$R_j - \overline{R}_j$	$(R_j - \overline{R}_j)^2$
2001/02	77.34	-0.5991	-0.9758	0.9522
2002/03	48.56	-0.3721	-0.7488	0.5607
2003/04	142.65	1.9376	1.5609	2.4364
2004/05	206.90	0.4504	0.0737	0.0054
2005/06	499.70	0.14152	-0.2352	0.0553
2006/07	181.12	-0.6375	-1.0142	1.0286
2007/08	768.26	3.24172	2.86502	8.2083
2008/09	738.99	-0.0381	-0.4148	0.1721
2009/10	540.48	-0.2686	-0.6453	0.4164
2010/11	492.31	-0.0891	-0.4658	0.217
		3.76666		14.0524
	Expected return $(\overline{R}_j)$	0.3767		

* Closing NEPSE index of Others in the year 2000/2001 is Rs. 192.9

Where,

N_{It} = This year closing price (Ending price)

N_{It-1} = Previous year closing MPS (Beginning price)

R = Return

Expected Return $(\overline{R}_j) = \frac{\sum R_j}{n} = \frac{3.7667}{10} = 0.3767$

Standard Deviation $(\sigma_j) = \sqrt{\frac{\sum (R_j - \overline{R}_j)^2}{n-1}} = \sqrt{\frac{14.0524}{10-1}} = 1.2496$

Variance $(\sigma_j)^2$ = (standard deviation) ^{2} = $(1.2496)^2 = 1.6515$

Coefficient of Variation (C.V.) = $\frac{\pm_j}{\overline{R}_j} \times 100\% = \frac{1.2496}{0.3767} \times 100\% = 331.72\%$

ANNEX II

Calculation of Beta Coefficient, Systematic and Unsystematic Risk of each to Commercial Banks

A. Nabil Bank Ltd.

Fiscal year	A=$(R_N - \overline{R_N})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-1.4275	-0.0976	0.1393
2002/03	-0.3731	-0.1946	0.0726
2003/04	0.6329	-0.0169	-0.0107
2004/05	1.0148	0.1935	0.1964
2005/06	2.2688	0.2518	0.5713
2006/07	2.543	0.6705	1.7051
2007/08	-0.4818	0.3109	-0.1498
2008/09	-1.0252	-0.3200	0.3281
2009/10	-1.5506	-0.4598	0.713
2010/11	-1.601	-0.3381	0.5413
		Total	4.1065

We have,

$$Cov(R_N, R_M) = \frac{\sum A \times B}{n-1} = \frac{4.1065}{10-1} = 0.4563$$

$$\text{Beta Coefficient } \beta_{NM} = \frac{Cov(R_N, R_m)}{\pm_m^2} = \frac{0.4563}{0.1248} = 3.6562$$

Similarly,

Correlation Coefficient between return of Nabil Bank ltd and Market Return is given by,

$$\circ_{NM} = \frac{Cov(R_N, R_m)}{\pm_N \times \pm_M} = \frac{0.4563}{1.7471 \times 0.3532} = 0.7395$$

Hence,

Systematic Risk of Nabil Bank Ltd = $\pm_N \times \circ_{NM} = 1.7471 \times 0.7395 = 1.2920$

Unsystematic Risk of Nabil Bank Ltd = $\pm_N \times (1 - \circ_{NM}) = 1.7471 \times (1\text{-}0.7395) = 0.4551$

B. Standard Chartered Bank Nepal Ltd.

Fiscal year	A=$(R_S - \overline{R_S})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.97449	-0.0976	0.0951
2002/03	-0.08009	-0.1946	0.0156
2003/04	0.18331	-0.0169	-0.0031
2004/05	1.48791	0.1935	0.2879
2005/06	2.66691	0.2518	0.6715
2006/07	1.41551	0.6705	0.9491
2007/08	-0.02529	0.3109	-0.0079
2008/09	-1.15339	-0.3200	0.3691
2009/10	-1.75669	-0.4598	0.8077
2010/11	-1.76369	-0.3381	0.5963
		Total	3.7814

We have,

$$Cov(R_S, R_M) = \frac{\sum A \times B}{n-1} = \frac{3.7814}{10-1} = 0.4202$$

Beta Coefficient $\beta_{SM} = \frac{Cov(R_S, R_m)}{\pm_m^2} = \frac{0.4202}{0.1248} = 3.367$

Similarly,

Correlation Coefficient between return of SCBNL and Market Return is given by,

$$\rho_{SM} = \frac{Cov(R_S, R_m)}{\pm_S \times \pm_M} = \frac{0.4202}{1.4850 \times 0.3532} = 0.8011$$

Hence,

Systematic Risk of SCBNL = $\pm_S \times \rho_{SM}$ = $1.4850 \times 0.8011 = 1.1896$

Unsystematic Risk of SCBNL = $\pm_S \times (1 - \rho_{SM})$ = $1.4850 \times (1\text{-}0.8011) = 0.2954$

C. Nepal Investment Bank Ltd.

Fiscal year	A=$(R_{NI} - \overline{R_{NI}})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.4394	-0.0976	0.0429
2002/03	0.0117	-0.1946	-0.0023
2003/04	0.0445	-0.0169	-0.0008

2004/05	-0.2758	0.1935	-0.0534
2005/06	1.4909	0.2518	0.3754
2006/07	0.6518	0.6705	0.4370
2007/08	0.4414	0.3109	0.1372
2008/09	-0.6590	-0.3200	0.2109
2009/10	-0.6895	-0.4598	0.3170
2010/11	-0.5772	-0.3381	0.1952
		Total	1.6592

We have,

$$Cov(R_{NI}, R_{M,}) = \frac{\sum A \times B}{n-1} = \frac{1.6593}{10-1} = 0.1844$$

$$\text{Beta Coefficient } \beta_{NIM} = \frac{Cov(R_{NI}, R_m)}{\pm_m^2} = \frac{0.1844}{0.1248} = 1.4776$$

Similarly,

Correlation Coefficient between return of Nepal Investment Bank Ltd and Market Return is given by,

$$\circ_{NIM} = \frac{Cov(R_{NI}, R_m)}{\pm_{NI} \times \pm_M} = \frac{0.1844}{0.6957 \times 0.3532} = 0.7504$$

Hence,

Systematic Risk of Nepal Investment Bank Ltd = $\pm_{NI} \times \circ_{HIM}$

$= 0.6957 \times 0.7504$

$= 0.5221$

Unsystematic Risk of Nepal Investment Bank Ltd = $\pm_{NI} \times (1 - \circ_{NIM})$

$= 0.6957 \times (1\text{-}0.7504)$

$= 0.1736$

D. Himalayan Bank Ltd.

Fiscal year	A=$(R_H - \overline{R_H})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.4072	-0.0976	0.0397
2002/03	-0.2383	-0.1946	0.0464
2003/04	-0.0607	-0.0169	0.001
2004/05	0.237	0.1935	0.0459
2005/06	0.6046	0.2518	0.1522
2006/07	1.0299	0.6705	0.6905

2007/08	0.3219	0.3109	0.1001
2008/09	-0.2111	-0.3200	0.0676
2009/10	-0.6949	-0.4598	0.3195
2010/11	-0.5809	-0.3381	0.1964
		Total	1.6593

We have,

$$Cov(R_{H,}\, R_{M,}) = \frac{\sum A \times B}{n-1} = \frac{1.6593}{10-1} = 0.1844$$

$$\text{Beta Coefficient } \beta_{HM} = \frac{Cov(R_H, R_m)}{\pm_m^2} = \frac{0.1844}{0.1248} = 1.4776$$

Similarly,

Correlation Coefficient between return of Himalayan Bank ltd and Market Return is given by,

$$\circ_{HM} = \frac{Cov(R_H, R_m)}{\pm_H \times \pm_M} = \frac{0.1844}{0.5454 \times 0.3532} = 0.9572$$

Hence,

Systematic Risk of Himalayan Bank Ltd = $\pm_H \times \circ_{HM} = 0.5454 \times 0.9572 = 0.5221$

Unsystematic Risk of Himalayan Bank Ltd = $\pm_H \times (1 - \circ_{HM}) = 0.5454 \times (1\text{-}0.9572)$

$= 0.0233$

E. Bank of Kathemandu Ltd.

Fiscal year	A=$(R_K - \overline{R_K})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-1.1749	-0.0976	0.1147
2002/03	-0.6515	-0.1946	0.1268
2003/04	0.2488	-0.0169	-0.004
2004/05	0.4319	0.1935	0.0836
2005/06	2.0447	0.2518	0.5149
2006/07	0.6853	0.6705	0.4595
2007/08	0.7607	0.3109	0.2365
2008/09	-0.5682	-0.3200	0.1818
2009/10	-0.9466	-0.4598	0.4352
2010/11	-0.8302	-0.3381	0.2807

		Total	2.4294

We have,

$$Cov(R_K, R_M) = \frac{\sum A \times B}{n-1} = \frac{2.4294}{10-1} = 0.2699$$

$$\text{Beta Coefficient } \beta_{KM} = \frac{Cov(R_K, R_m)}{\sigma_m^2} = \frac{0.2699}{0.1248} = 2.1627$$

Similarly,

Correlation Coefficient between return of Bank of Kathmandu ltd and Market Return is given by,

$$\rho_{KM} = \frac{Cov(R_K, R_M)}{\sigma_K \times \sigma_M} = \frac{0.2699}{1.0105 \times 0.3532} = 0.7562$$

Hence,

Systematic Risk of Bank of Kathmandu Ltd = $\sigma_K \times \rho_{KM} = 1.0105 \times 0.7562 = 0.7641$

Unsystematic Risk of Bank of Kathmandu Ltd = $\sigma_K \times (1 - \rho_{KM}) = 1.0105 \times (1\text{-}0.7562)$

$= 0.2464$

ANNEX-III

Calculation of Relation between the Banks in term of Return

A. Between Nabil Bank and SCBNL

Fiscal year	$R_N - \overline{R_N}$	$R_S - \overline{R_S}$	$(R_N - \overline{R_N})(R_S - \overline{R_S})$
2001/02	-1.4275	-0.9745	1.3911
2002/03	-0.3731	-0.0801	0.0299
2003/04	0.6329	0.1833	0.1160
2004/05	1.0148	1.4879	1.5099
2005/06	2.2688	2.6669	6.0507
2006/07	2.543	1.4155	3.5996
2007/08	-0.4818	-0.0253	0.0122
2008/09	-1.0252	-1.1534	1.1825
2009/10	-1.5506	-1.7567	2.7239
2010/11	-1.601	-1.7637	2.8237
			19.4395

We have,

$$\text{Cov}(R_N, R_S) = \frac{\sum (R_N - \overline{R_N})(R_S - \overline{R_S})}{n-1} = \frac{19.4395}{10-1} = 2.1599$$

Correlation Coefficient between return of Nabil Bank ltd and SCBNL is given by,

$$\circ_{NS} = \frac{Cov(R_N, R_S)}{\pm_N \times \pm_S} = \frac{2.1599}{1.7471 \times 1.4850} = 0.8325$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745\left[1-(0.8325)^2\right]}{\sqrt{10}} = 0.0655$$

$6PE = 6 \times 0.0655 = 0.393$

Since correlation of coefficient between Nabil and SCBNL is gather than 6PE, the value of correlation is significant.

B. Between Nabil Bank and NIBL

Fiscal year	$R_N - \overline{R_N}$	$R_{NI} - \overline{R_{NI}}$	$(R_N - \overline{R_N})(R_{NI} - \overline{R_{NI}})$

2001/02	-1.4275	-0.4394	0.6273
2002/03	-0.3731	0.0117	-0.0044
2003/04	0.6329	0.0445	0.0282
2004/05	1.0148	-0.2758	-0.2799
2005/06	2.2688	1.4909	3.3826
2006/07	2.5430	0.6518	1.6575
2007/08	-0.4818	0.4414	-0.2127
2008/09	-1.0252	-0.6590	0.6756
2009/10	-1.5506	-0.6895	1.0691
2010/11	-1.601	-0.5772	0.9241
			7.8674

We have,

$$\text{Cov}(R_N, R_{NI}) = \frac{\sum\left(R_N - \overline{R_N}\right)\left(R_{NI} - \overline{R_{NI}}\right)}{n-1} = \frac{7.8674}{10-1} = 0.8742$$

Correlation Coefficient between return of Nabil Bank ltd and NIBL is given by,

$$\circ_{NNI} = \frac{Cov(R_N, R_{NI})}{\pm_N \times \pm_{NI}} = \frac{0.8742}{1.7471 \times 0.6957} = 0.7192$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745\left(1-r^2\right)}{\sqrt{n}} = \frac{0.6745\left[1-(0.7192)^2\right]}{\sqrt{10}} = 0.1030$$

$6PE = 6 \times 0.1030 = 0.618$

Since correlation of coefficient between Nabil and NIBL is gather than 6PE, the value of correlation is significant.

C. Between Nabil Bank and HBL

Fiscal year	$R_N - \overline{R_N}$	$R_H - \overline{R_H}$	$(R_N - \overline{R_N})\left(R_H - \overline{R_H}\right)$
2001/02	-1.4275	-0.4072	0.5813
2002/03	-0.3731	-0.2383	0.0889
2003/04	0.6329	-0.0607	-0.0384

2004/05	1.0148	0.237	0.2405
2005/06	2.2688	0.6046	1.3717
2006/07	2.543	1.0299	2.6190
2007/08	-0.4818	0.3219	-0.1551
2008/09	-1.0252	-0.2111	0.2164
2009/10	-1.5506	-0.6949	1.0775
2010/11	-1.601	-0.5809	0.9300
			6.9319

We have,

$$\text{Cov}(R_N, R_H) = \frac{\sum\left(R_N - \overline{R_N}\right)\left(R_H - \overline{R_H}\right)}{n-1} = \frac{6.9319}{10-1} = 0.7702$$

Correlation Coefficient between return of Nabil Bank ltd and HBL is given by,

$$\circ_{NH} = \frac{Cov(R_N, R_H)}{\pm_N \times \pm_H} = \frac{0.7702}{1.7471 \times 0.5454} = 0.8083$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745\left(1-r^2\right)}{\sqrt{n}} = \frac{0.6745\left[1-(0.8083)^2\right]}{\sqrt{10}} = 0.0739$$

$6PE = 6 \times 0.0739 = 0.4434$

Since correlation of coefficient between Nabil and HBL is gather than 6PE, the value of correlation is significant.

D. Between Nabil Bank and BOKNL

Fiscal year	$R_N - \overline{R_N}$	$R_B - \overline{R_B}$	$(R_N - \overline{R_N})\left(R_B - \overline{R_B}\right)$
2001/02	-1.4275	-1.1749	1.6772
2002/03	-0.3731	-0.6515	0.2431
2003/04	0.6329	0.2488	0.1575
2004/05	1.0148	0.4319	0.4383
2005/06	2.2688	2.0447	4.6390
2006/07	2.543	0.6853	1.7427

2007/08	-0.4818	0.7607	-0.3665
2008/09	-1.0252	-0.5682	0.5825
2009/10	-1.5506	-0.9466	1.4678
2010/11	-1.601	-0.8302	1.3291
			11.9107

We have,

$$\text{Cov}(R_N, R_B) = \frac{\sum (R_N - \overline{R_N})(R_B - \overline{R_B})}{n-1} = \frac{11.9107}{10-1} = 1.3234$$

Correlation Coefficient between return of Nabil Bank ltd and BOKNL is given by,

$$\circ_{NB} = \frac{Cov(R_N, R_B)}{\pm_N \times \pm_B} = \frac{1.3234}{1.7471 \times 1.0105} = 0.7496$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745\left[1-(0.7496)^2\right]}{\sqrt{10}} = 0.0934$$

$6PE = 6 \times 0.0934 = 0.5604$

Since correlation of coefficient between Nabil and BOKNL is gather than 6PE, the value of correlation is significant.

E. Between SCBNL and NIBL

Fiscal year	$R_S - \overline{R_S}$	$R_{NI} - \overline{R_{NI}}$	$(R_S - \overline{R_S})(R_{NI} - \overline{R_{NI}})$
2001/02	-0.9745	-0.4394	0.4282
2002/03	-0.0801	0.0117	-0.0009
2003/04	0.1833	0.0445	0.0082
2004/05	1.4879	-0.2758	-0.4104
2005/06	2.6669	1.4909	3.9761
2006/07	1.4155	0.6518	0.9226
2007/08	-0.0253	0.4414	-0.0112
2008/09	-1.1534	-0.6590	0.7601
2009/10	-1.7567	-0.6895	1.2112

2010/11	-1.7637	-0.5772	1.0180
			7.9019

We have,

$$\text{Cov}(R_S, R_{NI}) = \frac{\sum\left(R_S - \overline{R_S}\right)\left(R_{NI} - \overline{R_{NI}}\right)}{n-1} = \frac{7.9019}{10-1} = 0.8780$$

Correlation Coefficient between return of SCBNL and NIBL is given by,

$$\circ_{SNI} = \frac{Cov(R_S, R_{NI})}{\pm_S \times \pm_{NI}} = \frac{0.8780}{1.4850 \times 0.6957} = 0.8499$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745\left(1-r^2\right)}{\sqrt{n}} = \frac{0.6745\left[1-(0.8499)^2\right]}{\sqrt{10}} = 0.0593$$

$6PE = 6 \times 0.0593 = 0.3558$

Since correlation of coefficient between SCBNL and NIBL is gather than 6PE, the value of correlation is significant.

F. Between SCBNL and HBL

Fiscal year	$R_S - \overline{R_S}$	$R_H - \overline{R_H}$	$(R_S - \overline{R_S})\left(R_H - \overline{R_H}\right)$
2001/02	-0.97449	-0.4072	0.3968
2002/03	-0.08009	-0.2383	0.0191
2003/04	0.18331	-0.0607	-0.0111
2004/05	1.48791	0.237	0.3526
2005/06	2.66691	0.6046	1.6124
2006/07	1.41551	1.0299	1.4578
2007/08	-0.02529	0.3219	-0.0081
2008/09	-1.15339	-0.2111	0.2435
2009/10	-1.75669	-0.6949	1.2207
2010/11	-1.76369	-0.5809	1.0245
			6.3082

We have,

$$\text{Cov}(R_S, R_H) = \frac{\sum (R_S - \overline{R_S})(R_H - \overline{R_H})}{n-1} = \frac{6.3082}{10-1} = 0.7009$$

Correlation Coefficient between return of SCBNL and HBL is given by,

$$\circ_{SH} = \frac{Cov(R_S, R_H)}{\pm_S \times \pm_H} = \frac{0.7009}{1.4850 \times 0.5454} = 0.8654$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745\left[1-(0.8654)^2\right]}{\sqrt{10}} = 0.0536$$

$6PE = 6 \times 0.0536 = 0.3216$

Since correlation of coefficient between SCBNL and HBL is gather than 6PE, the value of correlation is significant.

G. Between SCBNL and BOKNL

Fiscal year	$R_S - \overline{R_S}$	$R_B - \overline{R_B}$	$(R_S - \overline{R_S})(R_B - \overline{R_B})$
2001/02	-0.9745	-1.1749	1.1449
2002/03	-0.0801	-0.6515	0.0522
2003/04	0.1833	0.2488	0.04562
2004/05	1.4879	0.4319	0.6426
2005/06	2.6669	2.0447	5.4530
2006/07	1.4155	0.6853	0.9700
2007/08	-0.0253	0.7607	-0.0192
2008/09	-1.1534	-0.5682	0.6554
2009/10	-1.7565	-0.9466	1.6629
2010/11	-1.7637	-0.8302	1.4642
			12.0716

We have,

$$\text{Cov}(R_S, R_B) = \frac{\sum \left(R_S - \overline{R_S}\right)\left(R_B - \overline{R_B}\right)}{n-1} = \frac{12.0716}{10-1} = 1.3413$$

Correlation Coefficient between return of SCBNL and BOKNL is given by,

$$\circ_{SB} = \frac{Cov(R_S, R_B)}{\pm_S \times \pm_B} = \frac{1.3415}{1.4850 \times 1.0105} = 0.8940$$

$$\text{Calculation of Probable Error (P.E.)} = \frac{0.6745\left(1-r^2\right)}{\sqrt{n}} = \frac{0.6745\left[1-(0.8940)^2\right]}{\sqrt{10}} = 0.0428$$

$6PE = 6 \times 0.0428 = 0.2568$

Since correlation of coefficient between SCBNL and BOKNL is gather than 6PE, the value of correlation is significant.

H. Between NIBL and HBL

Fiscal year	$R_{NI} - \overline{R_{NI}}$	$R_H - \overline{R_H}$	$(R_{NI} - \overline{R_{NI}})\left(R_H - \overline{R_H}\right)$
2001/02	-0.4394	-0.4072	0.1789
2002/03	0.0117	-0.2383	-0.0028
2003/04	0.0445	-0.0607	-0.0027
2004/05	-0.2758	0.237	-0.0654
2005/06	1.4909	0.6046	0.9014
2006/07	0.6518	1.0299	0.6713
2007/08	0.4414	0.3219	0.1421
2008/09	-0.6590	-0.2111	0.1391
2009/10	-0.6895	-0.6949	0.4791
2010/11	-0.5772	-0.5809	0.3353
			2.7764

We have,

$$\text{Cov}(R_{NI}, R_H) = \frac{\sum \left(R_{NI} - \overline{R_{NI}}\right)\left(R_H - \overline{R_H}\right)}{n-1} = \frac{2.7764}{10-1} = 0.3085$$

Correlation Coefficient between return of NIBL and HBL is given by,

$$\circ_{NIH} = \frac{Cov(R_{NI}, R_H)}{\pm_{NI} \times \pm_H} = \frac{0.3085}{0.6957 \times 0.5454} = 0.8131$$

Calculation of Probable Error (P.E.) = $\frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745[1-(0.8131)^2]}{\sqrt{10}} = 0.0723$

$6PE = 6 \times 0.0723 = 0.4338$

Since correlation of coefficient between NIBL and HBL is gather than 6PE, the value of correlation is significant.

I. Between NIBL and BOKNL

Fiscal year	$R_{NI} - \overline{R_{NI}}$	$R_B - \overline{R_B}$	$(R_{NI} - \overline{R_{NI}})(R_B - \overline{R_B})$
2001/02	-0.4394	-1.1749	0.5163
2002/03	0.0117	-0.6515	-0.0076
2003/04	0.0445	0.2488	0.0111
2004/05	-0.2758	0.4319	-0.1191
2005/06	1.4909	2.0447	3.0484
2006/07	0.6518	0.6853	0.4467
2007/08	0.4414	0.7607	0.3358
2008/09	-0.6590	-0.5682	0.3744
2009/10	-0.6895	-0.9466	0.6527
2010/11	-0.5772	-0.8302	0.4792
			5.7378

We have,

$$Cov(R_{NI}, R_B) = \frac{\sum (R_{NI} - \overline{R_{NI}})(R_B - \overline{R_B})}{n-1} = \frac{5.7378}{10-1} = 0.6375$$

Correlation Coefficient between return of NIBL and BOKNL is given by,

$\circ$ $_{NIB} = \frac{Cov(R_{NI}, R_B)}{\pm_{NI} \times \pm_B} = \frac{0.6375}{0.6957 \times 1.0105} = 0.9069$

Calculation of Probable Error (P.E.) = $\frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745[1-(0.9069)^2]}{\sqrt{10}} = 0.0379$

$6PE = 6 \times 0.0379 = 0.2272$

Since correlation of coefficient between NIBL and BOKNL is gather than 6PE, the value of correlation is significant.

J. Between HBL and BOKNL

Fiscal year	$R_H - \overline{R_H}$	$R_B - \overline{R_B}$	$(R_H - \overline{R_H})(R_B - \overline{R_B})$
2001/02	-0.4072	-1.1749	0.4784
2002/03	-0.2383	-0.6515	0.1553
2003/04	-0.0607	0.2488	-0.0151
2004/05	0.237	0.4319	0.1024
2005/06	0.6046	2.0447	1.2362
2006/07	1.0299	0.6853	0.7058
2007/08	0.3219	0.7607	0.2449
2008/09	-0.2111	-0.5682	0.1199
2009/10	-0.6949	-0.9466	0.6578
2010/11	-0.5809	-0.8302	0.4822
			4.1678

We have,

$Cov(R_H, R_B) = \frac{\sum (R_H - \overline{R_H})(R_B - \overline{R_B})}{n-1} = \frac{4.1678}{10-1} = 0.1298$

Correlation Coefficient between return of HBL and BOKNL is given by,

$\circ_{HB} = \frac{Cov(R_H, R_B)}{\pm_H \times \pm_B} = \frac{0.1298}{0.5454 \times 1.0105} = 0.2355$

Calculation of Probable Error (P.E.) = $\frac{0.6745(1-r^2)}{\sqrt{n}} = \frac{0.6745[1-(0.2355)^2]}{\sqrt{10}} = 0.2015$

$6PE = 6 \times 0.2015 = 1.2090$

Since correlation of coefficient between HBL and BOKNL is lesser than 6PE, the value of correlation is insignificant.

ANNEX-IV

Calculation for the Line of Best fit using Least Square Method.

A. Nabil Bank Ltd.

Fiscal Year	Closing EPS (Y)	X	X^2	XY
2002	59.30	-9	81	-533.70
2003	84.66	-7	49	-592.62
2004	92.61	-5	25	-463.05
2005	105.49	-3	9	-316.47
2006	129.21	-1	1	-129.21
2007	137.08	1	1	137.08
2008	115.86	3	9	347.58
2009	113.44	5	25	567.20
2010	83.81	7	+49	586.67
2011	70.67	9	81	636.03
	$\sum Y$ =992.13		$\sum X^2$ =330	$\sum XY$ =239.51

We have,

Expected return of ($\overline{R_Y}$) = $\frac{\sum Y}{n} = \frac{992.13}{10} = 99.21$

If, $\sum X = 0$

Calculation of slope (m) = $\frac{\sum XY}{\sum X^2} = \frac{239.51}{330} = 0.7258$

Now,

The required equation of the straight line trend is:

$$Y = \overline{R_Y} + m \times X$$

$$Y = 99.21 + 0.7258\ X$$

B. SCBNL.

Fiscal Year	Closing EPS (Y)	X	X^2	XY
2002	141.13	-9	81	-1270.17

2003	149.30	-7	49	-1045.10
2004	143.55	-5	25	-717.75
2005	143.93	-3	9	-431.79
2006	175.84	-1	1	-175.84
2007	167.37	1	1	167.37
2008	131.92	3	9	395.76
2009	109.99	5	25	549.95
2010	77.65	7	49	543.55
2011	69.51	9	81	625.59
	$\sum Y$ =1310.19		$\sum X^2$ =330	$\sum XY$ = -1358.43

We have,

Expected return of ($\overline{R_Y}$) = $\frac{\sum Y}{n} = \frac{1310.19}{10}$ = 131.02

If, $\sum X$ =0

Calculation of slope (m) = $\frac{\sum XY}{\sum X^2} = \frac{-1358.43}{330}$ = -4.1165

Now,

The required equation of the straight line trend is:

$Y = \overline{R_Y} + m \times X$

$Y = 131.02 + (-4.1165) X$

$Y = 131.02 - 4.1165X$

C. NIBL

Fiscal Year	Closing EPS (Y)	X	X^2	XY
2002	33.59	-9	81	-302.31
2003	39.58	-7	49	-277.06
2004	51.70	-5	25	-258.50
2005	39.50	-3	9	-118.50

2006	59.35	-1	1	-59.35
2007	62.57	1	1	62.57
2008	57.87	3	9	173.61
2009	37.42	5	25	187.10
2010	52.55	7	49	367.85
2011	48.84	9	81	439.56
	$\sum Y$ =482.97		$\sum X^2$ =330	$\sum XY$ = 214.97

We have,

Expected return of ($\overline{R_Y}$) = $\frac{\sum Y}{n} = \frac{482.97}{10} = 48.30$

If, $\sum X = 0$

Calculation of slope (m) = $\frac{\sum XY}{\sum X^2} = \frac{214.97}{330} = 0.6514$

Now,

The required equation of the straight line trend is:

$$Y = \overline{R_Y} + m \times X$$

$$Y = 48.30 + 0.6514\ X$$

D. HBL

Fiscal Year	Closing EPS (Y)	X	X^2	XY
2002	60.26	-9	81	-542.34
2003	49.45	-7	49	-346.15
2004	49.05	-5	25	-245.25
2005	47.91	-3	9	-143.73
2006	59.24	-1	1	-59.24
2007	60.66	1	1	60.66
2008	62.74	3	9	188.22

2009	61.90	5	25	309.50
2010	31.80	7	49	222.60
2011	44.66	9	81	401.94
	$\sum Y$ =527.67		$\sum X^2$ =330	$\sum XY$ = -153.79

We have,

Expected return of ($\overline{R_Y}$) = $\frac{\sum Y}{n} = \frac{527.67}{10}$ = 52.77

If, $\sum X$ =0

Calculation of slope (m) = $\frac{\sum XY}{\sum X^2} = \frac{-153.79}{330}$ = -0.4660

Now,

The required equation of the straight line trend is:

$Y = \overline{R_Y} + m \times X$

$Y = 52.77 - 0.4660\ X$

E. BOKNL

Fiscal Year	Closing EPS (Y)	X	X^2	XY
2002	2.00	-9	81	-18
2003	17.72	-7	49	-124.04
2004	27.50	-5	25	-137.5
2005	30.10	-3	9	-90.3
2006	43.67	-1	1	-43.67
2007	43.50	1	1	43.5
2008	59.94	3	9	179.82
2009	54.68	5	25	273.4
2010	43.08	7	49	301.56
2011	44.51	9	81	400.59
	$\sum Y$ =366.70		$\sum X^2$ =330	$\sum XY$ = 785.36

We have,

Expected return of ($\overline{R_Y}$) = $\frac{\sum Y}{n} = \frac{366.70}{10} = 36.67$

If, $\sum X = 0$

Calculation of slope (m) = $\frac{\sum XY}{\sum X^2} = \frac{785.36}{330} = 2.3799$

Now,

The required equation of the straight line trend is:

$$Y = \overline{R_Y} + m \times X$$

$$Y = 36.67 + 2.3799\ X$$

ANNEX-V

Calculation of Required Rate of Return of Sampled Commercial Bank using CAPM Model.

According to the CAPM Model

Required rate of Return (R_J) = $R_f + \left[\left(\overline{R_M} - R_f\right)\right]_J$

Where, R_f = (7.41) Risk Free Rate of Return

$\overline{R_m}$ = (9.76) Expected Market Return

$_J$ = Beta of selected Banks

Now, Nabil Bank, $R_n = R_f + \left[\left(\overline{R_m} - R_f\right)\right]_n$

= 7.41% + (9.76%-7.41%) 3.50

=15.64%

Of SCBL, $R_S = R_f + \left[\left(\overline{R_m} - R_f\right)\right]_S$

= 7.41% + (9.76%-7.41%) 3.37

= 15.34%

Of NIBL $R_{NI} = R_f + \left[\left(\overline{R_m} - R_f\right)\right]_{NI}$

= 7.41% + (9.76%-7.41%) 1.74

= 11.50%

Of HBL, $R_H = R_f + \left[\left(\overline{R_m} - R_f\right)\right]_H$

= 7.41% + (9.76%-7.41%) 1.74

= 11.50%

Of BOKL, $R_{BOK} = R_f + \left[\left(\overline{R_m} - R_f\right)\right]_{BOK}$

= 7.41% + (9.76%-7.41%) 2.16

= 12.49%

Here, return on the 91 says Treasury bill on Nepal Rastra Banks annual report 2010/11 has been taken as a proxy of the risk free rate of return.

ANNEX-VI

Calculation of cut-off Rate and weight for determining optimal portfolio,

Solving by Ranking $(R_i - R_f)_i$

Name of sampled banks	R_i	R_f	$R_i - R_f$	$_i$	$\frac{(R_i - R_f)}{i}$	Rank
Nabil	112.82	7.41	105.41	3.50	30.12	2
SCBNL	152.07	7.41	144.66	3.37	42.94	1
NIBL	30.77	7.41	23.36	1.74	13.43	4
HBL	28.56	7.41	21.15	1.74	12.16	5
BOKL	50.88	7.41	43.47	2.16	20.13	3

Comparing the ratio of excess return to Bi to the Cut-off rate, C*

$\pm^2 ei$	$\frac{(R_i - R_f)_i}{\pm^2 ei}$	$\sum_{i=1}^{i} \frac{(R_i - R_f)_i}{\pm^2 ei}$	$\frac{^2 i}{\pm^2 ei}$	$\sum_{i=1}^{i} \frac{^2 i}{\pm^2 ei}$	ei
45.51	8.11	8.11	0.2692	0.2692	23.2160
29.54	16.50	24.61	0.3845	0.6537	33.5365
17.36	2.34	26.95	0.1744	0.8281	29.6732
2.33	15.79	42.74	1.2994	2.1275	19.3601
24.64	3.81	46.55	0.1894	2.3169	19.4199

The value of cut-off Rate, C* is 33.5365 and equal to SCBNL, Cut off Rate.

Possible cut off Rate, C_i

$$C_i = \frac{\pm^2 m \sum_{i=1}^{i} \frac{(R_i - R_f)_i}{\pm^2 ei}}{1 + \pm^2 m \sum_{i=1}^{i} \frac{^2 i}{\pm^2 ei}}$$

For Nabil Bank Ltd; $C_n = \frac{12.48 \times 8.11}{1 + 12.48 \times 0.2692} = 23.2160$

For SCBNL; $C_S = \frac{12.48 \times 24.61}{1 + 12.48 \times 0.6537} = 33.5365$

For NIBL; $C_{NI} = \frac{12.48 \times 26.95}{1 + 12.48 \times 0.8281} = 29.6732$

For HBL; $C_H = \frac{12.48 \times 42.74}{1 + 12.48 \times 2.1275} = 19.3601$

For BOKL; $C_{BOK} = \frac{12.48 \times 46.55}{1 + 12.48 \times 2.3169} = 19.4199$

To find percentage or weight of each security first calculation of the X value of the two banks,

We have,

$$Z_i = \frac{i}{\pm\, {}^2ei}\left[\frac{R_i - R_f}{i} - C^*\right]$$

For, HBL $Z_H = \frac{1.74}{2.33}[12.16 - 33.5365]$

$= 0.7468 \times (-21.3756)$

$= -15.9640$

For, BOKL $Z_{BOK} = \frac{2.16}{24.64}[20.13 - 33.5365]$

$= 0.0877 \times (-13.4065)$

$= -1.1758$

Again

$\sum Z$ = (-15.9640) + (-1.1758)
= -17.1398

Now % investment in security or weight

$$= \frac{Z_i}{\sum Z}$$

For, HBL $= \frac{-15.9640}{-17.1398} = 93.14\%$ For, BOKL $= \frac{-1.1758}{-17.1398} =$ 6.86%

ANNEX-VII

Calculation of Risk and Return of Optimal Portfolio

Portfolio Beta

$$= \sum W_I \times \ _I$$

$$= 0.9314 \times 1.74 + 0.0686 \times 2.16$$

$$= 1.7688$$

Unsystematic Risk or Error Variance of Portfolio

$$\pm^2 ep = \sum W^2{}_S \times \pm^2 es$$

$$= (0.9314)^2 \times 0.0233 + (0.0686)^2 \times 0.2464$$

$$= 0.0214$$

Systematic Risk of Portfolio

$$^2{}_P \times \pm^2{}_m = (1.7688)^2 \times 0.1248$$

$$= 0.3945$$

Total Risk or Variance of Portfolio

$$\pm^2{}_p = \ ^2{}_p \times \pm^2{}_m + \pm^2 ep$$

$$= 0.3945 + 0.0214$$

$$= 0.4159$$

Portfolio Return

$$R_p = \sum W_i \times R_i$$

$$= 0.9314 \times 0.2856 + 0.0686 \times 0.5088$$

$$= 0.3009 \text{ or } 30.09\%$$

ANNEX -VIII

Calculation of Correlation between the Sectors Wise in term of Market Returns.

A Market and Banking Sectors.

Fiscal year	A=$(R_B - \overline{R_B})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.4796	-0.0976	0.0468
2002/03	-0.1394	-0.1946	0.0271
2003/04	0.1097	-0.0169	-0.0019
2004/05	0.3639	0.1935	0.0704
2005/06	0.4451	0.2518	0.1121
2006/07	0.5572	0.6705	0.3736
2007/08	0.1982	0.3109	0.0616
2008/09	-0.2585	-0.3200	0.0827
2009/10	-0.4655	-0.4598	0.2140
2010/11	-0.3313	-0.3381	0.1120
		Total	1.0986

We have,

$$Cov(R_B, R_M) = \frac{\sum A \times B}{n-1} = \frac{1.0986}{10-1} = 0.1221$$

Similarly, Correlation (ρ_{BM}) $= \frac{Cov(R_B, R_m)}{\pm_B \times \pm_M} = \frac{0.1221}{0.3852 \times 0.3532} = 0.8971$

B. Market & Manufacturing and Processing Company

Fiscal year	A=$(R_{MP} - \overline{R_{MP}})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.2848	-0.0976	0.0278
2002/03	-0.1543	-0.1946	0.0300
2003/04	-0.0466	-0.0169	0.0008
2004/05	-0.1287	0.1935	-0.0249
2005/06	0.2313	0.2518	0.0582
2006/07	0.0483	0.6705	0.0324
2007/08	0.1468	0.3109	0.0456
2008/09	-0.0432	-0.3200	0.0138
2009/10	-0.0832	-0.4598	0.0383
2010/11	0.3139	-0.3381	-0.1061
		Total	0.1159

We have,

$$Cov(R_{MP}, R_M) = \frac{\sum A \times B}{n-1} = \frac{0.1159}{10-1} = 0.0129$$

Similarly, Correlation (ρ_{MPM}) $= \frac{Cov(R_{MP}, R_m)}{\sigma_{MP} \times \sigma_M} = \frac{0.0129}{0.1851 \times 0.3532} = 0.1972$

C. Market & HOTEL

Fiscal year	A= $(R_H - \overline{R_H})$	B= $(R_M - \overline{R_M})$	AxB
2001/02	-0.3127	-0.0976	0.0305
2002/03	-0.1475	-0.1946	0.0287
2003/04	-0.1183	-0.0169	0.002
2004/05	0.1063	0.1935	0.0206
2005/06	0.3024	0.2518	0.0761
2006/07	-0.1921	0.6705	-0.1288
2007/08	0.4189	0.3109	0.1302
2008/09	-0.0652	-0.3200	0.0209
2009/10	0.0335	-0.4598	-0.0154
2010/11	-0.0251	-0.3381	0.0085
		Total	0.1733

We have,

$$Cov(R_H, R_M) = \frac{\sum A \times B}{n-1} = \frac{0.1733}{10-1} = 0.0193$$

Similarly, Correlation (ρ_{HM}) $= \frac{Cov(R_H, R_m)}{\sigma_H \times \sigma_M} = \frac{0.0193}{0.2248 \times 0.3532} = 0.2431$

D. Market & Trading Company

Fiscal year	A= $(R_T - \overline{R_T})$	B= $(R_M - \overline{R_M})$	AxB
2001/02	-0.3196	-0.0976	0.0312
2002/03	-0.2842	-0.1946	0.0553
2003/04	-0.2019	-0.0169	0.0034
2004/05	1.8238	0.1935	0.3529
2005/06	-0.0098	0.2518	-0.0025
2006/07	-0.7559	0.6705	-0.5068
2007/08	0.1068	0.3109	0.0332
2008/09	0.2429	-0.3200	-0.0777
2009/10	-0.2532	-0.4598	0.1164
2010/11	-0.3489	-0.3381	0.118
		Total	0.1234

We have,

$$Cov(R_T, R_M) = \frac{\sum A \times B}{n-1} = \frac{0.1234}{10-1} = 0.0137$$

Similarly, Correlation (ρ_{TM}) $= \frac{Cov(R_T, R_m)}{\sigma_T \times \sigma_M} = \frac{0.0137}{0.6974 \times 0.3532} = 0.0556$

E. Finance and Insurance Companies

Fiscal year	A=$(R_{FI} - \overline{R_{FI}})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.181	-0.0976	0.0177
2002/03	-0.29	-0.1946	0.0564
2003/04	-0.1009	-0.0169	0.0017
2004/05	0.3642	0.1935	0.0705
2005/06	0.1314	0.2518	0.0331
2006/07	0.3905	0.6705	0.2618
2007/08	0.7499	0.3109	0.2331
2008/09	-0.3798	-0.3200	0.1215
2009/10	-0.3686	-0.4598	0.1695
2010/11	-0.3155	-0.3381	0.1067
		Total	1.072

We have,

$$Cov(R_{FI,} R_{M,}) = \frac{\sum A \times B}{n-1} = \frac{1.072}{10-1} = 0.1191$$

Similarly, Correlation (ρ_{FIM}) $= \frac{Cov(R_{FI}, R_m)}{\sigma_{FI} \times \sigma_M} = \frac{0.1191}{0.3904 \times 0.3532} = 0.8637$

F. Others

Fiscal year	A=$(R_O - \overline{R_O})$	B=$(R_M - \overline{R_M})$	AxB
2001/02	-0.9758	-0.0976	0.0952
2002/03	-0.7488	-0.1946	0.1457
2003/04	1.5609	-0.0169	-0.0264
2004/05	0.0737	0.1935	0.0143
2005/06	-0.2352	0.2518	-0.0592
2006/07	-1.0142	0.6705	-0.6800
2007/08	2.86502	0.3109	0.8907
2008/09	-0.4148	-0.3200	0.1327
2009/10	-0.6453	-0.4598	0.2967
2010/11	-0.4658	-0.3381	0.1575
		Total	0.9673

We have,

$$Cov(R_{O,} R_{M,}) = \frac{\sum A \times B}{n-1} = \frac{0.9673}{10-1} = 0.1075$$

Similarly, Correlation (ρ_{OM}) $= \frac{Cov(R_O, R_m)}{\sigma_O \times \sigma_M} = \frac{0.1075}{1.2496 \times 0.3532} = 0.2435$