Chapter I

Introduction

1.1 General Background

1.1.1 Investment

The field of finance is very broad and dynamic which affects the lives of every person and organization directly and indirectly. Financial management is mainly concerned with the acquisition and investment of fund in the productive sectors for the purpose of enhancing wealth. Investment requires collection of necessary funds and utilization of those funds towards productive sectors. Investment is the exploitation of opportunities by transferring funds from surplus to needed sectors through the transaction of financial instruments.

An investment is a commitment of funds made in the expectation of some positive rate of returns. If the investment properly undertaken, the return will be commensurate with risk, the investor assumes. (Fischer & Jordon, 2002, 2)

Investment is sacrifice of fund at present for future return. It is the employment of fund with the aim of achieving additional income. It is long-term commitment and expectation of generating additional money in future or waiting for reward. Every investment entails some degree of risk. It requires a present certain sacrifice for a future uncertain benefit.

Investing is a process of making decisions today whose results will not be known until tomorrow. Nobody knows what kind of result tomorrow will bring because nobody can control everything that is going to happen tomorrow.

Desire of investors to have increased wealth motivates them to invest in the securities. If the investment would not generate any return in future, then no one would be searching for the opportunities of investment. Almost all the investment efforts are followed by the expectation of some positive return.

Investments involve sacrifice of funds at present, which attracts return as reward in future. It is the purchase of either financial or real asset by an individual or

institutional investor. It produces return proportional to the risk, which is assumed to be gained in future. This means return related to investment is directly related to risk associated with it. Investment in this study refers mainly to investment on financial assets like stocks and bonds etc. In other words, there are various investment alternations.

Investment on equities includes common stock and preference stocks. These kinds of equities are traded in any organized exchanges or over the counter market (OTC).

Investment is made in debts. Investors lend money to various types of corporations, which are called debt investment. There are various types of debts, which are alternatives for investments. They are short term, long and intermediate debt investment.

Short-term debt includes commercial papers, bankers' acceptances, treasury bills, etc. commercial papers are negotiable notes issued by larger corporations. Bankers' acceptance is required by importers to secure their imports, which are guaranteed by bank. And treasury bills are issued by government at discount.

Intermediate and long-term bonds are traded in OTC market. Some elements of these bonds are government securities, hybrid securities, derivative securities. Hybrid securities are convertible preferred stocks and convertible bonds. Derivatives are options, warrants, rights etc.

Investment is also made on real assets. Real assets include precious metals like gold, real states like land, collectibles. Some examples of collectibles are diamond, fine arts, stamps, prints etc.

Investment can be undertaken world widely. This type of investment is investment on international corporations like multinational corporations, foreign stocks traded in local exchange counter.

The other sources of investment are pension funds, mutual funds etc.

This implies that there is wide range of investment alternatives available. Most of the investments are undertaken to have increased wealth, which will be helpful in retirement, children's education or accomplishment of other financial goals. The

above mentioned multiple investment alternatives also help in establishment of emergency funds.

Investments generally involve real assets or financial assets. Real assets are tangible, material things such as buildings, automobiles, and textbooks. Financial assets are pieces of paper representing an indirect claim to real assets held by someone else. These pieces of paper represent debt or equity commitments in the form of stock certificates. Among the many properties that distinguish real from financial assets, one of special interest to investors is liquidity. Liquidity refers to ease of converting an asset into money quickly, conveniently, and at little exchange cost. Real assets are more heterogeneous, often peculiarly adapted to a specific use, and yield benefits only in cooperation with other productive factors. In addition, returns on real assets are frequently more difficult to measure accurately, owing to the absence of board, ready, and active markets.

1.1.2 Components of Investment

An investment involves the sacrifice of current rupees for future rupees. The sacrifice takes place in the present and certain but the reward comes later and is generally uncertain. Investment is composed of various components, which are explained below:

- Risk
- Return
- Time

Investment is committed in the expectations of certain return, which may be gained in future. There is no meaning of investment for the investors if return is not possible. Investors may buy and sell financial assets in order to earn return on them. The return better known as reward form investments includes both current income and capital gains or losses that arise by increase or decrease of the security price. Return is the income received in investment. People invest their wealth with an expectation of getting some reward for leaving its liquidity; they only invest in those opportunities

where they can get higher return. Hence, investor wants favorable return to be yield by its stock, and go for those, which yield more.

Another component of investment is risk, which is not predictable at present. It may occur in future. It makes an investment meaningful because it is followed by return proportional to it.

Risk in fact is an indication of chance of losing investment values. Different people interpret risks in different ways. To some, it is simply a lack of definite outcome, which can be any unknown event, which may be unfavorable. It is a chance of happening some unfavorable event or danger of losing some material value. Risk in holding securities is generally associated with the possibility that realized returns will be less than the returns that were expected. The source of such disappoint is failure of dividends (interest) and/or the security's price to materialize as expected. The investment process must be considered in terms of both aspects risk and return.

Risk and return are so interrelated that they are inseparable from each other. Therefore, the investors analyze and select their investment option, which is also called portfolio after analysis of risk and return. Investors select dominant assets. Dominant assets have maximum rate of return at any selected level of risk or minimum level of risk with a given level of expected rate of return. A wealth seeking risk averse investor would prefer investing in those assets which have low risk and high return. Investors' preferability towards dominant assets depends upon personal investment preferences. Dominant assets refer to those assets, which dominate others with respect to risk and return. Highly risk averse investor would prefer dominant investment with low risk followed by low return where as aggressive and risk seeking investor would prefer dominant investment which has high risk, so high return. Medium investor who is in between risk averse and aggressive investor would prefer asset with moderate risk and moderate return. Dominance principle assumes that no rational investor would prefer the assets with high risk with low return. The rational and aggressive investor would select the asset, which has high risk with high return.

Another inseparable component of investment is time. Investment is committed for a certain time span. Within a definite time period, investment generates income. The single period rate of return is most important outcome from investment, which

measures wealth accumulation (or decrease) rate. This implies that investor require higher expected rate of return to invest their fund in riskier assets. Time period offers different courses of action. It depends on attitude of investor who follows 'buy and hold' policy. As time moves on, analysts believe that conditions changes and investors reevaluate expected return and risk for each investment.

1.1.3 Investment Process

The investment process describes how an investor should go about making decisions with regard to what marketable securities to invest in, how extensive the investment should be, and when the investment should be made. A five-step procedure for making decisions forms the basis of investment process: (Sharpe, Alexander & Bailey, 1996, 10)

- Set investment policy
- Security analysis
- Portfolio construction
- Portfolio revision
- Portfolio performance evaluation.

Set investment policy

The first step of investment process is to set the investment policy, which involves determining the investor’s objectives and the amount of investable wealth, which is essential for the investment. Investor's objective should be stated in terms of both risk and return. This step involves the identification of the potential categories of financial assets for consideration in the ultimate portfolio. This identification is based on the investment objectives, amount of investable wealth, and tax status of investor.

Security Analysis

The second step in the investment process is to perform security analysis, which involves examining a number of individual securities (or group of securities) within the broad categories of financial assets. The purpose of conducting such examination

is to identify those securities that currently appear to be mispriced. There are two main approaches to security analysis. They are (1) Technical Analysis (2) Fundamental Analysis.

Technical analysis involves the study of stock market price in an attempt to predict future price movements for the common stock of a particular firm. First, past prices are examined in order to identify recurring trends or patterns in price movements. Then more recent stock prices are analyzed in order to identify emerging trends or patterns that are similar to past ones.

Fundamental analysis begins with intrinsic value of any financial asset equals to present value of all cash flows that the owner of the asset expects to receive. Once the intrinsic value of the common stock of a particular firm has been determined, it is compared with the security's current market price of the common stock. If the current market price of the common stock is below the intrinsic value, a purchase is recommended. Conversely, if the current market price is above this intrinsic value, a sale is recommended.

Portfolio Construction

The third step of the investment process is construction of portfolio. Construction of portfolio involves identification of specific securities in which to invest, along with the proportion of investable wealth to be put into each security. Here, selectivity, timing and diversification need to be addressed by the investors.

Portfolio Revision

The fourth step of investment process, portfolio revision, which involves both, realizing that the currently held portfolio is not optimal and specifying another portfolio to hold with superior risk-return characteristics. The investor must balance the costs of moving to the new portfolio against the benefits of revision.

Portfolio Performance Evaluation

The fifth step in the investment process, portfolio performance evaluation, involves determining periodically how the portfolio performed in terms of risk and return, and compares the performance with that of an appropriate "benchmark" portfolio.

1.1.4 Portfolio

A portfolio is a combination of investment assets. The portfolio is the holding of securities and investment in financial assets i.e. bond, stock. Individual securities have risk-return characteristics of their own. Portfolios may or may not take on the aggregate characteristics of their individual part. Portfolio analysis thus takes the ingredients of effects of combining securities and considers the blending or interactive effects of combining securities. The portfolio management is characterized by Traditional Approach and Modern Approach.

In traditional approach, portfolio planning called for the selection of those securities that best fit the personal needs and desires for the investors. For example, a young, aggressive, single adult would be advised to buy stocks in newer, dynamic, rapidly growing firms. A retired widow would be advised to purchase stocks and bonds in old-line, established, stable companies, such as utilities.

Modern Approach suggests that the traditional approach to portfolio analysis, selection, and management may well yield less than optimum results that a more scientific approach is needed, based on estimates of risk and return of the portfolio and the attitudes of the investor toward a risk-return in trade-off streaming from the analysis of the individual securities.

The return of the portfolio is nothing more than the weighted average of the returns of the individual stocks. The weights are based on the percentage composition of the portfolio. The total risk of the portfolio is more complex. Here we need only point out that securities when combined may have a greater or lesser risk than the sum of their component risks. This fact arises from the degree to which the returns of individual securities move together or interact.

1.1.5 Insurance companies in Nepal

After the introduction of liberalized economic policy and restoration of multiparty democracy in Nepal, environment for the establishment of public limited companies was favourable. As a result, many companies were established and issued shares (common stocks) in order to collect fund for their operation. The organized stock exchange in Nepal named 'Nepal Stock Exchange', also called NEPSE is platform

where the issued common stocks are listed and made eligible for trading in secondary market. Among them many insurance companies have issued common stock in primary market, listed in NEPSE and traded in secondary market. At present, many Nepalese investors trade the stocks of Nepalese insurance companies.

Insurance companies are established to support the economic growth of the country and help to boost up the economic activities. They give economic relief against risk of any kind that is happened to the people and their property, in the form of life and non life insurance. Insurance is a financial security against suffering of people caused by any kind of risk that can harm lives of people.

Insurance is a contract whereby one person undertakes to compensate another person by paying him a sum of money on the happening of a specified event. The person who undertakes to compensate is insurer and another person is called the insured. The insurer's promise for compensation is followed by a sum of money called 'premium' paid by the insured. Insurance is related to the protection from risk. The insured is promised to pay on the happening of specified event. The events may be death or disability or damage to the property.

Insurance is therefore merely another form of contract for which a special type of rules was evolved over the years. Main purpose of contract of insurance is to protect the insured from risk. The insurance contract is a device whereby the risk of financial loss accruing from death or disability, or damage to the property is passed on to another. The insurer usually collects an agreed rate of contribution from a large number of people and relieves the insured by paying the insurance money. It does not attempt to prevent the happening of the event insured, but it merely compensates the insured when the event insured against occurs.

The history of insurance business in Nepal is not as long as in other countries. As the economy was confined completely before 2007, the scope of insurance was also narrow to a large extent. Prior to establishment of Nepalese insurance companies, the insurance activity in Nepal was executed by the Indian insurance companies. This trend of insurance business by Indian companies collected fund from Nepalese people, helped to transfer fund to India. This reduced productive fund flow for development of Nepal from national sources. And, when Nepalese people needed to

have their money refunded, or when they were to get their benefit, they wouldn't get it easily. They should have gone long processes. Indian companies didn't respond in time. This was leading Nepalese people and economy both to darkness.

However, the history shows that the introduction of insurance company named “Mal Chalani and Beema Co.” in 2004BS in ownership of Nepal Bank Ltd with authorized capital of Rupees 5 lac was first formally established insurance company in Nepal. It was later converted into 'Nepal Insurance and Transport Company Pvt. Ltd.' in 2016BS which was again renamed as 'Nepal Insurance Company Ltd' in 2048. Likewise, in 2024BS, 'Rastriya Beema Sansthan (Private) Ltd' was established under ownership of Nepalese Government empowered by Nepal Company Act. In the same year, non life insurance business in Nepal was started. In 2025, this company was converted as 'Rastriya Beema Sansthan' under Rastriya Beema Sansthan Act 2025. Increasing Nepalese concern towards privatization and liberalization helped in enacting Insurance Act 2049. This helped establishment of private insurance companies in Nepal. To manage, develop, regulate and control insurance business in Nepal Beema Samiti was formed in 2049.

Nepal is slowly opening its market to foreign investors. There are currently 22 insurance companies in Nepal. Rastriya Beema Sansthan, a state-owned insurer, dominates the market, and holds about 80 percent and 15 percent of market shares in life and non-life insurance businesses. The Insurance Board, empowered by the Insurance Act of 1992 and the Insurance Rules of 1993, regulates and supervises the Nepalese insurance industry. It grants licenses, issues directives, and may take actions on observing any non-disciplinary activity of an insurer. The board created the Tariff Advisory Board in 1996, which is responsible primarily for ratemaking.

1.1.6 Functions of Insurance Companies

Functions and importance of insurance companies can be pointed out as:

- To safeguard losses
- To extend protection
- Underwriting
- To facilitate funds

- To assist in economic development
- Managing claims and losses
- Assists to reduce inflation
- Motivates saving and means of investment.

1.1.7 Focus of the Study

This study will try to focus on analysis of price movement of individual insurance companies, stock price and try to analyze and evaluate the insurance companies in terms of their risk and return. It will also focus on the analysis of portfolio that can be constructed by bringing together the risk and return of all insurance companies included in this study.

1.2 Statement of Problem

Many insurance companies are established in Nepal in a short span of time and, investment is most important factor for both investors and management of these companies because they collect fund from general people through the issuance of common stock. But if investment decision is taken without adequate analysis of risk and return of common stocks, profitable return is not possible and efficient portfolio construction is also not possible. Consequently, it wouldn't lead to long lasting existence of these companies. These are the reasons why these insurance companies are suffering losses.

In fact, after the establishment of NEPSE in Nepal, Nepalese capital market started to grow rapidly. But investors who are directly or indirectly related to capital market, their attitudes, beliefs and knowledge have not been yet changed. They lack theoretical knowledge about risk, return, portfolio and diversification. They also are less familiar with financial activities of those companies listed in NEPSE, So that there are most of the investors investing in less profitable companies. Investors must be able to analyze risk, return of stocks they want to invest. They are solely responsible for their investing decision.

Even intellectual scholars, university graduates and postgraduates in Business Studies could not perfectly analyze risk and return of stock and stock market. Very few of the effective programmes have been introduced to develop investors' knowledge in Nepal. Therefore, investors will be helped to create optimal portfolio, find and use easy tools and techniques to analyze risk and return.

Traditional investment analysis emphasizes projection of price and dividends including price estimation and dividend stream and discounting back to present. This is intrinsic value, which is compared to current market price. The modern security analysis is rooted in fundamental analysis, which emphasizes on risk and return estimates rather than mere price and dividend estimates. Risk and return estimate depends upon share price and accompanying dividend stream.

People assume more than real risk in stock investment. Simple and clear technique to analyze risk associated with return is not available.

The theory about efficient market condition about the equality of intrinsic value, which is calculated by required rate of return and growth, and current stock price led by rational invertors, is not correctly found in real world. This is not applicable in out context. Because of lack of knowledge to interpret the information, the invertors make irrational decision regarding stock transaction. In this way, stock price here is determined by other factors rather than financial performance of stock.

The basic research problems are:

- What is the risk, return of listed insurance companies of Nepal?
- What is relation between risk and return?
- How can be risk minimized? What should be compensation for risk bearing?
- How the investment decisions are to be taken?
- Does the risk and return of common stock investment of insurance companies vary significantly?
- To what extent there is systematic risk in relation to total risk?
- Would portfolio construction within the insurance companies be profitable?
- How can investors diversify the risk within insurance companies?

1.3 Objectives of the Study

Nepalese investors are facing various aforementioned problems in setting their investment policies, evaluating financial assets, constructing portfolio and revising and analyzing their portfolio performance. The key objectives of the study revolve around the subject of finding out risk minimizing tools and techniques in relation to certain financial as well as other constraints.

The main and basic objective of this study is to estimate an optimal portfolio among common stock investment of insurance companies. However, the objectives are as below:

(a) To evaluate common stock of insurance companies in terms of risk and return.

(b) To estimate an optimal portfolio among common stock investment of insurance companies.

(c) To determine whether the shares of insurance companies in Nepal are overpriced or underpriced by analyzing the risk and return characteristics of the individual shares.

(d) To evaluate the systematic and unsystematic risk associated with security under study.

1.4 Significance of the Study

Stock markets being one of the prominent sources of economic development, ultimately, its potential investors are biggest assets. The target of this study is to explore and increase stock investment.

Modern security analysis emphasizes the risk return analysis rather than price and dividend estimates. And, the risk and return estimate is dependent upon the share price and the dividend stream. The investors are investing in shares by trial and error approach.

Traditional investment analysis emphasizes the projection of prices and dividends. That is, the potential price of a firm common stock and the future dividend stream are

forecasted and then discounted back to the present. This intrinsic value is then compared with the security's current market price. If the current market price is below the intrinsic value, a purchase is recommended. Conversely, if the current market price is above this intrinsic value, a sale is recommended. Although the modern security analysis emphasizes the risk and return estimates rather than mere price and dividend estimates. The risk and return estimates, of course, are dependent on the share price and the accompanying dividend stream.

Investors are investing in shares following trial and error approach.

Therefore, it is necessary to establish clear picture about the return from investing in securities. Not only risk and return but the variability in return is to be addressed. These factors i.e. risk and returns are the most important factors influencing investment decisions and process.

Existing and potential public investors are not well known about the real financial strengths and weaknesses of the public companies in which they are investing or going to invest their funds.

This study is focused on the risk, returns analysis of individual insurance companies, and estimates an optimal portfolio among common stock investment of insurance companies.

This study is conducted to provide basic and necessary information about investment and investment process. This current study will help to take an appropriate decision about how to set investment policies and how to analyze and evaluate the investment worthwhile over the different time period.

The focus of the study is on the analysis of risk, return and portfolio, which will enable investors to guide the investment activities.

Benefits of the study will be received by security businesspersons, issue managers, brokers, marketing managers and general investors.

This research work will be the valuable assets for the further research work.

1.5 Hypothesis of the Study

This study includes student's t-test for testing the hypothesis, which is test of significance for a single, or double mean. The reason for using t-test is sample size taken in this study being less than 30.

This study will test the following hypothesis:

Hypothesis I

Null hypothesis H_0: $\mu = \mu_0$ i.e. there is no significance difference between the average return of insurance companies' common stock and overall market return. In other words, average return on the common stock of insurance companies is equal to the market return.

Alternative hypothesis H_A: $\mu \neq \mu_0$ i.e. there is significant difference between the average return of insurance companies' common stock and overall market return. In other words, average return on the common stock of insurance companies is not equal to the market return.

Hypothesis II

Null hypothesis H_0: $\mu = \mu_0$ or $\mu = 1$, portfolio beta of the individual insurance companies' common stock is equal to 1. In other words, there is no significant difference between the portfolio beta of insurance companies' common stock and market beta.

Alternative hypothesis H_0: $\mu \neq \mu_0$ or $\mu \neq 1$, portfolio beta of the individual insurance companies' common stock is not equal to 1. In other words, there is significant difference between the portfolio beta of insurance companies' common stock and market beta.

Hypothesis III

Stock price of insurance companies are underpriced.

Hypothesis IV

Portfolio construction within same sector will not minimize risk significantly.

1.6 Limitation of the Study

This research work is not able to study the whole Nepalese capital market in detail due to various reasons. The study concentrates only on the insurance companies that are listed in NEPSE, ignoring others. Therefore, this study is not free from the limitations. The major limitations of the study are as follows:

(a) The overall study is based on the secondary data. So the incorrectness of the key source might affect the accuracy of the outcome of the study.

(b) Data of FY 1998/99 to 2007/08 are used for the study.

(c) Mainly the study is concentrated on risk, return and portfolio estimation of insurance companies.

(d) Among the different financial assets, only common stock is taken for the purpose of the study.

(e) There is time constraint as it is only a study to fulfill partial requirement of confining MBS Degree.

1.7 Organization of the Study

The study will be organized in six different chapters.

Chapter 1 presents a brief introduction of the study. This includes general background of the study, focus of the study, statement of problem, objectives of the study, significance of study, limitation of the study.

Chapter 2 is about review of literature that includes conceptual framework, review of previous studies, books, articles and journals, reports and theses related to the topic of this study.

Chapter 3 is Research methodology. This deals with whole procedure of this research study i.e., research design, sources of data, population and sample, data processing and method of analysis.

Chapter 4 is about Data presentation, analysis and interpretation.

Chapter 5 p resents a brief summary of whole research report, conclusion and recommendations.

Chapter 6 is about bibliography that states different references referred during the study were conducted.

Chapter II

Review of Literature

2.1 Introduction

This chapter deals with theoretical aspect of topic, which includes review of various literatures such as books, newspapers, journals, magazines, articles websites, independent researches, university thesis and other relevant researches/studies. In other words, this chapter provides review on literature that is available in the topic risk, return and portfolio analysis. This section covers those studies that are conducted by academicians and scholars.

2.2 Conceptual Framework

Before getting into the core subject matter, it is necessary to have general knowledge of risk, return and portfolio. Major focus is on analysis of risk, return and portfolio within the common stock of selected insurance companies.

2.2.1 Common Stock

"Common equity in a corporation or partnership or proprietorship interests in an unincorporated firm constitute the first source of funds to a new business and the base of support for borrowing by existing firms." (Weston & Copeland, 9th Ed, 931) There are different instruments that include a capital structure of a firm, such as common stock, preference stock, debt and so on. The most important one is common stock or equity share or ordinary share. Common stock represents the ownership position in a corporation. Common stock is the first security of a corporation to be issued and in case of bankruptcy, the last to be retired. They have the lowest priority claim on earning and assets of all securities issue. Common stockholders have the power to elect the board of directors. Common stocks are generally non-assessable i.e. the common stockholders may lose their initial investment, not more which means stockholders have limited liability to the share that they hold.

Common stock includes a commitment of the issuer to the holder of paying dividends in the time of profit earning which is the main attraction to the public investors. "Common stock represents a commitment on the part of a corporation to pay periodically whatever its board of directors deem appropriate as a cash dividend." (Sharpe, Alexander & Bailey, 1996, 177).

Among all the securities, common stocks are assumed to be most risky securities since they don't have fixed periodic income. So, they have higher risk and tend to earn higher return proportional to their risk. Securities other than common stocks, such as bonds and preference shares have fixed income, which is receivable in both favorable and unfavorable condition of the company, that's why these are assumed to be less risky securities. Therefore, the main two features of common stock are risk and return associated with them. "Common stock known to be normally the most expensive form of long term financing, this is because dividends are not tax deductible and because common stock is a riskier security than either debt or preferred stock". (Gitman, 1995).

Among the entire securities holder, common stock holders are only to bear the risk of uncertainty. Stockholders get return only when the income of the firm is enough to pay interest to debt holders. "The true owners of business firms are the common stock holders who invest their money in the firm only because of their expectation of future returns. A common stock holder is sometimes referred to as a residual owner, since in essence he or she receives what is left after all other claims or the firms income and assets have been satisfied. As a result of this generally uncertain position, the common stock holders expect to be compensated with adequate dividend and capital gain." (Gitman, 1995). Common stock holders fall last in the priority list when their company is to be liquidated. Debts and Preference shares are settled before common stockholders are paid. Equity holders are owners and other security holders are creditors. "In case of liquidity or bankruptcy, common stockholders are in the principal entitled only to assets remaining after all prior claimants have been satisfied. As expressed above, common stock is the most risky security, so, must be in its expected return as well. When investors buy common stock, they receive certificate of ownership as a part of there being part owners of the company. The certificate states the number of shares purchased and their par value." (Bhalla, 2000, 196).

When stockholders purchase common stocks, they receive certificates that states number of shares purchased including par value if any. When stock is purchased in the market (that is when it is not a new issue purchased directly from the company), the new owner of share and number of shares purchased are noted in a stock record book of the transfer agent. The transfer is usually a big city bank appointed by corporation to keep track its shares' entire owner. This is followed by cancellation of old certificates and new certificates are sent to the registrar, which is a bank or trust company. The registrar checks to verify that no errors were made, and when all checks are completed, the certificate is sent to the new shareholder. (Francis, 1991, 37-39).

Common stock holders of a corporation are its residual owners, their claim to income and assets comes after creditors and preferred stock holders have been paid in full. As a result, a stockholder's return on investment is less certain than that to lenders or to preferred stockholders. On the other hand, the shares of a common stock can be authorized either with or without par value. The par value of a stock is merely a stated figure in the corporate charter and is of little economic significance. A company should not issue stock at a price less than par value because stockholders who bought stock for less than par value would be liable to creditors for the difference between the below par value they paid and the par value. (Van Horne, 1997, 560).

“Common stock has one important investment characteristic and one important speculative market price tends increase irregularly but persistently over the decades as their net worth builds through the reinvestment of undistributed earning. However, most of the time common stocks are subject to irrational and excessive price fluctuation in both directions, as the consequence of the ingrained tendency of most people to speculative or gamble, i.e. to give way to hope fear and greed.” (Weston & Fama, 1999, 93-94).

These days common stock investment is getting popular day by day. Recent increment in the transaction and price of common stock and eagerness of the public towards equity investment has made it clear. "Of all the other forms of securities, common stock appears to be the most romantic, while fixed income investment avenue may be more important to most of the investors, equity shares seems to capture their interest the most. The potential reward and penalties associated with the

equity make them an interesting even exciting proportion, no wonder, equity investment is a favorite topic for conservation in parties and get together." (Prasanna, 1995, 16).

Common stockholders enjoy certain advantages from their investment. First, they enjoy limited liability that is if the corporation goes bankrupt and it doesn't have enough assets to pay of its bills, the common stock holders can not be forced to participate in the payment of unpaid bills. Second, stockholders enjoy unlimited participation in the firms' profits if the earnings become highly lucrative. Third shares or common stockholders are marketable securities designed to be bought and sold with ease. Finally, only common shareholders are entitled to vote at the shareholders meeting at the corporation. This means stockholders have voice in management. Shareholders are requested to vote in order to elect board of directors and change memorandum of association. This is legal power of the shareholders. To change authorized capital or objectives of business, approval of ordinary shareholders is required. This is known as voting right of the shareholders and right to control too. If board fails to protect their interest, they can replace directors. They are able to participate in management through their voting right and right to maintain proportionate ownership. The power to vote for board of directors for or against major issues (such as mergers or expansions into new product lines) belongs to the common stock holders because they are owners of corporation.

Law grants shareholders the right called preemptive right, to purchase new shares in proportion to their current ownership. Preemptive right enables stockholders to maintain their proportionate share ownership in the company. The stockholders option to purchase a stated number of new shares at a specified price during a given period is called rights, which can be exercised at a subscription price, which is generally much below than current market price of shares. To grant preemptive right is to recognize that the stockholders are part owners of corporation and as such should have an interest in earnings and assets and a voice in management proportionate to the fraction of voting shares they own. Thus, the preemptive right if exercised guarantees the investors' undiluted maintenance of voting control, share in earnings and share in assets. (Francis, 1983, 39).

The ordinary stockholders are true owners of the corporation but they enjoy limited liability to the amount of their investment in share. If fully paid the issue price of shares purchased, nothing more to contribute in event of financial distress or liquidation. Most of the investors are wise to invest their saving funds in stocks with expectation of future cash inflows as dividends and maximization of value of their holdings in the market. The dividend and value of firm are linked with the earning power of firms, which ultimately affect the market price of shares.

2.2.2 Security Market

A security market can be defined as a mechanism for bringing together buyers and sellers of financial assets in order to facilitate trading. Security market exists in order to bring together buyers and sellers of securities. It means the market where the securities are traded. One of the main functions is “price discovery” i.e. to cause prices to reflect currently available information.

Financial instruments are traded in security market. Security markets are also known as financial markets, which include primary and secondary market.

Corporations need to list their shares in organized securities exchange to qualify their stocks for trading. In Nepalese context, Nepal Stock Exchange Ltd. (NEPSE) represents the corporate organized securities exchange.

Security market can be distinguished into:

- Primary and Secondary Market
- Money and Capital Market

Primary Market

Securities offered for the first time to the general public through the primary securities are primary markets. The issuer may be a brand new company or one that has been in business for many years. It is also known as New Issue Market (NIM). NIDC is only the authorized agent of most of the companies for initial public offering.

The financial market in which securities are initially issued is directly involved to the transaction is called primary market. (Gitman, 1985, 33).

Secondary Market

The secondary market is that financial market in which pre owned securities are traded. Organized stock exchange and over the counter market represent the secondary market.

The Secondary Market is not keeping pace with the growth of the primary market. This is mainly due to lack of the needed efforts on the concerned authority to devise suitable package of measure to encourage the growth of broker networks in the country's growing stock exchange. (Shrestha, 1992, 18).

Money Market

Money Market is also called short-term financial market, which is the set of supplying short-term debt or working capital needed for industries, business or incorporated bodies etc. The instruments of money market are government securities, inter-bank deposits, banker's acceptance, certificate of deposit and commercial papers issued by non-financial institutions.

Capital Market

Capital Market is the market where the transaction of long-term finance is conducted. The funds collected in this market are raised and traded by long-term financial instruments such as equities and bonds. From the capital market, the maturity preference of lender and borrower is adjusted. The lender can immediately get cash in case of need and borrower receives long-term credit.

2.2.3 Market Price of the Share

Market price of Shares as the output of the demand and supply interaction is the most influencing factor in determining the price of the stock. (Ackerman, 1980, 10) In relation to the interacting forces of demand and supply, i.e. Market Price is determined at given time and the prices and volumes of its past transaction are meaningful indication of probable relationship of future supply and demand pressure. In addition, such relationship is the most important element in determining the probable direction of the price movements. If the demand exceeds the supply, the price will rise and if the supply exceeds demand, the price will fall.

2.2.4 Profit Maximization or Wealth Maximization

In the past, profit maximization was regarded as the only objective of business firms but in modern time, a firm has multiple objectives though some objectives may receive priority over other objectives. It is a rational behavior of the firm to maximize the profit. The financial manager should select the alternative having maximum monetary return. Profit maximization objective is short run objective where as wealth maximization objective is long run objective of the firm. When the time period is short and uncertainty is not much, profit maximization and wealth maximization are almost same. The wealth of the shareholders is measured by the share price of the stock. The share price depends on the timing of returns, cash flow and risk. Generally, the value or wealth can be expressed more explicitly in following ways. (Pandey, 1991, 56)

$$W = \frac{A_1}{(1+K)} + \frac{A_2}{(1+K)^2} + \frac{A_3}{(1+K)^3} + \ldots\ldots\ldots\ldots + \frac{A_n}{(1+K)^n} \quad C$$

$$= \sum_{t=1}^{n} \frac{A_t}{(1+K)^n} C$$

Where,

A_1, A_2, A_3 … A_n = Stream of benefit expected to occur a course of action is adopted.

C = cash out lay or cost of action

K = Discount rate.

W = Value or worth

But the value of the company does not increase itself; there are a number of factors that may contribute to increase the value. The value is represented by the market price of the company's common stock, which in turn reflects the firm's investment strategy, and dividend decisions. So, to maximize value of the stock, the financial manager should consider following factors:

- Project earning per share
- Timing of the earning stream.

- Use of debt
- Dividend policy

Hence, the wealth maximization principal implies that the fundamental objective of a firm should be to maximize the market value of its shares.

2.2.5 Stock Valuation

Financial managers use different analytical techniques for valuing common stock. The stockholder expects regular earnings in the form of dividends and capital gain by upward movement of the stock price. To maximize the stock price, stock valuation model can be used as important tools. Mainly three basic models are used to value stock. (Pike & Neale, 1996, 21)

Table 2.1. Stock Valuation Model

SN	Model	Valuation Model
1	NAVM	NW = TA-(CL+LTD)
2	DVM	$P_o = \sum_{t=1}^{n} \frac{D_1}{(1+K_e)}$
3	EVM	P_o = P/E ratio × EPS

Source: Richard Pike and Neale

Where,

NVAM = Net Asset Value Model

DVM = Dividend Value Model

EVM = Earning Valuation Model

NW = Net Worth

TA = Total Asset

CL = Current Liabilities

P_o = Value of the stock today

K_e = Cost of equity capital

t = 1, 2, 3 ...n yr.

P/E = Price earning ratio

EPS = Earning per share.

LTD = Long Term Debt

2.2.6 The Expected Rate of Return on Common Stock

Return is the main attraction for investors to invest in a risky security as stock (equity share) accepting a varying degree of risk tolerance.

The expected rate of return is the increase in the expected after tax value of the initial investment over the holding period. The cash payoff to owners of common stock is of two kinds:-

- Cash dividend [Dividend component]
- Capital gain (loss) [capital appreciation]

Capital appreciation is the difference between ending value and beginning value of an investment. Returns are defined as the dividend yield plus capital gain/loss. Thus, return comes from two sources, income and price appreciation.

"The return from holding an investment over some period, say a year is simply any cash part received due to ownership plus the change in market price derived by the beginning price. For common stock, we can define one period return as:

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

Where R is the actual return when it refers to a particular time period in the past (future). D_t is the cash dividend at the end of time period t. P_t is the stock price at the time period t and P_{t-1} is stock price at the period t-1. Notice that this formula can be used to determine both actual one period return (when based on historical returns) as well as expected one period returns (when based on expected dividends and prices). Also note that the term in parenthesis is the number of the above equation represents the capital gain or loss during the period." (Van Horne & Wachowicz, 1995, 84-85)

Above process is based on historical data. Future return can be defined on the basis of probability distribution.

If we take example of two stocks X and Y, and they are:

Stock X- being under priced, where, expected return E(r) is higher than the required rate of return R(r), and

Stock Y - being overpriced, expected to provide lower return than required return to compensate systematic risk (β).

Investors seek to invest in stock X for superior return.

"Investing in stock X should rush to buy it. This action could drive the price up and the expected return down. How long would this continue? It would continue until the market price was seen that the expected return would now lie on the SML. In the case of stock Y, investors holding this stock would sell it, recognizing that they could obtain a higher return for the same amount of systematic risk with other stocks. This selling pressure would drive stock Y's market price down and its expected return up until the expected return was on the SML." (Op cit Van Horne & Wachowicz, 1995, 89)

“Annualized rate of return over several periods can be calculated in two ways. The first one is simply to take the arithmetic average of the annual Holding Period Return (HPR) over a period and the second one, which also takes into account the compounding effects of cash receipts over different time intervals, is the geometric mean rate of return.

Simple Arithmetic Mean $HPR = \sum_{t=1}^{n} HPR_t/n$

The geometric mean $HPR_g = \sum_{t=1}^{n} (1+HPR)^{1/n} -1$

Where, HPR=Holding Period Return, n = No. Of periods, HPRg=Geometric mean holding Period return.” (Cheney & Moses, 1992, 746)

2.2.7 Risk on Common Stock

If one is going to invest in common stock, he/she is going to face some risk for future return too. High return on common stock involves high risk and vice-versa. “The risk is defined in Webster’s Dictionary as ‘a hazard: A peril: exposure to loss or injury; thus for most, risk refers to the chance that some unfavorable event will occur. If you invest in speculative stocks (or, really, any stock), you are taking a risk in the hope of making an appreciable return.” (Weston & Brigham, 1995, 182-183)

“Risk, defined more generally, is a probability of the occurrence of unfavorable outcome. But risk has different meaning in different contexts. In our context, two measures developed from the probability distribution have been used as initial measures of return and risk. They are the mean and standard deviation of the probability distribution.” (Weston & Brigham, 1995, 183)

Some of sources of uncertainty that contribute to risk of investment are cited below: (Francis, 1991, 3)

- Interest rate risk

Interest rate risk is potential variability of return caused by changes in the market interest rate. If market interest rates rise, then, investments’ values and market price will fall and vice versa. The variability of return that results is interest rate risk. This interest rate risk affects the prices of bonds, stock, etc.

- Purchasing power risk

Purchasing power risk is the variability of return an investor suffers because of inflation. When inflation takes place, financial assets such as cash, stocks, bonds, etc. may lose their ability to command the same amount of real goods and services they did in the past. The real rate of return on financial assets may not adequately compensate the holder of financial assets for inflation.

- Bull-Bear market risk

When a security index rises fairly consistently from a low point for a period of time, this upward trend is called a bull market. The bull market ends when the market index

reaches a peak and starts a downward trend. The period during which the market declines to the next trough is called a bear market.

- Management risk

Though many top executives earn princely salaries, occupy luxurious offices, and brandish enormous power within their organizations, they are mortal and capable of making a mistake or a poor decision. Furthermore, errors made by business managers can harm those who invested in their firms. Hence, it also is capable of poring risk to investment.

- Default risk

Default risk is the portion of an investments total risk that results from changes in the financial integrity of the investment. For instance, when a company that issues securities moves further away from bankruptcy or closer to it, these changes in the firms financial integrity will be reflected in the market price of its securities. The variability of return that investors experience as a result of changes in the creditworthiness of a firm in which they invested is their default risk.

- Liquidity risk

Liquidity risk is the portion of an asset's total variability of returns that results from price discounts given or sales commission paid in order to sell the asset without delay. Perfectly liquid assets are highly marketable and suffer no liquidation costs. Illiquid assets are not readily marketable- either price discounts must be given or sales commission must be paid, or both of these costs must be incurred by the seller.

- Callability risk

Some bonds and preference stocks are issued with a provision that allows the issuer to call them in for repurchase. The portion of a security's total variability of return that derives from the possibility that the issue may be called callability risk.

- Convertibility risk

Convertibility risk is portion of the total variability of return from a convertible bond or a convertible preferred stock.

- Political risk

The portion of an asset's total variability of return caused by changes in the political environment that affect the asset's market value.

- Industry risk

An industry is a group of companies that complete with each other to market a homogenous product. Industry risk is that portion of an investment's total variability of return caused by events that affect the products and firms that make up an industry.

2.2.7.1 The Range

The range is one of the traditional methods of measuring risk, which simply communicates the difference between the best possible returns and the worst possible return; it does not provide information about the distribution of the rates of return between the extremes.

Range=Best possible rate of return-Worst possible rate of return

The degree of risk of an underlying security is reflected in the magnitude of the differences. The smaller the difference the lower will be degree of risk.

2.2.7.2 Standard Deviation

Standard deviation is another parameter of return distribution measurement. It measures the tightness or variability of a set of outcomes. In another word, standard deviation measures the magnitude of the difference between best possible return and worst possible return.

The variance or standard deviation is common measure of risk. It measures the degree of risk of common stock. Because we have defined risk as the variability of returns, we can measure risk by examining the tightness of the probability distribution associated with the possible outcomes. In general, the width of a probability distribution indicates the amount of scatter, or variability, of the possible outcomes. Therefore, the higher the probability distribution of expected returns, the less is its variability thus, the smaller the risk associated with the investment" (Weston, Basely

& Brigham, 1996, 182-183). The measure we probably use most often is the standard deviation. The symbol for which is σ (pronounced as sigma).

$$\sigma = \sqrt{\sum_{t=1}^{n} (R_i - \overline{R}_i)^2 (P_i)}$$

Where, R_i = Expected rate of return on i^{th} asset

P ($_i$) = Probability

σ = Standard Deviation

Thus, the standard deviation is a weighted average deviation from the expected value, and it gives an idea of how far above or below expected value and the actual value is likely to be. (Weston, Basely and Brigham, 1996, 182-183).

"The standard deviation is the square root of the variance. The variance is computed by-

- Calculating deviation from mean
- Squaring the deviation
- Summing the squared deviation and
- Dividing by total no of observations." (Weston & Brigham, 1995, 185)

"The standard deviation can sometimes be misleading in comparing the risk or uncertainty, surrounding alternatives of they differ in size. To adjust the size or scale, problem, the standard deviation can be divided by the expected return to compute the coefficient of variation (C.V.). Thus, the coefficient of variation is the measure of relative dispersion (risk), a measure of risk per unit of expected return. The larger the CV, the larger the relative risk of the investment." (Van Horne & Wachowicz, 1995, 88).

We can normally know the attitude of investors they are simply risk conscious. In other words, they are risk averse, which means that the investor will choose the portfolio with the smaller standard deviation. And, correlation coefficient is simply the covariance, major standardized by dividing by the product of two standard deviations.

Thus, the standard deviation is a weighted average deviation from the expected value, and it gives an idea of how far above or below expected value and the actual value is likely to be. (Weston, Basely & Brigham, 1996, 182-183)

2.2.7.3 Systematic Risk and Unsystematic Risk

"Systematic risk is the variability of return on stocks or portfolio associated with changes in return on market as a whole." (Van Horne & Wachowicz, 1995, 88).

Systematic risk move with changes in market. Systematic risk is the portion of the total risk of an individual security caused by market factors that simultaneously affect the prices of all securities. It cannot be diversified. It is also called market risk or unavoidable risk or non-diversifiable risk or beta risk. It stems from factors, which systematically affect all firms, such as war, inflation, recession, high interest rate, depressions, and long-term changes in consumption in the economy.

Unsystematic risk is the portion of total risks that can be diversified. It is also called non-market risk or avoidable risk or company specific risk or diversifiable risk. It is caused by events particular to the firm. For example, labor strikes, management errors, inventions, advertising campaigns, shifts in consumer taste, and lawsuits, etc.

Systematic risk has its source factors that affect all marketable assets and thus cannot be diversified away. The sources of systematic risk are market pervasive.

The measure of systematic risk permits an investor to evaluate an asset's required rate of return relative to the systematic risk of the stock. Unsystematic (company specific/unique) risk can be reduced through diversification. The relationship among total risk, systematic risk and unsystematic risk are shown below:-

Total risk = Systematic Risk + Unsystematic Risk

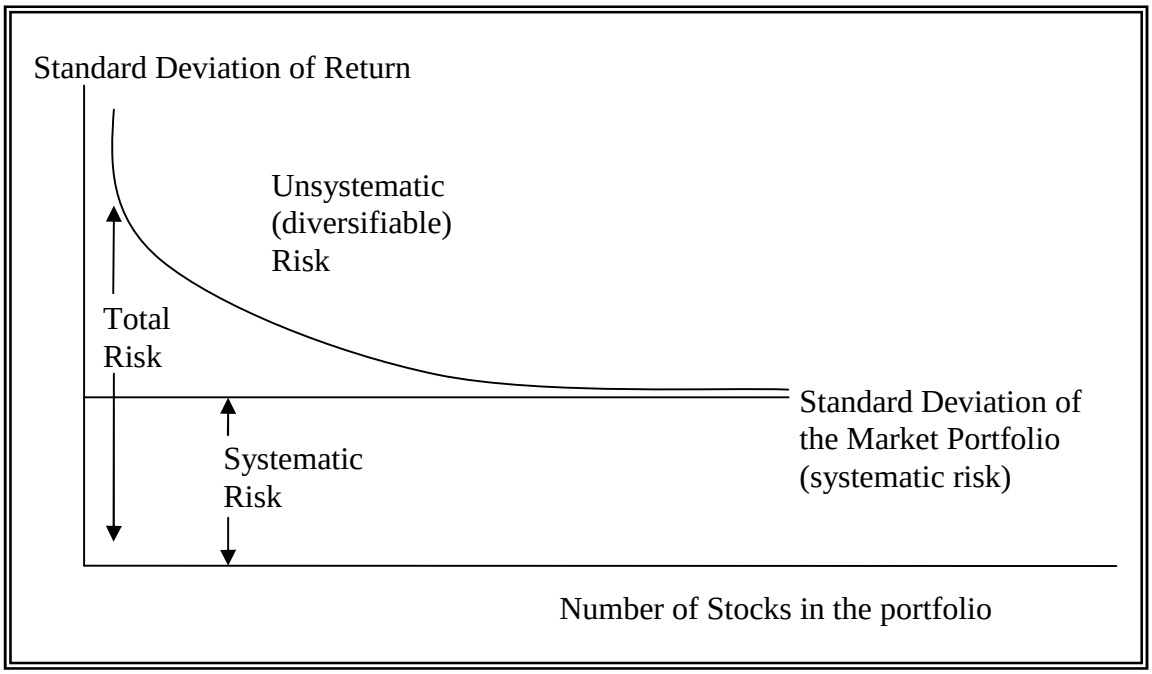
$$\text{or, } \sigma_j=(\sigma_j) \times (\rho_{jm}) + (\sigma_j)(1-\rho_{jm})$$

$$\text{or, } \sigma_j= \beta^2 \times \text{Var}(r_m) + \text{Var}(e)$$

In this equation ρ_{jm} is the correlation coefficient between the return of given stock (j) and the return on market portfolio.

The beta coefficient is an index of systematic risk. Betas can be used for a ranking of the systematic risk of assets. An asset with β=1 is moderate asset because market portfolio and asset's return is equal. An asset with β> 1 is an aggressive asset because it is more volatile than the market portfolio. If an assets has a β<1, the asset is defensive asset and the response of the asset will be less than that of the market.

Figure 2.1. Relation between S.D. of portfolio and Number of securities in portfolio.



Source: Fischer & Jordon, 2002, 70

Systematic risk refers to that portion of total variability in return caused by factors affecting the prices of all securities. Economic, political, and sociological changes are sources of systematic risk. Their effect is to cause prices of nearly all individual common stocks and/or all individual bonds to move together in the same manner. (Fischer & Jordon, 2002, 70).

Systematic risk includes Market risk, Interest rate risk and purchasing power risk. "Market risk and interest rate risk can be defined in terms of uncertainties as to the amount of current dollars to be received by an investor's purchasing power risk is the uncertainty of the purchasing power of the amounts to be received. In more, every day terms, purchasing power risk refers to the impact of inflation or deflation on an investment." (Fischer & Jordon, 2002, 73).

Unsystematic risk is that portion of total risk that is unique to a firm or industry. Factors such as management capability, consumer preferences, and labor strikes can cause systematic variability of returns for in a firm.

Unsystematic factors are largely independent of factors affecting securities markets in general. Because these factors affect one firm, they must be examined separately for each company. (Fischer & Jordon, 2002, 72).

The uncertainty surrounding the ability of the issuer to make payments on securities seems from two sources: (1) The operating environment of the business, and (2) the financing of the firm. These risks are referred to as business risk and financial risk, respectively. They are strictly a function of the operating conditions of the firm and the way in which it chooses to finance its operations. Our intention here will be directed to the broad aspects and implications of business and financial risk." (Fischer & Jordon, 2002, 74-75).

2.2.7.4 Portfolio

Since it is rarely desirable to invest the entire funds of an individual or an institution in a single security, it is essential that every security be viewed in a portfolio context. Thus, it seems logical that the expected return of a portfolio should depend on the expected return of each of the security, contained in portfolio: it also seems logical that the amounts invested in each security should be important. Yet the magnitude of our returns on the investment would be hard to measure, we seldom know how much our earning power will be increased because of our investment.

Portfolio is simply a combination of two or more securities or assets. “Market as a whole is defined as a portfolio of the total of all types of investment opportunities available.” (Weston & Brigham, 1995, 82).

Portfolio creation refers to combining two assets that behave exactly the same way but reduces portfolios’ overall risk. This requires rational diversification of investment on various assets they have varying degree of risk and return. Technical term for diversification is not putting all your eggs in one basket. In that way if you trip, you won’t break all the eggs. “Diversification is an additional strategic device in the financial managers’ armory of weapons for dealing with risk. The ideal form of

diversification is to engage in activities which behave in exactly opposite ways." (Pike & Neale, 1996, 23).

"Three influences reduce portfolio risk in relation to the standard deviation of individual securities in isolation: (1) the extent to which the correlation between the returns from the individual securities is less than 1. (2) The number of securities in the portfolio and (3) the proportions or weights of the individual securities in the portfolio in relation to their correlation among one another. The effect of these three influences combined can be determined by relating individual securities to all securities, the market portfolio." (Weston & Brigham, 1995, 83).

An analysis of the two securities portfolio shows that the risk can totally be minimized if correlation is perfectly negative. In this situation, risk can totally be diversified but when there is perfectly positive correlation between return of two securities, risk is undiversifiable. Analysis shows some have negative and some have positive correlation. Negative correlation between securities returns is preferred for diversification of risk. (Bhatta, 1995, 54).

Conceptually portfolio is a collection of securities that have been gathered to achieve certain investment goals. (Salavitabar, 173) Investors usually diversify their portfolio in order to minimize their risk given the rate of return. To minimize the risk of portfolio an individual invests in securities with different risk and return characteristics. This procedure is called diversification. The degree of diversification varies depending on how risk avert the investor, is. This determines the level of risk and return of the portfolio. "An efficient portfolio is that portfolio which maximizes return for a given risk or minimizes, risk for a given return. The efficient frontier may be defined as the collection of all possible portfolios that are not dominated or that have the maximum possible expected return, given a level of risk or standard deviation". (Ibid, Salavitabar , 173).

Portfolio can be classified into

(a) Growth oriented portfolio and

(b) Income oriented portfolio.

Growth oriented portfolio is a part of portfolio whose primary objective is long-term price appreciation. Income oriented portfolio is a portfolio that stresses current dividends and interest return.

2.2.7.5 Portfolio theory

"Portfolio theory shows how an investor can reach his optimal portfolio position. Portfolio theory originally proposed by Harry M Markowitz is based on the assumption that the utility of the investor is a function of two factors: mean return and variance or its square root, the standard deviation of return. Hence it is also referred as the mean variance portfolio theory or two parameter portfolio theory." (Prasanna, 1995, 61).

Lesser the correlation, higher the reduction of portfolio risks which inspires more and more investments. The best way of investment for rational investor is to follow portfolio theory. In 1952, Harry Markowitz proposed concept of portfolio theory. Assumptions of this theory are as follows:

The expected return from an asset is the mean value of a probability distribution of future returns over some holding period. The risk and return of an individual asset or portfolio is based on the variability of returns (i.e. standard deviation and variation).

Investors depend solely on estimates of return and risk in making their investment decision. This means that investor utility curves are only a function of expected return and risk.

Investors adhere to the dominance principle i.e. for any given level of risk; investors prefer assets with higher expected returns to asset with a lower expected return. For asset with the same expected return, investors prefer lower to higher risk.

Markowitz suggests – an investor should seek a portfolio of securities that lies on efficient frontier set.

"A portfolio is not efficient if there is another portfolio with higher return and the same standard deviation. If your portfolio is not efficient you can increase expected return without increasing the risk, decrease risk without decreasing the expected

return or obtain some combination of increased expected return and decreasing the risk by switching a portfolio on the efficient frontier." (Van Horne, 1997, 60)

There are two types of objectives of portfolio creation:

Primary objectives	Secondary objectives
• Maximization of profit • Minimization of risk	• Regular return • Stable Income • Appreciation of capital • Ever liquidity • Easy marketability • Safety of investment • Tax benefits

2.2.8 Capital Assets Pricing Model (CAPM)

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

"The major implication of the CAPM is that the expected return of an asset will be related to a measure of risk for that asset known as beta (β)." (Sharpe, Alexander & Bailey, 1996, 263).

"CAPM is a model that describes the relationship between risk & expected (required) return. In this model, a security's expected (required) return is the risk free rate plus a premium based on the systematic risk of the security. The model is

$K_j = R_f + (R_m - R_f)\,\beta$

Where K_j is the required rate of return for stock j, R_f is the risk free rate, R_m is the expected return for the market portfolio and β is the beta coefficient for stock j. Here,

beta is an index of systematic risk. It measures sensitivity of a stock's returns to changes in returns on the market portfolio. The beta of a portfolio is simply a weighted average of the individual stock betas in the portfolio." (Van Horne & Wachowicz, 1995, 85).

Beta is a risk measure that arises from between the return on stock and the return on market.

"If beta is 1, then the required return is simply the average return for all securities that is the return on market portfolio; otherwise, the higher the beta, higher the premium and the total return required. A relatively high beta does not however guarantee a relatively high return. The actual return depends partly on the behavior of the market, which acts as a proxy for general economic factors." (Pike & Neale, 1996, 24).

Premium is simply the amount of return investors demand for holding risky securities such as stock.

Financial economist William J Sharpe, who is one of the creators of CAPM, used predominant model to estimate equity risk and return. When expected and required rate of return are equal, there is market equilibrium and all stocks lie in SML.

"The graphical version of CAPM is called the security market line which shows the relation between beta and the required rate of return." (Prasanna, 1994, 66).

When stocks are overpriced, they lie below SML, and when they are underpriced, they lie above SML. Stocks are under and over priced during temporary market disequilibrium. (Van Horne & Wachowicz, 1995, 87).

Sharpe & Litner developed 'Capital assets pricing Model' (CAPM). This model provides the intellectual basis for a number of the current practices in the investment industry. Although many of these practices are based on various extensions and modifications of the CAPM, a sound understanding of the original version is necessary in order to understand them; CAPM is based on the following assumptions. (Litner 1990, 13-37).

1. Investors evaluate portfolios by looking at the expected returns and standard deviations of the portfolio over a one-period horizon.

2. Investors are risk averse, so when given a choice between two otherwise identical portfolios, they will choose the one with the higher expected return.
3. Investors are never satisfied, so when given a choice between two otherwise identical portfolios, they will choose the one with lower standard deviation.
4. Individual assets are infinitely divisible meaning that an investor can buy a fraction of a share if he or she so desires.
5. There is a risk–free rate, at which an investor may either lend (that is invest) money or borrow money.
6. Taxes & transactions costs are irrelevant.
7. All investors have the same for one period horizon.
8. The risk–free rate is the same one period horizon.
9. Information is freely and instantly available to all investors.
10. Investors have 'homogeneous expectation' meaning they have the same perception in regard to the expected returns, standard deviations, and covariance of Securities.

The equation for CAPM is

$E(r_i)= R + [E(r_m) – R] b_i$

Where, $E(r_i)$ is the expected return for an assets.

R is the risk-free rate (usually assumed short-term T-bill rate).

$E(r_m)$ is the expected market return.

b_i is the systematic or market related risk.

It means the sensitivity of a stock's returns. It changes in returns on the market portfolio. The beta of portfolio is simply a weighted average of the individual stock beta in the portfolio." (Van Horne, 1997, 100).

"CAPM model based on the proposition that any stock's required rate of return is equal to the risk-free rate of return plus a risk premium where risk reflects diversification." (Weston, Basely & Brigham, 1996, 193).

"Remember the relevant risk associated with an individual stock is based on its systematic risk, which depends on how sensitive the firm's operations are to economic events such as interest rate changes and inflationary pressures. Because the general movements in the financial market reflect movement in the economy, the market risk of the stock can be measured by observing its tendency to move with the market, or with an average stock, that has the same characteristics as the market. The measure of the stock's sensitivity to market fluctuations is called its beta coefficient. Beta is a key element of the CAPM." (Weston, Basely & Brigham, 1996, 202).

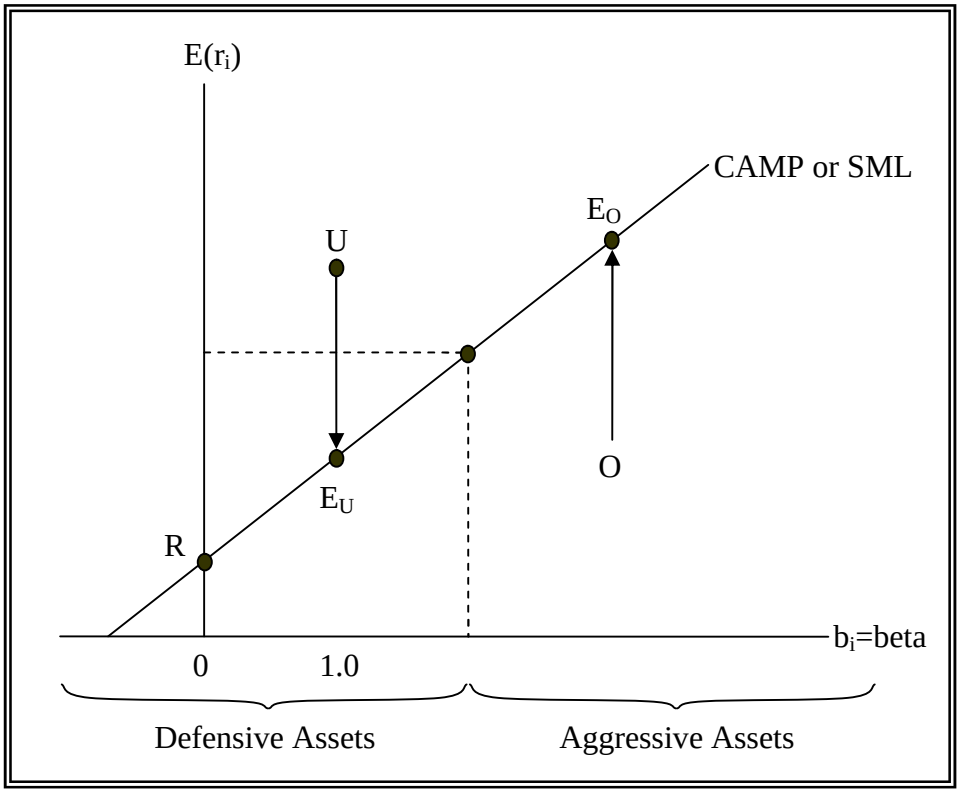
"Based on the behavior of the risk averse investor, there is implied an equilibrium relationship between risk and expected return for each security. In market equilibrium, a security will be expected to provide a return commensurate with its unavoidable risk. This is simply the risk that cannot be avoided by diversification. The greater the unavoidable risk of a security, the greater the return that investor will expect from the security. The relationship between expected return and unavoidable risk, and the valuation of securities that follows, is the essence of the capital asset pricing model (CAPM)" (Van Horne, 1997, 64-65).

"The major implication of the CAPM is that the expected return of an asset will be related to a measure of risk for that asset known as beta (β). The exact manner in which expected return and beta are related is specified by the CAPM. The model provides the intellectual basis for a number of the current practices in the investment industry." (Sharpe, Alexander & Bailey, 1996, 261-262).

Beta measures undiversifiable risk. Beta shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. Beta is calculated by relating the returns on a security with the returns for the market.

In summary, CAPM expresses the relationship between an asset’s return and its systematic risk. The relevant risk for an individual asset is systematic risk (or market-related risk) because of non-market risk can be eliminated by diversification. The CAPM is an equilibrium model for measuring the risk return tradeoff for all assets including both inefficient and efficient portfolio. The security market line (SML) clearly shows that return is the increasing function, in fact a linearly increasing function of risk. Furthermore, it is only market risk that affects return. The investor receives no added return for bearing diversifiable risk.

Figure 2.2. The Capital Assets Pricing Model



Source: Jack Clark Francis, 1991, 276

A vertical line in the Figure 2.2 shows a risk class for systematic risk.

The CAPM relates an expected return to each of the systematic risk. These expected returns can be interpreted as the appropriate discount rates, as the cost of capital, or as equilibrium rate of return that investors expect for that amount of systematic risk. In the figure, U and O are not in equilibrium on the CAPM. Asset U is undervalued and therefore desirable to own the asset. The price of U will rise in the market as more investors purchase it. When price goes up of asset U, its return falls. When U's return falls to the return consistent with its beta on the SML, equilibrium is attained. The asset O is overvalued. Investors will attempt to sell O, and therefore puts the downward pressure on O's price. When the return on asset O increases to the rate that is consistent with the beta risk level given by the SML, equilibrium will be achieved and downward price pressure will cease.

Hence, the CAPM or SML is relationship in which the expected rate of return of the individual asset is a linear function of that asset's systematic risk as represented by beta (β), symbolically. According to Sharpe & Litner (CAPM) study: the greater the

beta of a security, the greater the risk and the greater the expected return required. The lower the beta, the lower will be the risk.

2.2.9 Capital Market Line (CML)

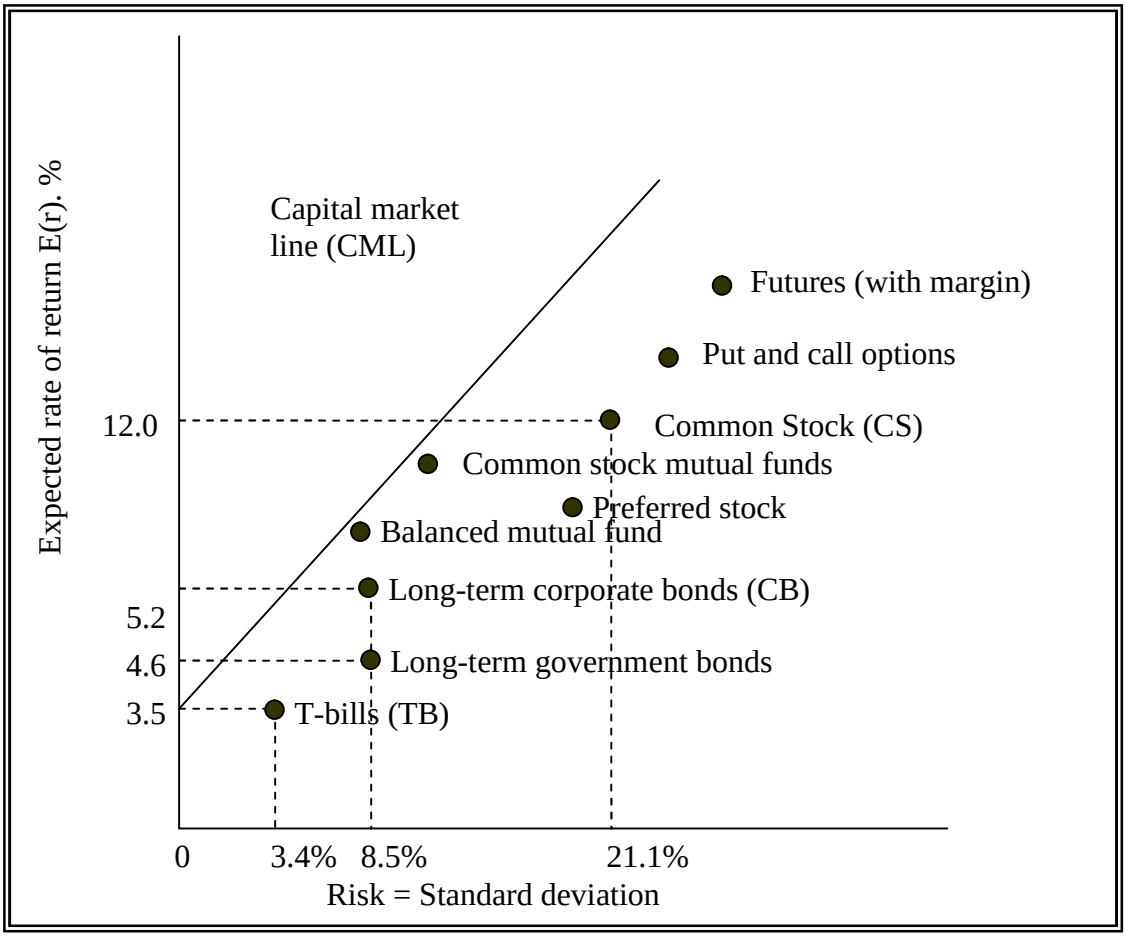
If borrowing and lending opportunities are included in the chart analysis, a linear set of investment opportunities called capital market line (CML) emerges. It is the locus of the portfolios that wealth seeking risk-averse investors will find more desirable than any other portfolios. CML illustrates the positive relationship between risk and average return. Therefore, it is always be positive sloped because investors are risk averse i.e. sleepless.

The assumptions underlying capital market theory are as follows:

1. Money can be borrowed and lent at the risk-free rate.
2. All investors have homogenous expectations concerning expected returns and risks on securities.
3. Investments are infinitely divisible.
4. No taxes or transaction costs exist
5. No inflation exists.
6. Capital markets are in equilibrium.

The main focus of investment graphed in risk-return space which has (1) the maximum expected rate of return in their risk class or (2) the maximum risk at whatever rate of return is selected. The efficient investments are called efficient portfolios because individual assets are dominated and will not be able to attain the efficient frontier. (Sharpe, Alexander & Bailey, 1996, 19) So, if it is constructed, it will be found convex towards expected rate of return axis in risk rate space. The portfolio having risk reducing power of diversification is needed to reach a positive in risk-return space that is on or near the CML. Only diversified portfolio can attain the CML. The CML is assumed to be the market equilibrium situation and is the locus of the most desirable, or most dominant, investment portfolios. CML concentrates how to form a portfolio that is efficient enough to lay on the CML.

Figure 2.3. The capital Market Line (CML) and other investment opportunities



Source: Jack Clark Francis, 1991, 19

The dots that lie below the CML represent individual stocks, bonds, commodity futures, puts, calls, and other investments. The dots labeled CS, CB, Expected rate of return E(r) % and TB represents the average common stock (CS), corporate bond (CB), and Treasury bill (TB) investments that were shown in the Figure 2.3. (Francis, 1991, 19).

2.3 Portfolio Analysis among Multiple Assets (Scholars of Tianjin University<http://www.china-review.com>)

The capital-asset pricing model (CAPM) discovered by Sharpe (1964), Litner (1965) and Mossin (1966) is a general equilibrium model. It not only allows improved understanding of market behavior, but also provides practical benefits. At the same time, it also provides a practical mechanism for evaluating performance in a risk-adjusted mode. This model thus provides the initial basis for the practical implementation of the many aspects of portfolio analysis.

However, Richard Roll (1977) has directed some biting criticism at the tests in affirming the CAPM. This criticism is aimed at one of the critical notions "the identifying of the efficient market portfolio". This paper solves the highly difficult problem by a geometrical way. It first denotes the efficient frontier of Markowitz model with the weights vector of portfolio. Then, it denotes the capital market line (CML) with the weights vector too. By the definition of the CML, the efficient market portfolio thus can be identified.

In the path-breaking work on Portfolio Selection, Markowitz (1952) developed the concept of an efficient portfolio in terms of the expected return and standard deviation of return. It analyses the ingenerate relation between the return and risk for portfolio quantification. The Markowitz model is the foundation for portfolio. It makes people be able to describe and solve the optimization question of a portfolio by the numbers. The Markowitz model is normative; it shows how investors ought to behave. Given that investors behave in the fashion suggested by Markowitz, there are implications for

- The behavior of security prices,
- The sort of risk-return relationship that one would expect, and
- The appropriate measure of risk for securities.

The capital-asset pricing model (CAPM) discovered by Sharpe (1964), Litner (1965) and Mossin (1966) is a general equilibrium model that attempts to provide more explicit answers for those implications.

The CAPM not only allows improved understanding of market behavior, but also provides practical benefits. At the same time, it also provides a practical mechanism for evaluating performance in a risk-adjusted mode. This model thus provides the initial basis for the practical implementation of the many aspects of portfolio analysis.

2.3.1 Efficient Frontier of Markowitz Model

Portfolio construction can be viewed as a matter of selecting securities to include in a portfolio and then determining the appropriate weighting: proportional representation of the securities in the portfolio. The Markowitz model indicates that the proper goal of portfolio construction should be to generate a portfolio that provides the highest return at a given level of risk or the minimum risk at a given level of return. A portfolio having this characteristic is known as an efficient portfolio.

The subject to market efficiency has been much concerned areas of the study for the academicians and researchers in recent times.

The intrinsic value of given securities depends on earning prospects of the company which in turn are related to economic, political, industrial and company specific factors. At many point of time, there exists implicitly an intrinsic value of each share but in the world of uncertainty, the intrinsic value is not known exactly. Therefore, there can be disagreement among the participants about the estimated intrinsic value of the shares and actual price differ from its intrinsic values. Over the time, the intrinsic value itself changes, as new information appears that affects the prospects of company. New information may be about a change in management, success in research and development etc. Steady inflow of various types of information (i.e., pessimistic, optimistic and so on) arise independently across the time and its participants do not show dependent tendency about intrinsic value, the subsequent prices in stocks will be independent.

2.3.2 Capital Market Line (CML) and the Market Portfolio

The CAPM is usually derived on the assumption that there exists a risk less asset available for investment. It is further assumed that investor can borrow or lend as much as desired at risk-free rate. Given this opportunity, investors can then mix risk-free assets with a portfolio of risky assets M to obtain the desired risk-return

combination. Let W represents the proportion invested in risk-free assets and 1-W the proportion invested in the risky assets, we can use a formula to calculate the expected return on the combination of portfolio R_p :

$R_p = E(r_p) = Wr_p + (1 - W), E(r_m) = Wr_1 + (1 - W)R_m$.....(3.1)

The variance of the portfolio is:

$\sigma_p^2 = W^2\sigma_p^2 + (1- W)^2\sigma_m^2 + 2W(1-W)\rho\sigma_1\sigma_m = (1- W)^2\sigma_M^2$ .....(3.2)

So,

$\sigma_p = (1- W)\sigma_m$.....(3.3)

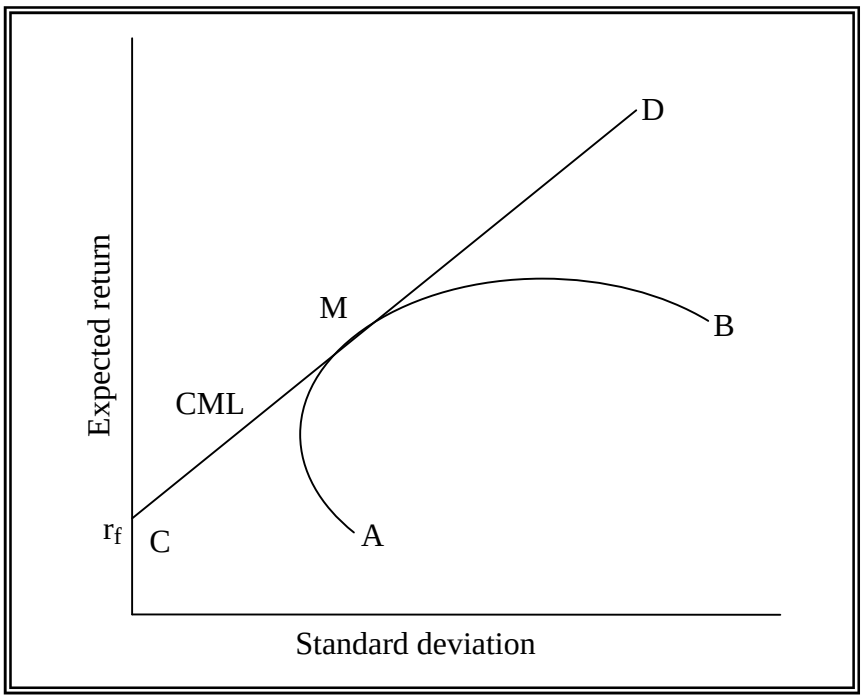
Taking the formula (3.3) into formula (3.1), we get:

$$R_p = r_f + \frac{R_M - r_f}{\sigma_M}\sigma_p$$ .....(3.4)

This is the capital market line (CML).

The possibility of lending and borrowing changes the original efficient frontier AMB to the straight line CMD, as shown in Figure 2.4. This line, rising from the interest rate point C on the vertical axis and tangential to the curve at point M, sets out all the alternative combinations of the risky portfolio M with risk free borrowing and lending. The portfolio M is called the efficient portfolio, it is an efficient portfolio.

Figure 2.4. Efficient Portfolio



Source : Jack Clarck Francis

Changing the formula (3.4) into:

$R_p = r_f + k\sigma_p$..... (3.5)

We can then obtain

$$\sigma_p^{\ 2} = \frac{1}{k^2}(R_p^{\ 2} - 2R_p r_f + r_f^{\ 2}) \text{ .... (3.6)}$$

Taking Rp = $X^T R$ and $\sigma_p^{\ 2} = X^T \Sigma X$ into the formula (3.6), we can get:

$$X^T \sum X = \frac{1}{k^2}[r_f^{\ 2} - 2r_f X^T R + (X^T R)^2] \text{ .....(3.7)}$$

The point M is a tangential point. According to the extract roots formula, we can find the values of k. By the value of k, we can also get the equation of the capital market line (CML). According to the following formulas:

$R_p = X^T R$.....(3.7)

$\sigma_p^{\ 2} = X^T \Sigma X$.....(3.8)

We can obtain the expected return R_M and the variance $\sigma_p^{\ 2}$ of the efficient market portfolio respectively.

2.4 Review of Previous Studies

During the 1950s and 1960s, Harry Markowitz, James Tobin, Jack Treynor, Bill Sharpe, and other showed that rational investors should ignore the investment characteristics of individual assets and focus instead on diversified portfolio. They proved that portfolios are more desirable than individual assets because portfolios can benefit form the risk-reducing power of diversification that individual assets cannot obtain. Researchers went on to demonstrate that once portfolios are investment of choice, the individual assets need only be analyzed to find out their expected rate of return and what risk they might contribute to diversified portfolio. One eye-opening implication of this analysis is that undiversifiable risk should not play a role in the determination of security prices.

2.4.1 Foreign Context

In the year 1967 in his article stated that a number of investigators have considered the question of the utility of the Markowitz procedures in a normative role. Given some method of security analysis and some rule for portfolio selection, does the Markowitz approach provide portfolios that outperform those selected in other ways? This is, of course, an empirical question; and all the usual problems associated with such questions arise. What is the appropriate test of performance? Are the methods reproducible in the future? Moreover, if the test shows the Markowitz technique to be inferior, doesn't this simply suggest that the security analysis method utilized was poor? The majority of the tests performed to date have utilized was past performance to derive (probabilistic) estimates of future performance. The alternative is usually a randomly selected portfolio or the actual performance of a mutual fund. Surprisingly, even under these conditions, the Markowitz approach appears to stand up well. The evidence, although limited, is thus comforting to the theory's proponents. (Sharpe, 1967, 78-79).

In 1985 Gordon A. Alexander and Bruce G. Resnick had focused for the risk-averse investors, consideration of estimation of risk is important in selecting an expected-utility-portfolio. They have examined the tangency of portfolio by using Market Model to estimate the risk and drawn the conclusion that "In the presence of a risk-free asset, the efficient frontier is known to consist of linear combinations of risk-free asset and tangency portfolio. If the Full Covariance Model is used, it has been shown elsewhere that the composition of the tangency portfolio when estimation risk is recognized identically to its composition when estimation risk is ignored. It may be used as originally presented since there is little substantive difference in the tangency portfolio's composition when estimation risk is recognized relative to when it is ignored. Of course, it should be kept in mind that the location of the efficient frontier will shift, even though the tangency portfolio's composition is unaffected, when estimation risk is recognized. This means that the expected-utility-maximizing, risk-averse investor will generally invest more in the risk-free asset and less in the tangency portfolio when estimation risk is recognized relative to when it is ignored". (Alexander & Resnick, 1985, 131-132).

In the year 1988, Graham D. I. Barr and David J. Bardfield investigated the on the small scale random selection of 30 shares from Mining and Industrial sectors on Johannesberg Stock Exchange from January 4, 1974 to January 4, 1985 and have demonstrated a technique for estimating portfolio weights. The method does not rely on historical returns for its expected return input but uses expected returns generated by the CAPM. This plausible and flexible method can be used to estimate optimal efficient portfolio weights for a range of prior expectations on overall market performance. Thus this technique can be sued for estimation of portfolio weights under various proposed bull and bear market scenarios. (Barr & Bradfield, 1988, 287-290).

In the year 2004, Elyas Elyasiani has used the Multivariate Generalized Autoregressive Conditionally Heteroskedastic (GARCH) method by taking daily data from January 4, 1988 to December 29, 2000 and data are sorted into three portfolios – the Money Centre Bank, the Large Bank and the Small Bank portfolios and drawn the conclusion as "The study examines the effect of interest rate volatility on bank stock returns and risk. Volatility in financial markets is generally overlooked in bank asset pricing models as a factor influencing bank stock returns and/or stock volatility. However, according to the results reached volatilities, as measured by volatilities of the short-term and long-term interest rates, do play a considerable role in determining the distribution of the bank stock returns, with the direction of the effect being model dependent. Specifically, fluctuations in the long-term interest rate volatility are found to increase bank stock return volatility. Hence, the use of a misspecified model may subject the direction and the magnitude of the interest rate effect to error and may misguide investors in bank stocks, as well as bank managers and policy makers. The overall results seem to be more plausible in the second model, which uses the long-term interest rate level as an argument in the mean return equation. Determination of the appropriate interest rate in the bank asset pricing model through a formal model selection procedure is a logical next step in addressing the issues of concern" (Elyasiani, 2004, 43).

In year 2004, Peter Byrne and Stephen Lee had different tools and techniques such as mean-variance model, mean absolute deviation approach, lower partial movement and minimax model in their research and concluded, "Traditionally, the measure of risk

used in portfolio optimization models is the variance. However, alternative measures of risk have many theoretical and practical advantages and it is peculiar therefore that they are not used more frequently. This may be because of the difficulty in deciding which measure of risk is best and any attempt to compare different risk measures may be a futile exercise until a common risk measure can be identified. To overcome this, another approach is considered, comparing the portfolio holdings produced by different risk measures, rather than the risk return trade-off. In this way we can see whether the risk measures used produce asset allocations that are essentially the same or very different. The results indicate that the portfolio compositions produced by different risk measures vary quite markedly from measure to measure. These findings have a practical consequence for the investor or fund manager because they suggest that the choice of model depends very much on the individual's attitude to risk rather than any theoretical and/or practical advantages of one model over another." (Byrne & Lee, 2004, 501).

"Financial economics is defined by Smith (1996) as the 'application of economic theory to financial markets'. It is a large body of theory including such well-known models as 'Modern Portfolio Theory' of Markowitz (1952), the CAPM of Sharpe (1964), 'The efficient market hypothesis of Samuelson (1965), Fama (1965) and the 'Option Pricing Model of Black & Scholes (1973). Although these models are all included in institutes of faculty education ltd 1995, their acceptance or use is controversial." (Howie, 1997, 99).

2.4.2 Nepalese Context

Radhe Shyam Pradhan carried out a study on the topic of "Stock market behavior on a small capital market: a case in Nepal" in 1993. The study was based on the data collected for seventeen enterprises from 1983 through 1990. (Pradhan, 1993, 23-49) One of the major objectives, which are related to this study, was "To access the stock market behavior in Nepal" Pradhan summarized the following findings:-

Dividend per share and market price per share was positively correlated.

Higher the earning on stocks, larger the ratio of dividends per share to market price per share.

There are positive relationship between dividend pay out and liquidity.

Manohar Krishna Shrestha, carried out the study on “Shareholders Democracy and annual general meeting (AGM) feedback”. This study critically analyzed the situation of common stock investors and the situation is not improved significantly till now.

Though the size of the shareholders population in Nepal has been growing constantly, the government seems to have not taken any initiation in formulating the separate Act, which protects the shareholders right. (Shrestha, 1947, 12) Company and other acts relating to financial and industrial sector have provisioned rights of the shareholders as -

- Voting right
- Participation in general meeting
- Right of getting information
- Electing as BOD
- Participation in the profit and loss of company.
- Transferring shares.
- Proxy representation.
- Collective rights of shareholders are:
- Amend the internal bylaws.
- Authorize the sales of assets
- Enter into merges
- Change the amount of authorized capital.

Some public limited companies have floated the shares of the general public without having shareholders representation in the board. There are many such companies, which conduct the annual general meetings just to fulfill their desire and do not consider the voice of the shareholders. Shrestha argued further to safeguard the investors interest: “The encouraging and growing confidence of shareholders over their investment seek an independent inquiry of disclosed contents of prospectus. This helps to satisfy a minimum standard of faith on investment in shares through relying

on pros and cons of prospectus. It is therefore, important to dispose everything in prospectus, which could reasonably influence the mind of the prudent investors. Various annual general meetings held by different public limited companies reveal a greater gap between disclosure made in prospectus and the actual results, which were reported. In this context the expression of disclosures philosophy and investigation of frauds in prospectus need to be reconciled to check and growing problems in the development of the capital market in Nepal.

Mr. Narayan Paudel, has carried out study about "Investing in shares of commercial Banks in Nepal: An assessment of return and risk elements." To analyze the risk characteristics of the shares of joint venture commercial banks, the share prices of Nepal Arab Bank Ltd.(NABIL), Nepal Indosuez Bank Ltd. (NIBL), Standard Chartered Bank Ltd. (SCBNL), Himalayan Bank Ltd. (HBL), Nepal SBI Bank Ltd. (NSBL), Nepal Bangladesh Bank Ltd.(NBBL), Everest Bank Ltd. (EBL) and Bank of Katmandu Ltd. (BOKL) have been analyzed. Six years data are analyzed.

His findings are summarized as below:

Bank	**Price**	**K_{avg}**	**K**
Nepal Arab Bank Ltd	Over-priced	5.90	6.18
Nepal Indosuez Bank Ltd	Over-priced	5.79	5.90
Standard Chartered Bank Ltd	Under-priced	7.06	5.72
Himalayan Bank Ltd	Over-priced	5.52	6.00
Nepal SBI Bank Ltd	Under-priced	8.56	5.82
Nepal Bangladesh Bank Ltd	Under-priced	14.24	5.82
Everest Bank Ltd	Under-priced	13.09	5.75
Bank of Kathamandu Ltd	Under-priced	15.57	5.00

Where, K_{avg}= Average mean return

K = the required rate of return using CAPM (Capital Assets Pricing Model)

It shows with larger standard deviations seem to be able to produce higher rate of return. The portion of unsystematic risk is very high with the shares having negative beta co-efficient. The risk per unit of return, as measured by beta co-efficient of 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 stocks (having beta co-efficient less than 1), except the shares of Bank of Kathmandu Ltd. Return on the shares of Nepal Arab Bank Ltd. is negatively co-related with the return on the market portfolio and, therefore, it has negative beta co-efficient. From the analysis, it appears that none of the shares is correctly priced.

Theoretically, the market price of an over priced shares (under-priced) will fall (rise) in order to increase the expected return such that the expected return equals the required return. Therefore, shares of Nepal Arab Bank Ltd., Nepal Indosuez Bank Ltd. and Himalayan Bank Ltd. which are overpriced relative to equilibrium thus market focus, will decline. The remaining shares appear to be under-priced indicating a possible positive long-term price trend.

2.4.3 Review of Masters Theses

Mr. Ramesh Kumar Bhandari (2003) conducted the study on "*Risk Return analysis in common stock Investment of listed companies in Nepal"* out of the objective, "risk return of common stock and their portfolio in a simple way and to study volatility" is related with this study. His finding was that expected return on the common stock of Nepal Finance and Saving Co. Ltd. is highest (i.e. 91.56%). His study was related with various types of organizations but results derived some relevant organizations are as below:

Bank	Expected return	Standard deviation	Co-efficient of variation
HBL	58.64%	0.7112	1.213
SCBNL	57.84%	0.7201	1.245

Mr. Deepak Adhikari (2002) conducted the study on common stock investment by using nine years data year from 1992/1993 to 2000/2001. There were various objectives of the study; among them, one "to evaluate common stock of listed commercial banks in terms of risk and return and to perform sector wise comparison on the basis of market capitalization" is related to this study.

Expected return of HBL is minimum (i.e. 13.3%) only HBL's expected rate of return is lower than market return (i.e. 13.3 %< 23.85%). The risks C.V of SCBNL has 0.9689 risks per 1% return but HBL has highest risk 1% of return (i.e. 2.9261). Market beta of Bank of Kathmandu ltd. is most volatile (i.e. β =1.9656) and SCBNL's CS is least volatile (i.e.β=0.2218). All banks common stocks are under-priced.

Mr. Riddi Prakash Sitaula (2003), "Risk and Return Analysis of Joint Venture Banks of Nepal" , he conducted his study between NABIL, HBL and SBI, he create the portfolio of two asses case. His findings are summarized as below:

Bank	Expected return	Standard deviation	Co-efficient of variation
NABIL	46.05%	54.30%	1.1786
SBI	45.09%	44.05%	0.9768
HBL	34.77%	34.90%	1.0038

At the time of study, expected return of market was 22.08% and return on TB was 4.96% that is very high as compared to return of TB in 2003, 2.98%.

Mr. Narayan Pokhrel (2004) conducted the study on Portfolio analysis on common stock of Joint venture Banks in Nepal, by using nine years data year from 1993/94 to 2002/2003. He has conducted the study of all the Joint Venture banks that are NABIL, SCBNL, HBL, SBI, NBBL, and EBL. There were various objectives of the study; among them, one "to estimate the optimal portfolio among CS investment of JVBs" is related to this study. In his study all the CS of JVBs are underpriced. Correlation between HBL and EBL was found to have 1, there is no chance to minimize risk by creating portfolio of HBL and EBL so excluding the EBL, he has estimated the

optimal portfolio among the remaining five JBVs whose return was 88.2% and the risk underlying on it was 102.3% with the investing weight as:

Bank	Weight
NABIL	45.336%
SCBNL	38.13%
HBL	-7.11%
SBI	49.57%
NBBL	-25.92%

Review of Ph.D. research by Post Doctoral researcher of CCER, Peking University, and People Republic of China.

In this research paper, a mathematical/Algorithm model for the optimal portfolio is designed. It gives a new thought to gain the capital market line (CML). Although the problem of the identifying the market portfolio has puzzled the academia for more than twenty years, using the way that this paper afford can solve the conundrum. More detail is explained later.

2.5 Research Gap

Research work conducted prior to this work could not estimate the portfolio among the multiple assets (CS), the primary aim of this research work to project/estimate an optimal portfolio among multiple assets.

Chapter III

Research Methodology

This chapter refers to the overall approach to the research process, from the theoretical underpinning to the collection and analysis of data. As most of the data are quantitative, the research is based on scientific methods. It is composed of both part of technical aspect and logical aspect. On the basis of historical data, using both financial and statistical tools performs detail analysis of different variables. Results are presented in simple way. Detail research methods are described in following headings.

3.1 Research Design

The research is based on recent historical data that are collected from secondary sources. It covers ten years period from F/Y 1998/99 to 2007/08 A.D. It deals with the study of risk, return and portfolio analysis of insurance companies based on available information. As the title of the research suggests, it is more analytical, empirical and less descriptive. Analytical in the sense that the available data are analyzed by using various statistical tools and techniques such as standard deviation, co-efficient of variation, regression model etc.

3.2 Population and Sample

As on Mid July 2008, there are 17 Insurance Companies that are listed in NEPSE and out of them, there are five insurance companies, taken as sample, on the basis of convenience sampling, which is 29.41% of population. These sample insurance companies are Nepal Insurance Company Ltd., Himalayan General Insurance Co. Ltd., United insurance Co. (Nepal) Ltd., Premier Insurance Co. (Nepal) Ltd. and Everest Insurance Co. Ltd.

3.3 Data Collection Techniques

The data are collected from secondary sources in a convenience sampling method. Informal discussions were conducted with individual investors, SEBO/N and NEPSE staffs and stockholders. Official website of NEPSE “http://www.nepalstock.com” and Nepal Rastra Bank “http://www.nrb.org.np” are accessed for data. Stock price of the different stocks publications of NEPSE and published financial statements are used as sources of secondary data. NEPSE indices have been collected from NEPSE office and web site as well. Financial statements of different insurance companies and their annual financial reports have been collected from respective insurance companies. NEPSE periodicals, articles and previous research have also been considered.

3.4 Data Analysis Tools

Market price of stock (P):

Among the various major data of the study, market price of stock is the most important. There are three-price records available, namely high price, low price and closing price of each year. Therefore two approaches either average price (i.e. average of high and low price) or closing price can be used.

By using average price, result may be very close to reality as it represents the price of whole year, but it is very difficult to obtain the real average. To get the real average, volume and price of each transaction in the stock and duration of time of each transaction in the whole year are essential. So, it is, of course, very hard and difficult together and includes all these information and average of high and low price cannot be used for this study. Due to such difficulties, it is very difficult to use average price as market price of stock, which has a specific time span of one year and the study has focused in annual basis. (Van Horne & Wachowicz, 1995, 90-109).

Dividend (D):

Company pays dividend to its existing shareholders in case of the declaration of only cash dividend, it is easy to calculate dividend amount. In case of the declaration of

stock dividend (i.e. bonus shares), it is difficult to obtain the amount that really a shareholder has gained. In such condition, shareholders get additional number of shares as dividend and simultaneously price of stock declines, as a result of increased number of outstanding stocks. So, to get the real amount of dividend, there is no model or formula developed yet.

In this study, models have been developed considering practical and theoretical aspect as well. (Sapkota, 2005, 65).

In case of stock dividend;

Total dividend amount = Cash Dividend + Stock Dividend % x Next years MPS

Where, MPS = Market Price Per share

Return on common stock investment (R):

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

Symbolically

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

Where; R= Amount rate of return on common stock at time t.

D_t= Cash Dividend received at time t.

P_t= Price of stock at time t.

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

Expected Return of common stock E(Rj):-

One of the main aims of the study is to determine the expected return on the investment in common stock. Generally, this rate is obtained by arithmetic mean of the past year's return.

Symbolically,

$$E(R_j) = \overline{R}_j = \sum \frac{R_j}{n}$$

Where, $E(R_j)$= Expected rate of return on stock j.

N= Number of years that the return is taken.

Σ= Sign of summation.

Standard Deviation (σ)

It is the statistical measure of the variability of a distribution of return around its mean. It is the square root of the variance and measures the unsystematic risk on stock investment.

Symbolically

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

Where, σ_j= Standard deviation of returns on stock j during the time period n.

Co-efficient of variation (C.V.)

It is the ratio of standard deviation of returns to the mean of that distribution. It is a measure of relative risk. (Van Horne & Wachowicz, 1995, 94).

Symbolically

$$C.V. = \frac{\sigma_j}{R_j}$$

Beta (β):

It is an index of systematic risk. It measures the sensitivity of a stock's return on the market portfolio. (Ibid, 102).

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

Where β_j = Beta co-efficient of stock J.

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

σ_m^2 = Variance of market return.

Correlation Co-efficient (ρ_{ij}):-

The correlation is also a measure of the relationship between two assets. The correlation co-efficient can taken on a value ranging from -1 to +1.

Correlation and covariance are related by the following equation.

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

$$\therefore \rho_{ij} = \frac{Cov_{ij}}{\pm_i \pm_j}$$

Where σ_i and σ_j are standard deviations of returns for assets j and i and ρ_{ij} is the correlation co-efficient for assets j and I. There are various cases of correlation and risk condition, which are presented as below:

Perfect positive correlation (ρ_{ij} =+1)

Returns on two perfectly correlated stocks would move in direct proportion and a portfolio consisting of two such stocks would be exactly as risky as the individual stocks. Thus, diversification does nothing to reduce risk if the portfolio consists of perfectly positively correlated stock.

Perfect Negative Correlation (ρ_{ij} =-1)

Returns on two perfectly correlated stocks would move perfectly together but in exactly opposite direction. In this condition, risk can be completely eliminated. Perfect negative correlation almost never found in the real world.

No relationship between returns (ρ_{ij} =0)

When the correlation between two stocks is exactly zero, there is no relationship between the returns; they are independent of each other. In this condition, some risk can be reduced.

Intermediate risk (ρ_{ij} =+0.5)

Most stocks are positively correlated, but not perfectly. On average the returns on two stocks would lie on the range of +0.4 and +0.75 under this condition combining stocks into portfolio reduces risk but does not eliminate completely.

Portfolio returns (R_p)

Portfolio is combination of two or more securities or assets and portfolio return is simply a weighted average of individual stock returns.

In case of two assets case:

$$\overline{R_P} = W_A \overline{R_A} + W_B \overline{R_B}$$

In case of three assets case:

$$\overline{R_P} = W_A \overline{R_A} + W_B \overline{R_B} + W_C \overline{R_C}$$

Where: R_p = Expected return on portfolio of stocks

W_A, W_B, W_C are weight of stock A, B and C respectively.

$W_A + W_B + W_C = 1$ (or 100%) always.

Portfolio Risk (σ_p):

It is measured by the combined standard deviation of the standard deviations of individual stock returns.

In case of two assets case:

$$\sigma_P = \sqrt{W_A{}^2\sigma_A{}^2 + W_B{}^2\sigma_B{}^2 + 2W_A W_B Cov(R_A R_B)}$$

In case of three assets case:

$$\sigma_P = \sqrt{\begin{matrix} W_A{}^2\sigma_A{}^2 + W_B{}^2\sigma_B{}^2 + W_C{}^2\sigma_C{}^2 + 2W_A W_B Cov(R_A R_B) + \\ 2W_B W_C Cov(R_B R_C) + 2W_C W_A Cov(R_C R_A) \end{matrix}}$$

Where σ_p = Standard deviation of portfolio return of stock A, B and C

$Cov(R_A,R_B)$= Equivalent representation for covariance of returns between assets A & B

$Cov(R_B,R_C)$=Equivalent representation for covariance of returns between assets B & C

$Cov(R_C,R_A)$=Equivalent representation for covariance of returns between assets C & A

Risk minimizing Portfolio:

It is the ratio of two assets, which minimize the risk (σ_p).

Symbolically,

$$W_A = \frac{\sigma_B^2 - Cov(R_A R_B)}{\sigma_A^2 + \sigma_B^2 - 2Cov(R_A R_B)}$$

Where,

W_A= Weight of Stock A that minimize the portfolio risk of stock A & B.

σ_A = Standard Deviation of stock A

σ_B = Standard Deviation of stock B.

Systematic Risk

Systematic risk refers to that portion of total variability in return caused by factors affecting the prices of all securities. Systematic risk is external to an industry and, of business and is attributed to board forces out of the business. Unlike systematic risk, the risk can be diversified away. Due to this character of this risk, it is said to be relevant risk to be concerned.

We can sort out systematic risk out of total risk using tool below:

Total risk = Systematic risk + Unsystematic risk
$\sigma_j^2 = \beta_j^2 \sigma_m^2 + \sigma_e^2$

Portion of systematic risk = $\frac{\text{Systematic Risk}}{\text{Total Risk}} = \frac{\beta_j^2 \sigma_m^2}{\sigma_j^2}$

Where,

σ_j^2= Variance of stock J.

β_j^2 = Square of beta to of stock j.

σ_m^2 = Variance of Market.

Portion of Unsystematic risk will simply be (1-Portion of systematic risk)

Or, $1 - \frac{\beta_j^2 \sigma_m^2}{\sigma_j^2}$

In case of multi Assets

Portfolio return (R_P) = $r_f + k\sigma_P$

Portfolio risk $(\sigma_P^2) = \frac{1}{k}(R_P^2 - 2R_P r_f + r_f^2)$

k should be calculated solving equations.

Chapter IV

Data Presentation, Analysis and Interpretation

This chapter is the major part of the study and holds the main important place in the entire research. This chapter deals with analysis of data collected and their presentation with interpretation using different tools and techniques of analysis. In this chapter, effort has been made to analyze risk return and portfolio behaviour of Insurance companies of Nepal. The analysis of data consists of organizing, tabulating and assessing financial and statistical result. Tables and diagrams are listed to make the result more simple and understandable with reference to the various readings and review of literature.

4.1 Data Analysis of Individual Companies

As per Annual Report 2007/2008 of Securities Board, Nepal there are altogether 17 insurance companies that are listed in NEPSE. Since the study is concentrated on the common stock of the Insurance companies, analyses are done separately.

4.1.1 Nepal Insurance Company Limited

4.1.1.1 Introduction

Nepal Insurance Company Limited was incorporated in the year 1947 A.D. in the name of Mal Chalani and Beema Co. Later in the year 1991 A.D. name of company was changed to Nepal Insurance Company Limited. This company was listed on 1984 A.D in NEPSE. Authorized capital, paid-up capital, issued capital, par value of shares and number of shareholders are as below:

Authorized Capital : Rs. 150000000.00

Paid-up Capital : Rs. 102698400.00

Issued Capital : Rs. 150000000.00

Par value of shares : Rs. 100

Number of shareholder/s : 1046

4.1.1.2 Data

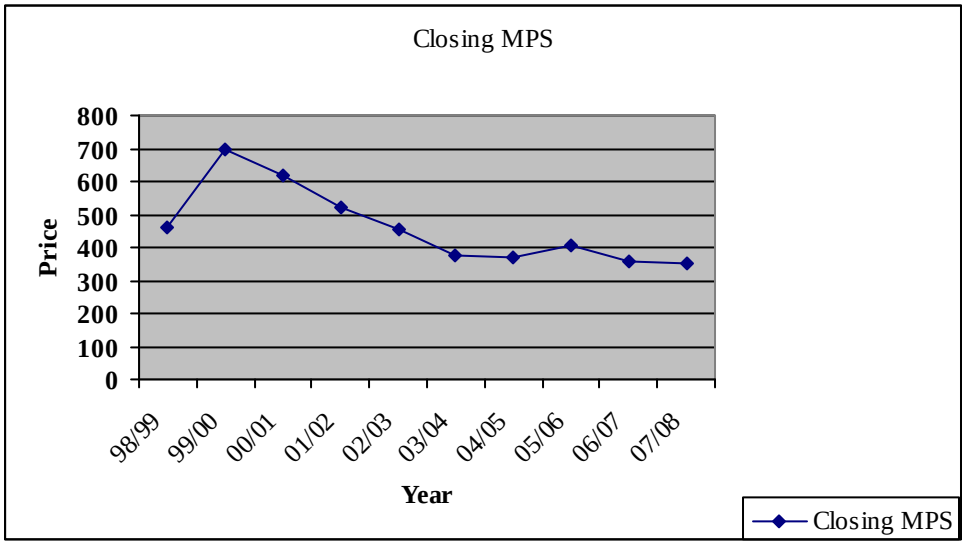
Market price and dividend records of common stock of Nepal Insurance Company Limited are shown in Table 4.1. Closing MPS of Nepal Insurance Company Limited is found to be high in the year 1999/2000. Year-end price movement and annual dividends paid to shareholders of Nepal Insurance Company Limited are also shown in the same table 4.1.

Table 4.1. MPS and Dividend of Nepal Insurance Company Limited

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
98/99	520	351	460	24.99		24.99
99/00	695	460	695	50		50
00/01	840	600	620	20.01	1:4	2100.01
01/02	671	430	520	0		0
02/03	500	415	456	0		0
03/04	446	360	375	0		0
04/05	375	340	370	0		0
05/06	450	370	405	0		0
06/07	400	357	357	0		0
07/08	357	345	350	0		0

Source: <http:\\www.nepalstock.com>

Figure 4.1. Year-end Price Movement of common stock of Nepal Insurance Company Limited



Source: <http:\\www.nepalstock.com>

Price is maximum in the year 1999/00 and lowest in year 2004/05. In the year 2000/01, the company has distributed stock dividend of 1:4, which ultimately resulted in decrease of share price.

4.1.1.3 Realized Return (R), Expected Return $(\overline{R})$ and its Standard Deviation (σ)

Year-end price and dividend amounts are used to calculate dividend yield and capital gain yield is added to find return for each year. Table 4.2 shows the calculation of yearly-realized return, expected return and standard deviation of returns.

Table 4.2. Realized return, Standard Deviation and Expected Return of Nepal Insurance Company Limited

F/Y	Closing MPS	Dividend	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$R - \overline{R}$	$(R - \overline{R})^2$
98/99	460	24.99	0	0	0
99/00	695	50.00	0.6196	0.2846	0.0810
00/01	620	2100.01	2.9137	2.5788	6.6500
01/02	520	0.00	-0.1613	-0.4962	0.2462
02/03	456	0.00	-0.1231	-0.4580	0.2098
03/04	375	0.00	-0.1776	-0.5126	0.2627
04/05	370	0.00	-0.0133	-0.3483	0.1213
05/06	405	0.00	0.0946	-0.2403	0.0578
06/07	357	0.00	-0.1185	-0.4535	0.2056
07/08	350	0.00	-0.0196	-0.3545	0.1257
			$\sum R = 3.0144$		$\sum (R - \overline{R})^2 = 7.9601$

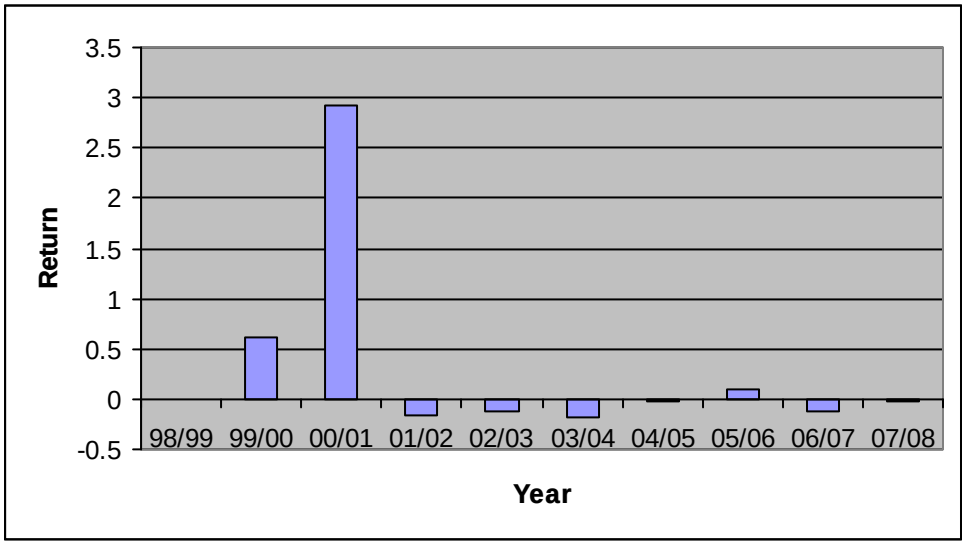
Source: <http:\\www.nepalstock.com>

Expected Return $(\overline{R}) = \sum R / n = 3.0144/9 = 0.3349$

Standard deviation ($(\pm) = \sqrt{\frac{\sum (R - \overline{R})^2}{n-1}} = \sqrt{\frac{7.9601}{8}} = 0.9975$

Co-efficient of Variation (CV) = $\sigma / \overline{R} = 0.9975/0.3349 = 2.9785$

Figure 4.5. Annual rate of return of Common Stock of Nepal Insurance Company Ltd.



Source: <http:\\www.nepalstock.com>

The result from table 4.2 and figure 4.2 shows that expected return of the CS of Nepal Insurance Company Limited is 33.49% that is high as compared to the market return 24.09% with coefficient of variation of 2.9785. Most of the yearly return are nil or negative, and the return that are positive also has high return in only single year, so the standard deviation is high as 99.75%.

4.1.2 Himalayan General Insurance Co. Ltd.

4.1.2.1 Introduction

Himalayan General Insurance Co. Ltd. was incorporated in the year 1988 A.D. with authorized capital of Rs. 160000000.00 and 1882 shareholders. This company was listed in the 1994 in NEPSE. This company has issued capital of Rs. 60000000.00 and has paid-up capital of Rs. 63000000.00 with paid up per share of Rs. 100. In summary

Authorized Capital	: Rs. 160000000.00
Paid-up Capital	: Rs. 63000000.00
Issued Capital	: Rs. 60000000.00
Par value of shares	: Rs. 100
Number of shareholder/s	: 1882

4.1.2.2 Data

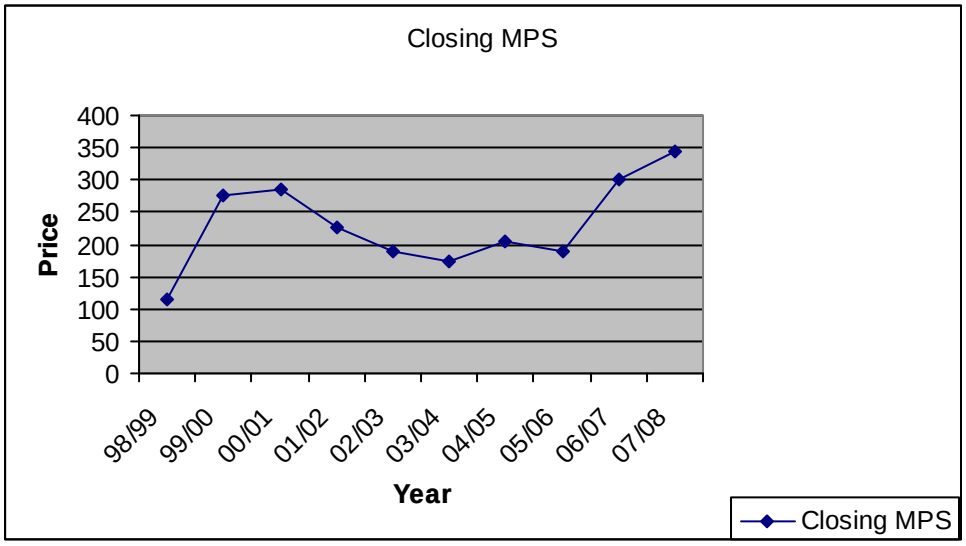
Market price and dividend records of common stock of Himalayan General Insurance Co. Ltd. are shown in Table 4.3. Closing MPS of Himalayan General Insurance is found to be high in the year 2007/08. Year-end price movement and annual dividends paid to shareholders of Himalayan General Insurance Co. Ltd. are also shown in the same Table 4.3.

Table 4.3. MPS and Dividend of Himalayan General Insurance Co. Ltd

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
98/99	116	90	116	10		10.00
99/00	288	116	275	15		15.00
00/01	310	235	285	15		15.00
01/02	280	225	225	15		15.00
02/03	205	175	190	0		0.00
03/04	190	165	175	0		0.00
04/05	207	170	205	0		0.00
05/06	215	171	189	0		0.00
06/07	300	198	300	5.79	1:1.1	385.29
07/08	348	315	345	0		0.00

Source: <http:\\www.nepalstock.com>

Figure 4.3. Year-end Price Movement of common stock of Himalayan General Insurance Co. Ltd



Source: <http:\\www.nepalstock.com>

Price is maximum in the year 2007/08 and lowest in year 1998/98. Himalayan General Insurance Co. Ltd has distributed stock dividend of 1:1.1 in year 2006/07. It has distributed cash dividend in the year 1998/99 through 2001/02 and in the year 2006/07.

4.1.2.3 Realized Return (R), Expected Return $(\bar{R})$ and its Standard Deviation (σ)

Year-end price and dividend amounts are used to calculate dividend yield and capital gain yield is added to find for each year. Table 4.4 shows the calculation of yearly-realized return, expected return and standard deviation of returns.

Table 4.4 Realized return, Standard Deviation and Expected Return of Himalayan General Insurance Co. Ltd.

F/Y	Closing MPS	Dividend	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$R - \overline{R}$	$(R - \overline{R})^2$
98/99	116	10.00	0	0	0
99/00	275	15.00	1.5	1.0480	1.09836
00/01	285	15.00	0.0909	-0.3611	0.1304
01/02	225	15.00	-0.1579	-0.6099	0.3719
02/03	190	0.00	-0.1556	-0.6075	0.3691
03/04	175	0.00	-0.0789	-0.5309	0.2819
04/05	205	0.00	0.1714	-0.2805	0.0787
05/06	189	0.00	-0.0780	-0.5300	0.2809
06/07	300	385.29	2.6259	2.1739	4.7258
07/08	345	0.00	0.15	-0.3020	0.0912
			$\sum R =$ 4.0678		$\sum (R - \overline{R})^2$ = 7.4283

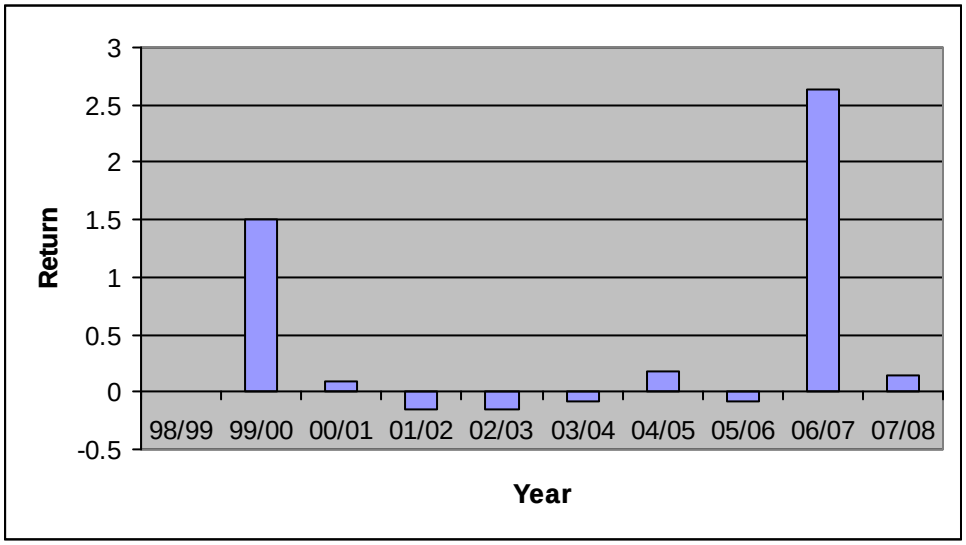
Source: <http:\\www.nepalstock.com>

Expected Return $(\overline{R}) = \sum R / n$ = 4.0678/9 = 0.4520

Standard deviation ($(\sigma) = \sqrt{\frac{\sum (R - \overline{R})^2}{n-1}} = \sqrt{\frac{7.4283}{8}} = 0.9636$

Co-efficient of Variation (CV) = $\sigma / \overline{R}$ = 0.9636/0.4520 = 2.1319

Figure 4.4. Annual rate of return of Common Stock of Himalayan General Insurance Co. Ltd.



Source: <http:\\www.nepalstock.com>

Table 4.4 and figure 4.4 shows that expected return of the CS of Himalayan General Insurance Co. Ltd is 45.20% that is very high as compared to the market return 24.09% and investor should bear the risk of 2.1319 and there is variability by 96.36% in the mean return on CS of Himalayan General Insurance Co. Ltd.

4.1.3 United Insurance Co. (Nepal) Ltd.

4.1.3.1 Introduction

United Insurance Co. (Nepal) Ltd. was incorporated in the year 1992 A.D. and listed in NEPSE in the year 1994. This insurance company was established with the authorized capital of Rs. 150000000.00. The paid-up value per share is Rs. 100. In summary,

Authorized Capital : Rs. 150000000.00

Paid-up Capital : Rs. 60000000.00

Issued Capital : Rs. 100000000.00

Par value of shares : Rs. 100

Number of shareholder/s : 4932

4.1.3.2 Data

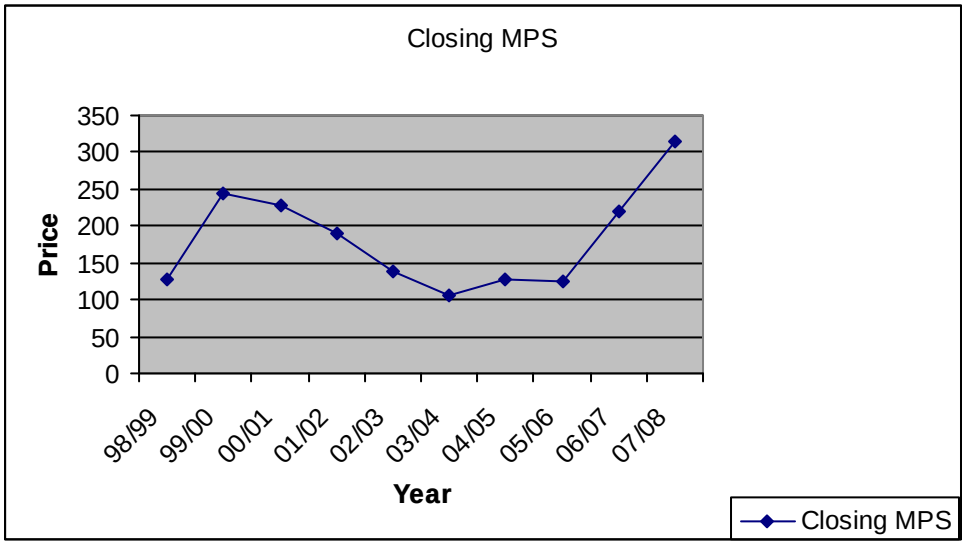
Market price and dividend records of common stock of United Insurance Co. (Nepal) Ltd. are shown in Table 4.5. Closing MPS of United Insurance is found to be high in the year 2007/08. Year-end price movement and annual dividends paid to shareholders of United Insurance Co. (Nepal) Ltd. are also shown in the same Table 4.5.

Table 4.5. MPS and Dividend of United Insurance Co. (Nepal) Ltd.

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
98/99	130	127	127	10		10.00
99/00	295	121	245	10		10.00
00/01	335	220	228	8		8.00
01/02	240	160	190	8		8.00
02/03	185	120	138	17		17.00
03/04	132	105	105	0		0.00
04/05	133	102	128	0		0.00
05/06	165	118	125	0		0.00
06/07	220	120	219	0		0.00
07/08	317	192	315	0		0.00

Source: <http:\\www.nepalstock.com>

Figure 4.5. Year-end Price Movement of common stock of United Insurance Co. (Nepal) Ltd.



Source: <http:\\www.nepalstock.com>

Price is maximum in the year 2007/08/00 and lowest in year 2003/04. United Insurance Co. (Nepal) Ltd. has not distributed any stock dividend. It has distributed cash dividend in the year 1998/99 through 2002/03.

4.1.1.3 Realized Return (R), Expected Return $(\bar{R})$ and its Standard Deviation (σ)

Year-end price and dividend amounts are used to calculate dividend yield and capital gain yield is added to find for each year. Table 4.6 shows the calculation of yearly-realized return, expected return and standard deviation of returns.

Table 4.6. Realized return, Standard Deviation and Expected Return of United Insurance Co. (Nepal) Ltd.

F/Y	Closing MPS	Dividend	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$R - \overline{R}$	$(R - \overline{R})^2$
98/99	127	10.00	0	0	0
99/00	245	10.00	1.0079	0.8076	0.6523
00/01	228	8.00	-0.0367	-0.2370	0.0562
01/02	190	8.00	-0.1316	-0.3318	0.1101
02/03	138	17.00	-0.1842	-0.3845	0.1478
03/04	105	0.00	-0.2391	-0.4394	0.193
04/05	128	0.00	0.2190	0.0188	0.0004
05/06	125	0.00	-0.0234	-0.2237	0.05
06/07	219	0.00	0.752	0.5518	0.3044
07/08	315	0.00	0.4384	0.2381	0.0567
			$\sum R$ = 1.3639		$\sum (R - \overline{R})^2$ = 1.5709

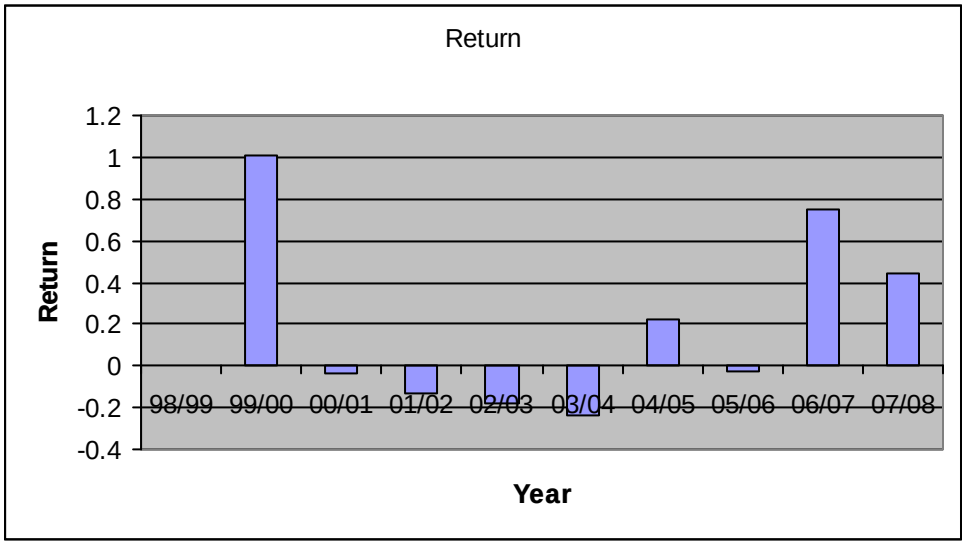
Source: <http:\\www.nepalstock.com>

Expected Return $(\overline{R}) = \sum R / n$ = 1.3639/9 = 0.1515

Standard deviation ($(\pm) = \sqrt{\frac{\sum (R - \overline{R})^2}{n-1}} = \sqrt{\frac{1.5709}{8}} = 0.4431$

Co-efficient of Variation (CV) = $\sigma / \overline{R}$ = 0.4351/0.1515 = 2.8717

Figure 4.6. Annual rate of return of Common Stock of United Insurance Co. (Nepal) Ltd.



Source: <http:\\www.nepalstock.com>

The result from table 4.6 and figure 4.6 shows that expected return of the CS of United Insurance Co. (Nepal) Ltd. is 15.15% that is low as compared to the market return of 24.09% with standard deviation of 43.51% and coefficient of variation of 2.8717.

4.1.4 Premier Insurance Co. (Nepal) Ltd.

4.1.4.1 Introduction

Premier Insurance Co. (Nepal) Ltd. was incorporated in the year 1992 A.D. and listed in NEPSE in the year 1995. This insurance company was established with the authorized capital of Rs. 200000000.00. The paid-up value per share is Rs. 100. In summary,

Authorized Capital : Rs. 200000000.00

Paid-up Capital : Rs. 30000000.00

Issued Capital : Rs. 120000000.00

Par value of shares : Rs. 100

Number of shareholder/s : 8476

4.1.4.2 Data

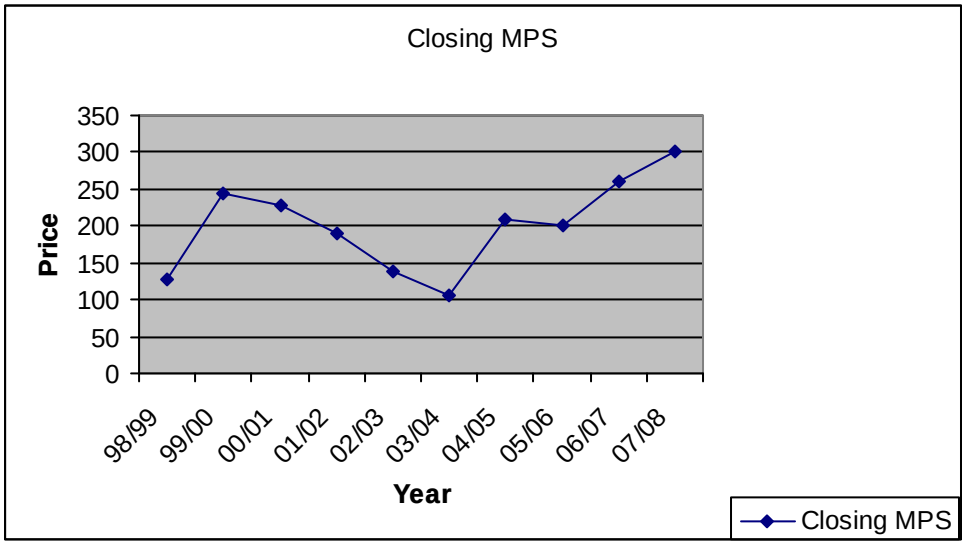
Market price and dividend records of common stock of Premier Insurance Co. (Nepal) Ltd. are shown in Table 4.7. Closing MPS of United Insurance is found to be high in the year 2007/08. Year-end price movement and annual dividends paid to shareholders of Premier Insurance Co. (Nepal) Ltd. are also shown in the same Table 4.7.

Table 4.7. MPS and Dividend of Premier Insurance Co. (Nepal) Ltd.

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
98/99	130	127	127	10		10.00
99/00	295	121	245	10		10.00
00/01	335	220	228	8		8.00
01/02	240	160	190	8		8.00
02/03	185	120	138	10		10.00
03/04	132	105	105	0		0.00
04/05	210	195	210	0		0.00
05/06	214	190	200	0		0.00
06/07	260	200	260	5.79	1:1.1	335.79
07/08	318	260	300	0		0.00

Source: <http:\\www.nepalstock.com>

Figure 4.7. Year-end Price Movement of common stock of Premier Insurance Co. (Nepal) Ltd.



Source: <http:\\www.nepalstock.com>

Price is maximum in the year 2007/08 and lowest in year 2003/04. Premier Insurance Co. (Nepal) Ltd. has distributed stock dividend of 1:1.1 in the year 2006/07 and has distributed cash dividend of 10% in the year 1998/98 through 2002/03 and 5.79 in 2006/07.

4.1.4.3 Realized Return (R), Expected Return $(\bar{R})$ and its Standard Deviation (σ)

Year-end price and dividend amounts are used to calculate dividend yield and capital gain yield is added to find return for each year. Table 4.8 shows the calculation of yearly-realized return, expected return and standard deviation of returns.

Table 4.8. Realized return, Standard Deviation and Expected Return of Premier Insurance Co. (Nepal) Ltd.

F/Y	Closing MPS	Dividend	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	125	10.00	0	0	0
99/00	250	10.00	1.08	0.7280	0.5299
00/01	220	8.00	-0.088	-0.4400	0.1936
01/02	170	8.00	-0.1909	-0.5429	0.2948
02/03	192	10.00	0.1882	-0.1638	0.0268
03/04	210	0.00	0.0938	-0.2583	0.0667
04/05	210	0.00	0	-0.3520	0.1239
05/06	200	0.00	-0.0476	-0.3996	0.1597
06/07	260	335.79	1.9790	1.6269	2.6469
07/08	300	0.00	0.1538	-0.1982	0.0393
			$\sum R$ = 3.1683		$\sum (R-\bar{R})^2$ = 4.0818

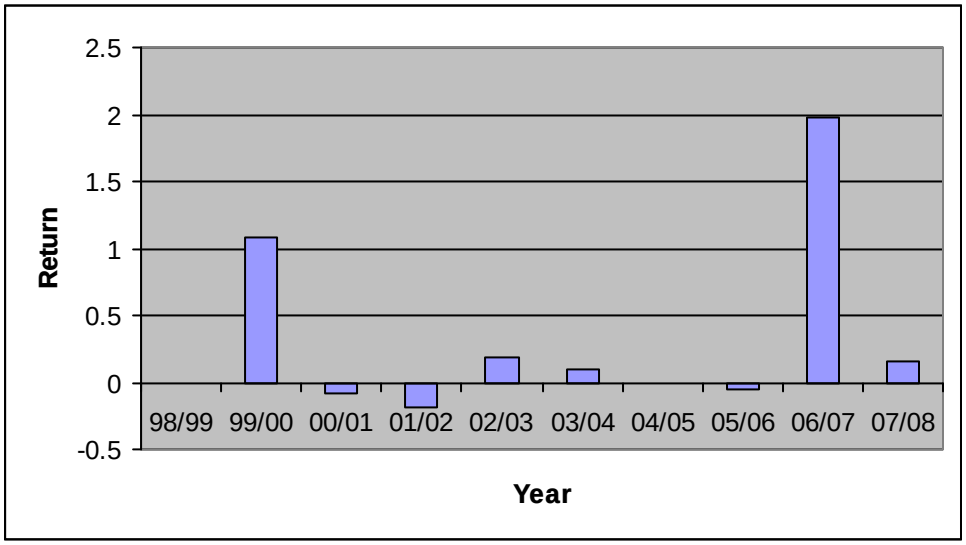
Source: <http:\\www.nepalstock.com>

Expected Return $(\bar{R}) = \sum R / n$ = 3.1683/9 = 0.3520

Standard deviation ($(\pm) = \sqrt{\frac{\sum (R - \bar{R})^2}{n-1}} = \sqrt{\frac{4.0818}{8}} = 0.7143$

Co-efficient of Variation (CV) = $\sigma / \bar{R}$ = 0.7143/0.3520 = 2.0293

Figure 4.8. Annual rate of return of Common Stock of Premier Insurance Co. (Nepal) Ltd.



Source: <http:\\www.nepalstock.com>

Result from table 4.8 and figure 4.8 shows that expected return of the CS of Premier Insurance Co. (Nepal) Ltd. is 35.20% that is high as compared to the market return of 24.09% and investor should bear the risk of 2.0293 and there is variability by 71.43% in the mean return on CS of Premier Insurance Co. (Nepal) Ltd.

4.1.5 Everest Insurance Company Ltd.

4.1.5.1 Introduction

Everest Insurance Company was incorporated in the year 1992 A.D. and listed in NEPSE in the year 1995. This insurance company was established with the authorized capital of Rs. 150000000.00. The paid-up value per share is Rs. 100. In summary,

Authorized Capital : Rs. 150000000.00

Paid-up Capital : Rs. 90000000.00

Issued Capital : Rs. 105000000.00

Par value of shares : Rs. 100

Number of shareholder/s : 8326

4.1.5.2 Data

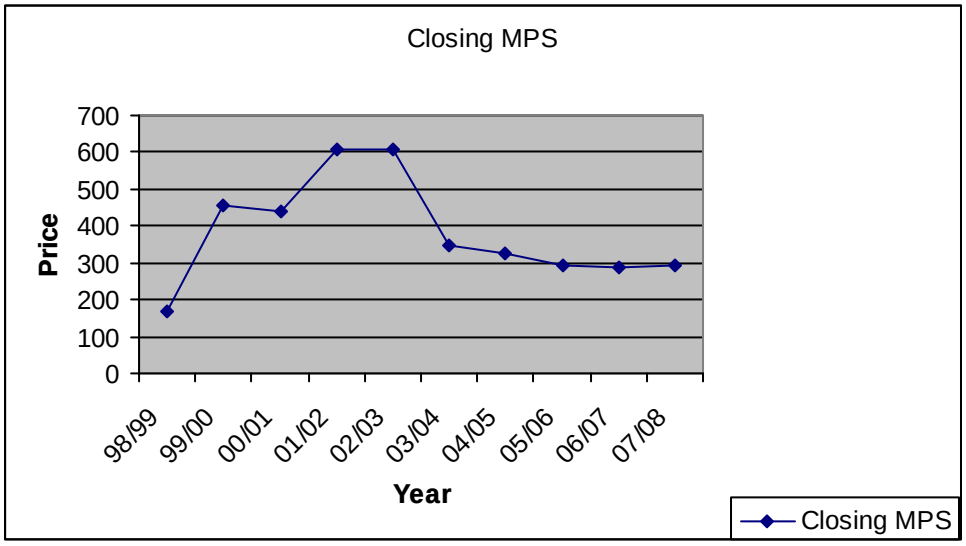
Market price and dividend records of common stock of Everest Insurance Company are shown in Table 4.9. Year-end price movement and annual dividends paid to shareholders of Everest Insurance Company are also shown in the same Table 4.9.

Table 4.9. MPS and Dividend of Everest Insurance Company

F/Y	High MPS	Low MPS	Closing MPS	DPS	Stock Dividend	Total Dividend
98/99	170	121	170	15		15.00
99/00	510	170	455	20		20.00
00/01	545	400	440	20		20.00
01/02	620	400	610	0		0.00
02/03	620	420	610	0	1:1	350.00
03/04	651	350	350	0		0.00
04/05	350	263	325	0		0.00
05/06	325	290	295	0		0.00
06/07	305	281	290	0		0.00
07/08	333	280	291	0	0	0.00

Source: <http:\\www.nepalstock.com>

Figure 4.9. Year-end Price Movement of common stock of Everest Insurance Company



Source: <http:\\www.nepalstock.com>

Price is maximum in the year 2001/02 and 2002/03 and lowest in year 1998/99. Everest Insurance Company has distributed stock dividend of 1:1 in the year 2002/03 which ultimately decreased the price at the year 2003/04.

4.1.5.3 Realized Return (R), Expected Return $(\bar{R})$ and its Standard Deviation (σ)

Year-end price and dividend amounts are used to calculate dividend yield and capital gain yield is added to find return for each year. Table 4.10 shows the calculation of yearly-realized return, expected return and standard deviation of returns.

Table 4.10. Realized return, Standard Deviation and Expected Return of Everest Insurance Company

F/Y	Closing MPS	Dividend	$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$	$R - \overline{R}$	$(R - \overline{R})^2$
98/99	170	15.00	0	0	0
99/00	455	20.00	1.7941	1.5539	2.4147
00/01	440	20.00	0.0110	-0.2292	0.0525
01/02	610	0.00	0.3864	0.1462	0.0214
02/03	610	350.00	0.5738	0.3336	0.1113
03/04	350	0.00	-0.4262	-0.6664	0.4441
04/05	325	0.00	-0.0714	-0.3116	0.0971
05/06	295	0.00	-0.0923	-0.3325	0.1106
06/07	290	0.00	-0.0169	-0.2571	0.0661
07/08	291	0.00	0.0034	-0.2367	0.0561
			$\sum R = 2.1619$		$\sum (R - \overline{R})^2 = 3.3737$

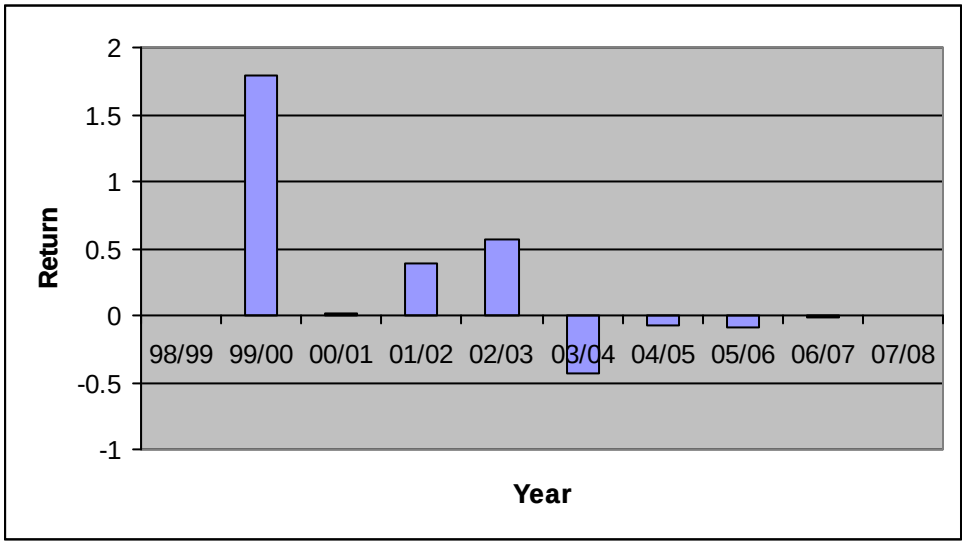
Source: <http:\\www.nepalstock.com>

Expected Return $(\overline{R}) = \sum R / n = 2.1619/9 = 0.2402$

Standard deviation $(\pm) = \sqrt{\frac{\sum (R - \overline{R})^2}{n-1}} = \sqrt{\frac{3.3737}{8}} = 0.6494$

Co-efficient of Variation (CV) = $\sigma / \overline{R}$ = 0.6494/0.2402 = 2.7036

Figure 4.10. Annual rate of return of Common Stock of Everest Insurance Company



Source: <http:\\www.nepalstock.com>

Result from table 4.10 and figure 4.10 shows that expected return of the CS of Everest Insurance Company is 24.02% that is almost equal as compared to the market return of 24.09% and investor should bear the risk of 2.7036 and there is variability by 64.94% in the mean return on CS of Everest Insurance Company.

4.1.6 Market Risk and Return

4.1.6.1 Introduction

The one and only one stock market in Nepal is Nepal Stock Exchange (NEPSE). Price fluctuation in market is represented by the NEPSE Index or Market Index. So, the market return, standard deviation and coefficient of variation are based on the NEPSE index in this research work.

4.1.6.2 Data

Market Portfolio return, its Standard Deviation and Co-efficient of variation is shown in Table 4.11.

Table 4.11. Calculation of Returns, S.D., Expected Returns and C.V. of Market

Year	**NEPSE index**	$R_m = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R_m - \overline{R_m}$	$(R_m - \overline{R_m})^2$
98/99	216.92	0.3279	0.0871	0.0076
99/00	360.70	0.6628	0.4220	0.1781
00/01	348.43	-0.0340	-0.2749	0.0756
01/02	227.54	-0.3470	-0.5878	0.3455
02/03	204.86	-0.0997	-0.3405	0.1160
03/04	222.04	0.0839	-0.1570	0.0246
04/05	320.24	0.4423	0.2014	0.0406
05/06	381.25	0.1905	-0.0503	0.0025
06/07	612.46	0.6065	0.3656	0.1337
07/08	817.30	0.3345	0.09360	0.0088
		$\sum R_m = 2.1677$		$\sum (R_m - \overline{R}_m)^2 = 0.9328$

Source: <http:\\www.nepalstock.com>

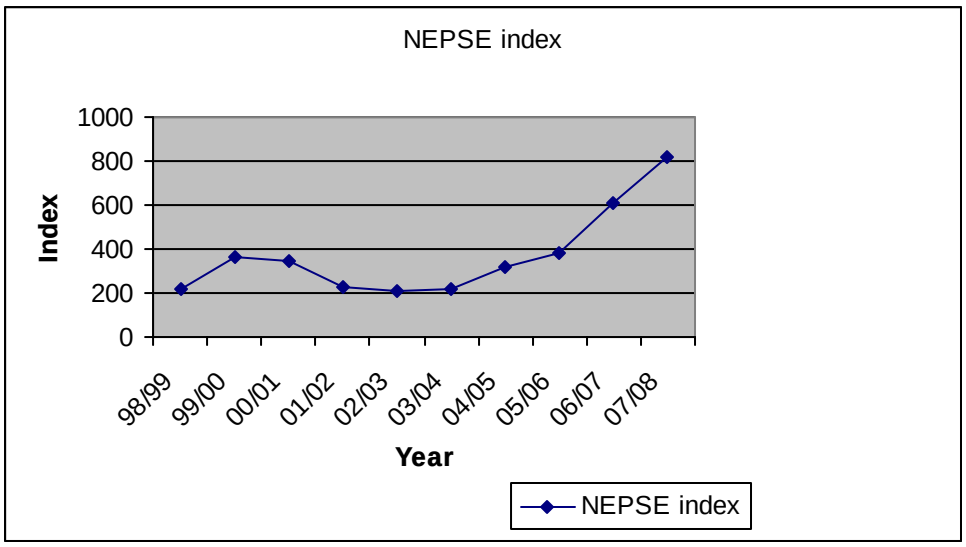
Expected return $(\overline{R_m}) = \sum R_m / n = 2.1677/9 = 0.2409$

Standard deviation $(\pm_m) = \sqrt{\frac{\sum (R_m - \overline{R}_m)^2}{n-1}} = \sqrt{\frac{0.9328}{9-1}} = 0.3415$

Coefficient of Variation (C.V.) = $\frac{\sigma_M}{\overline{R}_M} = 0.3415/0.2409 = 1.4176$

It shows market return is 24.09% and variation in mean return is 34.15% and risk is 1.4176.

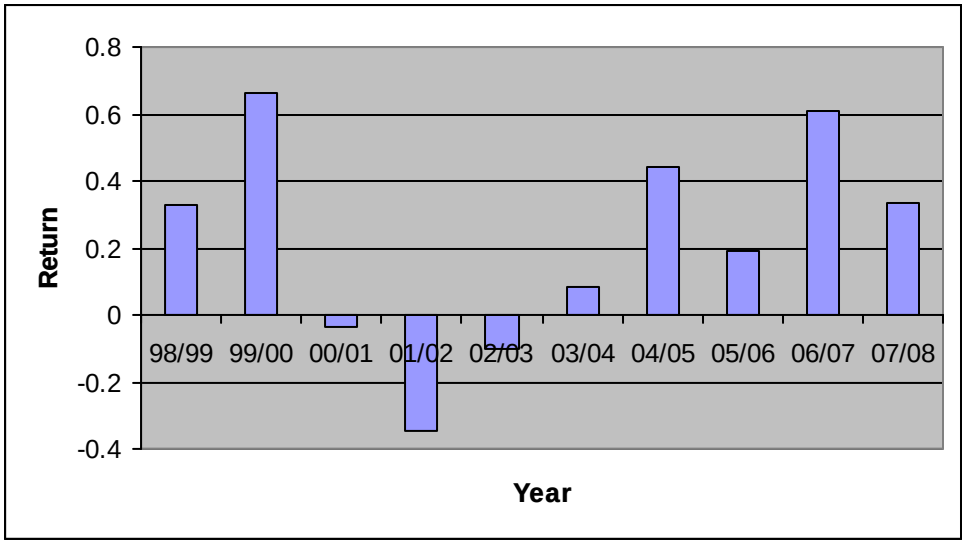
Figure 4.11. Market Index Movements



Source: <http:\\www.nepalstock.com>

In the year 2007/08, the NEPSE index was high at 817.30 and was low in the year 2002/03 with index of 204.86. The NEPSE index seems to be fluctuant from the beginning. There are lots of ups and downs in the index. In the first two years (from 1998/99 to 1999/00), the NEPSE index was in increasing trend. The index was in declining trend in next three years (from 2000/01 to 2002/03) and reached at the lowest point in the year 2002/03. Then, NEPSE index began to rise and reached the highest point in the year 2007/08.

Figure4.12.MarketReturnMovements



Source: <http:\\www.nepalstock.com>

Market return was also high in the year 1999/00, which was 66.28%. There were three negative returns from market from year 2000/01 to 2002/03 but in average, the market return is 24.09% with the variance of 11.66%.

4.1.6.3 Analysis of Market Sensitivity

Analysis of market sensitivity gives very useful insight in the analysis and the selection procedure of common stock in the market, which is explained by its beta co-efficient. Common stock with the given movement in the market status. Beta measures the systematic risk, which cannot be eliminated through the means of diversification. Beta co-efficient of market is always 1.

This statement can be proved as follows:

$$\beta_i = \frac{Cov(R_i R_m)}{\sigma_m^2} = \frac{\sigma_i \sigma_m \rho_{im}}{\sigma_m^2} = \frac{\sigma_i \rho_{im}}{\sigma_m}$$

Where, ρ_{im} = Correlation between market return and individual stock's return.

Hence,

$$\beta_m = \frac{Cov(R_m R_m)}{\sigma_m^2} = \frac{\sigma_m \sigma_m \rho_{mm}}{\sigma_m^2} = \rho_{mm} = 1$$

Hence, Beta Coefficient of market is always equal to 1

Table 4.12. Beta Coefficient for Insurance Company

Company	Beta	Remarks
Nepal Insurance	-0.3027	Low beta
Himalayan General	1.8362	High beta
United Insurance	0.9906	
Premier Insurance	1.3045	
Everest Insurance	0.44	

Source: Refer annexes: 1-5

From table 4.12, it can be concluded that Himalayan General Insurance Co. Ltd. is more sensitive to the market than other remaining companies are and Nepal Insurance Company is less sensitive than other with the market is.

4.2 Inter Company Comparison

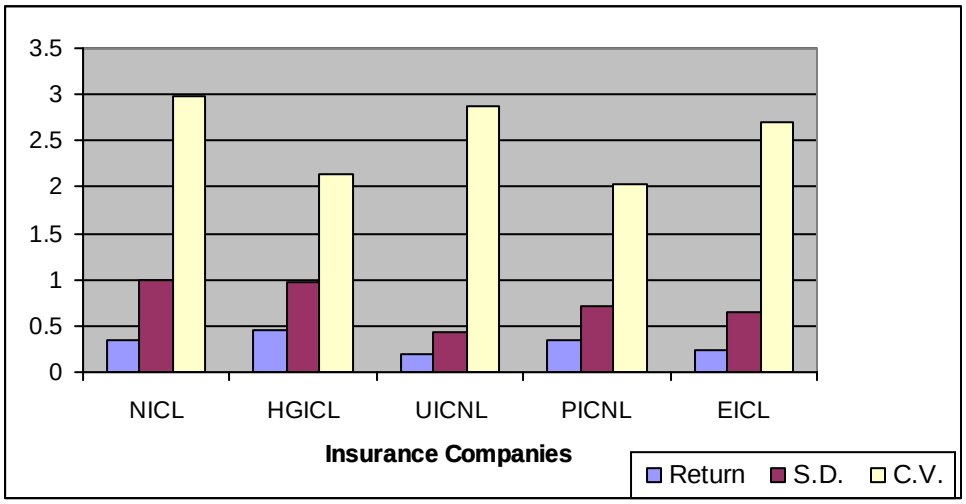
On the basis of above section 4.1, comparative analysis of return and total risk (σ) are performed here. Expected return, standard deviations of returns, coefficient of variations of each insurance company for the year 1998/99 to 2007/08 are given in Table 4.12.

Table 4.13. Expected return, S.D. and C.V. of Each Company

Company	$\overline{R}$	S.D.	C.V.	Remark(s)
NICL	0.3349	0.9975	2.9785	Highest standard deviation
HGICL	0.4520	0.9636	2.1319	Highest return, high standard deviation
UICNL	0.2003	0.4351	2.8717	Lowest standard deviation and lowest return
PICNL	0.3520	0.7143	2.0293	high return, high standard deviation
EICL	0.2402	0.6494	2.7036	moderate return, moderate standard deviation

Source: Refer annexes: 1-5

Figure 4.13. Expected Return, S.D. and C.V. of each company



Source: Refer annexes: 1-5

Table 4.14. Systematic and Unsystematic risk of individual company

Company	Beta	S.D.	Systematic Risk	Unsystematic Risk
NICL	-0.3027	0.9975	0.0107	0.9843
HGICL	1.8362	0.9636	0.3931	0.5354
UICNL	0.9906	0.4351	0.1144	0.082
PICNL	1.3045	0.7143	0.1984	0.3118
EICL	0.44	0.6494	0.0226	0.3991

Source: Refer annex 6

Higher the beta, higher the unsystematic risk. It can be clear from table 15 that company high beta has high unsystematic risk. Moderate beta (i.e. beta almost equal to 1), low unsystematic risk. HGICL has highest beta coefficient and has high unsystematic risk with high standard deviation. UICNL has moderate beta and has lowest unsystematic risk with lowest standard deviation. NICL has negative beta and has highest unsystematic risk with highest standard deviation and lowest systematic risk.

4.2.1 Market Capitalization of Individual Company

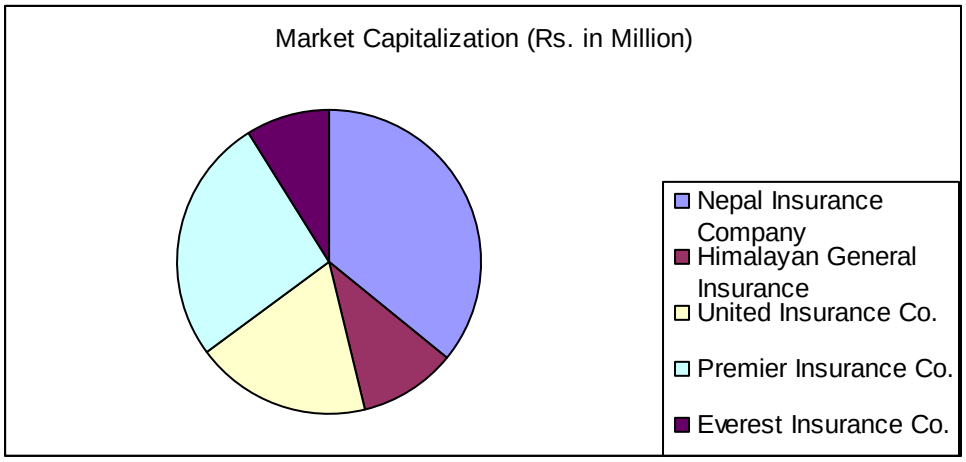
Based on the market capitalization at 2008, mid July, size of each insurance company is presented in Table 4.15. Market capitalization is the total market value at specific time period of the company, industry and market as a whole.

Table 4.15. Market capitalization at mid July 2008

Companies	Market Capitalization (Rs. in Million)
Nepal Insurance Company	359.44
Himalayan General Insurance	103.50
United Insurance Co.	189.00
Premier Insurance Co.	261.90
Everest Insurance Co.	90.00

Source: NEPSE Trading Report 2008

Figure 4.14. Market Capitalizations at mid July 2008



Source: NEPSE Trading Report 2008

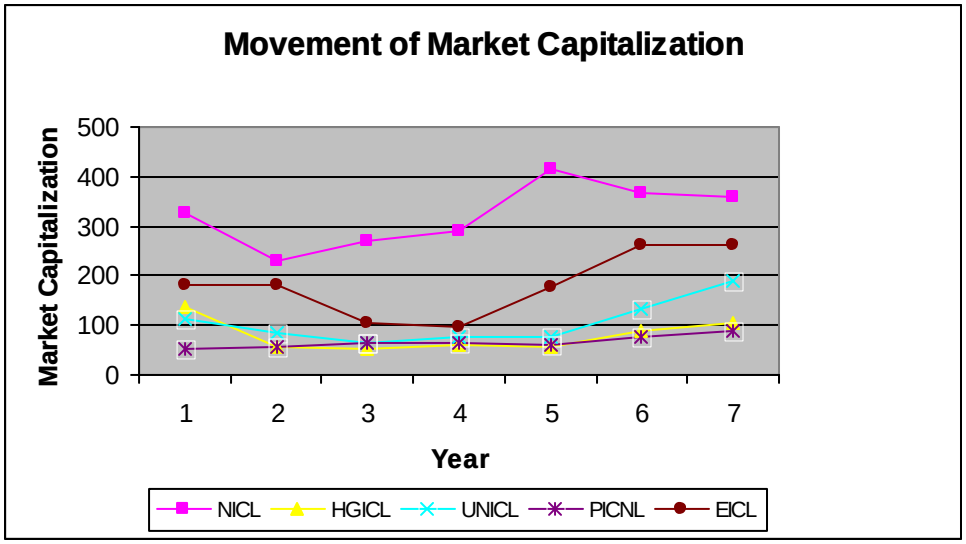
Similarly, a comparison is made on the movement of market capitalization. The table 4.16 shows the comparative movement of market capitalization of insurance companies.

Table 4.16. Year-wise comparative movement of market capitalization (in Million)

Companies	2002	2003	2004	2005	2006	2007	2008
NICL	328.52	228.09	269.25	292.30	415.93	366.63	359.44
HGICL	138.00	57.00	52.50	61.50	56.70	90.00	103.50
UNICL	114.00	82.8	63.00	76.80	75.00	131.40	189.00
PICNL	51.00	57.60	63.00	63.00	60.00	78.00	90.00
EICL	183.00	183.00	105.00	97.50	177.00	261.00	261.90

Source: <http:\\www.nepalstock.com>

Figure 4.15. Year-wise comparative movement of Market Capitalization



Source: <http:\\www.nepalstock.com>

Coefficient of variation (CV) is the most appropriate basis of taking decision on the investment in single security because it measures risk per unit return of a stock. So s.d. and expected return are included in it. As indicated in diagram 4.15, the line that is nearer to the x-axis means that investor must be careful to invest in that security regarding its CV.

4.3 Inter Industry Comparison

By the end of F/Y 2007/08, the market capitalization value of the listed securities reached at Rs. 366247.60 million. In the last fiscal year, this value was Rs.35240.38 million. During this year, the highest value of market capitalization was Rs. 42489.34 million and the lowest was Rs. 3386.45 million. The percentage contribution of market capitalization on GDP is estimated to be 44.3.

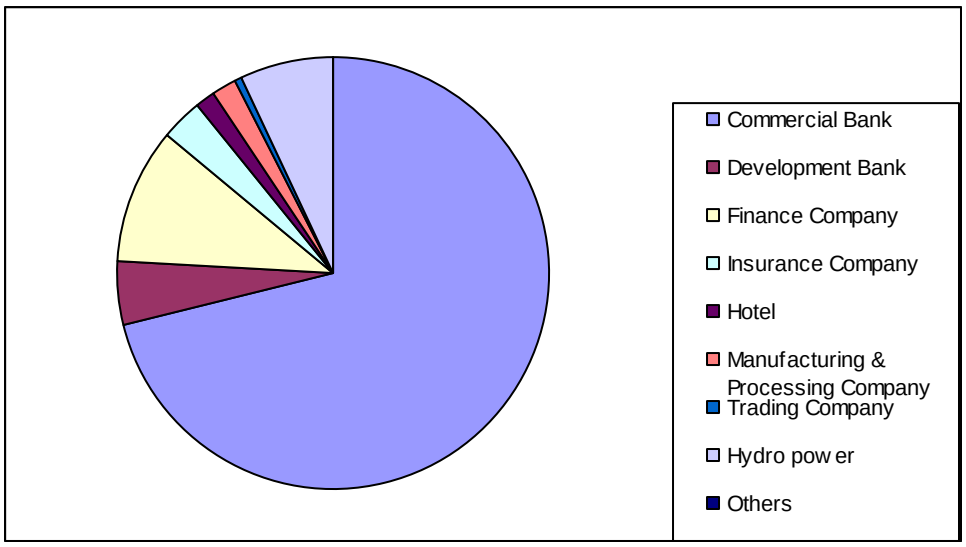
To compare size of industries, Table 4.17 and the Figure 4.16 are presented below. We can observe the commercial banking industry has majority value of total market share i.e. 70.98% and insurance companies have only 3.07% of market share.

Table 4.17. Market capitalization of each Industry at Mid July 2008

Industry	**Market Capitalization (Rs. in Million)**	**Percent**
Commercial Bank	259955.30	70.98
Development Bank	17997.80	4.91
Finance Company	37674.4	10.29
Insurance Company	11241.40	3.07
Hotel	4809.70	1.31
Manufacturing & Processing Company	7516.90	2.05
Trading Company	1170.20	0.32
Hydro power	25863.30	7.06
Others	18.70	0.01
Total	366247.60	100

Source: SEBO/N, Annual Report 2007/2008.

Figure 4.16. Market Capitalization of each industry at July 15, 2008



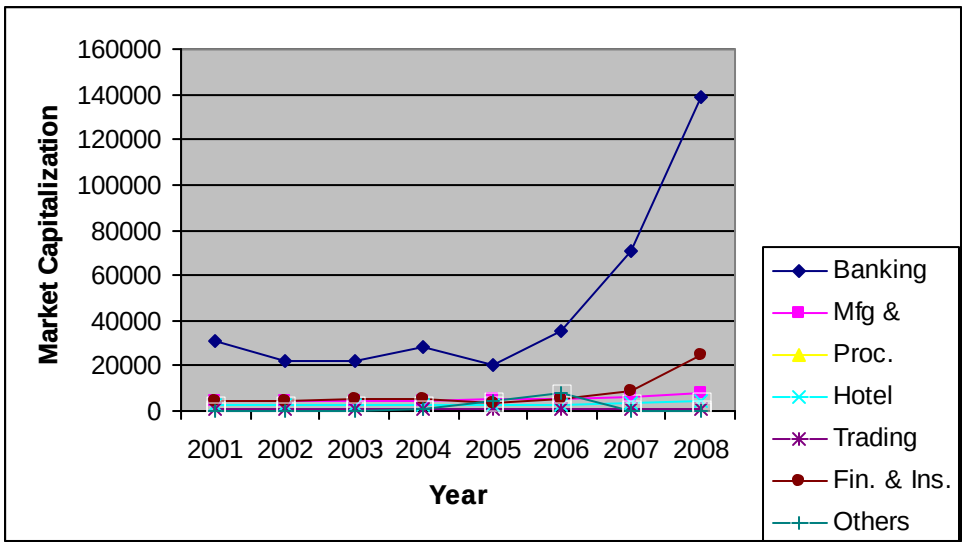
Source: SEBO/N, Annual Report 2007/2008.

Table 4.18. Industry wise market Capitalization (Rs. in Million)

Industry	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Banking	31235.21	22298.51	22453.49	27944.27	20584.98	35135.91	70799.49	138976.60
Mfg & Proc.	4657.29	4634.47	4731.30	4644.59	5024.83	5472.11	6199.99	7516.90
Hotel	2904.62	2807.74	2550.61	2391.39	2308.38	2344.21	3261.11	4809.70
Trading	552.36	527.48	488.02	490.37	635.88	764.44	796.36	1170.2
Fin. & Ins.	4484.22	4328.55	4949.70	5461.05	3816.12	4951.11	8974.55	24457.90
Others	249.88	107.12	67.26	493.09	4594.62	8008.94	24.71	18.70

Source: SEBO/N, Annual Reports

Figure 4.17. Industry wise movement of market capitalization



Source: SEBO/N, Annual Reports

Before year 2001/02, the different companies listed in NEPSE were categorized into six sectors i.e. Banks, Manufacturing & Processing Company, Hotel, Trading Company, Finance Company and Insurance Company and Others. But from the year 2001/02, it was categorized into eight sectors, splitting Banking sector into Commercial Banks and Development Banks and Finance Company and Insurance Company as a separate sectors. So, for the convenience of the study in Table 19, the NEPSE index of Commercial Bank and Development bank from year 2001/02 to 2007/08 as an average of the respective years. And as so for the Insurance Company and Finance Company.

Table 4.19. Industry wise NEPSE index at closing date of F/Y

F/Y	Banking	Mfg & Prod	Hotel	Trading	Fin. & Ins	Others	Market
98/99	219.44	229.83	242.52	123.99	195.68	376.10	216.92
99/00	397.17	340.59	346.15	123.74	305.98	308.46	360.70
00/01	397.38	349.31	291.34	115.55	318.67	190.90	348.43
01/02	241.15	216.51	216.51	102.20	288.76	77.34	227.54
02/03	223.31	250.13	196.68	94.56	224.39	48.56	204.86
03/04	187.31	190.03	195.99	184.41	175.30	237.67	222.04
04/05	271.25	276.50	178.00	123.20	274.32	347.65	320.24
05/06	365.95	301.11	180.77	148.11	321.31	410.00	381.25
06/07	664.44	348.63	251.47	155.37	542.14	818.12	612.46
07/08	1135.8	423.70	370.90	204.10	985.00	768.30	817.30

Source: SEBO/N, Annual Reports.

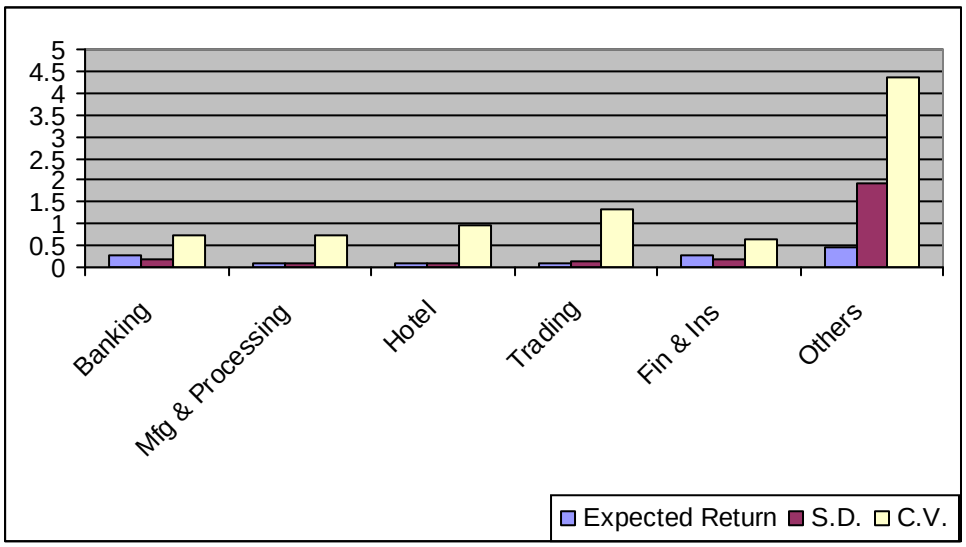
Table 4.20. Expected Return, SD and CV of Industries

Industry	Expected Return	S.D.	C.V.
Banking	0.2783	0.2053	0.7376
Mfg & Processing	0.1066	0.0804	0.7452
Hotel	0.0785	0.0767	0.9768
Trading	0.1027	0.1354	1.3177
Fin & Ins	0.2567	0.1651	0.6434
Others	0.4381	1.9187	4.3794

Source: Refer annexes: 7-12

Expected rate of return, Standard Deviation and Co-efficient of variation are taken as a main concern to compare between industries. Return of each industry is calculated on the basis of industry-wise NEPSE index; Year-end industry wise index is given in Table 4.19. Similarly, Table 4.20 shows these variables of each industry. Details of the calculation of each variables of each industry are shown in Appendices.

Figure 4.18. Industry wise Expected Return, S.D. and C.V.



Source: Refer annexes: 7-12

Expected Return and risk (Standard Deviation) are found to be high in other Industry, Expected rate of return is 43.81% and Standard Deviation is 191.87%. Expected Return and risk on hotel Industry is low.

Market return was high in 1999/00 and low in the year 2001/02. It is in decreasing order from 1999/00 to 2001/02 and increased till the year 2004/05. Again, it decreased in the year 2005/06 and increased in 2006/07. In last three years of research period, market return remained volatile.

In comparison with market return (24.09%), Banking Industry (27.83%), Finance and Insurance Industry (25.67%), and others Industry (43.81%) have higher expected return than market return. Hotel Industry (7.85%), Processing Industry (10.66%), Trading Industry (10.27%) has lower return than market return.

In comparison with market risk (34.15%), other industry (191.87%) has higher risk than market risk. Banking Industry (20.53%), Manufacturing and Processing Industry (8.04%), Hotel Industry (7.67%), Trading and Industry (13.54%), Finance and Insurance (16.51%) have lower risk than market risk.

4.4 Pricing Model

In this part of the research, Capital Assets Pricing Model (CAPM) is used as pricing model. In the above section 4.1.6.3, it is already calculated the beta coefficient for individual company. The rate of Treasury bill at the year ended 16 July 2008 is 5.41%. The price situation based on CAPM model is as below:

Table 4.21. Equilibrium return, Expected return and price evaluation

Company	Beta	$E(R_i)=R_f+(R_m-R_f)\beta_i$	Expected return $(\overline{R}_i)$	Price situation
NICL	-0.3027	-0.0024	0.3349	Underpriced
HGICL	1.8362	0.3971	0.4520	Underpriced
UICNL	0.9906	0.2391	0.1515	Overpriced
PICNL	1.3045	0.2978	0.3520	Underpriced
EICL	0.4400	0.1363	0.2402	Underpriced

Source: Refer annexes: 1-5

Where,

R_f = Risk free rate of return = 5.41% or 0.0541 (Risk Free rate is based on weighted average Treasury Bills rate of 91 days for the year 2007/08. Source: NRB)

$(\overline{R}_m)$ = Market rate of return = 24.09% or 0.2409 (Expected market rate of return is for the year 1998/99 to 2007/08.)

E (R_i) = Equilibrium rate of return of Capital Assets

From table 4.21, beta coefficient of HGICL and PICNL are greater than market beta, so stocks of these companies are aggressive. The beta coefficient of UICNL is almost equal to the market beta, so stock of this company is moderate and the beta coefficient of NICL and EICL are less than the market beta, stock of these companies are defensive.

Most of the companies stocks are underpriced so these (four) companies are having stock with good investment opportunities. Their stock value will increase in the future providing investor's high return. Rational and efficient investment decision makers need to analyze other dimensions too.

4.4.1 Analysis of Risk Diversification

If the portfolio is created, it reduces the unsystematic risk dramatically without losing considerable return. Therefore, a brief analysis of risk and return is extended to portfolio context.

The expected return of a portfolio is simply a weighted average of the expected returns of securities comprising that portfolio. The weights are equal to the proportions of the total funds invested in each security.

"Not putting all eggs in one basket" or spreading the risks means simple diversification. The analysis is based on two assets, the tools for analysis are based on two assets, and tools for analysis are presented in CHAPTER III.

Table 4.22 shows the calculation of covariance of the returns of the given two stocks Cov(R_A R_B) and proportion of stock A (W_A) that minimizes the risk, standard deviation.

$$W_A = \frac{\sigma_A^{\,2} - \mathrm{Cov}(R_A R_B)}{\sigma_A^{\,2} + \sigma_B^{\,2} - 2\mathrm{Cov}(R_A R_B)}$$

Where,

$\sigma_A^{\,2}$ = Standard deviation of stock A

$\sigma_B^{\,2}$ = Standard deviation of stock B

W_A = Proportion of stock A

W_B = Proportion of stock B.

Table 4.22. Portfolio risk and return

S.N.	Portfolio	Weight	Covariance	$\overline{R}_P$	σ_P
1	NICL & HGICL	W(N)=0.52 W(H)=0.48	-0.0481	0.3911	0.6775
2	NICL & UICNL	W(N)=0.83 W(U)=0.17	-0.0114	0.3120	0.8293
3	NICL & PICNL	W(N)=0.64 W(P)=0.36	-0.0999	0.3411	0.6539
4	NICL & EICL	W(N)=0.71 W(E)=0.29	0.0396	0.3074	0.7439
5	HGICL & UNICL	W(H)=1.26 W(U)=-0.26	0.3158	0.5174	1.1314
6	HGICL & PICNL	W(H)=1.37 W(P)=-0.37	0.5997	0.4890	1.0976
7	HGICL & EICL	W(H)=0.75 W(E)=0.25	0.1722	0.3991	0.7831
8	UICNL & PICNL	W(U)=-0.12 W(P)=1.12	0.2202	0.3702	0.7639
9	UICNL & EICL	W(U)=0.14 W(E)=0.86	0.1440	0.2346	0.5919
10	PICNL & EICL	W(P)=0.57 W(E)=0.43	0.1268	0.3039	0.5531

Source: Refer annexes: 13-22

By using diversification, we can minimize risk. Diversification can only reduce risk but cannot increase return. Portfolio return is simply the average return of individual security's returns. Hence, average of high return is also high.

While creating portfolio between HGICL and UICL, expected return is very high, 51.74% and their weight is 1.26 and -0.26 respectively. Borrowing from the UICNL and investing in HGICL is found to be of profitable to an investor. Variation in mean return is 113.14% that is high as compared to other investing options.

Creating portfolio between PICNL and EICL, the risk can be minimized up to 55.31% and return will be only 30.39%.

4.4.2 Correlation

Most stocks are positively correlated, not perfectly. In this situation, some risk can be reduced. Here, Correlation between each company is presented below (Refer annex 23 for detail):

Table 4.23. Correlation between each company

	NICL	**HGICL**	**UICNL**	**PICNL**	**EICL**
NICL	1	-0.05	-0.03	-0.14	0.06
HGICL		1	0.75	0.87	0.28
UICNL			1	0.71	0.51
PICNL				1	0.27
EICL					1

Source: Refer annex 23

4.5 Major Findings of the Study

Major findings of the study are summarized as below:

1. Expected return, S.D., and C.V. of Banks are as below:

Company	Expected Return	S.D.	C.V.	Remark(s)
NICL	0.3349	0.9975	2.9785	Highest standard deviation
HGICL	0.4520	0.9636	2.1319	Highest return
UICNL	0.1515	0.4351	2.8717	Lowest return & lowest standard deviation
PICNL	0.3520	0.7143	2.0293	
EICL	0.2402	0.6494	2.7036	

2. Expected return of other industry is found to be of highest. I.e. 43.81%, S.D. of other industry is also highest that is 191.87% and expected return of hotel industry is lowest at 7.85% with lowest standard deviation of 7.67%

3. Market rate of return, expected return is 24.09%.

4. Systematic risk of the different companies under study is as below:

Company	Beta
NICL	-0.3027
HGICL	1.8362
UICNL	0.9906
PICNL	1.3045
EICL	0.44

5. Four of the companies under study are underpriced. They are Nepal Insurance Company, Himalayan General Insurance, Premier Insurance and Everest Insurance. One is overpriced and it is United Insurance Company Ltd.

6. Systematic risk and unsystematic risk of companies are as follows:

Company	**Systematic Risk**	**Unsystematic Risk**
NICL	0.0107	0.9843
HGICL	0.3931	0.5354
UICNL	0.1144	0.082
PICNL	0.1984	0.3118
EICL	0.0226	0.3991

7. While creating portfolio of two assets, expected return on investing HGICL and UICL is found to be highest i.e. 51.74%.

Chapter V

Summary, Conclusion and Recommendations

This chapter deals with the findings and conclusions derived from the study of above companies. This chapter consists of three sections: the first section provides the summary of the study, the second section draws the conclusions of the study and the final section gives recommendations to the problem observed on the basis of the findings.

5.1 Summary

The relationship between risk and return is described by investor's perception about risk and their demand for compensation. No investor will like to invest in risky assets unless he is assured of adequate compensation for the acceptance of risk. Hence, risk plays a central role in the analysis of investment. A rational investor always seeks to find the optimal portfolio so that this will reduce risk in his/her investment. Investors often ask about the total risk they will be assuming an investment and like to know if, the risk premium provided is enough. Higher risk gives higher premium and the trade off between the two assumes a linear relationship between risk and risk premium.

Five samples are taken among 17 listed insurance companies to analyze the risk, return and portfolio analysis in common stock investment. During the research work, a brief review of literature has been conducted. Mathematical and financial tools are used in data analysis. Tables, graphs and diagrams are used to present the data and results. Secondary data are collected from the NEPSE, NRB, and related companies.

Major problem faced by investors is inability to create an optimal portfolio, that's why investors loose their huge money in the share market. Major objective of this research work is to project an optimal portfolio in CS investment among the CS of insurance companies of Nepal. For the study, only ten years data are used.

Books, Journals, and Masters research works are reviewed for the research purpose. Very limited articles about Nepalese capital market are found. The major research gap found is about the estimation of an optimal portfolio between more than two assets.

This research work covers sample of five different insurance companies among the population of 17 companies. Secondary data are analyzed during the study.

Secondary data from various sources i.e. website of Insurance Companies, SEBO/N, NEPSE, NRB, Books and Annual reports published by SEBO/N, NEPSE and insurance companies are analyzed. Shareholders of Premier Insurance Co. (Nepal) Ltd. found to be high i.e. 8476 among the taken sample companies. Par value of all insurance companies (sample companies) equal as Rs. 100. Expected Rate of Return, Standard Deviation, Co-efficient of variation and beta co-efficient of individual insurance companies are calculated. Portfolio risk return and risk between companies are calculated. Sector wise risk, return and beta co-efficient are also calculated. Correlation co-efficient between companies is also calculated.

5.2 Conclusion

Stock market investment is considered as a gambling. Many people have unrealistically optimistic or pessimistic expectations about stock market investment or perhaps just a fear of the unknown. This study enables investors to put the returns they can expect and the risk they may take into better perspective. Nepalese stock market is in emerging stage. It is developed in accelerating since the political change in 1990. This is effect of openness and liberalization in national economy. But, due to the lack of knowledge and required information, Nepalese private investors are unable to analyze the securities as well as market prosperity.

From above study, the return is the income received on a stock investment, which is usually expressed in percentage. Expected return on CS of HGICL is maximum (i.e. 45.20%). This high return is due to stock dividend in the year 2006/07 and consistent cash dividend given to its shareholders from the year 1998/99 to 2001/02 and in the year 2006/07. Expected return of UICNL is minimum (i.e. 15.15%).

Standard deviation measures the unsystematic risk, which is not defined by the market so NICL's unsystematic risk is very high (i.e. 99.75%). Unsystematic risk of EICL is found to be of very low (i.e. 64.94%). Beta measures the systematic risk. HGICL has highest systematic risk (i.e. β=1.8362) and the lowest systematic risk is of NICL i.e. β=-0.3027. Investing in the stock of HGICL and PICNL will be the aggressive type of investment due to exceed of beta more than 1 and the investment in NICL, UICNL and EICL is defensive type of investment.

CAPM describes the relationship between risk and equilibrium return. In this model, risk free rate plus a premium based on systematic risk of the security is equilibrium rate of return of the stock. Comparing expected rate of return and equilibrium rate of return, four insurance companies are underpriced, they are NICL, HGICL, PICNL and EICL. UICNL is overpriced. This implies there is chance of increase of stock value in near future, so investor can purchase the CS of any of these underpriced insurance companies.

Using Markowitz simple diversification, risk could be diversified on investing in two or more assets. Investing on PICNL and EICL, unsystematic risk could be reduced to 55.31%. Before diversification, risk of these companies was 71.43% and 64.94% respectively.

Correlation co-efficient between NICL and PICNL is very low i.e. -0.14. This means they are negatively correlated and correlation between HGICL and PICNL is very high i.e. 0.87.

5.3 Recommendations

Following recommendations are forwarded on the basis of the research work. The recommendations are presented separately for investors and institutions:

1. Investors

I. To beat the stock market, proper analysis of individual security, industry and overall market is always required. This is proved by present political situation and declining of NEPSE index. An investor should buy securities when market

is rising (NEPSE index) and sell securities when market performance is falling, hold securities, which are performing better than the market.

II. Investor should invest in CS of HGICL so that investor could easily forecast rising or falling of his/her wealth position with respect to the market return since systematic risk of the HGICL is high.

III. Higher the risk, higher the return. In case of portfolio construction among many assets, it is recommended to invest in the assets whose correlation is negative since there will be more reduction of risk. Higher the coefficient of correlation, less degree of risk is reduced.

2. Institutions

I. NEPSE, being a major operative body in the area of secondary market, should keep on developing the different parameters related to the congenial functioning of the stock market. It needs to get into the modernization and further to this it needs to develop efficient and effective channels of information related to investment in companies listed.

II. Securities Exchange Board/ Nepal being the apex body in our nation for the regulation and development of capital market, it should initiate research and development program, seminars, workshops, training program etc. in interval of time. It should be stricter regarding rules and regulation in securities trading. SEBO/N seems to be more flexible towards corporations.

III. In order to develop the healthy economic system in the country, government should be keeping, devising and issuing rules and regulation regarding the operation of stock market.

IV. GoN needs to manage government securities trading from NEPSE trading floor.

V. Government needs to amend rules and regulations regarding stock trading time to time. Political stability is must for the economic prosperity and increasing trend of business.

VI. BIBLIOGRAPHY

VII.

VIII. <u>Books</u>

IX. Ackerman (1980), ***How to Invest in the Philippine Stock Market***. New Delhi: McGraw-Hill Inc.

X. Bhalla, V. K. (2000), ***Financial Management***. 5th Ed. New Delhi: Prentice Hall of India.

XI. Cheney, John M. & Moses, Edward A. (1992), ***Fundamentals of Investments***. New York: West Publishing Company.

XII. Fischer, Donald E. and Jordon, Ronald J. (2002), ***Security Analysis and Portfolio Management***, 6th Ed. New Delhi: Prentice-Hall of India Private Limited.

XIII. Francis, Jack Clark (1991), ***Investments: Analysis and Management***, 7th Ed. New York: McGraw-Hill, Inc.

XIV. Gitman, Lawrence G (1995), ***Principle of Managerial Finance,*** 4th ed, New York: Wright State University.

XV. Gitman, Lawrence G (1985), ***Principle of Managerial Insurance,*** 4th ed, Harper and Row Inc

XVI. Howie, R J Aug 1997 "Investment Risk & Asset Modelling"

XVII. Pandey, I. M. (1991), ***Financial Management***. New Delhi: Bikash Publishing House.

XVIII. Pike, Richard and Neale (1996), ***Corporate Finance and Investment decisions and Strategies***. New Delhi: Prentice-Hall of India Pvt. Ltd.

XIX. Prasanna, Chandra (1995), ***The Investment Game***, 6th Ed. New Delhi: Tata McGraw-Hill Publishing Company Ltd.

XX. Sharpe, William F., Alexander, Gordon J. & Bailey, Jeffery V. (1996), ***Investment***, 5th Ed. New Jersey: Prentice-Hall.

XXI. Van Horne, James C. (1997), ***Financial Management and Policy***, 7th Ed. New Delhi: Prentice Hall of India.

XXII. Van Horne, James C. and Wachowicz, John M., Jr. (1995), ***Fundamental of Financial Management***, 9th Ed., New Jersey: Prentice Hall Inc.

XXIII. Weston, Basley & Brigham (1996). ***Investment Analysis***. New York: McGraw-Hill Inc.

XXIV. Weston, J. Fred & Brigham, Eugene F. (1995), ***Managerial Finance***, 7th Ed. New York: The Dryden Press.

XXV. Weston, J. Fred & Copeland, Thomas E., ***Managerial Finance***, 9th Ed. New York: The Dryden Press.

XXVI. Weston, J. Fred and Fama, Eugene F. (1999), ***Managerial Finance***, Hold Saunders Internation Editions.

XXVII. Wolff, Howard K. & Pant, Prem R. (2002), ***Social Science Research and Thesis Writing***, 3rd Ed. Kathmandu: Buddha Academic Publishers & Distributor Pvt. Ltd.

XXVIII.

XXIX. Journal Articles

XXX. Alexander, Gordon J., Resnick, Bruce G. (1985), **"Estimation Risk and Optimal portfolio Selection"**, Vol. 40, No. 1, The Journal of Finance

XXXI. Barr, Graham D. I. and Bradfield, David J. (1988), **"Portfolio Selection in Thinly Traded Environments-A Case Study"**, Vol. 9, No. 4. Managerial and Decision Economics.

XXXII. Byrne, Peter and Lee, Stephen (2004), **"Different risk measures: different portfolio compositions?"**, Vol. 22, No. 6. Journal of Property Investment & Finance.

XXXIII. Elyasiani, Elyas (2004), **"Bank Stock Return Sensitivities to the Long-term and Short-term Interest Rates: A Multivariate GARCH Approach"**, Vol. 30, No. 9. Managerial Finance.

XXXIV. Litner, John. (1990). **"The valuation of Risk Assets & the Selection of Risky Investments in Stock Portfolios & Capital Budgets"**. Review of Economics & Statistics.

XXXV. Pradhan, Radhe S. (1993), **"Stock market behaviour in a small capital market: A case of Nepal"**, Vol. IX-No. 1. The Nepalese Management Review.

XXXVI. Salavitabar, Hadi, **"Investment Analysis and Portfolio Management"**. State University of New York, ISBN 0-205-12283-3.

XXXVII. Sharpe, William F. (1967), **"Portfolio Analysis"**, Vol. 2, No. 2. The Journal of Financial and Quantitative Analysis

XXXVIII. Shrestha, Manohar K. (1947), **"Shareholders democracy and annual general meeting feedback"**.

XXXIX. Shrestha, Manohar K. (1992), **"Capital Market in Nepal: Changing Dimensions and strategies"**. Nepalese Management Review.

XL. Thesis

XLI. Adhikari, Deepak (2002), **"Risk and return on common stock investment A study of some listed Commercial Banks in Nepal"**. An unpublished Master's Degree Thesis, T.U.

XLII. Bhandari, Ramesh Kumar (2003), **"Risk Return analysis in common stock Investment of listed companies in Nepal"**. An unpublished Master's Degree Thesis, T.U.

XLIII. Bhatta, Gopal P., (1995), **" Assessment of Performance of Listed Companies in Nepal"** MBA Thesis, TU Kathmandu.

XLIV. Pokhrel, Narayan (2004), **"Portfolio analysis on common stock of Joint venture Banks in Nepal"**. An unpublished Master's Degree Thesis, T.U.

XLV. Poudel, Narayan Prasad (2001), **"A study on share price movements of joint Venture commercials banks in Nepal"**. An unpublished Master's Degree Thesis, T.U.

XLVI. Sapkota, J.B. (2005) **"Risk and Return Analysis in common stock investment"**. An unpublished Master's Degree Thesis, T.U.

XLVII. Sitaula, Riddi Prakash (2003**), "Risk and Return Analysis of Joint Venture Banks of Nepal"**. An unpublished Master's Degree Thesis, T.U.

XLVIII.

XLIX. Others

L. A Post Doctoral research paper, developed by scholars of Tianjin University, Tianjin, Xiangtan University, Hunan and Peking University. ***<http://www.china-review.com>***

LI. Annual Report (Various Issues), Securities Board, Nepal

LII. Official website of Nepal Rastra Bank, ***<http://www.nrb.org.np>***

LIII. Official website of Nepal Stock Exchange, <***http://www.nepalstock.com***>

LIV. Trading Reports (Various Issues), Nepal Stock Exchange.

LV. Annex 1

LVI. Calculation of beta coefficient of Nepal Insurance Company Limited

LVII. Calculation of covariance between Nepal Insurance Company Limited and Market

F/Y	R_N	R_M	$R_N - \bar{R}_N$	$R_M \quad \bar{R}_M$	$(R_N - \bar{R}_N)(R_M - \bar{R}_M)$
99/00	0.6196	0.6628	0.2847	0.4584	0.1305
00/01	2.9137	-0.034	2.5788	-0.2384	-0.6148
01/02	-0.1613	-0.347	-0.4962	-0.5514	0.2736
02/03	-0.1231	-0.0997	-0.458	-0.3041	0.1393
03/04	-0.1776	0.0839	-0.5125	-0.1205	0.0618
04/05	-0.0133	0.4423	-0.3482	0.2379	-0.0828
05/06	0.0946	0.1905	-0.2403	-0.0139	0.0033
06/07	-0.1185	0.6065	-0.4534	0.4021	-0.1823
07/08	-0.0196	0.3345	-0.3545	0.1301	-0.0461
Total	3.0145	1.8398			-0.3175

LVIII. $\bar{R}_N = \frac{\sum R_N}{n} = 3.0145/9 = 0.3349$

LIX. $\bar{R}_M = \frac{\sum R_M}{n} = 1.8398/9 = 0.2044$

LX. $\sigma_M^2 = \frac{\Sigma (R_M \quad \bar{R}_M)^2}{n-1} = \frac{0.9328}{9-1} = 0.1166$

$$\mathrm{Cov}(R_N, R_M) = \frac{\sum (R_N - R_M)(R_M - \overline{R}_M)}{n}$$

LXI.
$$= \frac{-0.3175}{9}$$
$$= -0.0353$$

LXII. Now,

$$\beta_N = \frac{\mathrm{Cov}(R_N, R_M)}{\sigma_M{}^2}$$

LXIII.
$$= \frac{-0.0353}{0.1166}$$
$$= -0.3027$$

LXIV.

LXV.

LXVI.

LXVII.

LXVIII.

LXIX. Annex 2

LXX. Calculation of beta coefficient of Himalayan General Insurance Co. Ltd.

LXXI. Calculation of covariance between Himalayan General Insurance Co. Ltd. and Market

F/Y	R_H	R_M	$R_H - \bar{R}_H$	$R_M \quad \bar{R}_M$	$(R_H - \bar{R}_H)(R_M - \bar{R}_M)$
99/00	1.5	0.6628	1.0480	0.4584	0.4804
00/01	0.0909	-0.034	-0.3611	-0.2384	0.0861
01/02	-0.1579	-0.347	-0.6099	-0.5514	0.33631
02/03	-0.1556	-0.0997	-0.6076	-0.3041	0.1848
03/04	-0.0789	0.0839	-0.5309	-0.1205	0.0640
04/05	0.1714	0.4423	-0.2806	0.2379	-0.0667
05/06	-0.078	0.1905	-0.5300	-0.0139	0.0074
06/07	2.6259	0.6065	2.1739	0.4021	0.8741
07/08	0.15	0.3345	-0.3020	0.1301	-0.0393
Total	4.0678	1.8398			1.9271

LXXII. $\bar{R}_H = \frac{\sum R_H}{n} = 4.0678/9 = 0.4520$

LXXIII. $\bar{R}_M = \frac{\sum R_M}{n} = 1.8398/9 = 0.2044$

LXXIV. $\pm_M^2 = \frac{\sum (R_M - \bar{R}_M)^2}{n-1} = \frac{0.9328}{9-1} = 0.1166$

$$\text{Cov}(R_H, R_M) = \frac{\sum (R_H - \bar{R}_H)(R_M - \bar{R}_M)}{n}$$

LXXV.
$$= \frac{1.9271}{9}$$
$$= 0.2141$$

LXXVI. Now,

$$\beta_H = \frac{\text{Cov}(R_H, R_M)}{\sigma_M^{\,2}}$$

LXXVII.
$$= \frac{0.2141}{0.1166}$$
$$= 1.8362$$

LXXVIII.

LXXIX.

LXXX. Annex 3

LXXXI. Calculation of beta coefficient of United Insurance Co. (Nepal) Ltd.

LXXXII. Calculation of covariance between United Insurance Co. (Nepal) Ltd. and Market

F/Y	R_U	R_M	$R_U - \bar{R}_U$	$R_M \quad \bar{R}_M$	$(R_U - \bar{R}_U)(R_M - \bar{R}_M)$
99/00	1.0079	0.6628	0.8076	0.4584	0.3702
00/01	-0.0367	-0.034	-0.237	-0.2384	0.0565
01/02	-0.1316	-0.347	-0.3319	-0.5514	0.1830
02/03	-0.1842	-0.0997	-0.3845	-0.3041	0.1169
03/04	-0.2391	0.0839	-0.4394	-0.1205	0.0529
04/05	0.219	0.4423	0.0187	0.2379	0.0045
05/06	-0.0234	0.1905	-0.2237	-0.0139	0.0031
06/07	0.752	0.6065	0.5517	0.4021	0.2218
07/08	0.4384	0.3345	0.2381	0.1301	0.0310
Total	1.8023	1.8398			1.0399

LXXXIII. $\bar{R}_U = \frac{\sum R_U}{n} = 1.8023/9 = 0.2003$

LXXXIV. $\bar{R}_M = \frac{\sum R_M}{n} = 1.8398/9 = 0.2044$

LXXXV. $\pm_M^2 = \frac{\sum (R_M - \bar{R}_M)^2}{n-1} = \frac{0.9328}{9-1} = 0.1166$

$$\mathrm{Cov}(R_U, R_M) = \frac{\sum((R_U - \overline{R}_U)(R_M - \overline{R}_M)}{n}$$

LXXXVI.
$$= \frac{1.0399}{9}$$
$$= 0.1155$$

LXXXVII. Now,

$$\beta_U = \frac{\mathrm{Cov}(R_U, R_M)}{\sigma_M{}^2}$$

LXXXVIII.
$$= \frac{0.1155}{0.1166}$$
$$= 0.9906$$

LXXXIX.

XC.

XCI.

XCII. Annex 4

XCIII. Calculation of beta coefficient of Premier Insurance Co. (Nepal) Ltd.

XCIV. Calculation of covariance between Premier Insurance Co. (Nepal) Ltd. and Market

F/Y	R_P	R_M	$R_P - \bar{R}_P$	$R_M \quad \bar{R}_M$	$(R_P - \bar{R}_P)(R_M - \bar{R}_M)$
99/00	1.08	0.6628	0.728	0.4584	0.3337
00/01	-0.088	-0.034	-0.44	-0.2384	0.1049
01/02	-0.1909	-0.347	-0.5429	-0.5514	0.2994
02/03	0.1882	-0.0997	-0.1638	-0.3041	0.0498
03/04	0.0938	0.0839	-0.2582	-0.1205	0.0311
04/05	0	0.4423	-0.352	0.2379	-0.0837
05/06	-0.0476	0.1905	-0.3996	-0.0139	0.0056
06/07	1.979	0.6065	1.627	0.4021	0.6542
07/08	0.1538	0.3345	-0.1982	0.1301	-0.0258
Total	3.1683	1.8398			1.3692

XCV. $\bar{R}_P = \frac{\sum R_P}{n} = 3.1683/9 = 0.3520$

XCVI. $\bar{R}_M = \frac{\sum R_M}{n} = 1.8398/9 = 0.2044$

XCVII. $\pm_M^2 = \frac{\sum (R_M - \bar{R}_M)^2}{n-1} = \frac{0.9328}{9-1} = 0.1166$

$$\text{Cov}(R_P, R_M) = \frac{\sum (R_P - \overline{R}_P)(R_M - \overline{R}_M)}{n}$$

XCVIII.
$$= \frac{1.3692}{9}$$
$$= 0.1521$$

XCIX. Now,

$$\beta_P = \frac{\text{Cov}(R_P, R_M)}{\sigma_M^{\ 2}}$$

C.
$$= \frac{0.1521}{0.1166}$$
$$= 1.3045$$

CI.

CII.

CIII.

CIV. Annex 5

CV. Calculation of beta coefficient of Everest Insurance Company Ltd.

CVI. Calculation of covariance between Everest Insurance Company Ltd. and Market

F/Y	R_E	R_M	$R_E - \bar{R}_E$	$R_M \quad \bar{R}_M$	$(R_E - \bar{R}_E)(R_M - \bar{R}_M)$
99/00	1.7941	0.6628	1.5539	0.4584	0.7123
00/01	0.011	-0.034	-0.2292	-0.2384	0.0546
01/02	0.3864	-0.347	0.1462	-0.5514	-0.0806
02/03	0.5738	-0.0997	0.3336	-0.3041	-0.1014
03/04	-0.4262	0.0839	-0.6664	-0.1205	0.0803
04/05	-0.0714	0.4423	-0.3116	0.2379	-0.0741
05/06	-0.0923	0.1905	-0.3325	-0.0139	0.0046
06/07	-0.0169	0.6065	-0.2571	0.4021	-0.1034
07/08	0.0034	0.3345	-0.2368	0.1301	-0.0308
Total	2.1619	1.8398			0.4615

CVII. $\bar{R}_E = \frac{\sum R_E}{n} = 2.1619/9 = 0.2402$

CVIII. $\bar{R}_M = \frac{\sum R_M}{n} = 1.8398/9 = 0.2044$

CIX. $\pm_M{}^2 = \frac{\sum (R_M - \bar{R}_M)^2}{n-1} = \frac{0.9328}{9-1} = 0.1166$

$$\text{Cov}(R_E, R_M) = \frac{\sum (R_E - \overline{R}_E)(R_M - \overline{R}_M)}{n}$$

CX.
$$= \frac{0.4615}{9}$$
$$= 0.0513$$

CXI. Now,

$$\beta_E = \frac{\text{Cov}(R_E, R_M)}{\sigma_M{}^2}$$

CXII.
$$= \frac{0.0513}{0.1166}$$
$$= 0.44$$

CXIII.

CXIV.

CXV. Annex 6

CXVI. <u>Partitioning of total risk of individual companies</u>

CXVII. We have,

$$\text{Total risk} = \text{Systematic Risk} + \text{Unsystematic risk}$$

$$\sigma^2 = \beta^2 \sigma_M^2 + \text{Unsystematic risk}$$

$$\therefore \text{Unsystematic risk} = \sigma^2 - \beta^2 \sigma_M^2$$

CXVIII. Where, σ^2 = Total variance of individual company

CXIX. β = Beta sensitivity to the market of individual company

CXX. σ_M^2 = Total Market variance

CXXI.

CXXII. <u>For Nepal Insurance Company Ltd.</u>

CXXIII. Unsystematic risk = $0.9950 - (-0.3027)^2 \times 0.1166$

CXXIV. = 0.9843

CXXV. Systematic risk = $(-0.3027)^2 \times 0.1166$

CXXVI. = 0.0107

CXXVII.

CXXVIII. <u>For Himalayan General Insurance Co. Ltd.</u>

CXXIX. Unsystematic risk = $0.9285 - (1.8362)^2 \times 0.1166$

CXXX. = 0.5354

CXXXI. Systematic risk = $(1.8362)^2 \times 0.1166$

CXXXII. = 0.3931

CXXXIII. For United Insurance Co. (Nepal) Ltd.

CXXXIV. Unsystematic risk = $0.1964 – (0.9906)^2 \times 0.1166$

CXXXV. = 0.082

CXXXVI. Systematic risk = $(0.9906)^2 \times 0.1166$

CXXXVII. = 0.1144

CXXXVIII.

CXXXIX. For Premier Insurance Co. (Nepal) Ltd.

CXL. Unsystematic risk = $0.5102 – (1.3045)^2 \times 0.1166$

CXLI. = 0.3118

CXLII. Systematic risk = $(1.3045)^2 \times 0.1166$

CXLIII. = 0.1984

CXLIV.

CXLV. For Everest Insurance Company Ltd.

CXLVI. Unsystematic risk = $0.0.4217 – (0.44)^2 \times 0.1166$

CXLVII. = 0.3991

CXLVIII. Systematic risk = $(0.44)^2 \times 0.1166$

CXLIX. = 0.0226

CL. **Annex 7**

CLI. Calculation of Returns, S.D., Expected Returns and C.V. of Banking Industry

F/Y	Banking	$R_B = \frac{NI_t - NI_{t1}}{NI_{t\ 1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	219.44	-	-	-
99/00	397.17	0.8099	0.5568	0.31
00/01	397.38	0.0005	-0.253	0.0638
01/02	241.15	-0.393	-0.646	0.4177
02/03	223.31	-0.074	-0.327	0.107
03/04	187.31	-0.161	-0.414	0.1717
04/05	271.25	0.4481	0.195	0.038
05/06	365.95	0.3491	0.096	0.0092
06/07	664.44	0.8157	0.5625	0.3164
07/08	1135.8	0.7094	0.4562	0.2082
	Total	2.5044		1.642

CLII.

CLIII. Expected Return ($\bar{R}$) = $\sum$ R/n =2.5044/9=0.2783

CLIV. Standard Deviation (σ) = $\sqrt{\frac{\sum(R - \bar{R})^2}{n-1}} = \sqrt{\frac{1.6420}{9-1}} = 0.2053$

CLV. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{0.2053}{0.2783} = 0.7376$

CLVI. Annex 8

CLVII. Calculation of Returns, S.D., Expected Returns and C.V. of Manufacturing and Processing Industry

Year	NEPSE Index	$R_P = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	229.83	-	-	-
99/00	340.59	0.4819	0.3753	0.1409
00/01	349.31	0.0256	-0.081	0.0066
01/02	216.51	-0.38	-0.487	0.237
02/03	250.13	0.1553	0.0487	0.0024
03/04	190.03	-0.24	-0.347	0.1203
04/05	276.5	0.455	0.3484	0.1214
05/06	301.11	0.089	-0.018	0.0003
06/07	348.63	0.1578	0.0512	0.0026
07/08	423.7	0.2153	0.1087	0.0118
	Total	0.9595		0.6432

CLVIII.

CLIX. Expected Return ($\bar{R}$) = $\sum$ R/n =0.9595/9=0.1066

CLX. Standard Deviation (σ) = $\sqrt{\frac{\Sigma (R - \bar{R})^2}{n-1}} = \sqrt{\frac{0.6432}{9-1}} = 0.0804$

CLXI. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{0.0804}{0.1066} = 0.7542$

CLXII. Annex 9

CLXIII. Calculation of Returns, S.D., Expected Returns and C.V. of Hotel Industry

Year	NEPSE Index	$R_H = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	242.52	-	-	-
99/00	346.15	0.4273	0.3488	0.1217
00/01	291.34	-0.158	-0.237	0.0561
01/02	216.51	-0.257	-0.335	0.1125
02/03	196.68	-0.092	-0.17	0.0289
03/04	195.99	-0.004	-0.082	0.0067
04/05	178.00	-0.092	-0.17	0.029
05/06	180.77	0.0156	-0.063	0.004
06/07	251.47	0.3911	0.3126	0.0977
07/08	370.90	0.4749	0.3964	0.1572
	Total	0.7068		0.6137

CLXIV. Expected Return ($\bar{R}$) = $\sum$ R/n =0.7068/9=0.0785

CLXV. Standard Deviation (σ) = $\sqrt{\frac{\Sigma (R - \bar{R})^2}{n-1}} = \sqrt{\frac{0.6137}{9-1}} = 0.0767$

CLXVI. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{0.0767}{0.0785} = 0.9768$

CLXVII. Annex 10

CLXVIII. Calculation of Returns, S.D., Expected Returns and C.V. of Trading Industry

Year	NEPSE Index	$R_T = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	123.99	-	-	-
99/00	123.74	-0.002	-0.105	0.011
00/01	115.55	-0.066	-0.169	0.0285
01/02	102.20	-0.116	-0.218	0.0476
02/03	94.56	-0.075	-0.177	0.0315
03/04	184.41	0.9502	0.8475	0.7182
04/05	123.20	-0.332	-0.435	0.1889
05/06	148.11	0.2022	0.0995	0.0099
06/07	155.37	0.049	-0.054	0.0029
07/08	204.10	0.3136	0.2109	0.0445
	Total	0.9246		1.083

CLXIX.

CLXX. Expected Return ($\bar{R}$) = $\sum$ R/n =0.9246/9=0.1027

CLXXI. Standard Deviation (σ) = $\sqrt{\frac{\Sigma (R - \bar{R})^2}{n-1}} = \sqrt{\frac{1.083}{9-1}} = 0.1354$

CLXXII. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{0.1354}{0.1027} = 1.3177$

CLXXIII. Annex 11

CLXXIV. Calculation of Returns, S.D., Expected Returns and C.V. of Finance and Insurance Industry

Year	NEPSE index	$R_F = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	195.68	-	-	-
99/00	305.98	0.5637	0.307	0.0942
00/01	318.67	0.0415	-0.215	0.0463
01/02	288.76	-0.094	-0.351	0.1229
02/03	224.39	-0.223	-0.48	0.23
03/04	175.30	-0.219	-0.475	0.2261
04/05	274.32	0.5649	0.3082	0.095
05/06	321.31	0.1713	-0.085	0.0073
06/07	542.14	0.6873	0.4306	0.1854
07/08	985.00	0.8169	0.5602	0.3138
	Total	2.3099		1.321

CLXXV.

CLXXVI. Expected Return ($\bar{R}$) = $\sum$ R/n =2.3099/9=0.2567

CLXXVII. Standard Deviation (σ) = $\sqrt{\frac{\Sigma (R - \bar{R})^2}{n-1}} = \sqrt{\frac{1.321}{9-1}} = 0.1651$

CLXXVIII. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{0.1651}{0.2567} = 0.6434$

CLXXIX. Annex 12

CLXXX. Calculation of Returns, S.D., Expected Returns and C.V. of Other Industry

Year	NEPSE Index	$R_O = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$	$R - \bar{R}$	$(R - \bar{R})^2$
98/99	376.10	-	-	-
99/00	308.46	-0.18	-0.618	0.3819
00/01	190.90	-0.381	-0.819	0.6711
01/02	77.34	-0.595	-1.033	1.067
02/03	48.56	-0.372	-0.81	0.6565
03/04	237.67	3.8944	3.4563	11.946
04/05	347.65	0.4627	0.0246	0.0006
05/06	410.00	0.1793	-0.259	0.067
06/07	818.12	0.9954	0.5573	0.3106
07/08	768.30	-0.061	-0.499	0.249
	Total	3.943		15.349

CLXXXI.

CLXXXII. Expected Return ($\bar{R}$) = $\sum$ R/n =3.943/9=0.4381

CLXXXIII. Standard Deviation (σ) = $\sqrt{\frac{\Sigma (R - \bar{R})^2}{n-1}} = \sqrt{\frac{18.44}{9-1}} = 1.9187$

CLXXXIV. Co-efficient of Variation (C.V) = $\frac{\pm}{\bar{R}} = \frac{1.3579}{0.4381} = 4.3794$

CLXXXV. Annex 13

CLXXXVI. Calculation of covariance between Nepal Insurance and Himalayan Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.2847	1.0480	0.2984
00/01	2.5788	-0.3611	-0.9312
01/02	-0.4962	-0.6099	0.3026
02/03	-0.458	-0.6076	0.2783
03/04	-0.5125	-0.5309	0.2721
04/05	-0.3482	-0.2806	0.0977
05/06	-0.2403	-0.5300	0.1274
06/07	-0.4534	2.1739	-0.9856
07/08	-0.3545	-0.3020	0.1071
		Total	-0.4332

CLXXXVII. We have

CLXXXVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{-0.4332}{9} = -0.0481$$

CLXXXIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9975)^2 - (-0.0481)}{(0.9975)^2 + (0.9636)^2 - 2 \times (-0.0481)}$$
$$= 0.52$$

CXC. $W_B = 1 - W_A = 1 - 0.52 = 0.48$

CXCI. Portfolio Return and Standard Deviation of NICL and HGICL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CXCII. $$= 0.52 \times 0.3349 + 0.48 \times 0.4520$$

$$= 0.3911$$

CXCIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CXCIV. $$= \sqrt{(0.52)^2 \times (0.9975)^2 + (0.48)^2 \times (0.9636)^2 + 2 \times (0.52) \times (0.48) \times (-0.0481)}$$

$$= 0.6775$$

CXCV. Annex 14

CXCVI. Calculation of covariance between Nepal Insurance and United Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.2847	0.8076	0.2299
00/01	2.5788	-0.237	-0.6112
01/02	-0.4962	-0.3319	0.1647
02/03	-0.458	-0.3845	0.1761
03/04	-0.5125	-0.4394	0.2252
04/05	-0.3482	0.0187	-0.0065
05/06	-0.2403	-0.2237	0.0538
06/07	-0.4534	0.5517	-0.2501
07/08	-0.3545	0.2381	-0.0844
		Total	-0.1025

CXCVII. We have

CXCVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{-0.1025}{9} = -0.0114$$

CXCIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9975)^2 - (-0.0114)}{(0.9975)^2 + (0.4351)^2 - 2 \times (-0.0114)}$$
$$= 0.83$$

CC. $W_B = 1 - W_A = 1 - 0.83 = 0.17$

CCI. Portfolio Return and Standard Deviation of NICL and UICNL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCII. $$= 0.83 \times 0.3349 + 0.17 \times 0.2003$$

$$= 0.3120$$

CCIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCIV. $$= \sqrt{(0.83)^2 \times (0.9975)^2 + (0.17)^2 \times (0.4351)^2 + 2 \times (0.83) \times (0.17) \times (-0.0114)}$$

$$= 0.8293$$

CCV. Annex 15

CCVI. Calculation of covariance between Nepal Insurance and Premier Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.2847	0.728	0.2073
00/01	2.5788	-0.44	-1.1347
01/02	-0.4962	-0.5429	0.2694
02/03	-0.458	-0.1638	0.0750
03/04	-0.5125	-0.2582	0.1323
04/05	-0.3482	-0.352	0.1226
05/06	-0.2403	-0.3996	0.09602
06/07	-0.4534	1.627	-0.7377
07/08	-0.3545	-0.1982	0.0703
		Total	-0.8995

CCVII. We have

CCVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{-0.8995}{9} = -0.0999$$

CCIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9975)^2 - (-0.0999)}{(0.9975)^2 + (0.7143)^2 - 2 \times (-0.0999)}$$
$$= 0.64$$

CCX. $W_B = 1 - W_A = 1 - 0.64 = 0.36$

CCXI. Portfolio Return and Standard Deviation of NICL and PICNL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCXII. $$= 0.64 \times 0.3349 + 0.36 \times 0.3520$$

$$= 0.3411$$

CCXIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCXIV. $$= \sqrt{(0.64)^2 \times (0.9975)^2 + (0.36)^2 \times (0.7143)^2 + 2 \times (0.64) \times (0.36) \times (-0.0999)}$$

$$= 0.6539$$

CCXV. Annex 16

CCXVI. Calculation of covariance between Nepal Insurance and Everest Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.2847	1.5539	0.4424
00/01	2.5788	-0.2292	-0.5911
01/02	-0.4962	0.1462	-0.0725
02/03	-0.458	0.3336	-0.1528
03/04	-0.5125	-0.6664	0.3415
04/05	-0.3482	-0.3116	0.1085
05/06	-0.2403	-0.3325	0.0799
06/07	-0.4534	-0.2571	0.1166
07/08	-0.3545	-0.2368	0.0839
		Total	0.3564

CCXVII. We have

CCXVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{0.3564}{9} = 0.0396$$

CCXIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9975)^2 - 0.0396}{(0.9975)^2 + (0.6494)^2 - 2 \times 0.0396}$$
$$= 0.71$$

CCXX. $W_B = 1 - W_A = 1 - 0.71 = 0.29$

CCXXI. Portfolio Return and Standard Deviation of NICL and EICL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCXXII.
$$= 0.71 \times 0.3349 + 0.29 \times 0.2402$$
$$= 0.3074$$

CCXXIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCXXIV.
$$= \sqrt{(0.71)^2 \times (0.9975)^2 + (0.29)^2 \times (0.6494)^2 + 2 \times (0.71) \times (0.29) \times (0.0396)}$$
$$= 0.7439$$

CCXXV. Annex 17

CCXXVI. Calculation of covariance between Himalayan Insurance and United Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	1.0480	0.8076	0.8464
00/01	-0.3611	-0.237	0.0856
01/02	-0.6099	-0.3319	0.2024
02/03	-0.6076	-0.3845	0.2336
03/04	-0.5309	-0.4394	0.2333
04/05	-0.2806	0.0187	-0.0052
05/06	-0.5300	-0.2237	0.1186
06/07	2.1739	0.5517	1.1993
07/08	-0.3020	0.2381	-0.0719
		Total	2.8421

CCXXVII. We have

CCXXVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{2.8421}{9} = 0.3158$$

CCXXIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9636)^2 - 0.3158}{(0.9636)^2 + (0.4351)^2 - 2 \times 0.3158}$$
$$= 1.26$$

CCXXX. $W_B = 1 - W_A = 1\text{-}1.26 = -0.26$

CCXXXI. Portfolio Return and Standard Deviation of HGICL and UICNL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCXXXII.
$$= 1.26 \times 0.4520 + (-0.26) \times 0.2003$$
$$= 0.5174$$

CCXXXIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2 W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCXXXIV.
$$= \sqrt{(1.26)^2 \times (0.9636)^2 + (-0.26)^2 \times (0.4351)^2 + 2 \times (1.26) \times (-0.26) \times (0.3158)}$$
$$= 1.1314$$

CCXXXV. Annex 18

CCXXXVI. Calculation of covariance between Himalayan Insurance and Premier Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	1.0480	0.728	0.7629
00/01	-0.3611	-0.44	0.1589
01/02	-0.6099	-0.5429	0.3311
02/03	-0.6076	-0.1638	0.0995
03/04	-0.5309	-0.2582	0.1371
04/05	-0.2806	-0.352	0.0988
05/06	-0.5300	-0.3996	0.2118
06/07	2.1739	1.627	3.5369
07/08	-0.3020	-0.1982	0.0599
		Total	5.3969

CCXXXVII. We have

CCXXXVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{5.3969}{9} = 0.5997$$

CCXXXIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9636)^2 - 0.5997}{(0.9636)^2 + (0.7143)^2 - 2 \times 0.5997}$$
$$= 1.37$$

CCXL. $W_B = 1 - W_A = 1\text{-}1.37 = -0.37$

CCXLI. Portfolio Return and Standard Deviation of HGICL and PICNL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCXLII. $$= 1.37 \times 0.4520 + (-0.37) \times 0.3520$$

$$= 0.4890$$

CCXLIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \text{Cov}(R_A, R_B)}$$

CCXLIV. $$= \sqrt{(1.37)^2 \times (0.9636)^2 + (-0.37)^2 \times (0.7143)^2 + 2 \times (1.37) \times (-0.37) \times (0.5997)}$$

$$= 1.0976$$

CCXLV. Annex 19

CCXLVI. Calculation of covariance between Himalayan Insurance and Everest Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	1.0480	1.5539	1.6285
00/01	-0.3611	-0.2292	0.0828
01/02	-0.6099	0.1462	-0.0892
02/03	-0.6076	0.3336	-0.2027
03/04	-0.5309	-0.6664	0.3538
04/05	-0.2806	-0.3116	0.0874
05/06	-0.5300	-0.3325	0.1762
06/07	2.1739	-0.2571	-0.5589
07/08	-0.3020	-0.2368	0.0715
		Total	1.5494

CCXLVII. We have

CCXLVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{1.5494}{9} = 0.1722$$

CCXLIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.9636)^2 - 0.1722}{(0.9636)^2 + (0.6494)^2 - 2 \times 0.1722}$$
$$= 0.75$$

CCL. $W_B = 1 - W_A = 1\text{-}0.75 = 0.25$

CCLI. Portfolio Return and Standard Deviation of HGICL and EICL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCLII. $$= 0.75 \times 0.4520 + 0.25 \times 0.2402$$

$$= 0.3991$$

CCLIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCLIV. $$= \sqrt{(0.75)^2 \times (0.9636)^2 + (0.25)^2 \times (0.6494)^2 + 2 \times (0.75) \times (0.25) \times (0.1722)}$$

$$= 0.7831$$

CCLV. Annex 20

CCLVI. Calculation of covariance between United Insurance and Premier Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.8076	0.728	0.5879
00/01	-0.237	-0.44	0.1043
01/02	-0.3319	-0.5429	0.1802
02/03	-0.3845	-0.1638	0.0630
03/04	-0.4394	-0.2582	0.1135
04/05	0.0187	-0.352	-0.0066
05/06	-0.2237	-0.3996	0.0894
06/07	0.5517	1.627	0.8976
07/08	0.2381	-0.1982	-0.0472
		Total	1.9821

CCLVII. We have

CCLVIII. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{1.9821}{9} = 0.2202$$

CCLIX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.4351)^2 - 0.2202}{(0.4351)^2 + (0.7143)^2 - 2 \times 0.2202}$$
$$= -0.12$$

CCLX. $W_B = 1 - W_A = 1-(-0.12) = 1.12$

CCLXI. Portfolio Return and Standard Deviation of UICNL and PICNL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCLXII.
$$= (-0.12) \times 0.2003 + 1.12 \times 0.3520$$
$$= 0.3702$$

CCLXIII.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCLXIV.
$$= \sqrt{(-0.12)^2 \times (0.4351)^2 + (1.12)^2 \times (0.7143)^2 + 2 \times (-0.12) \times (1.12) \times (0.2202)}$$
$$= 0.7639$$

CCLXV.

CCLXVI. Annex 21

CCLXVII. Calculation of covariance between United Insurance and Everest Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.8076	1.5539	1.2549
00/01	-0.237	-0.2292	0.0543
01/02	-0.3319	0.1462	-0.0485
02/03	-0.3845	0.3336	-0.1283
03/04	-0.4394	-0.6664	0.2928
04/05	0.0187	-0.3116	-0.0058
05/06	-0.2237	-0.3325	0.0744
06/07	0.5517	-0.2571	-0.1418
07/08	0.2381	-0.2368	-0.0564
		Total	1.2956

CCLXVIII. We have

CCLXIX. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{1.2956}{9} = 0.1440$$

CCLXX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.4351)^2 - 0.1440}{(0.4351)^2 + (0.6494)^2 - 2 \times 0.1440}$$
$$= 0.14$$

CCLXXI. $W_B = 1 - W_A = 1 - 0.14 = 0.86$

CCLXXII. Portfolio Return and Standard Deviation of UICNL and EICL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCLXXIII.
$$= (0.14) \times 0.2003 + 0.86 \times 0.2402$$
$$= 0.2346$$

CCLXXIV.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCLXXV.
$$= \sqrt{(0.14)^2 \times (0.4351)^2 + (0.86)^2 \times (0.6494)^2 + 2 \times (0.14) \times (0.86) \times (0.1440)}$$
$$= 0.5919$$

CCLXXVI. Annex 22

CCLXXVII. Calculation of covariance between Premier Insurance and Everest Insurance and their weights, portfolio risk and return

F/Y	$(R_A - \overline{R}_A)$	$(R_B - \overline{R}_B)$	$(R_A - \overline{R}_A)(R_B - \overline{R}_B)$
99/00	0.728	1.5539	1.1312
00/01	-0.44	-0.2292	0.1008
01/02	-0.5429	0.1462	-0.0794
02/03	-0.1638	0.3336	-0.0546
03/04	-0.2582	-0.6664	0.1721
04/05	-0.352	-0.3116	0.1097
05/06	-0.3996	-0.3325	0.1329
06/07	1.627	-0.2571	-0.4183
07/08	-0.1982	-0.2368	0.0469
		Total	1.1413

CCLXXVIII. We have

CCLXXIX. $$\text{Cov}(R_A, R_B) = \frac{\sum (R_A - \overline{R}_A)(R_B - \overline{R}_B)}{n} = \frac{1.1413}{9} = 0.1268$$

CCLXXX.
$$W_A = \frac{\pm_A^2 - \text{Cov}(R_A, R_B)}{\pm_A^2 + \pm_B^2 - 2\,\text{Cov}(R_A, R_B)}$$
$$= \frac{(0.7143)^2 - 0.1268}{(0.7143)^2 + (0.6494)^2 - 2 \times 0.1268}$$
$$= 0.57$$

CCLXXXI. $W_B = 1 - W_A = 1 - 0.57 = 0.43$

CCLXXXII. Portfolio Return and Standard Deviation of PICNL and EICL

$$R_P = W_A \times \overline{R}_A + W_B \times \overline{R}_B$$

CCLXXXIII. $$= (0.57) \times 0.3520 + 0.43 \times 0.2402$$

$$= 0.3039$$

CCLXXXIV.

$$\pm_P = \sqrt{W_A{}^2 \pm_A{}^2 + W_B{}^2 \pm_B{}^2 + 2W_A W_B \mathrm{Cov}(R_A, R_B)}$$

CCLXXXV. $$= \sqrt{(0.57)^2 \times (0.7143)^2 + (0.43)^2 \times (0.6494)^2 + 2 \times (0.57) \times (0.43) \times (0.1268)}$$

$$= 0.5531$$

CCLXXXVI. Annex 23

CCLXXXVII. Correlation between the insurance companies

CCLXXXVIII. We have,

CCLXXXIX. $$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$

CCXC. Where, ρ_{AB} = Correlation between Stock A and Stock B

CCXCI. $Cov(R_A, R_B)$ = Covariance between Stock A and Stock B

CCXCII. σ_A = Standard Deviation of Stock A

CCXCIII. σ_B = Standard Deviation of Stock B

CCXCIV.

CCXCV. Between Nepal Insurance and Himalayan Insurance

CCXCVI.
$$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$
$$= \frac{-0.0481}{0.9975 \times 0.9636}$$
$$= -0.05$$

CCXCVII. Between Nepal Insurance and United Insurance

CCXCVIII.
$$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$
$$= \frac{-0.0114}{0.9975 \times 0.4351}$$
$$= -0.03$$

CCXCIX. Between Nepal Insurance and Premier Insurance

CCC.
$$\circ_{AB} = \frac{Cov(R_A, R_B)}{\pm_A \pm_B}$$
$$= \frac{-0.0999}{0.9975 \times 0.7143}$$
$$= -0.14$$

CCCI. Between Nepal Insurance and Everest Insurance

CCCII.
$$\circ_{AB} = \frac{Cov(R_A, R_B)}{\pm_A \pm_B}$$
$$= \frac{0.0396}{0.9975 \times 0.6494}$$
$$= 0.06$$

CCCIII. Between Himalayan Insurance and United Insurance

CCCIV.
$$\circ_{AB} = \frac{Cov(R_A, R_B)}{\pm_A \pm_B}$$
$$= \frac{0.3158}{0.9636 \times 0.4351}$$
$$= 0.75$$

CCCV. Between Himalayan Insurance and Premier Insurance

CCCVI.
$$\circ_{AB} = \frac{Cov(R_A, R_B)}{\pm_A \pm_B}$$
$$= \frac{0.5997}{0.9636 \times 0.7143}$$
$$= 0.87$$

CCCVII. Between Himalayan Insurance and Everest Insurance

CCCVIII.
$$\circ_{AB} = \frac{Cov(R_A, R_B)}{\pm_A \pm_B}$$
$$= \frac{0.1722}{0.9636 \times 0.6494}$$
$$= 0.28$$

CCCIX.

CCCX. Between United Insurance and Premier Insurance

CCCXI.
$$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$
$$= \frac{0.2202}{0.4351 \times 0.7143}$$
$$= 0.71$$

CCCXII. Between United Insurance and Everest Insurance

CCCXIII.
$$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$
$$= \frac{0.1440}{0.4351 \times 0.6494}$$
$$= 0.51$$

CCCXIV. Between Premier Insurance and Everest Insurance

CCCXV.
$$\rho_{AB} = \frac{Cov(R_A, R_B)}{\sigma_A \sigma_B}$$
$$= \frac{0.1268}{0.7143 \times 0.6494}$$
$$= 0.27$$

CCCXVI.