CHAPTER - I

INTRODUCTION

1.1 Background of the Study

The Nepalese securities market is dominated by the banking, finance, and insurance sectors in terms of capital issue through public issue and rights offerings. However, it is necessary to encourage manufacturing, infrastructure and other service sectors to utilize the stock market for capital mobilization to the maximum extent to achieve the sustainable and balance growth of the stock market. Since the country is heading towards peace and stability, there is a need for giving higher priority to policy and programs relating to securities market so that it can be developed as an effective venue for capital mobilization, thereby increasing public participation in the industry and infrastructure development.

Securities market is the backbone of any economy and Nepal is no exception. Development of vivacious and dynamic securities market is the prerequisites for the upliftment of the economic condition of the country. Hence, the development of efficient securities market/stock exchange becomes essential for the economic development of the country. So the promotion of the securities market in a sizeable extent would promote the economic development through increased mobilization of saving and their channeling into productive sectors, and hereby, creating suitable economic outcomes in the economy.

The history of securities market began with the floatation of shares by Biratnagar Jute Mills Ltd. and Nepal Bank Ltd. in 1937. Introduction of the Company Act in 1964, the first issuance of Government Bond in 1964 and the establishment of Securities Exchange Center Ltd. in 1976 were other significant development relating to capital markets. Securities Exchange Center was established with an objective of facilitating and

promoting the growth of capital markets. Before conversion into stock exchange it was the only capital markets institution undertaking the job of brokering, underwriting, managing public issue, market making for government bonds and other financial services.

1.1.1 NEPSE- An Overview

His Majesty's Government, under a programme initiated to reform capital markets converted Securities Exchange Center into Nepal Stock Exchange in 1993. NEPSE is a non-profit organization, operating under Securities Exchange Act, 1983. Government of Nepal, Nepal Rastra Bank, NIDC, and members are the shareholders of the NEPSE.

The basic objective of NEPSE is to provide liquidity to the government and corporate securities by facilitating transactions through market intermediaries, such as broker, market makers etc. the other important objective of NEPSE are to protect investors' rights and develop a secondary market, as prescribed at Article of Memorandum of (MOA) and Article of Association (AOA) of NEPSE.

The Board of Directors (BOD) which governs NEPSE constitute of members representing different sectors. As per a recent revision, the BOD comprises seven members: two including the chairman from the Nepal government, two from Nepal Rastra Bank (NRB), one from NIDC and the other one to be nominated by the BOD will be expert in the capital market. General Manager of NEPSE will serve as directors.

Besides this, NEPSE has also granted membership to issue and sales manager securities trader (Dealer). Issue and sales manager works as manager to the issue and underwriter for public issue of securities whereas securities trader (Dealer) works as individual portfolio manager.

At present there are 11 sales and issue manager and 2 dealers (secondary market). The tenure of the membership is one year. The license should be renewed within 3 months after the closure of the fiscal year. If not, it can be done within another three months by paying 25% penalty.

Trading on the floor of the NEPSE is restricted to listed corporate securities and government bonds. At present, 162 companies have listed their securities to make them eligible for trading. Besides this, NCM Mutual Fund enlisted its units to make them eligible to trade in the floor. The listing fee and the annual fee to be paid by the listed company are based on the capital of the company. The rate of brokerage on equity transactions ranges from 1 percent to 1.5 percent depending on the traded amount. Basically, there exist two types of financial markets; primary and secondary. Primary markets are those markets where stock, debenture, bond and preference share are issued to investors. Similarly, secondary markets involve trading financial assets previously issued. NEPSE falls under the secondary markets.

1.1.2 Introduction to Risk and Return

Return is defined as the likelihood that the actual return from an investment will be less then the forecast return. Stated differently, it is the variability of return from investment. The return consists of the income and the capital gains relative on an investment. It is usually quoted as a percentage.

Income received on an investment plus any change in market price, usually expressed as a percent of the beginning market price of the investment (Horne and Wachowicz, 1993:100).

Return is measured by the mean of security and preferably measured in terms of percentage. Return can be classified into two heading based on availability of data and the time; ex-post and ex-ante. Ex-post return is also known as holding period return (HPR), which is calculated from the historical data of the company. HPR is based on a year return. Likewise, ex-ante return is that return that is based on future expected return. For this reason, probabilities are assigned to corresponding return to obtain the return. This return is regarded as the expected return.

Persistently, the chance that an investment's actual return will be different than expected. This includes the possibility of losing some or all of the original investment. It is usually measured by calculating the standard deviation of the historical returns or average returns of a specific investment. Precisely, risk is menace of return fluctuation that is anticipated. Same authors explained risk as,

The variability of return from those that are expected (Horne and Wachowicz, 1993:100).

Greater the variability, much riskier the security be and vice versa. It is also expressed in terms of percentage. Most of the investors are risk averter; person who does not want to take risk. Risk seekers are those persons who are interested to take the risk. Because banks invest much of their funds in interest sensitive assets, primarily loans, there are several categories of risk, including: capital risk-risk that a deterioration in asset quality from loan losses will impair a bank's capital, requiring sale of new stock to meet regulatory capital requirements; credit risk-the possibility that the borrower will be unable to make regular payments of principal and interest, and may default; delivery risk-the possibility that the buyer or seller of an instrument or foreign exchange may be unable to meet obligations at maturity; exchange risk-the possibility of a loss on an uncovered position resulting from an appreciation or depreciation of a foreign currency.

Total risk can either be categorized into two headings namely, systematic (undiversifiable) and unsystematic (diversifiable) risk. Principally, diversifiable risk or unsystematic can be eliminated completely simply via costless diversification. For this reason, we require large number of assets into a particular portfolio. On the other hand, undiversifiable or systematic risk (Beta) to reflect the fact that it is related to general economic conditions. It ensures the volatility of the particular stock with the market portfolio, if the consideration is regarding systematic risk.

The term "risk and return" refers to the potential financial loss or gain experienced through investments in securities. An investor who has registered a profit is said to have seen a "return" on his or her investment. The "risk" of the investment, meanwhile, denotes the possibility or

likelihood that the investor could lose money. If an investor decides to invest in a security that has a relatively low risk, the potential return on that investment is typically fairly small. Conversely, an investment in a security that has a high risk factor also has the potential to garner higher returns. Return on investment can be measured by nominal rate or real rate (money earned after the impact of inflation has been figured into the value of the investment).

1.1.3 Concept of Share (Common Stock)

Common stock describes the character of ownership, or equity in a company. Before any common stockholders can receive payments, the current liabilities, long-term liabilities, and preferred stock are to be paid off in case of bankruptcy. In other words, it is a residual claim over the liabilities of a corporation after the settlement of claimants.

It is a certificate with number of shares held by the particular invested noted on it along with date of issue, name, and address etc. Such shares are transferable to a new owner with the corporation of either issuing authority or its designated transfer agent (NEPSE in Nepal). S/he is the owner of a company due to a common stockholder, has voting right on matters brought up at the company's annual meeting and to vote for the company's director.

When a company primarily charters, it is authorized to issue up to the stated number of shares of common stock, with each carrying a specified par value (basically Rs.100). Sometimes stock is sold for more or less than its par value, the difference may be carried separately on the company's books under stockholders' equity section. The par value of the stock is carried in a separate account, titled "common stock" with an amount that is equal to the number of shares outstanding times the par value per share. Retained earning on company's books is the amount generated from the continuous income over the time period after the payment made to creditors (interest) and dividend to stockholders. So, the sum of retained earnings and other entries viz., common stock par and capital contributed in excess of par under the headings of stockholders'

equity, is the book value of the equity. Book value per share can be determined by the dividing the book value by the number of shares outstanding.

1.2 Statement of the Problem

Generally, risk and return are worked out to identify the sustainable position of any organization and financial institutions, after the establishment of Nepal Stock Exchange; the capital market has grown rapidly within a very short period. However, the attitudes and knowledge of the most investors have not changed. Few investors follow the investment policy and portfolio analysis. Without getting theoretical knowledge of risk associated with investment most of the investor are making investment on stocks that may be terms as ill practice.

The availability of data and policy of stock market may also affect the risk, return and price of share, in practice. This is due to immature stage of stock exchange. Moreover, government strategies and plans regarding the stock exchange are not much pragmatic; nevertheless, these policies are paper based far away from implementation.

The meticulous research and experiment are essential for the success and sustainable growth for stock market. This kind of operation has been performed neither by the government nor by the stock exchange itself. This causes a fear in general public to invest in such kind of securities that causes low investment in stocks, in turn, unsuccessful to understand the nature of risk and return in the market.

1.3 Objectives of the Study

It aims to examine whether the risk and return the only factor for the fixation of share price. However, different concepts and tools have been included that they could provide insights for the impact on share price. Thus, to depict conclusion on the basic objective, many sub-objectives can be considered. Following objectives are laid down:

i. To evaluate risk and return in common stock investment.
ii. To evaluate the current share price of these organizations.
iii. To examine how risky to invest in the common stock and to explore the risk minimization process.
iv. To provide feedback about the effect of risk and return analysis on the stock market in Nepal.

1.4 Significance of the Study

This study attempts to increase popularity of share such that investors might attract in investing their valuable earnings. It is to provide insight about the NEPSE and its function. There has always been rumor and exaggeration regarding share. People are unconscious about the advantages of stock and are always repel themselves from it. In turn, there is high prospective in stock investment. Stock facilitates and promotes the growth of capital markets. Now a day, knowledge is the biggest asset and valuable resource. It is result of the continuous quest of mankind. So, knowledge regarding risk and return can benefit potential investors by having acquaintances with fact and theories about it. It also helps assist managers of the organization to make rational managerial decisions regarding investment in shares. Not only the risk and return but also the rationality of making portfolio investment, is other aspect of this study. Likewise, it provides insight about the growth of the companies resulting in higher productivity, employment, and economic development of the nation.

1.5 Limitations of the Study

Despite, analysis and concepts are expressed to clarify share, its price and the risk and return, some criticism may be found in this study. Interviews are taken to limited person, though the opinion regarding the various persons may vary and expected result may not be derived. Time has always been short in any task so in this study. Moreover, resources constraints are also the limiting factor for this study. Following points are listed under the limitations:

i. This study confines with the information provided by the NEPSE personnel and the material available from the concerned company and no verification regarding data has been made.
ii. This study is done to fulfill the requirement of the MBS degree programme and no other purposes are taken into consideration.
iii. Listed banks, finance companies, and insurance companies fall under this study. All other financial markets are ignored under this study. In fact, this may not reflect the market risk and return and the share price.
iv. The operations of these organizations may vary with each other that might draw different conclusions.
v. Other components of the economy such as industry, and tourism, are precluded in the study that may affect the value of share of company. In fact, these factors also influence the value of share of other companies.
vi. There are various investment alternatives namely real and financial instruments. This study covers only common stock's risk and return and all other aspects of investments are excluded.
vii. This study is restricted to five fiscal years i.e. from 2003/04 to 2007/08. The data available prior to these fiscal years are excluded from the study.

1.6 Organization of the Study

This study confines to explain the prologue; joint venture banks, finance companies and insurance companies, practices of pricing of individual share and current performances of these organization through risk and return under the five main headings viz., introduction, literature review, research methodology, analysis & presentation of data and summary, recommendation & conclusions. This study aim to locate strategies involved in the trade-offs between risk and return in screening to make decision regarding value maximization of the firm confirming reduction in its risk. Each subsequent chapter is treated under following sub-headings to clarify them.

Chapter - I: Introduction

Covers basic background on the Nepalese economy in terms of product & service industries and introduction of service industries (financial markets) and part played by the NEPSE in the development of the nation.

Chapter - II: Review of Literature

Discusses topic share (common stock) and risk and return supportive with the books, earlier thesis, journals and websites.

Chapter – III: Research Methodology

Focuses on the method used for the study. Under this heading the tools for analysis and the data collection procedure are discussed.

Chapter - IV: Data Presentation and Analysis

It continues the analysis of impact of risk and return on share prices of the respective companies.

Chapter - V: Summary, Conclusion and Recommendations

It represents summary of the study in viewing to scrutinize the problems of the companies along with under or over pricing of the share and recommend these companies from the conclusion to amend earlier policies for the sake of investors and economic welfare.

CHAPTER - II

REVIEW OF LITERATURE

This chapter presents the review of relevant theoretical literatures. It is divided into two parts. Theoretical review and research review.

2.1 Conceptual Framework

This section provides meaning of some related terms to this topic such as investment, common stock, risk, and return etc.

2.1.1 Investment

Investment, in its broadest sense, means the sacrifice of current Rupees (dollars) and resources for the sake of future Rupees (dollars) and resources. In other words, it is a commitment of money and other resources that are expected to generate additional money and resources in the future.

Investment brings forth visions of profit, risk, speculation, and wealth. Uninformed investment may result in disaster. The investment process can be financially rewarding and exciting. From this definition regarding investment reveals following attributes. They are:

1. Time, a predominant factor
2. Risk, dominant factor

In some cases, both time and risk are precarious and important such as investment in shares. So, the magnitude of return is uncertain whereas the investment in present is certain. In fact, without investment both the risk and return cannot be magnified. It is obvious that reward comes later with appearances (risk or return) from the sacrifice currently made.

2.1.2 Common Stock

Securities representing equity ownership in a corporation, providing voting rights, and entitling the holder to a share of the company's success through dividends and/or capital appreciation. In the event of liquidation, common stockholders have rights to a company's assets only after bondholders, other debt holders, and preferred stockholders have been satisfied. More precisely, common stock refers to the ownership or interest in a company. Being owner, its holders are entitled to certain right and privileges.

Common stock represents an ownership interest in a corporation (Cheney and Moses, 1994:411).

Common stock securities that represent the ultimate ownership and risk position in a corporation (Horne and Wachowicz, 2004:75).

Common stock is a part contributed by an individual to an enterprise or commitment (Allen, 1990:114).

2.1.3 Common Stock Valuation

The ordinary/equity shareholders buy/hold shares in expectation of periodic cash dividends and an increasing share value. They would buy a share when is undervalued and sell it when its market price is more than its true value. The value of a share is equal to the present value of all future dividends it is expected to provide over an infinite time horizon (Khan and Jain, 2004:46).

2.1.4 Common Stock Values

Common stock values are based on book, par, and market or intrinsic value and each of the term are not related with an individual stock.

2.1.4.1 Book value

A company's common stock equity as it appears on a balance sheet, equal to total assets minus liabilities, preferred stock, and intangible assets such as goodwill. This is how much the company would have left over in assets if it went out of business immediately. Since companies are usually expected to grow and generate more profits in the future, market capitalization is higher than book value for most companies. Since book value is a more accurate measure of valuation for companies, which aren't growing quickly, book value is of more interest to value investors than growth investors.

2.1.4.2 Par value

The nominal rupee amount assigned to a security by the issuer. For an equity security, par value is usually a very small amount that bears no relationship to its market price, except for preferred stock, in which case par value is used to calculate dividend payments. It is also known as face value. Par value of the stock does not change without stock split or other action by the BOD. Sometimes stock is used without par value.

2.1.4.3 Market or Intrinsic Value

Market value of the stock refers a security's last reported sale price (if on an exchange) or its current bid and ask prices (if over-the-counter); i.e. the price as determined dynamically by buyers and sellers in an open market. Intrinsic value refers to the actual value of a security, as opposed to its market price or book value. The intrinsic value includes other variables such as brand name, trademarks, and copyrights that are often difficult to calculate and sometimes not accurately reflected in the market price. One-way to look at it is that the market capitalization is the price (i.e. what investors are willing to pay for the company) and intrinsic value is the value (i.e. what the company is really worth). Different investors use different techniques to calculate intrinsic value.

2.1.5 Classification of Common Stock

Common stock is a homogeneous type of security. Nevertheless, despite the homogenous nature of common stock, it is important to realize that the risk-return characteristics of stocks can vary significantly. Indeed, stocks are often classified on the basis of these characteristics.

1. Blue-Chip Stocks
2. Growth Stocks
3. Income stocks
4. Cyclical and Defensive Stocks
5. Speculative Stocks
6. Small Stocks
7. Treasury Stocks

2.1.6 Risk on Common Stock

Risk is the variability of return from those that are anticipated. Following statement clarifies the risk on common stock.

To begin to get a handle on risk, let's first consider a couple of examples. Assume that you buy a one year Treasure Bill (T-bill) to yield 8 percent. If you hold it for the full year, you will realize a government-guaranteed 8 percent return on your investment-not more, or less. Now, buy a share of common stock in any company and hold it for one year. The cash dividend that you anticipate receiving may or may not materialize as expected. And, what is more, the year-end price of the stock might be much lower than expected-may be even less than you

started with. Thus, your actual return on this investment may differ substantially from your expected return. If we define risk as the variability of returns from those that are expected, the T-bill would be a risk-free security while the common stock would be risky security.

2.1.6.1 Systematic Risk

Systematic risk is market related. In other words, it arises from the changes in the economy and market condition for example high inflation recession, impact of political factors, which are beyond the control of company management. It affects all firms in the market. The portion of the risk is non-diversifiable and cannot be reduced. The systematic risk is rewarded in the form of risk premium. Sometimes systematic risk is called market risk.

Systematic risk is the variability of return on stocks or portfolios associated with changes in return on the market as a whole (Horne and Wachowicz, 2004:102).

2.1.6.2 Unsystematic risk

Unsystematic risk is non-market factors related. In other words, it arises from the project specific factors for example inefficiency of management failure in new product in production, employee strikes, lawsuits and any other event that is unique to the company. This portion of the risk is diversifiable and it is possible to reduce or eliminate through diversification of investments. It is called unique or asset-specific risk (Ross and et.al., 1998:104).

2.1.7 Return on Common Stock

The annual return on an investment (common stock), expressed as a percentage of the total amount invested. It is also called rate of return. Estimation of the value of an investment, including the change in price and any payments or dividends, calculated from a probability distribution

curve of all possible rates of return. In general, if an asset is risky, the expected return will be the risk-free rate of return plus a certain risk premium.

2.1.8 Sources of Risk

2.1.8.1 Business Risk

Business risk refers to the uncertainty about the rate of return caused by the nature of the business. The most frequently discussed causes of business risk are uncertainty about the firm's sales and operating expenses. Risk associated with the unique circumstances of a particular company, as they might affect the price of that company's securities.

2.1.8.2 Financial Risk

It is the possibility that a bond issuer will default, by failing to repay principal and interest in a timely manner. Bonds issued by the federal government, for the most part, are immune from default (if the government needs money it can just print more). Bonds issued by corporations are more likely to be defaulted on, since companies often go bankrupt. Municipalities occasionally default as well, although it is much less common.

2.1.8.3 Liquidity Risk

It is associated with uncertainty created by the inability to sell the investment quickly for cash. The return variability will increase if price discounts and sales commission are to be given in order to liquidate assets in time. The less the liquidity, the greater will be the risk. So two factors – price and time are associated with liquidity.

2.1.8.4 Default Risk

It is that portion of an investments total risk that results from changes in the financial integrity of the investment. It is related to the probability that some of all of the initial investment will not be returned.

2.1.8.5 Interest Rate Risk

It is defined as the potential variability of return caused by changes in market interest rate. This interest rate risk affects the prices of bonds, stocks, real estate gold puts, calls, futures contracts and other investments as will.

2.1.8.6 Purchasing Power Risk

It is the variability of return an investor suffers because of inflation. Economists measure the rate of inflation by using a price index. The consumer price index (CPI) is a popular index in the US.

2.1.9 Measurement of Risk

Risk is measured in many ways but commonly three methods are used:

2.1.9.1 Standard Deviation (±)

This is a measurement of the dispersion of forecast returns when such returns approximate a normal probability distribution. It is a statistical concept and is widely used to measure risk from holding a single asset. The standard deviation is derived so that a high standard deviation represents a large dispersion of return is a high risk. On other hand, a low standard deviation is a small dispersion and represents low risk.

2.1.9.2 Coefficient of Variation (CV)

If risk is measured by the standard deviation, the CV can measure the risk per unit of expected return. If risk increases with the increase in return, then CV_j provides a quick summary of the relative trade-off between expected return and risk. The CV indicates that investment might be preferred by investor since the risk per unit of return is less than for another investment.

2.1.9.3 Beta Coefficient ( )

This is a mathematical value that measures the risk of one asset in term of its effects on the risk of a group of assets, called a portfolio. It is concerned solely with market related risk, as would be the concern for an investor holding stocks and bonds, it is derived mathematically so that a high beta indicates a high level of risk; a low beta represents low risk.

2.1.10 Risk and Return Tradeoff

The use of the CV of rank investments assumes that the investor should expect higher returns for facing higher total risk as measured by the asset's standard deviation (a constant risk-return tradeoff). Investors are by and large, risk averse; term applied to an investor who demands higher expected return, the higher the risk. This implies that risky investment must offer higher expected returns than less risky investments in order for people to buy and hold them. To have low risk, investment might have lower expected return. The investments having higher returns produced by low risk investment should be viewed skeptically.

2.1.11 The Character Line

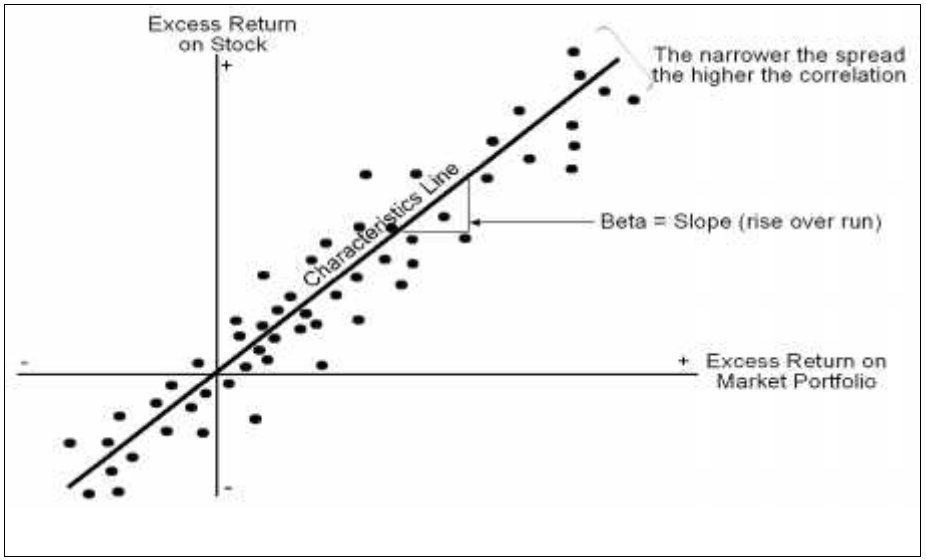
It is useful to deal with returns in excess of the risk-free rate. The excess return is simply the expected return less risk free return. The returns are calculated as:

$$\frac{\text{Dividends paid} + (\text{Ending price} - \text{Beginning price})}{\text{Beginning price}}$$

The dark line is known as the security's character line; it depicts the expected relationship between excess returns for the stock and excess return for the market portfolio. The return from above formula the risk free rate is subtracted to obtain excess return. When returns on the market portfolio are high, returns on the stock tend to be high as well. Instead of using historical return relationships, on might obtain future return estimates from security analysis follow the stock.

Figure 2.1

The Character Line



Source: Horne and Wachowicz, 1993:114

2.1.12 Portfolio Analysis

A portfolio means a combination of two or more securities. A large number of portfolios can be formed from a given set of assets. Each portfolio has risk-return characteristics of its own. Portfolio theory, originally developed by Harry Markowitz, shows that portfolio risk; unlike portfolio return is more than a simple aggregation of the risks of individual assets. As investors construct a portfolio of investment rather than invest in a single asset (Khan and Jain, 2004:34).

The objective of portfolio analysis is to develop a portfolio that has the maximum return at whatever level of risk the investor deems appropriate. All information available to the securities analyst is supposed to be summarized in the risk-return statistics describing the investment candidates.

2.1.13 Portfolio Expected Return

The expected return of a portfolio is the weighted average of the expected return in terms of the individual assets in the portfolio. The weights are the proportion of the investor's wealth invested in each asset (W_j), and the sum of the weights must equal 1 (i.e. $\sum_{j=1}^{n} W_j = 1$), which is calculated as follows:

$$E(HPR_p) = \sum_{j=1}^{n} W_j \, E(HPR_j)$$

Where,

W_j = the proportion of the investor's wealth invested in each asset

$E(HPR_j)$ = Assets expected return

n = number of securities in a portfolio.

2.1.14 Portfolio Risk

We measure the risk of an individual asset by the variance of returns or its square root, the standard deviation. The degree to which the assets' return move together is measured by the covariance or correlation coefficient. By combining the measures of individual asset risk (variance and standard deviation), relative asset weights, and the co-movement of assets' returns (covariance or correlation), the risk of the portfolio can be estimated. Portfolio risk is measured as:

$$\sigma_p = \sqrt{\sum_{i=1}^{n}\sum_{j=1}^{n} W_i W_j \rho_{ij} \sigma_i \sigma_j}$$

Where, ρ_{ij} = correlation coefficient between the securities $\left(\frac{Cov_{ij}}{\sigma_i \sigma_j}\right)$

Alternatively,

$$\sigma_p = \sqrt{\sigma_i^2 W_i + \sigma_j^2 W_j + 2 W_i W_j \rho_{ij} \sigma_i \sigma_j}$$ two assets case

or, three assets case (σ_P)

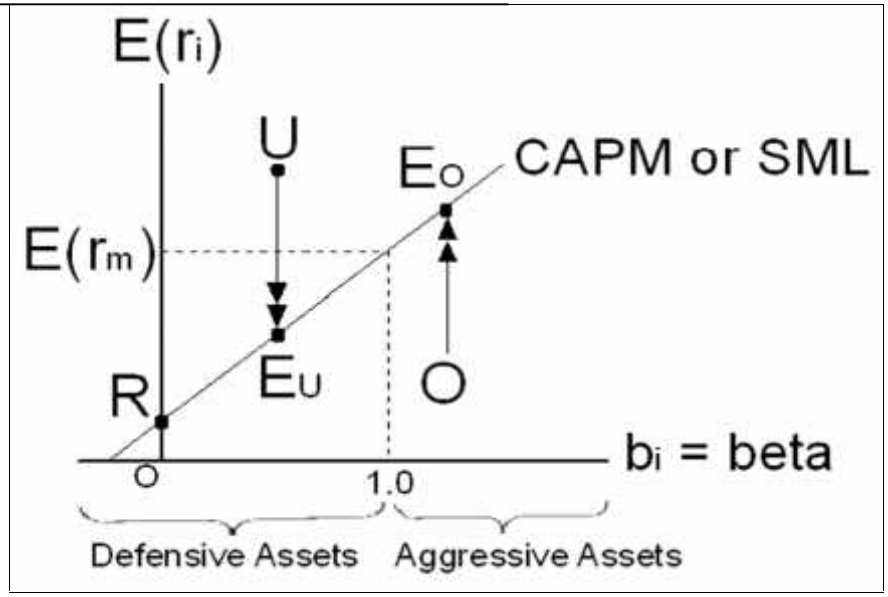
$$\sqrt{\sigma_i^2 W_i^2 + \sigma_j^2 W_j^2 + \sigma_k^2 W_k^2 + 2 W_i W_j \rho_{ij} \sigma_i \sigma_j + 2 W_i W_k \rho_{ik} \sigma_i \sigma_k + 2 W_j W_k \rho_{jk} \sigma_j \sigma_K}$$

2.1.15 Capital Assets Pricing Model (CAMP)

CAPM provides a framework for measuring the systematic risk of an individual security and relate it to the systematic risk of a well diversified portfolio. In the context of CAPM the risk if individual security is defined as the volatility of the security return vis-à-vis the return of a market portfolio. CAPM was developed by William F Sharpe and John Linther in 1960 (Horn 1997). The model describe the relationship between risk and return or expected return, in the model a securities expected return is the risk free rate plus a premium based on the systematic risk of the securities. β is the heart of CAPM. It is the better measure of risk. The most important aspect of risk is the overall risk of the firm as viewed by investors in the market price. Overall risk significantly affects investment opportunities and even more important, the owners wealth. The basis theory that links together risk and return for all assets is commonly called Capital Asset Pricing Model.

Figure 2.2

The CAPM



Source: Francis, 1983: 276

Symbolically,

$$E(r_i) = R_f + [\, E(r_m) - R_f]\beta_i \qquad \text{since } b_m = 1.0$$

Where, b_i = independent variable representing systematic risk of i^{th} asset; it determines the dependent variable $E(r_i)$, expected rate of return for asset i.

R_f = vertices axis intercept, the risk free rate

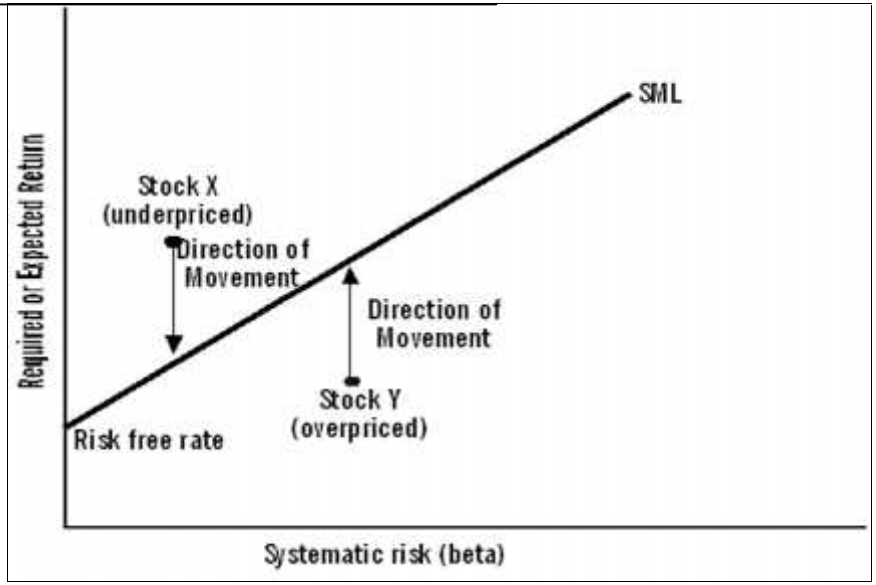
$[E(R_m) - R_f]$ = slope of CAMP

2.1.16 Under Priced and Overpriced Stock

Security Market Line (SML) is drawn on the basis of what investors as a whole know to be the appropriate relationship between the required rate of return and systematic risk. For some reason, two stocks-call them X and Y-are properly priced. Stock X is under priced relative to the security market line, whereas stock Y is overpriced.

Figure 2.3

The Security Market Line



As a result, stock X is expected to provide a rate of return greater than that required based on its systematic risk. In contrast, stock Y is expected to provide lower return than that required compensating for its systematic risk. Investors, seeing the opportunity for superior returns by investing in stock X, should rush to buy it. This action would drive the price up and the expected return down. How long would this continue? It would continue until the market price was such 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 Y's market price down and its expected return up until the expected return was on the SML.

When expected returns for those two stock returns to the SML, market equilibrium will again prevail. As a result, the expected returns for the two stocks will then equal their required returns. Available evidence suggests that disequilibria situations in stock prices do not long persist and that stock prices adjust rapidly to new information. With the vast amount of evidence indicating market efficiency, the SML concept becomes a useful means for determining the expected and required rate of return for a stock.

2.1.17 Correlation Coefficient

Correlation is a statistical measure of the relationship, if any, between series of numbers representing data any kind (Gitman, 2004: 227).

If two mover in the same direction, they are positively correlated; if the series move in opposite directions, they are negatively correlated.

The degree of correlation is measured by the correlation coefficient, which ranges from +1 for perfectly positively correlated series to – 1 for perfectly negatively correlated series. The perfectly positively correlated series move exactly together; the perfectly negatively correlated series move in exactly opposite directions.

2.2 Review from International Studies

In this section some of international published articles are reviewed and are presented hereunder:

Mitchell and Mulherin (1994), the abstract under the heading "*The Impact of Public Information on the Stock Market*", published in "*Journal of Finance*", pointed out the following:

The objective of the study is to locate the relation between the number of news announcements and aggregate measure of securities market activity including trading volume and market returns.

- Aggregate market volume is positively and significantly related to both dividend-capture trading and a dummy variable for triple-watching days, indicating in a simple fashion why volume and information are not perfectly correlated.
- The measures of market and firm-specific returns are not significantly related to the non information sources of trading activity.

R.R. Grauer (1999), an abstract regarding "*On the Cross–Sectional Relation Between Expected Returns, Betas and Size*" published in the "*Journal of Finance*" found some results on portfolio has been presented here for the review. The objective of the study was to locate whether Sharpe (1964) and Lintner (1965) mean variance capital asset pricing model is true or false.

- The market portfolio is MV efficient

- There is at least on positively weighted efficient portfolio.
- In the risk less asset version of the model, the market portfolio in the tangency portfolio i.e. it is the point of tangency between a ray emanating from the risk less interest rate and the minimum variance frontier of risky assets.
- There is linear relation between the expected returns and market betas of securities, i.e., securities plot on the security market line (SML).
- Market betas are the only measures of risk needed to explain the cross section of expected returns.

R. Jagannathan and T. Ma (2003) abstract under the heading, "*Risk Reduction in Large Portfolios: Why Imposing the Wrong Constraints Helps*", published in, "*The Journal of Finance*", under the objective constraining portfolios weights to be nonnegative can reduce the risk in estimated optimal portfolios even when the constraints are wrong, revealed the following points:

- Practitioners often restrict portfolio weights to be positive when constructing minimum variance and minimum tracking error portfolios.
- Constructing a minimum risk portfolio subject to the constraint that portfolio weights should be positive is equivalent to constructing it without any constraint on portfolio weights after modifying the covariance matrix in a particular way.
- An estimated large covariance is due to sampling error, the shrinkage leads to a more precise estimate of the corresponding element in the population.
- The population covariance itself could be large, in which case the shrinkage introduces specification errors. The net effect depends on the trade-off between sampling and specification errors.
- The annualized standard deviation of the return on the minimum variance portfolio constructed using the sample covariance matrix and 60 months of observations on returns and equally weighted portfolio has a greater standards deviation.

2.3 Review from Journals and Abstracts

In this section available were reviewed and the subject matters related to the topic of this thesis abstract so as to know the new contributions made in this field.

Manandhar (1998), carryout a study entitled "*Dividend policy and Value of the Firm in Small Stock Market*", published in "*Management Dynamics*". The basic objective is to find out the financial variable that is related to market equity. But the objective does not seem to be related with the present study, still it is reviewed here. Because Manandhar had pointed out some problems in stock market in Nepal and dividend practices which are:

- Most of the companies are undertaking the expectation of investors resulting in the low marketability of shares and trading floor of stock exchanges
- Majority of the companies are declaring dividends less than risk free rate and market risk premium.
- The relationship between the earnings, dividend pay out and expansion program do not match with financial needs of the companies.
- Companies do not follow sound dividend policy

Ghimire (2001), entitled, "*NEPSE Index-Understand the Reality, An Investor Prospective*", published in "*New Business Age*", is reviewed here under:

The NEPSE index fell to the lowest point of 318.21 on Friday 3rd August from the highest point of 545.43 in December 2000. The index in real terms would have recorded much higher. But Nepal Stock Exchange does not take into consideration the right shares and bonus shares while calculating the index. The share prices of Nepal Bangladesh Bank (NBB), Everest Bank, Bank of Kathmandu (BOK), Nepal SBI Bank, Himalayan Bank and Nepal Arab Bank (now Nabil) have fallen sharply after the book close. Investors had calculated the upcoming bonus shares

and right shares and gave order for sales and purchase accordingly. When the book closure of BOK for right issue was announced, the closing price was Rs.813 per share. But when it reopened, the transaction was for Rs.450 and Rs.455 in the first day. In reality the prices had not fallen that much because Rs.813 plus Rs.100 for every right share comes to Rs.913. When that is divided by 2, it comes to Rs.456.5. Thus the price is normal, but NEPSE index that day fell by 7.18, which is due to the non-listing of the right shares. Similar is the case with the prices of all other listed banks mentioned above (It has been stated that only the bonus share of NBB is adjusted in the price and that was due to heavy fall in the price of NBB after bonus book close, which is again an example of not complying to the best practices). When all these shares will be listed at stock exchange, the index will come to about 350 which can be termed as 'stable' in comparison with prices of June last year.

He noted the financial results of the banks & their impact on the stock market followings from his study:

- All the major banks and financial institutions have published their performance results for fiscal year ending on July 15, 2001. But its positive impact was short-lived. Barring a few, the prices of most of the banks are still too high. Only NBB is being quoted lower (Rs.1040 on Aug. 15) than the suggested price (Rs.1054).
- The performances of the banks are not bad in comparison to those in last year, except in cases of a few like Nepal Indosuez Bank (NIB) in which net profit has decreased by 15 million. Standard Chartered Bank Nepal (formerly Nepal Grindlays Bank) has lowest growth rate in net profit as it has earned only Rs.27 million more than in the last year.
- The share price of NIB ought to be Rs.430. This proves that the promoter share that is on sale should not be worth more than Rs.350. The current controversy on the sale of the share is meaningless and should be avoided.
- Two major reasons can be attributed for the lower share prices. First, the actual loan loss of commercial banks is unknown to the investors. And the second, the fear of imminent closure of distilleries that have taken heavy loans from commercial banks.

Bhattrai (2006), an article related to "*Volatile Market and IPO Scam*", published in "*New Business Age*" during the fiscal year 2000/01 is reviewed hereunder.

According to this article stock index late April after the king's April 24 announcement was not sustained in the later days. In this course the market changed by 18.30 points in a single day (April 30) registering a record in the history of the Nepali Share Market. Though various other reasons can be cited to explain this, the most important one was the increasing level of confidence of the investors rather than improved performance of the companies and the economy. But soon the share market showed increasing volatility and the change in the market index followed the change in the political language of Maoist leaders.

The market continuously increased till May 1. Within a short period between 25th April to 1st May, the market index went up by 42.99 points. The share price of the Standard Charted Bank Nepal Ltd. recorded a high of Rs.3,360 crossing the previous record of Rs.3,111 in the fiscal year 2000/01. The upward trend in the price of this scrip continued even after that and reached Rs.3,700. This is the highest ever for any scrip listed in the NEPSE.

In the fiscal year 2000/01, Nepal Bangladesh Bank Ltd scrip had created recorded by reaching Rs.3,431, but the company went on losing investor faith and with its continuous deterioration in financial performance. Now this scrip is trading Rs.158 (June 1).

Despite the volatility, the market however gained 10.16 points in May, but this is a lower growth as compared to the previous month when it was 24.06 points.

According to this article following points are revealed:

- During this period registered a record in the history of the Nepali Share Market.
- The share price of the Standard Charted Bank Nepal Ltd. recorded high crossing previous record in the fiscal year 2000/01. This trend continued and reached up to Rs.3,700.
- Despite the volatility, the market gained raising points.

2.4 Review of Previous Studies

Rakesh Shrestha (2005), has conducted a study on, *"Analysis of Risk and Return on Commerical Banks of Nepal (with reference to HBL, NABIL, SCBNL and NBBL."* The main objective of this study is to asses the risk associated with return on the common stock investment. The other specific objectives of the study are;

a. To measure the systematic and unsystematic risk of the individual bank.
b. To study the risk return of the individual bank.
c. To find out the relationship between earning per share and market price per share of the commercial banks.

The major findings of the study are;

a. The expected return on common stock of NBBL is highest, i.e. 31.27%. The reason of expected return being so high is the effect of unrealistic annual return in 199/00. Expected return of Himalayan Bank is the lowest, i.e. 11.65%. Other common stocks having higher return are common stock of NABIL and SCBNL, which is 30.55% and 29.72% respectively.
b. In terms of risk, common stock of NBBL is most risky while SCBNL is least risky. NBBIL has standard deviation of 77.27 and it has the highest expected return. The security of NBBIL is quite risky. Therefore, it is not always true that a riskier asset will pay a higher average rate of return. Similarly, the S.D. of NABIL and SCBNL is 50% and 30.36%.

c. The correlation between return of individual Banks and market portfolio have positive correlation which represents that if market return increases the return of the sampled banks also increases or vice versa.
d. All the selected banks are earning more than required rate of return. Therefore, it can be said that all the stocks are underpriced, which implied that they are the stock with a good investment opportunity. Among them, NABBL is the best investment due to high expected return which is 35.27%.

Manisha Manandhar (2006), has conducted a study on, *"Risk, Return and Investment of Commercial Banks in Nepal."* The main objective of the study is to analyze the risk, return and investment of commercial banks in Nepal. The specific objectives of the study are;

a. To analyze the risk and return and portfolios of different common stocks.
b. To analyze the volatility of different stock and other relevant variables.
c. To identify correlation between return of commercial banks under study.

The major findings of the study are;

a. The return behavior of NABIL bank is fluctuated during the period of the study. The return patterns of NABIL bank for the periods 2057/58, 2058/59, 2059/60, 2060/61 and 2061/62 are 20%, -51.33%, 12.86%, 43.92% and 57.50% respectively.
b. The return behavior of SCBL bank is fluctuated during the period of the study. The returns patterns for SCBNL bank for the periods 2057/58, 2058/59, 2059/60, 2060/61 and 2061/62 are 13.05%, -21.87%, 22.19%, 13.11% and 41.26% respectively.
c. The return behavior of HBL bank is fluctuated during the period of the study. The return patterns for HBL bank for the periods 2057/58, 2058/59, 2059/60, 2060/61 and 2061/62 are 7.5%, -26.09%, 4.73%, 0.48%, and 36.67% respectively.
d. The return behavior of NIBL bank is fluctuated during the period of study. The return patterns for NIBL for the periods 2057/58, 2058/59, 2059/60, 2060/61 and 2061/62 are -17.92%, -13.17%, 7.24%, 20.13% and 53.40% respectively.

e. The standard deviation of NABIL, SCBL, HBL and NIBL is 42.01%, 22.90%, 22.24% and 28.76% respectively. Similarly, the beta coefficient of NABIL, SCBL, HBL and NIBL is 1.3741, 0.7039, 0.7060 and 0.8222 respectively.

Khadga Bahadur Pariyar (2007), has conducted a study on, *"Risk and Return Analysis of Listed Finance Companies of Nepal."* The main objective of the study is to undertake the risk and return analysis of the common stock of finance companies. However, the specific objectives of the study are as follows;

a. To analyze the holding period return (HPR) and its risk.
b. To assess the volatility of individual stocks, i.e. market sensitivity of the stocks.
c. To assess the systematic and unsystematic risk of the stocks.
d. To identify whether the stocks of the companies are correctly priced or not.

The major findings of the study are;

a. The average return on the CS of Mahalaxmi Finance is the highest, i.e. 57.06% and that of NFCL is the lowest, i.e. 10.22%. On the basis of return, CS of MFC appears the best among the sampled finance companies.
b. Regarding the risk characteristic, the common stock of NFL has the lowest risk, i.e. 27.52% and that of MFC has the highest, i.e. 84.65%. In terms of risk characteristic, the CS of NFL is the best one for investment. All the finance companies are more risky than market.
c. The beta coefficient of ACE is the highest, i.e. 2.89 and that of NFL is the lowest, i.e. -0.02 among all. Hence, the stocks of ACE are the most volatile and most risky and the stocks of NFL are the least volatile and least risky.
d. Required rates of return of NFCL, AFCL, PFL, NABBC, NFL, ACE, YFC and MFC are 1.08%, -5.61%, -5.93%, 1.41%, 4.56%, -12.56%, 1.05% and 1.98% respectively. Where average rate of return of these companies are 10.22%, 54.01%, 12.26%, 43.64%, 31.88%, 35.41%, 28.32% and 57.06% respectively. Since required rate of returns of all the companies are less than the average rates of return of all the companies are less than the average rates of return, the stocks of all the sampled finance companies are under priced in the market.

Buddha Prasad Pathak (2008), has conducted a study on, *"Analysis of Risk and Return on Stock of Selected Finance Companies Listed in Nepal Stock Exchange Ltd."* The main objective of the study is to evaluate the risk and return associated with common stock investment of selected (six) finance companies listed in Nepal Stock Exchange. The specific objectives of the study are as follows:

a. To see the portfolio risk and return of selected finance companies.
b. To analyze the relation among the returns of selected finance companies.

The major findings of the study are;

a. Among the selected finance companies, only Citizen Investment Trust (CIT) and Ace Finance Company Limited have favorable expected rate of return, which are 20.70% and 11.35% respectively. Citizen Investment Trust has larger expected return i.e. 20.70% and

National Finance Company has lower expected rate of return, i.e. 0.101. The average expected return of finance companies is 19.05%. This is considered as the average return.

b. All the investment involved has certain amount of risk (i.e. standard deviation). The investment on Citizen Investment Trust involves the highest risk, i.e. 86.51%, whereas Kathmandu Finance Company has the lower risk of 22.34%. The average risk on finance company investment is 43.56. Most of the finance company has the risk less than the average. The average risk on finance company investment is 43.56. Most of the finance company has the risk less than the average.
c. The highest value of CV is 1.053 for Ace Finance Company Ltd. Where as the lowest value of CV is for Peoples' Finance Ltd., i.e. -7.71 which indicated that the Re 1 returns from finance companies involve less risk than 1. The average CV for finance companies is -1.27, which indicates that there is low risk associated with investment on stock of finance company.
d. The highest value of β, i.e. degree of systematic risk for finance companies is 1.15 for Samjhana Finance Company Ltd. Whereas lower beta for Peoples Finance Limited i.e., 0.13. The average value of β is 0.5450. Majority of finance companies have the value of beta less than 1. The value of beta suggests that the majority of finance companies stock volatility is less than the market volatility and they are defensive stock.
e. The average of SR and USR for finance companies is 10.10 and 35.90 respectively. The highest value for SR is 23.56 for Samjhana Finance Company and lowest for National Finance Company, i.e. 2.1. Similarly, the highest value of USR is 70.9 for Citizen Investment Trust and lowest is of 5.4 for National Finance Company.

2.5 Research Gap

Numerous studies over the years have shown that these companies have under priced stock. It implies that the expected return is higher than the required rate of return. Certain companies might have such kind of stock price, which affect to increase the value share in the market in future.

Question is not the under priced, rather, will always these companies share be under priced and should the investors are always be ready to invest in these common stock with expectation to get higher return.

In this research work, research has tried to demonstrate the portfolio construction from various assets rather than constructing two assets portfolio. Beside this, it has also tried to explore the risk minimization process.

CHAPTER - III

RESEARCH METHODOLOGY

This chapter gives the theoretical foundation of data collection and analysis for the study. It represents the highlight of research design, population and sample size, data collection techniques, sources of data and data analysis tools.

Research methodology is really a method of critical thinking by defining and redefining problems, formulating hypothesis or suggested solution, collecting, organizing and evaluating data, making deductions and making conclusions to determine whether they fit the formulated hypothesis (Joshi, 2002:4).

3.1 Research Design

Research design is a plan for the collection and analysis of data in which several steps are included for the selection of research problem, presentation of the problem, formulation of hypothesis, conceptual clarity, methodology, survey of literature, data collection, testing of the hypothesis, interpretation, presentation and reporting.

3.2 Sources of Data

The data for the study is based on secondary sources. The main source of data is the reports of Nepal Stock Exchange Ltd, report of Securities Board of Nepal, websites, annual reports of commercial banks and periodicals of NRB. An annual report of NEPSE has been used to take financial statement and trading report of listed commercial banks. Annual report of sampled commercial banks has been mainly taken from SEBON. Websites have been visited to take operational data of commercial banks.

3.3 Population and Samples

Since this study is undertaken with special reference to financial sector, so, among the listed companies, 3 Joint Venture Banks, 3 insurance companies, and 4 finance companies will be taken as samples for this research. It is assumed that these samples represented risk and return of the whole respective organization groups. However, for hypothesis testing, overall listed stocks are considered as a population. Organizations, which are taken as sample, are as follows:

- **Joint Venture Banks**
  a. Nabil Bank
  b. Standard Chartered Bank
  c. Himalayan Bank Limited

- **Finance Companies**
  a. Nepal Finance & Saving Company Limited
  b. National Finance Company
  c. Kathmandu Finance Limited
  d. Peoples Finance Limited

- **Insurance Companies**
  a. Nepal Insurance Company Limited
  b. Premier Insurance Company Limited
  c. United Insurance Company (Nepal) Limited

3.4 Evaluation Tools

There are many tools, which are used to analyze this research study. Some of them are as follows:

3.4.1 Rate of Return (HPR)

It is already mentioned that return is the income received plus any change in market price. So, it is generally expressed as a percentage of the beginning market price of the investment.

Where,

R = rate of return

D_t = Cash dividend received at time t

P_t = Price of a stock at time t

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

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

3.4.2 Average Rate of Return [($\bar{R}_j$)]

This is one of the main tools to analyze this research study. Generally, the expected rate of return is obtained by arithmetic mean of the past year's return.

Average rate of return = ($\bar{R}_j$)

n = Total no. of observation

$$E(R_j) = \bar{R}_j = \sum_{j=1}^{n} \frac{R_j}{n}$$

3.4.3 Standard Deviation (±)

It is a statistical tool, which measures the unsystematic risk i.e. it measures the variability of a distribution of return around its mean. It is the square root of variance.

σ_j = standard deviation of return on stock j during the time period n.

$$\sigma_j = \sqrt{\frac{\sum_{j=1}^{n} (R_j - R_j)^2}{n - 1}}$$

3.4.4 Coefficient of Variation (CV)

It measures the relative risk, which is the ratio of standard deviation of returns to the mean of that distribution. It is a relative measure risk per unit of expected return.

σ_j = standard deviation

R_j = mean of return

$$CV = \frac{\sigma_j}{R_j}$$

3.4.5 Beta Coefficient ( )

Beta coefficient is an idea of systematic risk. It may be used for ranking the systematic risk of different assets. If beta is greater than 1, then the assets are more volatile than the market, which is called an aggressive asset. If the beta is less than 1, the assets are considered as defensive assets as its price fluctuations are less volatiles than market. On the other hand, if the beta is equal to 1 then the assets is said to be average as its price move proportional to the market changes.

β_j = beta coefficient of stock j

Cov (R_jR_m) = covariance between R_j and R_m

σ_m^2 = variance of market return

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

3.4.6 Correlation Coefficient (°)

It is the relationship between two variables (i.e. only one variable dependent and one or more variable (s) independent. Correlation coefficient always lies in the range of +1 to -1. Karl Pearson's method is used to calculate correlation coefficient. A positive correlation coefficient indicates that the returns from two securities generally move in same direction but in negative correlation vice versa. It is calculated as:

$$\rho = \frac{Cov\ (R_j\ R_m)}{\sigma_j\ \sigma_m}$$

3.4.7 Covariance

Covariance is a statistical measure of the relationship between two random variables. That is, it is a measure of how two random variables, such as the returns on securities i and j, "move together." A positive value for covariance indicates that the securities' returns tend to move in the same direction; for example, a better-than-expected return for one security is likely to occur along with a better-than-expected return for the other. A negative covariance indicates a tendency for the returns to offset occur along with a worse-than-expected return for the other. A relatively small or zero value for the covariance indicates that there is little or no relationship between the returns for the two securities.

3.4.8 Figures, Diagram, and Graphs

Classification and tabulation are the devices of presenting the statistical data in neat, concise, systematic and readily comprehensible and intelligible form, thus highlighting the salient features. Another important, convincing, appealing, and easily understood method of presenting the statistical data is the use of diagrams and graphs.

Bar diagram are one of the easiest and the most commonly used devices of presenting most of the business and economic data. These are especially satisfactory for categorical data or series. The circle may be divided into various sections or segments viz., sectors representing certain proportion or percentage of the various component parts to the total. This is known as angular or pie diagram, named so because the various segments resemble slices cut from a pie. Horizontal line graphs is obtained on plotting the time variable along the X-axis and the other variable viz., the magnitudes of the phenomenon under consideration along the Y-axis on a suitable scale and joining the points so obtained by straight lines.

3.5 Hypothesis

A quantitative statement about the population parameter is called a hypothesis. In order to test the validity of population parameter certain assumptions are made, which may be or may not be valid while verifying with the outcome. For the assessment of the significance of a statistic or difference between two independent statistics is regarded as testing of hypothesis (significance). It is to test the features of hypothesized population parameter based on sample drawn.

A statistical hypothesis is some assumption or statement, which may or may not be true, about a population or equivalently about the probability distribution characterizing the given population, which we want to test on the basis of the evidence from a random sample (Gupta, 2000: 1117).

3.5.1 The Null Hypothesis (H_0)

The random selection of the samples from the given population makes the tests of significance valid. For applying any test of significance we first set up a hypothesis-a definite statement about the population parameters. Such a statistical hypothesis, which is under test, is usually a hypothesis of no difference and hence is called Null hypothesis. It is usually denoted by H_0.

Null hypothesis is the hypothesis, which is tested for possible rejection under assumption that it is true.

Thus,

H_0: $\mu_0 = \mu_1$, i.e. there is no significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is equal to the market return.

And, H_0: $\mu_0 = \mu_1$, i.e. There is no significant difference between the portfolio beta of the sample companies' common stock and the market beta. In other words, average beta of the individual company's common stock is equal to 1.

And,

H_0: $\mu_1 = \mu_2 = \mu_3$, i.e., the means of various samples do not differ significantly among themselves. In other words, the means of population from which the samples have come is same.

3.5.2 The Alternative Hypothesis (H_1)

Any hypothesis, which is complementary to the null hypothesis, is called an alternative hypothesis. It is usually denoted by H_1. It is very important to explicitly state the alternative hypothesis in respect of any null hypothesis H_0 because the acceptance or rejection of H_0 is meaningful only if it is being tested against a rival hypothesis. For instance, if we want to test the null hypothesis that the population has a specified mean μ_0, say, i.e.,

$$H_0: \mu_0 = \mu_1,$$

Then the alternative hypothesis could be:

$$H_1: \mu_0 \neq \mu_1, \text{ (i.e. } \mu_0 > \mu_1 \text{ or } \mu_0 < \mu_1)$$

The alternative hypothesis is known as a two-tailed alternative and otherwise right tailed or left tailed alternatives.

The null hypothesis consists of only a single parameter value and is usually simple while alternative hypothesis is usually composite.

Thus,

H_1: $\mu_0 \neq \mu_{1,}$ i.e. There is significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is not equal to the market return.

And,

H_1: $\mu_0 \neq \mu_{1,}$ i.e. There is significant difference between the portfolio beta of the sample companies' common stock and the market beta. In other words, average beta of the individual company's common stock is not equal to 1.

And,

H_1: $\mu_1 \neq \mu_2 \neq \mu_3$, (Two tailed test) i.e., the means of various samples do differ significantly among themselves. In other words, the means of population from which the samples have come is not the same.

3.6 Test Statistic

Various tools can be applied to evaluate the significance of the drawn samples from normal population. Some of the techniques to be applied in the research work have been demonstrated hereunder:

3.6.1 T-Test

If $\times_1, \times_2, \ldots, \times_n$ is a random sample size n from a normal population with mean μ and variance σ^2, then Student's t statistic is defined as:

$$t = \frac{\bar{X} - \mu}{S/\sqrt{n}} \sim t_{n-1}$$

Where,

$$\bar{X} = \frac{\sum X}{n}$$**, Sample mean**

$$S = \sqrt{\frac{1}{n-1}\sum(x - \bar{x})^2}$$ **is an unbiased estimated of the population standard deviation. 't' defined as Student's t-distribution with v = (n – 1) degree of freedom (d.f.).**

3.6.2 F-Test (ANOVA)

In order to test the homogeneity of several means, the analysis of variance (ANOVA) is another tool for tests the significance to evaluate differences among the parameters of various groups. It is to test whether the means of more than two quantitative populations are equal. It helps in making inferences about whether all the samples have come from the same normal population having the same mean.

When the numerical measurements across the several groups are continuous and certain assumptions are met, a methodology known as one-way ANOVA may be employed to compare the means of several groups. The motive of one-way ANOVA is to analyze difference among the group means by considering one variable.

In this process, we subdivide the total variation in the measurement into that which is attributable to differences among the several groups and that which is due to change or attributable to inherent variation within the groups which is known as experimental error. On the other hand, among group variation is attributable to treatment effects.

Thus,

Total variation = Variation among the groups (samples) + Variation within the groups (samples)

Under the null hypothesis, the one-way ANOVA F-test statistic is

$$F = \frac{MSC}{MSE}$$

The F-statistic follows F-distribution with (k – 1) d.f. corresponding to MSC in the numerator and (n – k) d.f. corresponding to MSE in the denominator. It follows F-distribution with (k – 1) d.f.

Here, MSC = mean sum of squares between samples (columns)

$$= \frac{SSC}{k-1}$$

and MSE = mean sum of squares within samples (errors)

$$= \frac{SSE}{n-k}$$

It is noted that the sum of squares divided by its d.fs. gives the corresponding variance or the mean sum of squares (MSS).

Total variation in the measurement is usually represented by the total sum of squares (SST) that is divided into two parts. Thus,

$$SST = SSC + SSE$$

Where SSC = sum of squares between samples (columns)

SSE = sum of squares within samples

The total sum of squares (SST) among all the observations is obtained by summing the squared differences between each individual observation and the overall or grand mean $\bar{x}$ that is based on all the observations in all the groups combined. Thus, total sum of squares is calculated by following formula.

$$SST = \sum(x_{ij} - \bar{x})^2$$

Where, $\bar{x} = \frac{\sum x_{ij}}{n}$ = the overall or grand mean

x_{ij} = the i^{th} observation in group or level j.

n_j = the total number of observations in group j.

n = the total number of observations in all groups combined.

$= n_1 + n_2 + n_3 + \ldots\ldots + n_k$

k = the number of groups or levels of the factor of interest.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

This chapter covers presentation of the arguments, documentation, ideas or concepts, interpretation and findings. Selected companies collected raw data are from various sources are gathered to analyze in accordance with the tools mentioned in chapter three; the research methodology.

4.1 Risk and Return of the Selected Companies

To fulfill the research, 3 banks, 4 finances, and 3 insurance companies are selected as samples for the study. The risk and return analysis of each subsequent selected sample namely, Himalayan Bank, Nabil Bank Limited, Standard Chartered Bank, Peoples' Finance Ltd., Kathmandu Finance Limited, National Finance Ltd., Nepal Finance and Saving Co. Ltd., Premier Insurance Co. Ltd., United Insurance Co. Ltd., and Nepal Insurance Co. Ltd, are presented. Likewise, the under and over pricing of each stock of the respective companies along with their systematic and optimal portfolio selection are also offered in this section. This section also covers the correction coefficient between the two securities return whether positive or negative are also the subject matter of this section which are thus, presented under the following sub-heading:

4.2 Selected Banks, Finances and Insurance Companies

4.2.1 Himalayan Bank Ltd. (HBL)

Table 4.1

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	950	750	836	–	–	–	-
2003/04	1010	600	840	–	–	–	0.48
2004/05	1181	855	920	–	20%	220[1]	35.71
2005/06	1200	900	1100	10.00	20%	362[2]	58.91
2006/07	1760	950	1760	30	5%	129	71.73
2007/08	2856	1340	1980	15	15%	312	30.23
Total							**$\sum R = 197.06$**

Source: Annex - 2

Holding Period Return ($\bar{\bar{H}}\bar{\bar{P}}\bar{\bar{R}}_{HBL}$ = $\frac{\sum HPR}{n}$

$= \frac{197.06}{5}$

= 39.41%

[1] **20% * 1100 = 220**
[2] **(20% * 1760) + 10 = 362**

Table 4.2

Standard Deviation and Coefficient of Variation

FY	$HPR_{HBL} - \overline{HPR}_{HBL}$	$(HPR_{HBL} - \overline{HPR}_{HBL})^2$
2003/04	-0.3893	0.1516
2004/05	-0.0370	0.0014
2005/06	0.1950	0.0380
2006/07	0.3232	0.1045
2007/08	-0.0918	0.0084
		$\sum(HPR_{HBL} - \overline{HPR}_{HBL})^2 = 0.3039$

Standard Deviation (σ_{HBL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.3039}{5-1}}$

$= 0.2757 \sim 27.57\%$

Coefficient of Variation (CV_{HBL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.2757}{0.3941}$

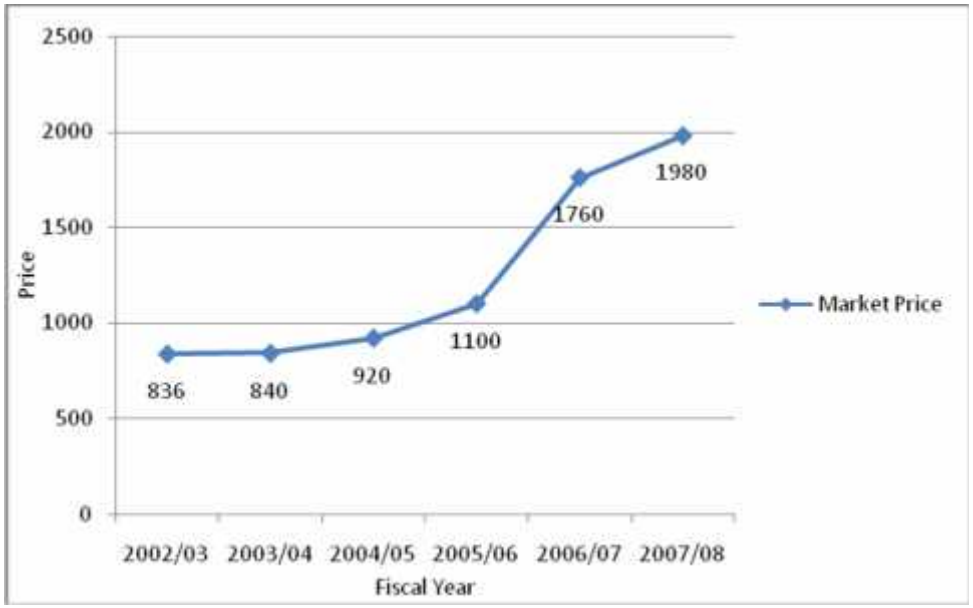
$= 0.6996$

The above table depicts that MPS of the company is increasing continuously. The MPS ranges from Rs.836 to Rs.1980 i.e. minimum in the year 2002/03 and maximum in the year 2007/08. The company has started giving dividend only after the fiscal year 2004/05.The calculated expected return, standard deviation, and coefficient of variation of the company are 39.41%, 27.57%, and 0.6996 respectively.

The trend line showing the price movement during the study period i.e. 2002 to 2008 is shown in the following figure.

Figure 4.1

HBL's Price Movement



4.2.2 Nabil Bank Ltd. (NBL)

Table 4.3

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	875	700	735	–	–	–	-
2003/04	1005	705	1000	50	–	50	42.86
2004/05	1515	1000	1505	65	–	65	57.00
2005/06	2300	1500	2240	70	–	70	53.49
2006/07	5050	2025	5050	85	-	85	129.24
2007/08	6700	3410	5275	100	-	100	6.44
Total							**∑R 289.03**

Holding Period Return ($\bar{HPR}_{NBL}$) $= \frac{\sum HPR}{n}$

$= \frac{289.03}{5}$

= 57.81%

Table 4.4

Standard Deviation and Coefficient of Variation

FY	$HPR_{NBL} - \overline{HPR}_{NBL}$	$(HPR_{NBL} - \overline{HPR}_{NBL})^2$
2003/04	-0.1495	0.0224
2004/05	-0.0081	0.0001
2005/06	-0.0432	0.0019
2006/07	0.7143	0.5102
2007/08	-0.5137	0.2639
		$\sum(HPR_{NBL} - \overline{HPR}_{NBL})^2 = 0.7985$

Standard Deviation (σ_{NBL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.7985}{5-1}}$

$= 0.4768$

$= 47.68\%$

Coefficient of Variation (CV_{NBL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.4768}{0.5781}$

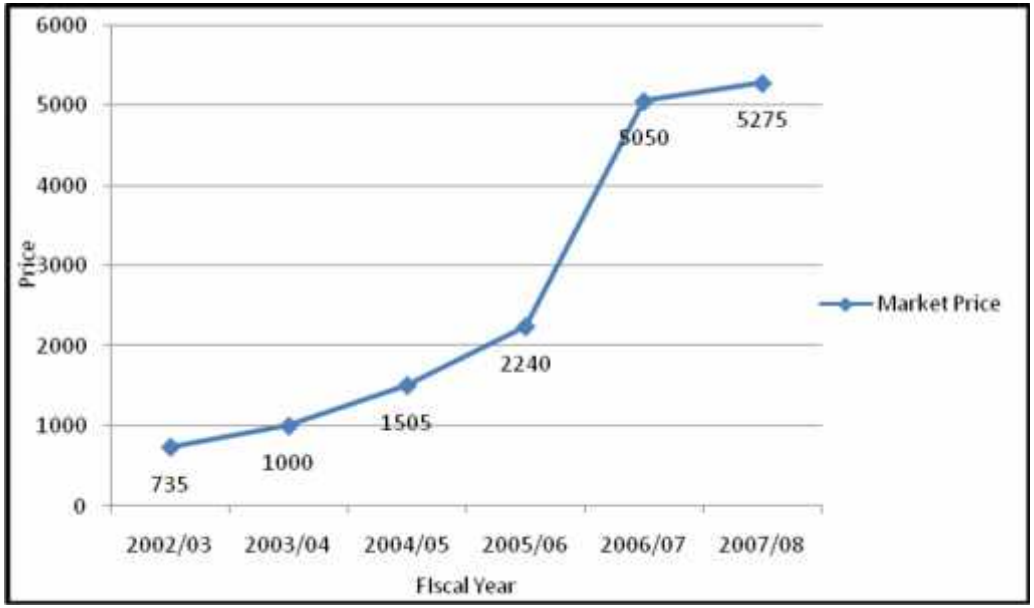
$= 0.8248$

The above table depicts the MPS of the company is continuously increasing. MPS is minimum in the year 2002/03 and is maximum in the fiscal year 2007/08. Company provided sound dividend through out the year. The minimum is Rs.30 and maximum is Rs.70 in the fiscal year 2001-02 and 2005-06 respectively. The holding period return of the company is highest in the fiscal year 2006/07 whereas the minimum in 2007/08. Similarly the average return, standard deviation, and coefficient of variation are 57.81%, 47.68%, and 0.8248 respectively.

The trend line showing the price movement during the study period i.e. 2002 to 2008 is shown in the following figure.

Figure 4.2

NBL's Price Movement



4.2.3 Standard Chartered Bank Ltd. (SCBL)

Table 4.5

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	1760	1380	1640	–	–	–	-
2003/04	1800	1520	1745	110	–	110	13.11
2004/05	2350	1553	2345	110	–	110	40.69
2005/06	3775	2200	3775	120	–	120	66.10
2006/07	5900	3058	5900	130	-	130	59.74
2007/08	9025	4505	6830	80	-	80	17.12
Total							**$\sum R = 196.76$**

Holding Period Return ($\overline{HPR}_{SCBL}$) $= \frac{\sum HPR}{n}$

$= \frac{196.76}{5}$

$= 39.35\%$

Table 4.6

Standard Deviation and Coefficient of Variation

FY	$HPR_{SCBL} - \overline{HPR}_{SCBL}$	$(HPR_{SCBL} - \overline{HPR}_{SCBL})^2$
2003/04	-0.2624	0.0689
2004/05	0.0134	0.0002
2005/06	0.2675	0.0716
2006/07	0.2039	0.0416
2007/08	-0.2223	0.0494
		$\sum(HPR_{SCBL} - \overline{HPR}_{SCBL})^2 = 0.2317$

Standard Deviation (σ_{SCBL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.2317}{5-1}}$

$= 0.2706$

$= 27.06\%$

Coefficient of Variation (CV_{SCBL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.2706}{0.3935}$

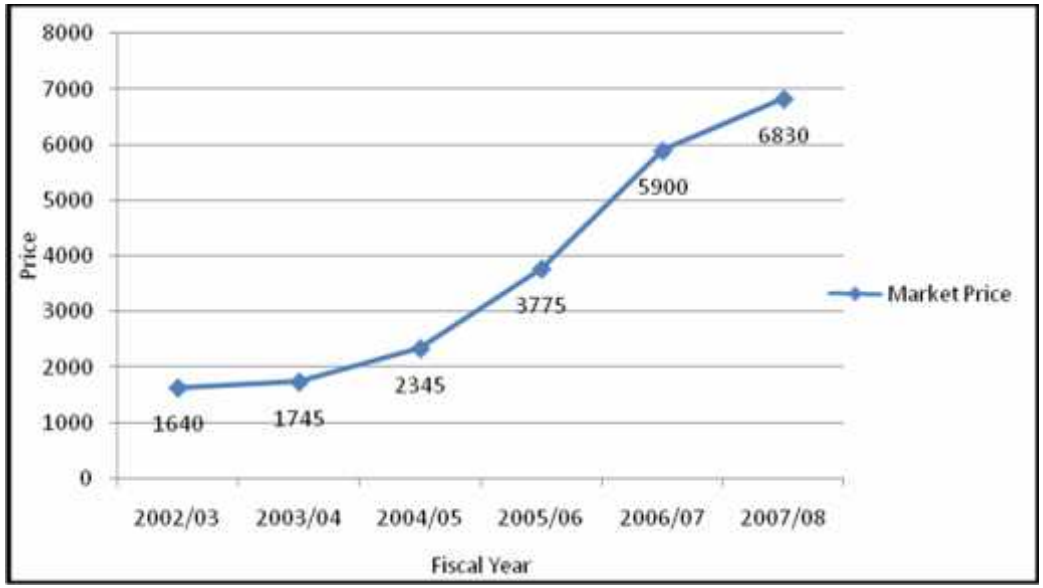
$= 0.6877$

The above table shows the market price per share during the fiscal years 2000 to 2006. The MPS is in increasing trend**.** It reaches up to Rs.6830 maximum in the fiscal year 2007/08 and minimum Rs.1640 in the fiscal year 2002/03. The dividend distribution sounds good of the company, providing beyond the par value of the common stock. The holding period, standard deviation and coefficient of variation of the company are 39.35%, 27.06%, and 0.6877 respectively.

The trend line showing the price movement during the study period i.e. 2002 to 2008 is shown in the following figure.

Figure 4.3

SCBL's Price Movement



4.2.4 Kathmandu Finance Co. Ltd. (KFCL)

Table 4.7

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	**Closing**	**Cash**	**Stock**	**Total**	
2002/03	310	230	235	–	–	–	-
2003/04	274	200	205	–	–	–	-12.77
2004/05	207	135	138	–	–	–	-32.68
2005/06	147	135	140	–	10%	20.30	16.16
2006/07	204	140	203	10		10.00	52.14
2007/08	285	213	285		15%	42.75	61.45
Total							**$\sum R = 84.30$**

Holding Period Return ($\overline{HPR}_{KFCL}$) $= \frac{\sum HPR}{n} = \frac{84.30}{5}$

= 16.86%

Table 4.8

Standard Deviation and Coefficient of Variation

FY	$HPR_{KFCL} - \overline{HPR}_{KFCL}$	$(HPR_{KFCL} - \overline{HPR}_{KFCL})^2$
2003/04	-0.2963	0.0878
2004/05	-0.4954	0.2454
2005/06	-0.0070	0.0000
2006/07	0.3528	0.1245
2007/08	0.4459	0.1988
		$\sum(HPR_{SCBL} - \overline{HPR}_{SCBL})^2 = 0.6565$

Standard Deviation (σ_{KFCL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.6565}{5-1}}$

$= 0.4051$

$= 40.51\%$

Coefficient of Variation (CV_{KFCL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.4051}{0.1686}$

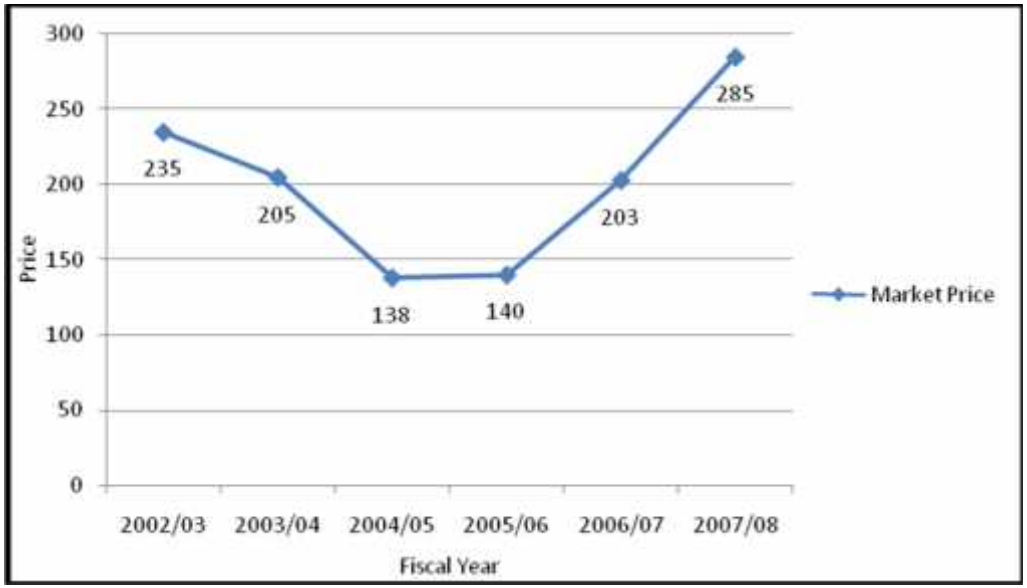
$= 2.4027$

The above table shows the market price per share during the fiscal years 2002 to 2008. The MPS is deceasing till 2004/05 and then it is increasing steadily. The dividend is distributed only after the fiscal year 2005/06. The holding period, standard deviation, and coefficient of variation of the company are 16.86%, 40.51%& and 2.4027 respectively.

The following figure reveals the Market price movement during the study period of the company.

Figure **4.4**

KFCL's Price Movement



4.2.5 National Finance Co. Ltd. (NFCL)

Table 4.9

Holding Period Return

FY	MPS			DPS			Realized Return
	High	*Low*	Closing	Cash	Stock	Total	$R = \frac{D_1 + (P_1 - P_0)}{P_0}$
2002/03	515	414	455	–	20%	72	-
2003/04	445	360	360	–	20%	59	-7.91
2004/05	375	295	295	1	20%	53.6	-3.17
2005/06	309	250	263	–	10%	46	4.75
2006/07	460	263	460		10%	105	114.83
2007/08	1200	450	1050	5	50%	530	243.48
Total							**$\sum R = 351.98$**

Holding Period Return ($\bar{H}\bar{P}\bar{R}_{NFCL}$) $= \frac{\sum HPR}{n}$

$= \frac{351.98}{5}$

$= 70.40\%$

Table 4.10

Standard Deviation and Coefficient of Variation

FY	$HPR_{NFCL} - \overline{HPR}_{NFCL}$	$(HPR_{NFCL} - \overline{HPR}_{NFCL})^2$
2003/04	-0.7831	0.6132
2004/05	-0.7357	0.5413
2005/06	-0.6565	0.4310
2006/07	0.4443	0.1974
2007/08	1.7308	2.9957
		$\sum(HPR_{NFCL} - \overline{HPR}_{NFCL})^2 = 4.7786$

Standard Deviation (σ_{NFCL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{4.7786}{5-1}}$

$= 107.30\%$

Coefficient of Variation (CV_{NFCL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{1.0730}{0.7040}$

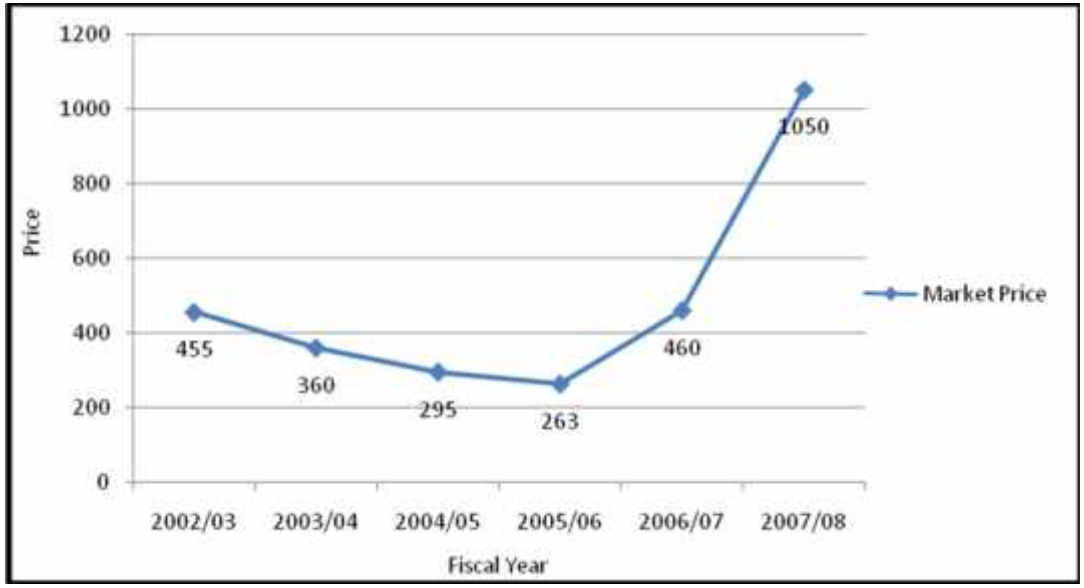
$= 1.5241$

The MPS of the company is maximum Rs.1050 in the fiscal year 2007/08 and minimum Rs.263 in the fiscal year 2005/06. It distributed dividend in the first two fiscal years and continues to provide stock dividend instead of cash till 2007/08. The market price per share of the company tends to decrease from the very beginning till it reaches to fiscal year 2006/07. The holding period return, standard deviation, and coefficient of variation of the company are 70.40%, 107.30%, and 1.5241 respectively.

The following figure reveals the Market price movement during the study period of the company.

Figure 4.5

NFCL's Price Movement



4.2.6 Nepal Finance and Saving Co. Ltd. (NEFINSCO)

Table 4.11

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	290	176	176	–	–	–	-
2003/04	170	160	165	–	–	–	-6.25

2004/05	164	132	147	–	–	–	-10.91
2005/06	165	134	134	–	–	–	-8.84
2006/07	314	134	265	-	50%	237.5	2.75
2007/08	480	267	475	-	50%	237.5	1.69
Total							**∑R = -21.56**

Holding Period Return ($\overline{HPR}_{NEFINSCO}$) $= \frac{\sum HPR}{n}$

$= \frac{-21.56}{5}$

= -4.31%

Table 4.12

Standard Deviation and Coefficient of Variation

FY	$HPR_{NEFINSC0} - \overline{HPR}_{NEFINSC0}$	$(HPR_{NEFINSC0} - \overline{HPR}_{NEFINSC0})^2$
2003/04	-0.1056	0.0112
2004/05	-0.1522	0.0232
2005/06	-0.1315	0.0173
2006/07	-0.0156	0.0002
2007/08	-0.0262	0.0007
		$\sum(HPR_{NEFINSCO} - \overline{HPR}_{NEFINSCO})^2 = 0.0526$

Standard Deviation ($\sigma_{NEFINSCO}$) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.0526}{5-1}}$

$= 11.48\%$

Coefficient of Variation ($CV_{NEFINSCO}$) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.1148}{-0.0431}$

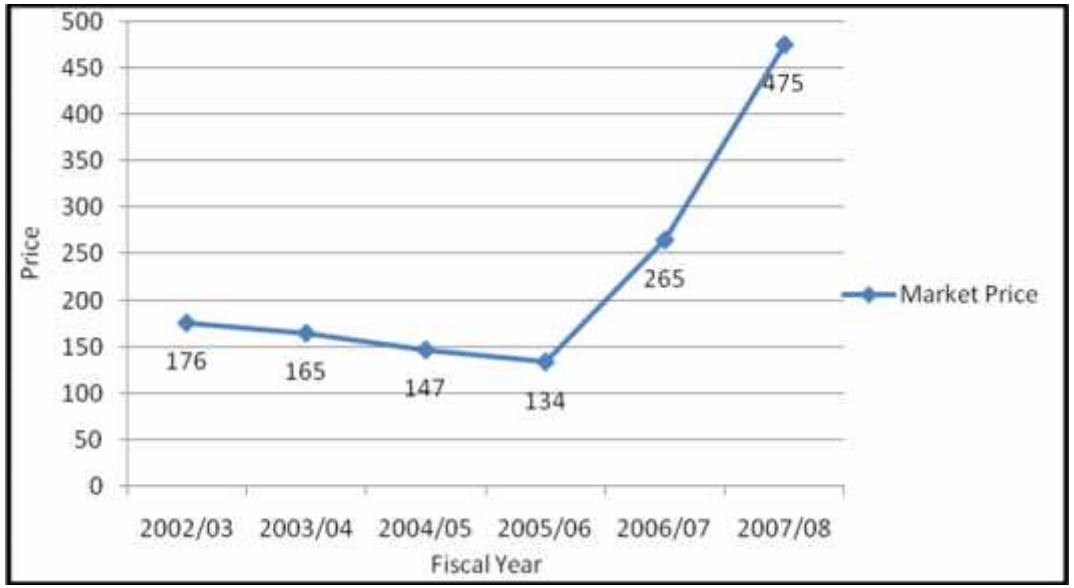
$= -2.6636$

The MPS of the company is maximum Rs.475 in the fiscal year 2007/08 and minimum Rs.134 in the fiscal year 2005/06. It distributed dividend at the fiscal year 2006/2008.The market price per share of the company tends to decrease from the very beginning reaching down to Rs.134 except increase in the FY 2006/07 to 2007/08. The holding period return, standard deviation, and coefficient of variation of the company are -4.31%, 11.48%, and -2.6636 respectively.

The following figure reveals the market price movement during the study period of the company.

Figure 4.6

NEFINSCO's Price Movement



4.2.7 Peoples' Finance Co. Ltd. (PEFIL)

Table 4.13

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	**Closing**	**Cash**	**Stock**	**Total**	
2002/03	130	90	90	–	–	–	-
2003/04	118	90	104	–	–	–	15.56
2004/05	115	99	100	10	–	10	5.77
2005/06	126	96	111	11.10		11.10	22.1
2006/07	139	115	125	-	10%	69.9	75.59
2007/08	699	127	699	-	-	-	459.20
Total							**∑R = 578.22**

Holding Period Return ($\overline{HPR}_{PEFIL}$) $= \frac{\sum HPR}{n}$

$= \frac{578.22}{5}$

= 115.64%

Table 4.14

Standard Deviation and Coefficient of Variation

FY	$HPR_{PEFIL} - \overline{HPR}_{PEFIL}$	$(HPR_{PEFIL} - \overline{HPR}_{PEFIL})^2$
2003/04	-1.0008	1.0016
2004/05	-1.0987	1.2071
2005/06	-0.9354	0.8750
2006/07	-0.4005	0.1604
2007/08	3.4356	11.8033
		$\sum(HPR_{PEFIL} - \overline{HPR}_{PEFIL})^2 = 15.0474$

Standard Deviation (σ_{PEFIL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{15.0474}{5-1}}$

$= 193.96\%$

Coefficient of Variation (CV_{PEFIL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{1.9196}{1.1564}$

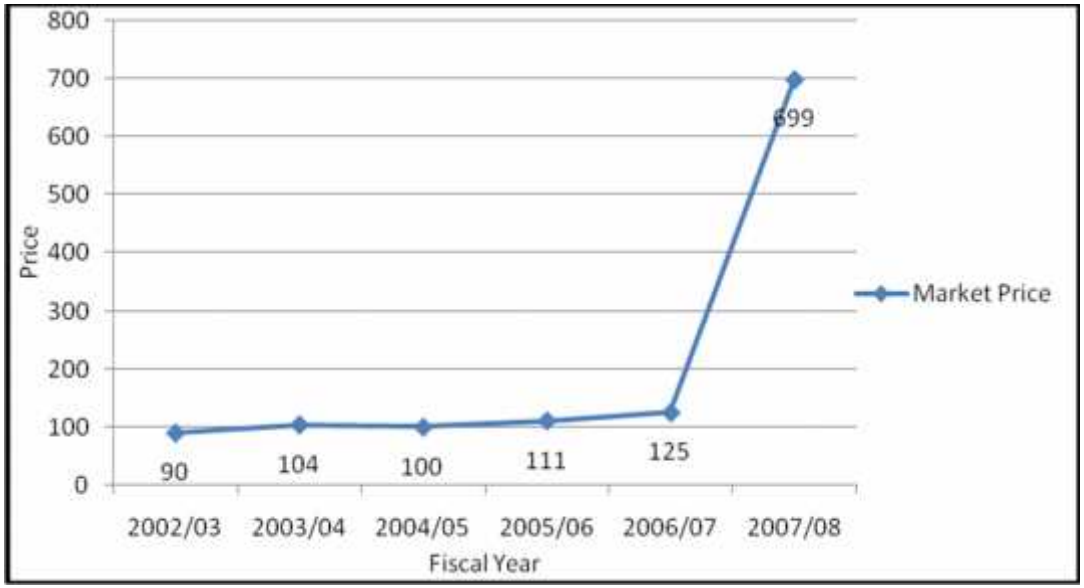
$= 1.6600$

The above table depicts the market price during the study period i.e. 2002 through 2008. The MPS of the company is increasing trend. The company distributed cash dividend in 2004/05 fiscal year and stock dividend in 2005/06 and 2006/07 fiscal year. The company's calculated holding period return, standard deviation, and coefficient of variation are 115.64%, 193.96% and 1.6600 respectively.

The following figure reveals the market price movement during the study period of the company.

Figure 4.7

PEFIL's Price Movement



4.2.8 Nepal Insurance Co. Ltd. (NICL)

Table 4.15

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	500	415	456	–	–	–	-
2003/04	446	360	375	–	–	–	-17.76
2004/05	375	340	370	–	–	–	-1.33
2005/06	450	370	405	10	30%	117.10	41.11
2006/07	400	357	357	-	-	-	-11.85
2007/08	357	345	350	-	-	-	-1.96
Total							**$\sum R = 8.21$**

Holding Period Return ($\bar{HPR}_{NICL}$) $= \frac{\sum HPR}{n}$

$= \frac{8.21}{5}$

$= 1.64\%$

Table 4.16

Standard Deviation and Coefficient of Variation

FY	$HPR_{NICL} - \overline{HPR}_{NICL}$	$(HPR_{NICL} - \overline{HPR}_{NICL})^2$
2003/04	-0.1940	0.0376
2004/05	-0.0297	0.0009
2005/06	0.3947	0.1558
2006/07	-0.1349	0.0182
2007/08	-0.0360	0.0013
		$\sum(HPR_{NICL} - \overline{HPR}_{NICL})^2 = 0.2138$

Standard Deviation (σ_{NICL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.2138}{5-1}}$

$= 0.2313$

$= 23.13\%$

Coefficient of Variation (CV_{NICL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.2313}{0.0164}$

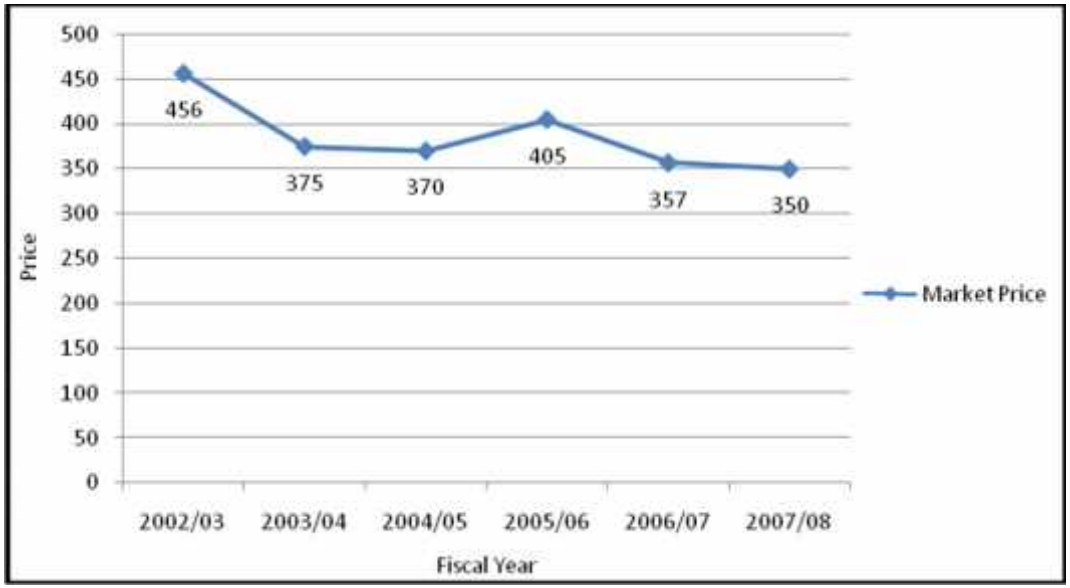
$= 14.1037$

The MPS of the company is in decreasing trend till 2004/05 and increases in 2005/06 and it is in decreasing trend in following fiscal years. The maximum MPS is Rs.456 whereas minimum Rs.350. The company was able to distribute dividend in the fiscal year 2005/06. The holding period return, standard deviation, and Coefficient of variation of the company are 1.64%, 23.13% and 14.1037 respectively.

The following figure reveals the market price movement during the study period of the company.

Figure 4.8

NICL's Price Movement



4.2.9 Premier Insurance Co. Ltd. (PICL)

Table 4.17

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	200	160	192	-	-	-	-
2003/04	210	192	210	-	-	-	9.38
2004/05	210	195	210	-	-	-	0.00
2005/06	214	190	200	-	-	-	-4.76
2006/07	260	200	260	-	-	-	30.00
2007/08	318	260	300	-	-	-	15.98
Total							**$\sum R = 50.57$**

Holding Period Return ($\overline{HPR}_{PICL}$) $= \frac{\sum HPR}{n}$

$= \frac{50.57}{5}$

=10.11%

Table 4.18

Standard Deviation and Coefficient of Variation

FY	$HPR_{PICL} - \overline{HPR}_{PICL}$	$(HPR_{PICL} - \overline{HPR}_{PICL})^2$
2003/04	-0.0062	0.0000
2004/05	-0.1000	0.0100
2005/06	-0.1476	0.0218
2006/07	0.2000	0.0400
2007/08	0.0538	0.0029
		$\sum(HPR_{PICL} - \overline{HPR}_{PICL})^2 = 0.0747$

Standard Deviation (σ_{PICL}) $= \sqrt{\frac{\sum(HPR - \overline{HPR})^2}{n-1}}$

$= \sqrt{\frac{0.0747}{5-1}}$

$= 0.1367$

$= 13.67\%$

Coefficient of Variation (CV_{PICL}) $= \frac{\sigma}{\overline{HPR}}$

$= \frac{0.1367}{0.1011}$

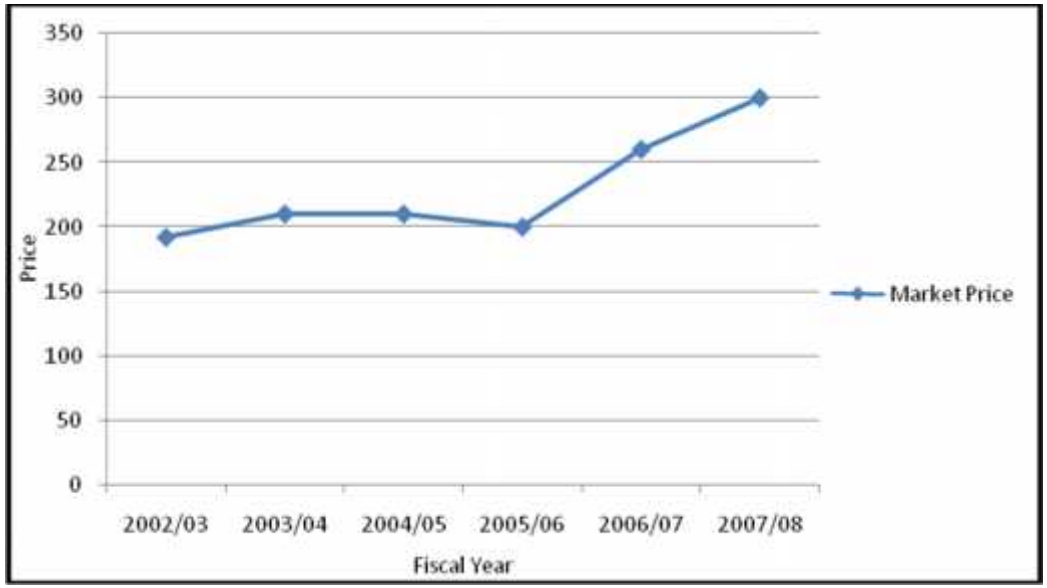
$= 1.3521$

The MPS of this company is fluctuating. Company distributed no dividend through the sampled fiscal year. The MPS reached up to Rs.300 for maximum MPS, while on the other hand Rs.192 for minimum MPS. This is the result of the fiscal year 2007/08 and 2002/03 respectively. The holding period return, Standard deviation and coefficient of variation of the company stand for 10.11%, 13.67% and 1.3521 respectively.

The following figure is presented the market price movement during the study period of the company.

Figure 4.9

PICL's Price Movement



4.2.10 United Insurance Co. Ltd. (UICL)

Table 4.19

Holding Period Return

FY	MPS			DPS			Realized Return $R = \frac{D_1 + (P_1 - P_0)}{P_0}$
	High	*Low*	Closing	Cash	Stock	Total	
2002/03	185	120	138	4	-	4	-
2003/04	132	105	105	-	-	-	-23.91
2004/05	133	102	128	-	-	-	21.9
2005/06	165	118	125	-	-	-	-2.34
2006/07	220	120	219	-	-	-	75.20
2007/08	317	192	315	-	20		72.60
Total							**$\sum R = 143.45$**

Holding Period Return ($\bar{H}\bar{P}\bar{R}_{UICL}$) $= \frac{\sum HPR}{n}$

$= \frac{143.45}{5}$

$= 28.69\%$

Table 4.20

Standard Deviation and Coefficient of Variation

FY	$HPR_{UICL} - \overline{\overline{HPR}}_{UICL}$	$(HPR_{UICL} - \overline{\overline{HPR}}_{UICL})^2$
2003/04	-0.5260	0.2767
2004/05	-0.0679	0.0046
2005/06	-0.3103	0.0963
2006/07	0.4651	0.2163
2007/08	0.4391	0.1928
		$\sum(HPR_{UICL} - \overline{\overline{HPR}}_{UICL})^2 = 0.7867$

Standard Deviation (σ_{UICL})

$$= \sqrt{\frac{\sum(HPR - \overline{\overline{HPR}})^2}{n-1}}$$

$$= \sqrt{\frac{0.7867}{5-1}}$$

$$= 47.35\%$$

Coefficient of Variation (CV_{UICL})

$$= \frac{\sigma}{\overline{\overline{HPR}}}$$

$$= \frac{0.4735}{0.2869}$$

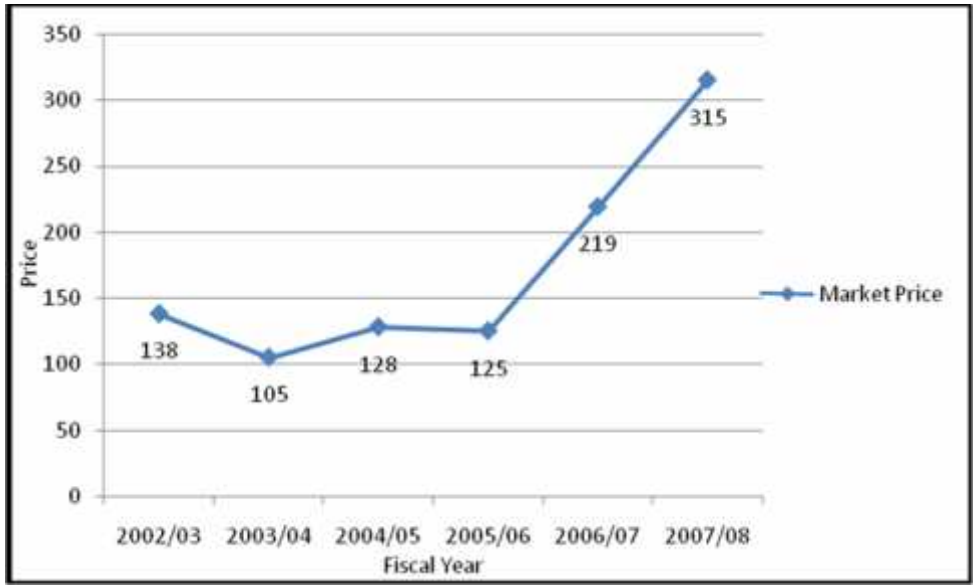
$$= 1.6504$$

The maximum MPS is Rs.315 in the fiscal year 2007/08 and minimum MPS Rs.105 is fiscal year 2003/04. The company distributed dividend in the last fiscal year only. The holding period return, standard deviation, and coefficient of variation of the company are 28.69%, 47.35% and 1.6504 respectively.

The following figure is presented the market price movement during the study period of the company.

Figure 4.10

UICL's Price Movement



Thus, all the sample companies HPR, standard deviation, and its coefficient of variations are presented in the following table 4.21.

Table 4.21

Summary of HPR, ±, CV of Sample Companies

CO.	HPR	±	CV
SCBL	39.35%	27.06%	0.6877
NBL	57.81%	47.68%	0.8248
HBL	39.41%	27.57%	0.6996
NICL	1.64%	23.13%	14.1037
NFCL	70.40%	107.30%	1.5241
UICL	28.69%	47.35%	1.6504
PICL	10.11%	13.67%	1.3521
KFCL	16.86%	40.51%	2.4027
PEFIL	115.64%	193.96%	1.6773
NEFINSCO	-4.31%	11.48%	-2.6636

4.3 Inter-Firm Comparison

4.3.1 Market Capitalization Basis

Table 4.22

Market Capitalization at 16th July 2008

Companies	Outstanding Equity	Closing Price	Market Capitalization (in million)	%	Rank
SCBL	680,784,000	6830	42337.95	43.62	1st
NBL	687,393,000	5275	36259.98	37.36	2nd
HBL	1,216,215,000	1980	16054.04	16.54	3rd
NFCL	156,881,800	1050	1098.06	1.13	4th
PEFIL	84,000,000	699	464.09	0.48	5th
NICL	102,698,400	350	359.44	0.37	6th
UICL	60,000,000	315	198.00	0.20	7th
NEFINSCO	30,000,000	475	95.00	0.10	8th
KFCL	37,950,000	285	94.05	0.10	9th
PICL	30,000,000	300	90.00	0.09	10th
Total	**3,005,922,200**	**17,559**	**97050.6100**	**100**	

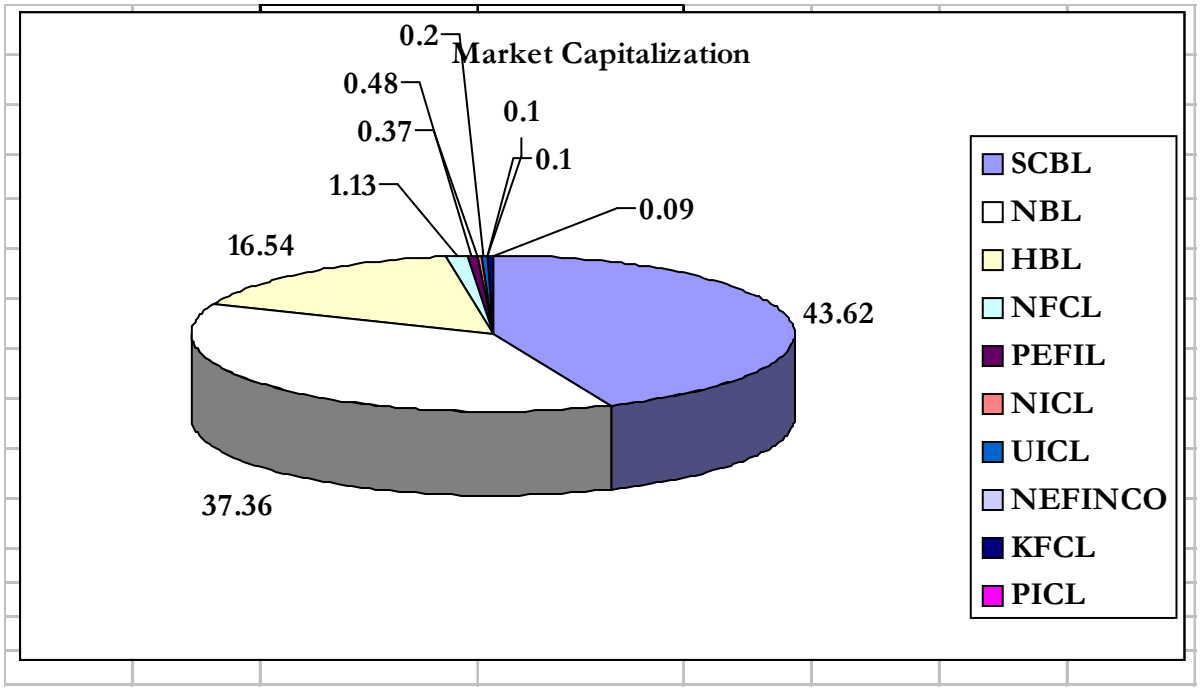
Source: Annex - 2

Table 4.22 represents the market capitalization, share outstanding, and the position of market capitalization of the individual companies based on the data 16th July 2008. The total numbers of shares outstanding is 3,005,922,200 shares whereas the market capitalization amounted to Rs.97050.6100 (in million).

According to market capitalization SCBL is the largest market capture whereas PICL is the smallest among selected companies. The chronologies of these selected companies are SCBL, NBL, HBL, NFCL, PEFIL, NICL, UICL, NEFINSCO, KFCL, and PICL. The percentage of market capture on the basis of market capitalization is 43.62, 37.36, 16.54, 1.13, 0.48, 0.37, 0.20, 0.10, 0.10 and 0.09 respectively which is represented in the following pie diagram 4.11.

Figure 4.11

Pie Diagram (Market Capitalization)



4.3.2 Risk and Return Basis

Table 4.23

Ranking of the Company on the basis of CV

Company	HPR	±	CV	Rank
SCBL	39.35%	27.06%	0.6877	1st
HBL	39.41%	27.57%	0.6996	2nd
NBL	57.81%	47.68%	0.8248	3rd
PICL	10.11%	13.67%	1.3521	4th
NFCL	70.40%	107.30%	1.5241	5th
UICL	28.69%	47.35%	1.6504	6th
PEFIL	115.64%	193.96%	1.6773	7th
KFCL	16.86%	40.51%	2.4027	8th
NEFINSCO	-4.31%	11.48%	-2.6636	9th
NICL	1.64%	23.13%	14.1037	10th

Table 4.23 shows the holding period return, standard deviation, and coefficient of variation of the selected listed companies. Among the listed companies PEFIL has the highest holding period return i.e. 115.64%, whereas NICL has the lowest holding period return i.e.1.64%.

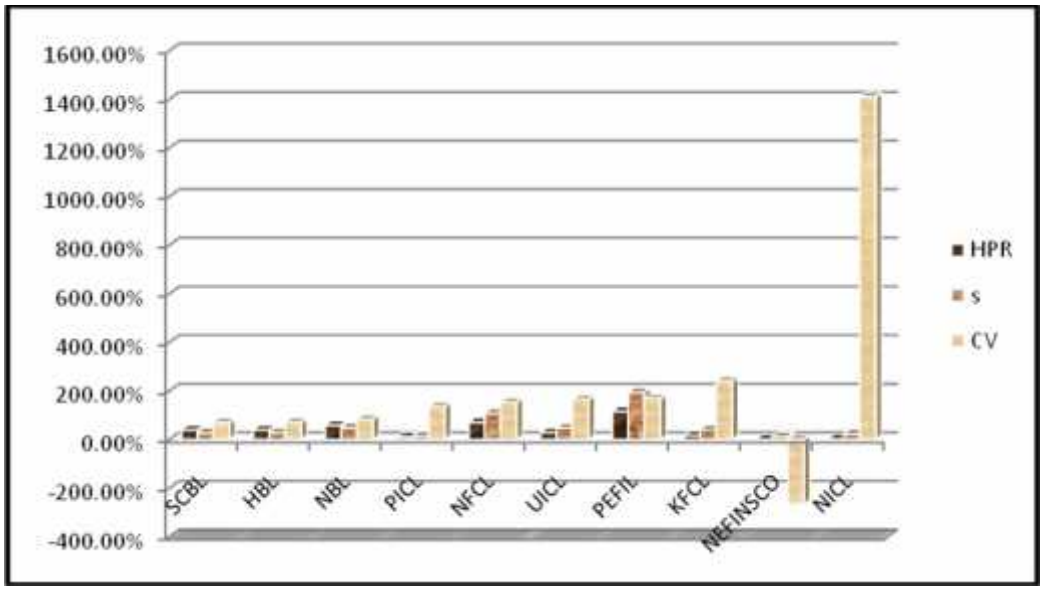
Similarly, standard deviation is the measurement for risk to get the expected return. NEFINSCO has the lowest standard deviation i.e. 11.48% whereas; PEFIL has the highest standard deviation i.e. 193.96%.

The coefficient of variation locates the risk and return trade off i.e. the variation to obtain the expected return. This ranges from 0.6877 to 14.1037. The C.V having the highest value indicates that there is a greater variability to obtain the anticipated return. On the other hand, lower C.V indicates high possibilities to obtain expected return.

On the basis of CV; a relative measure (risk and return) the ranking of the selected companies is provided in the table 4.23, SCBL stands 1st and NICL the last.

Figure 4.12

Risk and Return



4.4 Market Risk and Return

Table 4.24

Calculation of HPR_m, $\pm_m$, and $C.V_m$

FY	NI	$HPR_m = \frac{NI_1 - NI_0}{NI_0}$	$HPR_m - \bar{\bar{HPR}}_m$	$(HPR_m - \bar{\bar{HPR}}_m)^2$
2002/03	204.82	-	-	-
2003/04	224.91	0.0981	-0.2816	0.0793
2004/05	287.90	0.2801	-0.0996	0.0099
2005/06	386.83	0.3436	-0.0361	0.0013
2006/07	683.95	0.7681	0.3884	0.1509
2007/08	963.36	0.4085	0.0288	0.0008
Total		**$\sum HPR_m = 1.8984$**	**$\sum (HPR_m - \bar{\bar{HPR}}_m)^2 = 0.2422$**	

Holding Period Return on Market ($\bar{\bar{HPR}}_m$) $= \frac{\sum HPR_m}{n}$

$= \frac{1.8984}{5}$

$= 0.3797$

$=37.97\%$

Standard Deviation of Market (σ_m) $= \sqrt{\frac{\sum(HPR_m - \bar{HPR}_m)^2}{n-1}}$

$= \sqrt{\frac{.2422}{5\text{-}1}}$

$= 0.2462$

$=24.62\%$

Variance (σ_m^2) $= \frac{\sum(HPR_m - \bar{HPR}_m)^2}{n-1}$

$= \frac{0.2422}{5-1}$

$= 0.0606$

Coefficient of Variation of Market (CV_m) $= \frac{\pm_m}{\bar{HPR}_m}$

$= \frac{\mathbf{0.2462}}{\mathbf{0.3797}}$

$\mathbf{= 64.84}$

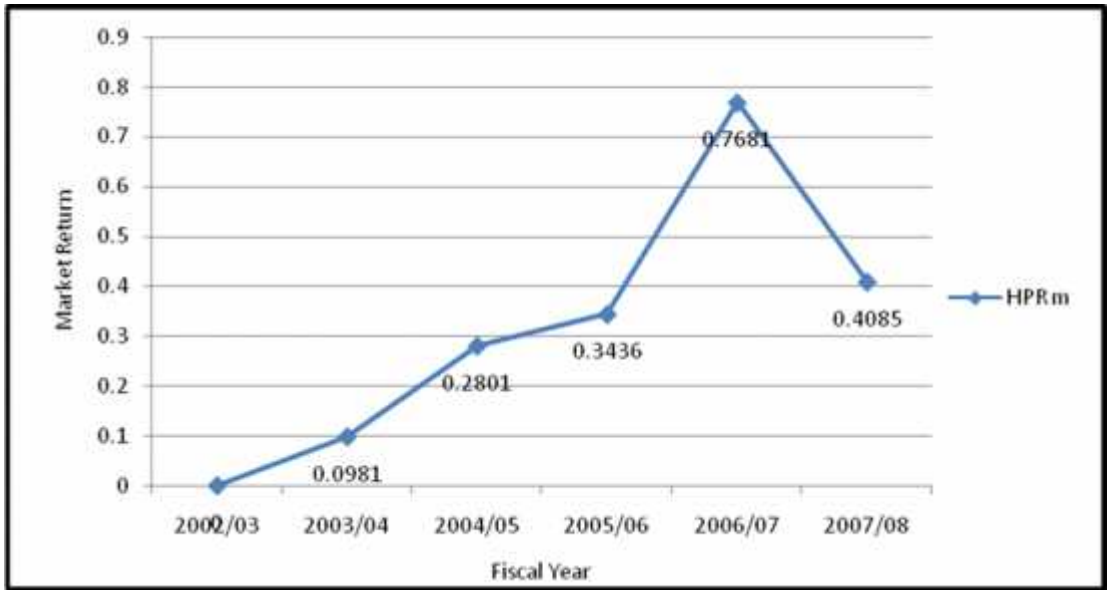
Holding period return of market is calculated on the basis of NEPSE index on July 16th 2008. Table 4.24 depicts the computation of C.V,σ, and return of the market. The annual return is in increasing trend during the fiscal year 2002/03 to 2007/08. The NEPSE index ranges from 204.82 to 963.36. The overall return of the market is 37.97%, standard deviation is 24.62%, variance is 0.0606, and coefficient of variation of market is

64.84. This indicates that to obtain 37.97% return the investors should bear 24.62% risk of loosing the return. There is a greater variability in the market return, which is represented by the coefficient of variation.

Trend line of the holding period return is presented in the following diagram.

Figure 4.13

Holding Period Return during 2003/04 – 2007/08



4.5 Market Sensitivity Analysis

Total risk consists of systematic and unsystematic risk. Unsystematic risk can be diversified whereas systematic risk cannot be eliminated. The beta coefficient represents the degree of systematic risk. As already mentioned, beta coefficient of market is always one, the individual companies calculated beta coefficient; the measurement of systematic risk is given in the following table:

Table 4.25

Beta of the Individual Company

Company Name	**Beta ($_j$) = $\frac{Cov_{jM}}{\pm^2_M}$**
HBL	0.9455
NBL	1.2673
SCBL	0.5594
KFCL	1.1667
NFCL	2.2277
NEFINSCO	0.1766
PEFIL	1.5198
NICL	-0.0330
PICL	0.3977
UICL	1.4818

Source: Annex - 4

Market sensitivity is explained by its individual beta coefficient. The beta coefficient having less than one is regarded as the defensive security and on the other hand, the beta coefficient greater than one is regarded as the aggressive security. Here, NBL, KFCL, NFCL, PEFIL and UICL are more sensitive securities because their beta coefficient is 1.2673, 1.1667, 2.2277, 1.5198, and 1.4818 respectively. All the other remaining securities are defensive securities.

Beta coefficient is the tool to determine required rate of return of individual assets with the help of risk free rate of return and market return, i.e., say, $R = R_f + (R_m - R_f)\beta_j$. The volatility of an asset is compared with the market beta i.e. 1.

4.6 Stock Status Analysis

The statement presented in chapter two-the review of literature, stated the stock X, Y and the SML for an individual investor depicted the appropriate relationship between the required rate of return and systematic risk. The expected return and required rate of return of each sample companies are presented in the table 4.25.

Table 4.26

Required Rate of Return

Company	$_i$	$^{\#}R_f$	$\overline{HPR}_m$	$E(R_i)$	$\overline{HPR}$%	Status
HBL	0.9455	0.0338	0.3797	36.08	39.41	Under priced

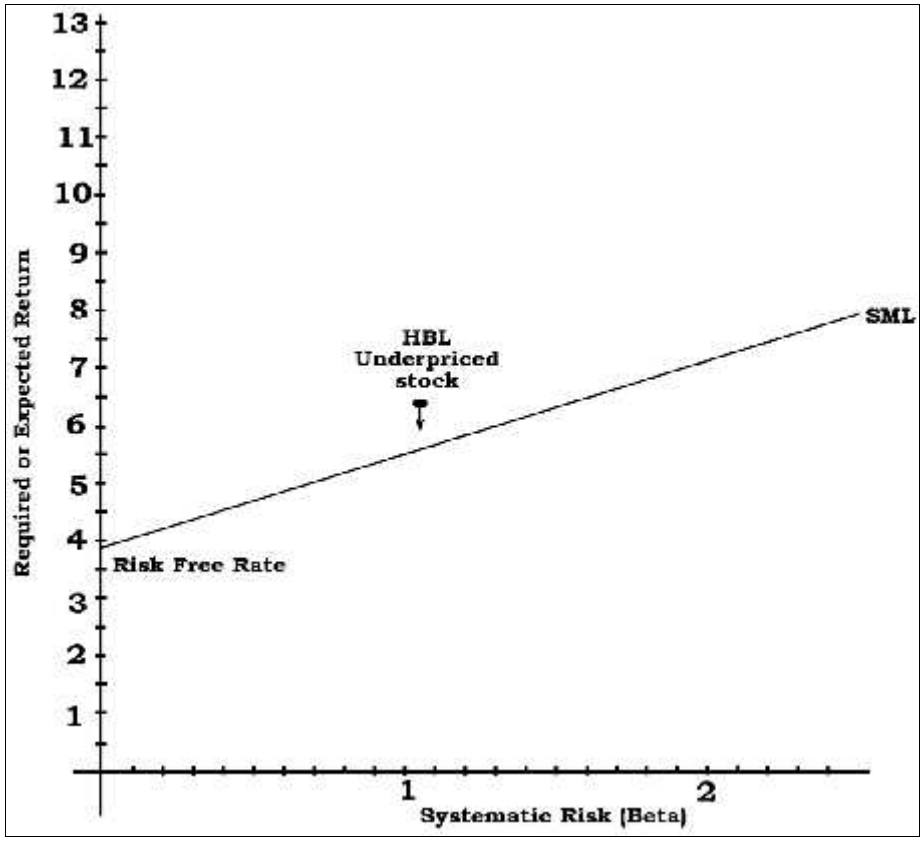
NBL	1.2673	0.0338	0.3797	47.21	54.81	Under priced
SCBL	0.5594	0.0338	0.3797	22.73	39.35	Under priced
KFCL	1.1667	0.0338	0.3797	43.73	16.86	Overpriced
NFCL	2.2277	0.0338	0.3797	80.44	70.40	Overpriced
NEFINSCO	0.1766	0.0338	0.3797	9.49	-4.31	Overpriced
PEFIL	1.5198	0.0338	0.3797	55.95	115.64	Under priced
NICL	-0.033	0.0338	0.3797	2.24	1.64	Overpriced
PICL	0.3977	0.0338	0.3797	17.14	10.11	Overpriced
UICL	1.4818	0.0338	0.3797	54.64	28.69	Overpriced

Source: www.nrb.org.np & Annex- 8

In above table, the JV banks viz., HBL, NBL, SCBL and one finance company PEFIL are assumed to be stock X, which provide a rate of return greater than required rate of return based on its systematic risk. Thus, these stocks are under priced relative to the SML. In contrast, all other securities like KFCL, NFCL, NEFINSCO, NICL, PICL AND UICL are overpriced assumed to be stock Y that are expected to provide lower rate of return than that required compensating foe its systematic risk. Investors seeking better return from the stock investment should rush to buy under priced securities because in a passage of time the price of such securities drives up and the expected return down. HBL under priced stock can be illustrated with the following diagram:

Figure 4.14

HBL's SML



Each stocks Y are regarded as overpriced, because, expected return is less than required rate of return. Investors having these securities prefer to sell it because they could obtain a higher return for the same amount of systematic risk with other, in turn, selling pressure will drive stock Y market price down and their expected return up until the expected return was on SML.

4.7 Testing of Hypothesis

1st Hypothesis

H_0: $\mu_0 = \mu_1 = 37.97\%$ i.e. there is no significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is equal to the market return.

Alternatively,

H_1: $\mu_0 \neq \mu_1 \neq 37.97\%$ (two tailed test) i.e. there is significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is equal to the market return.

Under H_0 the test statistics is given by,

$$t = \frac{\overline{HPR}_{SC} - \overline{HPR}_{m}}{\sqrt{S^2\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} \sim t_{n1 + n2 - 2}$$

Where,

$\overline{HPR}_{SC}$ = Average return of sample companies = 0.3755 (See Annex 5)

$\overline{HPR}_{m}$ = Average return on market = 0.3797

n_1 = n_2 = No. of observations = 10

^3S = an unbiased standard deviation of the estimates = 0.2102

s_1 = Standard deviation of Sample Companies = 0.1322 (See Annex 5)

s_2 = Standard deviation of market = 0.2462

Now, the test statistic is given by,

$$t = \frac{0.3755 - 0.3797}{\sqrt{0.2102\left(\frac{1}{10} + \frac{1}{10}\right)}}$$

$$= \frac{-0.0042}{0.2049}$$

$$= -0.0205$$

$\therefore t_{cal} = 0.0205$

The t_{tab} value for $v = n_1 + n_2 - 2 = 10 + 10 - 2 = 18$ d.f. at 5% level of significance for two tailed test is given by 2.101 and t_{cal} is 0.0205. Since, the t_{cal} is less than t_{tab}, the null hypothesis is accepted. It means that there is no significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is equal to the market return.

[5] $\mathbf{\frac{n_1s_1 + n_2s_2}{n_1 + n_2 - 2} = \frac{10 \times 0.1322 + 10 \times 0.2462}{10+10-2} = \frac{3.784}{18} = 0.2102}$

2nd Hypothesis

H_1: $\mu_0 \neq \mu_{1,} = 1$ i.e. There is significant difference between the average return of sample companies' common stock and overall market return. In other words, average return on the common stock of sample companies is not equal to the market return.

And,

H_1: $\mu_0 \neq \mu_1 \neq 1$, (two tailed test) i.e. there is significant difference between the portfolio beta of the sample companies' common stock and the market beta. In other words, average beta of the individual company's common stock is not equal to 1.

Now, the test statistic is given by,

$$t = \frac{\overline{\beta}_{SC} - \overline{\beta}_m}{\frac{S}{\sqrt{n}}} \sim t_{n-1}$$

Where,

$\overline{\beta}_{SC}$ = Weighted average beta coefficient of sample companies

= 0.9122 (See Annex 5)

$\overline{\beta}_m$ = Market beta coefficient

= 1

n = No. of observations

= 10

S = an unbiased standard deviation of the estimates

= 0.6140 (See Annex 5)

Now, the test statistic is given by,

$$t = \frac{0.9122 - 1}{\frac{0.6140}{\sqrt{10}}}$$

$$= \frac{-0.0878}{0.1948}$$

$$= -0.4521$$

$$\therefore t_{cal} = 0.4521$$

The t_{tab} value for v = n – 1 = 10 – 1 = 9 d.f. at 5% level of significance for two tailed test is given by 2.306 and t_{cal} is 0.4521. Since, the t_{cal} is less than t_{tab}, the null hypothesis is accepted, and an alternative hypothesis is rejected. It means that there is no significant difference between the portfolio beta of the sample companies' common stock and the market beta. In other words, the portfolio beta coefficient constructed between sample companies equal to market beta i.e. 1.

3rd Hypothesis

H_0: $\mu_1 = \mu_2 = \mu_3$, i.e., the means of various samples do not differ significantly among themselves. In other words, the means of population from which the samples have come is same.

And,

H_1: $\mu_1 \neq \mu_2 \neq \mu_3$, (Two tailed test) i.e., the means of various samples do differ significantly among themselves. In other words, the means of population from which the samples have come is not the same.

Now, the test statistic for one-way ANOVA F-test is defined as

$$F = \frac{MSC}{MSE} \text{ (See Annex 9)}$$

$$= \frac{0.1270}{0.1340}$$

$$= 0.9478$$

$$\therefore F_{cal} = 0.9878$$

Decision: The F_{tab} value for (2, 7) d.f. at 5% level of significance for two tailed test is given by 4.74 and t_{cal} is 0.9878. Since, the t_{cal} is less than t_{tab}, the null hypothesis is accepted, and an alternative hypothesis is rejected. It means that the means of various samples doesn't differ significantly among themselves. In other words, the means of population from which the samples have come is the same.

4.8 Portfolio Analysis

Portfolio refers to a collection of investment all owned by the same individual that includes stock, bond, mutual fund etc. The portfolio presented in this chapter is based on the common stock of sample companies of precluded all other investment opportunities. The motive of portfolio analysis in to obtain maximum return with respect to given level of risk the investors deems appropriate.

Overall investment strategy that seeks to construct an optimal portfolio by considering there relationship between risk of return, especially measured by alpha, R-squared (both excluded in this section), and beta; risk of a particular stock should be looked at on a standalone basis, but rather in relation to how that particular stock prices varies in reaction to the variation in price of the market portfolio.

4.8.1 Two-Assets Case

Portfolio is a combination of difference investment alternatives that enable to reduce avoidable risk. It can help reduce the portfolios total avoidable risk to zero. If the correlation coefficient is perfectly positive, i.e. two series moves exactly together, those portfolios cannot reduce the level of risk. In contrast, the perfectly negatively correlated assets can reduce the level of systematic risk. Table 4.27 depicts portfolios constructed between sample companies.

Table 4.27

$\pm_P$, $\bar{\bar{HPR}}_P$, $^\circ_{AB}$

Co.	Co.	W_A	W_B	$\bar{\bar{HPR}}_A$	$\bar{\bar{HPR}}_B$	$\pm_A$	$\pm_B$	$\bar{\bar{HPR}}_P$	$\pm_P$	$^\circ_{AB}$
PICL	NBL	1.08	-0.08	10.11	57.81	13.67	47.68	6.29	13.34	0.4740
NBL	PEFIL	0.86	0.14	57.81	115.64	47.68	193.96	65.91	31.14	-0.5343
SCBL	NEFINSCO	0.16	0.84	39.35	-4.31	27.06	11.48	2.68	1.07	0.0746
KFCL	NICL	0.25	0.75	16.86	1.64	40.51	23.13	5.45	19.95	-0.0160
NFCL	HBL	0.02	0.98	70.40	39.41	107.30	27.57	40.03	27.48	0.1433
NEFINSCO	PICL	0.80	0.20	-4.31	10.11	11.48	13.67	1.45	12.41	0.5500
PEFIL	UICL	0.13	0.87	115.64	28.69	193.96	47.35	40	55.40	0.6432
NICL	SCBL	0.67	0.33	1.64	39.35	23.13	27.06	14.07	21.35	0.4736
NFCL	PICL	-0.06	1.06	70.40	10.11	109.30	13.67	6.38	12.12	0.5475
UICL	HBL	0.07	0.93	28.69	37.41	47.35	27.57	38.66	27.41	0.4920

Source: Annex - 6

W_A and W_B are the weight of individual securities representing proportion of wealth of each. The negative sign is the indication of borrowed amount for those securities. The sum of two assets weight equates 1 ($W_A + W_B = 1$).

The portfolio among PICL of NBL shows that the portions of wealth invested is -0.08 representing fund borrowed from other institution to invest in NBL. Likewise the proportion of fund invested is 1.08 on behalf of PICL as its weight. The standard deviation, portfolio return, and correlation coefficient of these two securities are 13.34%, 6.29%, and 0.4740. The correlation coefficient between these two securities has high degree of positive correlation; representing risk minimization can hardly be done.

The portfolio among NBL and PEFIL shows the portions of wealth invested are 86% of 14% respectively, sum of those weights being 100%. The standard deviation, portfolio return and correlation coefficient of these two securities are 31.14%, 65.91% & -0.5343 respectively. The negative correlation indicates that portfolio constructed between these two securities that has moderate degree of negative correlation (-0.0689), enables an investor to reduce its unsystematic risk to obtain desire level of return.

The correlation coefficient between SCBL and NEFINSCO is 0.0746. The portfolio return and standard deviation between these securities are – 2.68 and 1.07 percent respectively. The weight of wealth invested in SCBL is 16% and remaining to NEFINSCO.

The proportion of wealth invested in KFCL and NICL are 25 and 75 percent respectively. The portfolio return and standard deviation for these securities are 5.45 and 19.95 percent respectively. These securities have negative correlation -0.0160 indicating an investor to reduce its unsystematic risk to obtain desire level of return.

The weight between NFCL and HBL is 2 and 98 percent respectively. Similarly, correlation coefficient between these securities is 0.1567. The portfolio return and standard deviation are 40.03 and 27.48 percent respectively.

The calculated correlation coefficient between NEFINSCO and PICL shows high degree of positive correlation i.e. 0.5500. The holding period return and standard deviation of the portfolio between these two securities are 1.45 and 12.41 percent respectively. The weights of these two securities are 0.80 and 0.20 respectively.

The weight of PEFIL is 13 percent and 87 percent for UICL. The correlation coefficient between these two securities is 0.6432; positively correlated securities. The portfolio return is 40 percent. Similarly, the standard deviation is 55.40 percent from the portfolio of these securities.

The weight of NICL and SCBL is 67 and 33 percent respectively. The correlation is 0.4736. Likewise, the calculated portfolio return and standard deviation are 14.07 and 21.35 percent respectively.

NFLC and PICL correlation is 0.5475. The weight of each security is -6 and 1.06 percent respectively. The portfolio's holding period return and standard deviation are 6.38 percent and 12.12 percent respectively.

Finally, UICL covers 7 percent wealth invested and 93 percent for HBL. The correlation shows the value 0.4920. The portfolio standard deviation and return are 27.41 and 38.66 percent respectively.

The risk and return along with correlation between ten sample companies constructed portfolios have been explored one by one from above table and explained. The proper selection of portfolio can increase the return maintaining same level of risk, if efficient portfolio is selected.

4.8.2 Other Assets Case

Table 4.28

$\pm_P$, $\overline{HPR}_P$, °

No.	Co.	Co.	Co.	Co.	Co	Co.	Co.	Co.	Co.	Co.	W_A	W_B	W_C	W_D	W_E	W_F	W_G	W_H	W_I	W_J	$\overline{HPR}_P$	$\pm_P$
1	NBL										1.0000										57.81	47.68
2	NBL	PICL									1.08	-0.08									6.29	13.34
3	NBL	PICL	KFCL								0.9949	0.0025	0.0026								57.58	42.25
4	NBL	PICL	KFCL	SCBL							0.4603	0.0011	0.0012	0.5374							47.77	36.87
5	NBL	PICL	KFCL	SCBL	NICL						0.4582	0.0011	0.0012	0.5350	0.0045						47.56	31.91
6	NBL	PICL	KFCL	SCBL	NICL	NEFINSCO					0.4576	0.0011	0.0012	0.5343	0.0045	0.0013					47.50	32.40
7	NBL	PICL	KFCL	SCBL	NICL	NEFINSCO	PEFIL				0.4550	0.0011	0.0012	0.5312	0.0045	0.0012	0.0058				47.90	32.22
8	NBL	PICL	KFCL	SCBL	NICL	NEFINSCO	PEFIL	HBL			0.3787	0.0009	0.0010	0.4422	0.0038	0.0010	0.0048	0.1676			46.50	30.56
9	NBL	PICL	KFCL	SCBL	NICL	NEFINSCO	PEFIL	HBL	NFCL		0.3744	0.0009	0.0010	0.4371	0.0037	0.0010	0.0048	0.1658	0.0113		46.77	37.87
10	NBL	PICL	KFCL	SCBL	NICL	NEFINSCO	PEFIL	HBL	NFCL	UICL	0.3736	0.0009	0.0010	0.4362	0.0037	0.0010	0.0048	0.1654	0.0113	0.0021	46.74	37.84

No.	$°_{AB}$	$°_{BC}$	$°_{AC}$	$°_{BD}$	$°_{CD}$	$°_{AD}$	$°_{AE}$	$°_{BE}$	$°_{CE}$	$°_{DE}$	$°_{AF}$	$°_{BF}$	$°_{CF}$	$°_{DF}$	$°_{EF}$	$°_{AG}$	$°_{BG}$	$°_{CG}$	$°_{DG}$	$°_{EG}$	$°_{FG}$	$°_{AH}$
1																						
2	0.4740																					
3		0.6625	0.0726																			
4				-0.0702	0.0958	0.5765																

5							-0.1786	-0.6750	0.0149	0.5456											
6											0.1133	0.4071	0.4038	-0.0716	-0.2264						
7																-0.5006	0.3384	0.7121	-0.4037	0.0196	0.3502
8																					0.6243
9																					
10																					

No.	**°BH**	**°CH**	**°DH**	**°EH**	**°FH**	**°GH**	**°AI**	**°BI**	**°CI**	**°DI**	**°EI**	**°FI**	**°GI**	**°HI**	**°AJ**	**°BI**	**°CJ**	**°DJ**	**°EJ**	**°FJ**	**°GJ**	**°HJ**	**°IJ**
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8	0.2520	0.4593	0.8056	0.4185	0.1451	-0.0922																	
9							-0.2017	0.5984	0.8636	-0.2319	-0.0819	0.4558	0.8890	0.0142									
10															0.2205	0.6662	0.7190	0.0999	-0.1498	0.4044	0.6026	0.4920	0.7886

Source: Annex - 7

W_A, W_B and to W_n are the weight of individual securities representing proportion of wealth of each. The negative sign is the indication of borrowed amount for those securities. The sum of assets weight equates 1 ($W_A + W_B + \ldots + W_n = 1$).

The portfolio among NBL, PICL, and KFCL shows that the portions of wealth invested are 0.9949, 0.0025, and 0.0026 respectively; sum of those weights being 1. The standard deviation and portfolio return of these securities are 42.25%, 57.58%. The correlation coefficient between NBL & PICL, PICL & KFCL, and NBL & KFCL are 0.4740, 0.6625, and 0.0726 respectively.

The portfolio among NBL, PICL, KFCL, and SCBL shows that the portions of wealth invested are 0.4603, 0.0010, 0.0012, and 0.5374 respectively. The standard deviation and portfolio return of these securities are 36.87%, 47.77%. The correlation coefficient between NBL & SCBL, PICL & SCBL, and KFCL & SCBL are 0.5765, 0.0702 and 0.0958 respectively.

The portfolio among NBL, PICL, KFCL, SCBL, and NICL shows that the portions of wealth invested are 0.4582, 0.0011, 0.0012, 0.5350, and 0.0045 respectively. The standard deviation and portfolio return of these securities are 31.91%, 47.56%. The correlation coefficient between NBL & NICL, PICL & NICL, KFCL & NICL, and SCBL & NICL are -0.1786, -0.6750, 0.0149, and 0.5456 respectively. If there is negative correlation the constructing portfolio will be better but if there is positive correlation no portfolio will be effective in the constructed portfolio maintenance.

The portfolio among NBL, PICL, KFCL, SCBL, NICL and NEFINSCO shows that the portions of wealth invested are 0.4576, 0.0011, 0.0012, 0.5343, 0.0045, and 0.0013 respectively; sum of those weights being 1. The standard deviation and portfolio return of these securities are 32.40%, 47.50%. The correlation coefficient between NBL & NEFINSCO, PICL & NEFINSCO, KFCL & NEFINSCO, SCBL & NEFINSCO, and NICL and NEFINSCO are 0.1133, 0.4071, 0.4038, -0.0716, and -0.2264 respectively.

Similarly, weights of the portfolio NBL, PICL, KFCL, SCBL, NICL, NEFINSCO, and PEFIL are 0.4550, 0.0011, 0.0012, 0.5312, 0.0045, 0.0012, and 0.0058. The

portfolio holding period return is 47.90% having 32.22% standard deviation from the portfolio of seven assets. The correlation coefficient between NBL & PEFIL, PICL & PEFIL, KFCL & PEFIL, SCBL and PEFIL, NICL & PEFIL, and NEFINSCO & PEFIL are -0.5006, 0.3384, 0.7121, -0.4037, 0.0196, and 0.3502.

The portfolio standard deviation between eight assets portfolio is 30.56% and its return is 46.50% from the assets of NBL, PICL, KFCL, SCBL, NICL, NEFINSCO, PEFIL, and HBL. Similarly their weights are 0.3787, 0.0009, 0.0010, 0.4422, 0.0038, 00.0010, 0.0048, and 0.1676 respectively. All the assets are almost positively correlated i.e. 0.6243, 0.2520, 0.4593, 0.8056, 0.4185, 0.1451, and -0.0922 between NBL & HBL, PICL & HBL , KFCL & HBL, SCBL and HBL, NICL & NFCL HBL, NEFINSCO & HBL, and PEFIL & HBL.

The portfolio standard deviation between nine assets portfolio is 37.78 % and its return is 46.77% from the assets of NBL, PICL, KFCL, SCBL, NICL, NEFINSCO, PEFIL, HBL and NFCL. Similarly their weights are 0.3744, 0.0009, 0.0010, 0.4371, 0.0037, 0.0010, 0.0048, 0.1658 and 0.0113 respectively. All the assets correlation coefficient are -0.2017, 0.5984, 0.8636, -0.2319, -0.0819, 0.4558, 0.8890, and -0.0142 between NBL & NFCL, PICL & NFCL, KFCL & NFCL, SCBL and NFCL, NICL & NFCL, NEFINSCO & NFCL, PEFIL & NFCL and HBL & NFCL.

Standard deviation of the portfolio of ten assets is 37.84% where as its return is 46.74%. The correlation coefficients are 0.2205 (NBL and UICL), 0.6662 (PICL and UICL), 0.7190 (KFCL and UICL), 0.0999 (SCBL and UICL), -0.1798 (NICL and UICL), 0.4044 (NEFINSCO and UICL), 0.6026 (PEFIL and UICL), 0.4920 (HBL and UICL), and 0.7886 (NFCL and UICL) from the portfolio of ten assets. Similarly, the weights of each asset are 0.3736, 0.0009, 0.0010, 0.4362, 0.0037, 0.0010, 0.0048, 0.1654, 0.0113, and 0.0021 respectively.

4.9 Major Finding of the Study

The major findings from the analysis of data can be summarized as follows:

- The prices of share of Joint Venture Banks are in increasing trend. But, finance and insurance companies' stock prices are in fluctuating order. It is essential for these companies to increase their MPS by good performance and to increase their goodwill so that will help rise in MPS. The market price of HBL, NBL, SCBL, KFCL, NFCL, NEFINSCO, PEFIL, PICL and UICL have the highest stock prices in the year 2007/08 whereas NICL's in the fiscal year 2002/03.
- In terms of distributing dividend, HBL, SCBL, NBL, and NFCL seem to be quite generous compared to other finance and insurance companies. Similarly, KFCL, NEFINSCO, PEFIL, NICL seem to be irregular in distributing dividend. Likewise, UICL offered stock dividend in the fiscal year 2007/08 whereas PICL offered no dividend through out the sampled fiscal years.
- The return on stock of PEFIL has the highest among all other sample companies (115.64%). Likewise, NFCL and NBL have 70.40% and 57.81% returns respectively. NEFINSCO is the only one having negative returns. Therefore, the highest expected return is from PEFIL and the lowest from NEFISCO among the sample companies. To increase return in the market the performance of the company must be improved then consequently the share price in secondary market will also be high.
- Unsystematic risk is the variability of return on common stock or portfolios not explained by general market condition, which is avoidable through diversification. The standard deviation represents the unsystematic risk. The standard deviation of PEFIL has the highest among all other samples i.e. 193.96% whereas the lowest is NEFINSCO i.e. 11.48%.
- The standard deviation and holding period return are the absolute measure that cannot provide an insight about investment choice in a particular asset (common stock). Thus, the relative measure of variation is the CV to evaluate volume of risk attached with return. NICL has the highest CV (14.1037) whereas the lowest 0.6877 of NFCL. Likewise, the CV of HBL, NBL, PICL, NFCL, UICL, PEFIL, KFCL and NEFINCSO are 0.6996, 0.8248, 1.3521, 1.5241, 1.6504, 1.6773, 2.4027, and 2.6636 respectively. Low CV indicates low risk with low return. High CV indicates high risk with high return.

- The total market value of a security is the market capitalization, i.e., the product between market price of common stock and outstanding equity. On the basis of market capitalization, SCBL has the highest market coverage i.e. by 43.62%. Whereas, market capitalization is 0.09% for PICL. Similarly, NBL, HBL, NFCL, PEFIL, NICL, UICL, NEFINSCO, and KFCL, have 37.36, 16.54, 1.13, 0.48, 0.37, 0.20, 0.10, and 0.10 percent respectively with respect to their raking.
- NEPSE index represents the overall market return. It seems to be in increasing trend throughout the study period. The NEPSE index ranges from 204.82 to 963.36 during the fiscal year 2002/03 to 2007/08.
- The expected returns of JV banks common stocks are higher than market return. In contract, finance (except for NFCL and PEFIL's 70.40% and 115.64%) and insurance companies' common stock returns are less than market return.
- NICL, PICL, and NEFINSCO's standard deviation is less than that of market standard deviation i.e. 24.62%. Other remaining sample companies' standard deviation is greater than that of market standard deviation.
- Beta coefficient measures the systematic risk. It is an index of systematic risk that quantifies the volatility of given stock relative to overall market. The beta coefficient of HBL, NBL, SCBL, NFCL, NEFINSCO, PEFIL, NICL, PICL, KFCL, and UICL are 0.9455, 1.2673, 0.5594, 2.2277, 0.1766, 1.5198, –0.0330, 0.3977, 1.1667, and 1.4818 respectively.
- The CAPM relates an expected return to each level of systematic risk. The required rate of return can be determined with the help of CAPM. JV banks common stock can be regarded as overprice stock due to excess expected rate of return. In contrast, all other sample companies' stocks are under priced due to excess required rate of return.
- The first hypothesis is to show the test of significance between the average return of sample companies' common stock with the overall market return. After testing the hypothesis null hypothesis is accepted. Thus, acceptance of null hypothesis refers there is no significant difference between these return.
- The second hypothesis is based on average beta of sample companies and market beta. It is to test whether sample companies' beta coefficient is equal to market i.e. 1. In this hypothesis null hypothesis accepted as well indicating there is no significant different between these two beta coefficients. Both the tests are based on 5 percent confidence level.

- The motive of constructing portfolio is to increase expected return and reduce risk of particular securities. In this study, many portfolios can be constructed but ten portfolios are constructed due to time factor. Among the various portfolios, the portfolios between PEFIL and NBL, KFCL and NICL, have the negative correlation indicating the portfolio these two samples can reduce large number of risk. The positive correlation indicates the risk minimization can be done to some extend.

CHAPTER - V

SUMMARY, CONCLUSION & RECOMMENDATIONS

4 Summary

Nepalese capital market observed tremendous growth during the last few years. Moreover, after the automation of the trading system by NEPSE, the only stock exchange at Nepal, the number of transactions and quantity of the shares traded has skyrocketed. Besides there are 159 companies, 13 corporate bonds and 14 government bonds listed at NEPSE. Financial market can be categorized into money and capital market. Money market is the banks, finance companies. It is the type of market which is meant for a short term and for highly liquid debt securities. They bring together the supplier and the demander of short term liquid fund. Capital market is NIDC and NEPSE. Capital markets are the markets meant for long term securities issued by the government or a corporation.

NEPSE is a non-profit organization under security exchange act 1983. The objective of NEPSE is to impart free marketability and liquidity to government and corporate securities by facilitating transaction in its trading floor through market intermediaries, such as brokers, market makers etc.

Investment refers to fund invested at present in a certain securities in anticipation to get some reward in a passage of time. Return can be defined as future reward for some securities differed from its utilization at present. The return consists of income and the capital gains relative on an investment usually quoted as percentage. Moreover, it can be classified into two headings based on availability of data and the time; ex-post and ex-ante. The ex-post return is also known as HPR i.e. calculated from the historical data and is based on a year return. Similarly, ex-ante return is that return that is based on future expected return, thus, probabilities are assigned to corresponding return to obtain expected return. Risk is a menace of return fluctuation that is anticipated. It is also expressed in term of percentage. Total risk consists of systematic and unsystematic risk. Systematic risk cannot be eliminated and is denoted by beta to reflect that it is related general economic condition. On the other hand,

unsystematic risk can be eliminated completely via diversification for which large number of assets into particular portfolios is constructed. HPR and standard deviation are the absolute measure whereas CV is a relative measure to ensure volatility of a particular stock i.e. due to company itself.

Risk and return can be regarded as the potential financial loss or gain experienced through investment in securities. An investor who has obtained profit is said to have seen a return whereas a possibility or likelihood that the investor could loss money is the risk.

Common stock investment is the most risky security and most important transaction of NEPSE. So, this study focused on to analyze risk and return of a common stock investment along with current prices of share of these sample companies, meanwhile, risk minimization exploration and to provide feedback about the effect of risk and return to stock market.

In order to point out risk and return, and to evaluate under or overpriced stock of those sample companies certain statistical tool have been conceptualized to make presentation and analysis. In order to reduce the risk portfolio helps in minimizing risk. Scientific methods are used to note the interaction between risk and return theory and research. For that primary and secondary data have been gathered to present and analyze it from the NEPSE and respective companies. The position of risk and return has been analyzed with the help of hypothesis to test whether the study is significant or not.

5.2. Conclusion

Following conclusions can be drawn out from the present study:

- **Position of Risk and Return**

On the basis of return PEFIL stands first among the sample companies obtaining upto 115.64 percent average return. So, this finance company is the leading financial institution in Nepal. In contrast, NEFINSCO seems to be obtaining negative return that is 4.31 percent during the study period.

On the basis of risk, the standard deviation of PEFIL is 193.96 percent representing the riskiest asset in terms of common stock investment. The standard deviation of SCBL is 66.77 percent indicating less risky security.

The relative measure of variation is determined by CV; measurement of risk per unit of expected return. It is a quick summary of a relative trade off between risk and return. NICL's CV is 14.1037 indicating most risky among the sample companies whereas NEFINSCO's CV is 2.6636. The negative sign is the indication of movement lower than the holding period return. Beta coefficient is a quantitative result of volatility of given stock relative to overall market. HBL, NBL, and SCBL's common stock are more volatile than overall market. On the other hand, all the securities of finance and insurance companies are less volatile.

Portfolio refers to collection of investment. It is more desirable than individual asset because power of diversification that individual asset cannot obtain. The portfolio constructed between NBL and PEFIL provided the highest expected return i.e., 65.91 percent with the standard deviation 31.14 percent, compared to 57.81 and 115.64 percent respectively. From this we conclude that reducing the risk increases the return of portfolio.

The correlation coefficient between NBL and PEFIL is –0.5343 that helps in reducing the level of risk and increase in return. The other negatively correlated securities is KFCL and NICL, all other portfolio are positively correlated.

- **Position of Stock Price**

CAPM is an economic model for valuing stock by relating risk and expected return, assets by high systematic risk will experience price decline such as JV banks common stock. The price level is the equilibrium price, and the expected return in the equilibrium rate of return for that risk class. All the securities of the finance and insurance companies are overpriced due to common stock of these companies lower expected return than that required compensating for its systematic risk. In contrast, JV banks securities are under priced due to expected return greater than required based on its systematic risk.

5.3 Recommendations

Based on the objective set following recommendation are forwarded:

- From the investor point of view common stock investment on JV bank can be regarded as beneficial. On the other hand finance and insurance companies share prices are providing negative return from the year 2003-05. So, the common stock investment in insurance and finance companies should be done rationally before making investment. The analysis regarding expected price of these companies should be done prior to investment.
- Portfolio investment provides maximum return at minimum level risk. In other words, it is a means of increasing the return by maintaining same level of risk. So, investors are recommended to utilize their funds by making portfolio such as the portfolio between NBL and PEFIL. The investment in single securities has greater chance of losing the fund invested. So, the investor should make portfolio in order to make higher returns with low level of risk.
- Investors are suggested to diversify their funds with a view of increasing the profitability from the common stock investment and to reduce the risk. For that efficient portfolio combination should be made. The negatively correlated, moderate, and low degree of positively correlated assets can provide better return from the common stock investment. So, the portfolio combination should be rationally made.
- More or less none of the portfolio returns are satisfactory if the portfolio constructed between two securities in term of risk and return. To obtain certain return maximum risk has to be borne by the investor.
- Unsystematic risk is the result of internal environment that exist with the company itself. It is a result of improper management and inefficient policy of the company that result in financial losses resulting in decline in share prices. So, the sound management and better policy enable to increase the profit and increase in the share prices of the respective organizations resulting in low level of risk.
- In Nepal, investment in common stock is new concept, so, the general investors are not much aware about the risk and return in the common stock investment. So, the campaign regarding common stock investment should be carried out, in which NEPSE and related organizations help to provide clear vision about common stock such that the general investor are motivated to invest in common

stock without fear. It helps to flow the common stock investment for the sake of investors and economic welfare.

- In Nepal, political crisis is the main reason behind backwardness of Nepalese economic growth that hits growth of the nation deficiently. So, it also influences the investment in common stock transactions in the secondary market due to fear of losing the investment regardless of return. The political stability is crucial that makes investor liberate to invest in common stock. As a result, they can have good return from their original investment, in turn; economic development can be attained effortlessly.
- In order to improve the stock exchange mechanism, a need is felt to introduce netting of position based on trades executed during settlement cycle and also introduce the concept of depository, where securities can be transferred seamless and electronically. So a new Central Depository System should be established for this purpose. Its main objective is to improve the investors' confidence in the stock market. To attract foreign investment in Nepal capital market. And also to bring in more participation, thus further improve liquidity and trading depth in capital market.
- Investor should be educated via different media by disseminating information through different newspapers, web site and other publications. This is meant to increase the investors' analytical capacities, and judgment to make investment on the securities. SEBON has been providing such investors training programs in regular basis.

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ANNEXURE

ANNEX-1

BRIEF PROFILE OF THE COMPANIES

1. Himalayan Bank Ltd. (HBL)

HBL was incorporated in 1992 by a few distinguished business personalities of Nepal in partnership with Employees Provident Fund and Habib Bank Limited, one of the largest commercial Banks of Pakistan. Banking operation was commenced from January 1993. Himalayan Bank is the first commercial bank of Nepal whose maximum shares are held by the Nepalese private sector. Besides commercial banking services, the Bank also offers industrial and merchant banking services.

2. Kathmandu Finance Ltd. (KFL)

KFL is a recognized financial Institution in Nepal, established in 1994 AD. Company has been able pay dividend annually to its investors in different fiscal year. Its reputation over the country is exciting while depositors are regularly getting their interest and goodwill through to it.

3. Nabil Bank Ltd. (NBL)

In 1984 as the first joint venture bank to commence operations in the Kingdom of Nepal, NBL has been a leader in terms of bringing the very best international standard banking practices, products, and services to the kingdom. Nabil Bank Limited, the first foreign joint venture bank of Nepal, started operations in July 1984. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society.

4. National Finance Co. Ltd. (NFCL)

NFCL was established in 1992. It was listed in NEPSE in 6 July 1993.

5. Nepal Finance and Saving Co. Ltd. (NEFINSCO)

NEFINSCO was established in 1992. It is the first finance company in Nepal of private sector after the embarked upon encouragement of economic liberalization mitigation of distortion and creation of basis for sustainable growth locative efficiency. Since its service tenure, this company has been providing the deposit and credit services to it general customers. Credit covers providing share loan, fixed deposit receipt, industrial, consortium, housing, business, hire purchase, nursing home etc. along with venture capital, share registrar, issue of share and sale is the other service that can be obtained through it. It was listed in NEPSE in 2 February 1993.

6. Nepal Insurance Co. Ltd. (NICL)

Nepal Insurance Company Limited (NICL) is an oldest insurance and one of the leading non-life insurance companies of Nepal. It is established by the Nepal Bank Limited, a leading and influential commercial bank of Nepal, as a joint venture with general public on 1947 September. It was listed in NEPSE in 8 November 1984.

7. People's Finance Ltd. (PEFIL)

It was listed in NEPSE in 1 August 1994.

8. Premier Insurance Co. Ltd. (PICL)

Incorporated on 12th May 1994, Premier Insurance Company (Nepal) Limited has emerged as a renowned general insurance company of the second generation. The company has earned a reputation in the local and international insurance and reinsurance sectors as well for its professionalism and services. It was listed in NEPSE in 3rd May 1995.

9. Standard Chartered Bank Ltd. (SCBL)

SCBL has been in operation in Nepal since 1987 when it was initially registered as a joint-venture operation. Today the Bank is an integral part of Standard Chartered Group who has 75% ownership in the company with 25% shares owned by the Nepalese public. The Bank enjoys the status the largest international bank currently operating in Nepal. It was listed in the NEPSE on 4th July 1988.

10. United Insurance Co. Ltd. (UICL)

UICL has started its operation from Dec. 1993 after its registration with the company registration's office and approved by insurance board. It was listed in NEPSE in 1 August 1994.

ANNEX-2

Nepal Stock Exchange Limited

Listed Companies

On 15th July 2008

S.No	Commercial Banks	Listed Shares	Paid up Value	Total Paid up Value	Closing Market Price	Market Capitalization 15July, 2008
1	Nabil Bank Ltd.	6873930	100	687393000	5275	36259980750
2	Nepal Investment Bank Ltd.	12039154	100	1203915400	2450	29495927300
3	Standard Chartered Bank Ltd.	6807840	100	680784000	6830	46497547200
4	Himalayan Bank Ltd.	12162150	100	1216215000	1980	24081057000
5	Nepal SBI Bank Limited	8734791	100	873479100	1511	13198269201
6	Nepal Bangladesh Bank Ltd.	7442000	100	744200000	1001	7449442000
7	Everest Bank Ltd	3780000	100	378000000	3132	11838960000
8	Bank of Kathmandu	6031413	100	603141300	2350	14173820550
9	Nepal Industrial & Co.Bank	7920000	100	792000000	1284	10169280000
10	Machhachapuchhre Bank Ltd	8216513	100	821651300	1265	10393888945
11	Laxmi Bank Limited	7320000	100	732000000	1113	8147160000
12	Kumari Bank Ltd	9000000	100	900000000	1005	9045000000
13	Lumbini Bank Ltd.	7500000	100	750000000	631	4732500000
14	Nepal Credit & Com. Bank	13490400	100	1349040000	457	6165112800
15	Siddhartha Bank Limited	8280000	100	828000000	1152	9538560000
16	NMB Bank Ltd.	10000000	100	1000000000	930	9300000000
17	Development Credit Bank Ltd.	11074560	100	1107456000	855	9468748800
	TOTAL	**146672751**		**14667275100**		**259.95 Billion**
	Manufacturing and Processing					
18	Bottlers Nepal Ltd.(Balaju)	1948887	100	194888700	700	1364220900
19	Nepal Lube Oil Ltd.	203936	100	20393600	250	50984000
20	Nepal Vanaspati Ghee Udhyog Ltd	101250	100	10125000	300	30375000

21	Raghupati Jute Mills Ltd.	1806966	100	180696600	100	180696600
22	Butwal Spinning Mills Ltd.	1306693	100	130669300	18	23520474
23	Gorakhakali Rubber Udhyog Ltd.	3833400	75	287505000	39	149502600
24	Jyoti Spinning Mills Ltd (ord.)	1270288	100	127028800	27	34297776
25	Arun Vanaspati Udhyog Ltd.	550343	100	55034300	58	31919894
26	Bottlers Nepal (Terai)Ltd.	1210000	100	121000000	700	847000000
27	Harisiddhi Brick and Tile Fac.Ltd.	18650000	10	186500000	4.2	78330000
28	Birat Shoe Ltd.(Ord.)	165000	100	16500000	28	4620000
29	Uniliver Nepal Ltd.	920700	100	92070000	4100	3774870000
30	Nepal Khadya Udhyog Ltd.	90000	100	9000000	231	20790000
31	Shree Bhrikuti Pulp& Paper Ltd	3500000	100	350000000	50	175000000
32	Fluer Himalayan Limited	262102	75	19657650	75	19657650
33	Shree Ram Sugar Mills Ltd	3045990	100	304599000	100	304599000
34	Nepal Bitumin and Barrel Udyog	210680	100	21068000	64	13483520
35	Himalayan Distillery Ltd.	4130000	100	413000000	100	413000000
	TOTAL	**43206235**		**2539735950**		**7.51 Billion**
	Hotels					
36	Yak and Yeti Hotel Ltd.(Ord.)	2209208	100	220920800	600	1325524800
37	Soaltee Hotel Ltd.	8697187	10	86971870	236	2052536132
38	Taragaon Regency Hotel	7449875	100	744987500	68	506591500
39	Oriental Hotel Ltd.	5000000	100	500000000	185	925000000
	TOTAL	**23356270**		**1552880170**		**4.80 Billion**
	Others.					
40	Nepal Film Dev.Co. Ltd.	491285	100	49128500	38	18668830
		491285		**49128500**		**18668830**
	Hydro Power					
41	National Hydro Power Co.	7000000	100	700000000	198	1386000000
42	Butwal Power Co. Ltd.	8390577	100	839057700	1559	13080909543
43	Chilime Hydro power Co.	7296000	100	729600000	1562	11396352000

	TOTAL	**22686577**		**2268657700**		**25.86 Billion**
	Trading					
44	Salt Trading Corporation	247777	100	24777700	331	82014187
45	Bishal Bazar Co. Ltd.	491400	100	49140000	2201	1081571400
46	Nepal Trading Ltd.	50000	50	2500000	56	2800000
47	Nepal Welfare Company Ltd.	41000	50	2050000	94	3854000
	TOTAL	**830177**		**78467700**		**1.17 Billion**
	INSURANCE					
48	Nepal Insurance Co.Ltd.	1026984	100	102698400	350	359444400
49	Rastriya Beema Sansthan	828999	100	82899900	1900	1575098100
50	National Life &Gen.Insu.Co.Ltd.	300000	100	30000000	900	270000000
51	Himalayan Gen.Insu. Co.Ltd.	630000	100	63000000	345	217350000
52	United Insurance Co.(Nepal)Ltd.	600000	100	6000000	315	189000000
53	Everest Insurance Co. Ltd.	900000	100	90000000	291	261900000
54	Premier Insurance co. Ltd.	300000	100	30000000	300	90000000
55	Neco Insurance Co.	550000	100	55000000	129	70950000
56	Alliance Insurance Co. Ltd.	500000	100	50000000	154	77000000
57	Sagarmatha Insurance Co.Ltd	561000	100	56100000	306	171666000
58	NB Insurance Co. Ltd.	1000000	100	100000000	106	106000000
59	Nepal Life Insurance Co. Ltd.	2500000	100	250000000	1669	4172500000
60	Life Insurance Co. Nepal	2500000	100	2500000	1012	2530000000
61	Prudential Insurance Co.	1000000	100	100000000	200	200000000
62	Lumbini General Insurance	1250000	100	125000000	112	140000000
63	Shikhar Insurance Co. Ltd.	1250000	100	125000000	446	557500000
64	Siddhartha Insurance Ltd.	1000000	100	100000000	253	253000000
	TOTAL	**16696983**		**1669698300**		**11.24 Billion**
	FINANCE					
65	Nepal Finance and Saving Co.Ltd.	300000	100	30000000	475	142500000
66	NIDC Capital Markets Ltd.	1012500	100	101250000	901	912262500

67	National Finance Co. Ltd.	1568818	100	156881800	1050	1647258900
68	Nepal Share Markets Ltd.	4320000	100	432000000	1670	7214400000
69	Annapurna Finance Co.Ltd.	2016000	100	201600000	1470	2963520000
70	Kathmandu Finance Limited.	379500	100	37950000	285	108157500
71	Peoples Finance Limited.	840000	100	84000000	699	587160000
72	Union Finance Co. Ltd.	725153	100	72515300	805	583748165
73	Citizen Investment Trust	600000	100	60000000	438	262800000
74	Nepal Aawas Bikas Beeta Co. Ltd.	706180	100	70618000	699	493619820
75	Narayani Finance Limited	666990	100	66699000	1116	744360840
76	Yeti Finance Company Ltd.	250000	100	25000000	245	61250000
77	Gorkha Finance Ltd.	300000	100	30000000	200	60000000
78	Samjhana Finance Co. Ltd.	225000	100	22500000	102	22950000
79	Universal Finance Ltd.	602184	100	60218400	283	170418072
80	Nepal Housing & Merchant Fin.	804402	100	80440200	780	627433560
81	General Finance Ltd.	242434	100	24243400	140	33940760
82	Maha Laxmi Finance Ltd.	800000	100	80000000	1191	952800000
83	Lalitpur Finance Ltd.	759375	100	75937500	795	603703125
84	Goodwill Finance Co. Ltd.	500000	100	50000000	633	316500000
85	Paschimanchal Finance Co. Ltd	506000	100	50600000	293	148258000
86	Pokhara Finance Ltd.	600000	100	60000000	657	394200000
87	Lumbini Finance Ltd.	600000	100	60000000	285	171000000
88	Siddhartha Finance Limited	520000	100	52000000	1343	698360000
89	Alpic Everest Finance Co. Ltd.	780000	100	78000000	572	446160000
90	United Finance Ltd	750000	100	75000000	935	701250000
91	International Leasing & Fin. Co.	1440000	100	14400000	610	878400000
92	Shree Investment Finance Co. Ltd	672000	100	67200000	568	381696000
93	Central Finance Co. Ltd.	780000	100	78000000	740	577200000
94	Nepal Shree Lanka Merchant Bank	1000000	100	100000000	124	124000000
95	Premier Finance Co. Ltd	331200	100	33120000	443	146721600

96	Nava Durga Finance Co.Ltd.	395507	100	39550700	306	121025142
97	Butwal Finance Ltd	696721	100	69672100	1032	719016072
98	Janaki Finance Ltd.	400000	100	400000	277	110800000
99	Standard Finance Ltd.	726000	100	72600000	930	675180000
100	Om Finance Ltd.	700000	100	70000000	437	305900000
101	Cosmic Mer.Bank & Fin.	750510	100	75051000	182	136592820
102	Fewa Finance Co. Ltd.	700000	100	70000000	426	298200000
103	KIST Merchant Bank. & Fin	2000000	100	200000000	998	1996000000
104	World Merchant Bank Ltd	600000	100	60000000	990	594000000
105	Birgunj Finance Ltd	726000	100	72600000	1320	958320000
106	Capital Mer. Bamk & Fin	3220000	100	322000000	1270	4089400000
107	Everest Finance Ltd,	200000	100	20000000	200	40000000
108	Prudential Bittiya Sans	500000	100	50000000	275	137500000
109	Shrijana Finance(Bittiya Sa	140000	100	14000000	107	14980000
110	Royal Mer. Bank.& Fin	604121	100	60412100	535	323204735
111	Guheyshwori Mer. Bank Finance	616813	100	61681300	865	533543245
112	IME Finance Institution	1000000	100	100000000	1480	1480000000
113	Bhajuratna Fin. And Sav. Co. Ltd.	350000	100	35000000	122	42700000
114	Patan Finance Ltd.	500000	100	50000000	250	125000000
115	Imperial Financial Inst. Ltd.	500000	100	50000000	641	320500000
116	Civil Merchant Bittiya Sanstha	500000	100	50000000	775	387500000
117	ICFC Bittiya Sanstha Ltd.	749354	100	74935400	710	532041340
118	Nepal Express Finance Ltd.	500000	100	50000000	415	207500000
119	Kuber Mer. Bittiya Sans. Ltd.	500000	100	50000000	699	349500000
	TOTAL	**43172762**		**4317276200**		**37.67 Billion**
	Development Bank Ltd.					
120	Nepal Industrial Dev. Corp.	2978784	100	297878400	120	357454080
121	Nepal Development Bank	3200000	100	320000000	302	966400000
122	Nirdhan Utthan Bank Ltd.	790721	100	79072100	134	105956614

123	Chhimek Vikash Bank Ltd.	310000	100	31000000	265	82150000
124	Paschimanchal Bikash Bank	1000000	100	100000000	511	511000000
125	Diprox Development Bank	174000	100	17400000	175	30450000
126	Gandaki Dev. Fin. Inst.	500000	100	50000000	884	442000000
127	Business Dev. Bank Ltd.	300000	100	30000000	510	153000000
128	Siddhartha Bikas Bank Ltd.	1075725	100	107572500	1525	1640480625
129	Bhrikuti Bikas Bank Ltd.	239572	100	23957200	150	35935800
130	Sanima Bikas Bank Ltd.	3200000	100	320000000	1430	4576000000
131	Narayani Industrial Dev. Bank	200000	100	20000000	189	37800000
132	Bageshwori Dev. Bank	300000	100	30000000	800	240000000
133	Sahayogi Bikas Bank	200000	100	20000000	236	47200000
134	Gurkha Dev. Bank	3200000	100	320000000	860	2752000000
135	Annarpurna Bikas Bank	600000	100	60000000	615	369000000
136	Swabalamwan Bikas Bank	250000	100	250000	1601	400250000
137	Ace Dev. Bank Ltd.	3200000	100	32000000	856	2739200000
138	Himchuli Bikas Bank Ltd.	300000	100	30000000	1776	532800000
139	Excel Dev. Bank	200000	100	20000000	823	164600000
140	Malika Development Bank	500000	100	50000000	1455	727500000
141	Birat Laxmi Dev. Bank	500000	100	50000000	754	377000000
142	Infrastructure Dev. Bank Ltd	800000	100	80000000	887	709600000
	TOTAL	**24018802**		**2322680200**		**17.99 Billion**
	GRAND TOTAL	**321131842**		**29465799820**		**366.20 Billion**

ANNEX-3
List of Selected Samples

Name	Address	Fax	Email
Nepal Standard Chartered Bank Ltd.	Naya Baneshowor, POBox 3990, Kathmandu 4782333, 4783753	4780762	ANZ@Dixitu.com
Nepal Insurance Company Ltd.	NIC Building Kamaladi, Kathmandu 4221353, 4245565, 4245568	4225446	nic@wlink.com.np
Nepal Finance & Saving Co. Ltd.	Kamaladi, PO Box 6867, Kathmandu 4220031, 4247020	4241237	NEFINSCO@info.com.np
National Finance Co. Ltd.	Pako, New Road, PO Box 6942, Kathmandu 4242302, 4228380	4222920	nfc@nfcl.wlink.com.np
NABIL Bank Ltd.	Kamaladi, PO Box 3729, Kathmandu 4429546, 4429546	4429548	nabil@nabil.com.np
Himalayan Bank Ltd.	Tridevi Marg, Thamel, PO Box 20590, Kathmandu 4227749, 4250201	4222800	hbl@hbl.mos.com.np
Premier Insurance Co. (Nepal) Ltd.	Tripureswor, PO Box 9183, Kathmandu 4 4249956, 4259537	4420554	premier@picl.com.np
United Insurance Co. (Nepal) Ltd.	IJ Plaza, Durbar Marg, PO Box 9075, Kathmandu 4230958, 4246686	246687	uic@dmarg.mos.com.np
Kathmandu Finance Ltd.	New Plaza, Putalisadak, Kathmandu PO Box 5090, 4430506, 4430527		
People's Finance Ltd.	K.K. M. Building, Tripureshor, Kathmandu, 4255829, 4252178	4262405	finance@peoples.wlink.com.np
Nepal Stock Exchange Ltd.	Singha Durbar Plaza, PO Box 1550, Kathmandu 250735	262538	nepse@stock.mos.com.np

ANNEX-4

Beta Coefficient

Himalayan Bank Limited

FY	HPR_{HBL}	HPR_m	$HPR_{HBL} - \overline{HPR}_{HBL}$	$HPR_m - \overline{HPR}_m$	$(HPR_j - \overline{HPR}_j)$ $(HPR_m - \overline{HPR}_m)$
1	0.0048	0.0981	-0.3893	-0.2816	**0.1096**
2	0.3571	0.2801	-0.0370	-0.0996	**0.0037**
3	0.5891	0.3436	0.1950	-0.0361	**-0.0070**
4	0.7173	0.7681	0.3232	0.3884	**0.1255**
5	0.3023	0.4085	-0.0918	0.0288	**-0.0026**
$\overline{HPR}_{HBL}$ = 0.3941					**$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)$= 0.2292**

$$\text{Cov (HBL,M)} = \frac{\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.2292}{5\text{-}1} = 0.0573$$

$$\beta_{HBL} = \frac{\text{Cov (HBL,M)}}{\sigma^2_m}$$

$$= \frac{0.0573}{0.0606} = 0.9455$$

Nabil Bank Limited

FY	HPR_{NBL}	HPR_m	$HPR_{NBL} - \overline{HPR}_{NBL}$	$HPR_m - \overline{HPR}_m$	$(HPR_{NBL} - \overline{HPR}_{NBL})$ $(HPR_m - \overline{HPR}_m)$
1	0.4286	0.0981	-0.1495	-0.2816	**0.0421**
2	0.5700	0.2801	-0.0081	-0.0996	**0.0008**

3	0.5349	0.3436	-0.0432	-0.0361	**0.0016**
4	1.2924	0.7681	0.7143	0.3884	**0.2774**
5	0.0644	0.4085	-0.5137	0.0288	**-0.0148**
$\bar{\bar{HPR}}_{NBL}$ = 0.5781					**$\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)$= 0.3071**

$$\text{Cov (NBL,M)} = \frac{\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)}{n-1}$$

$$= \frac{0.3071}{5\text{-}1} = 0.0768$$

$$\beta_{NBL} = \frac{\text{Cov (NBL,M)}}{\sigma^2_m}$$

$$= \frac{0.0768}{0.0606} = 1.2673$$

Standard Chartered Bank Limited

FY	**HPR_{SCBL}**	**HPR_m**	**$HPR_{SCBL} - \bar{\bar{HPR}}_{SCBL}$**	**$HPR_m - \bar{\bar{HPR}}_m$**	**$(HPR_{SCBL} - \bar{\bar{HPR}}_{SCBL})(HPR_m - \bar{\bar{HPR}}_m)$**
1	0.1311	0.0981	-0.2624	-0.2816	**0.0739**
2	0.4069	0.2801	0.0134	-0.0996	**-0.0013**
3	0.6610	0.3436	0.2675	-0.0361	**-0.0097**
4	0.5974	0.7681	0.2039	0.3884	**0.0792**
5	0.1712	0.4085	-0.2223	0.0288	**-0.0064**
$\bar{\bar{HPR}}_{SCBL}$ = 0.3935					**$\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)$= 0.1357**

$$\text{Cov (SCBL,M)} = \frac{\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)}{n-1}$$

$$= \frac{0.1357}{5\text{-}1} = 0.0339$$

$$\beta_{SCBL} = \frac{Cov\ (SCBL, M)}{\sigma^2_m}$$

$$= \frac{0.0339}{0.0606} = 0.5594$$

Kathmandu Finance Co. Ltd.

FY	**HPR_{KFCL}**	**HPR_m**	**$HPR_{KFCL} - \overline{HPR}_{KFCL}$**	**$HPR_m - \overline{HPR}_m$**	**$(HPR_{KFCL} - \overline{HPR}_{KFCL})$ $(HPR_m - \overline{HPR}_m)$**
1	-0.1277	0.0981	-0.2963	-0.2816	**0.0834**
2	-0.3268	0.2801	-0.4954	-0.0996	**0.0493**
3	0.1616	0.3436	-0.0070	-0.0361	**0.0003**
4	0.5214	0.7681	0.3528	0.3884	**0.1370**
5	0.6145	0.4085	0.4459	0.0288	**0.0128**
$\overline{HPR}_{KFCL} = 0.1686$					**$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m) = 0.2828$**

$$Cov\ (KFCL,M) = \frac{\sum(HPR_j - \overline{HPR}_j)\ (HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.2828}{5\text{-}1} = 0.0707$$

$$\beta_{KFCL} = \frac{Cov\ (KFCL,M)}{\sigma^2_m}$$

$$= \frac{0.0707}{0.0606} = 1.1667$$

National Finance Co. Ltd.

FY	HPR_{NFCL}	HPR_m	$HPR_{NFCL} - \overline{HPR}_{NFCL}$	$HPR_m - \overline{HPR}_m$	$(HPR_{NFCL} - \overline{HPR}_{NFCL})$ $(HPR_m - \overline{HPR}_m)$
1	-0.0791	0.0981	-0.7831	-0.2816	**0.2205**
2	-0.0317	0.2801	-0.7357	-0.0996	**0.0733**
3	0.0475	0.3436	-0.6565	-0.0361	**0.0237**
4	1.1483	0.7681	0.4443	0.3884	**0.1726**
5	2.4348	0.4085	1.7308	0.0288	**0.0498**
$\overline{HPR}_{KFCL}$ = 0.7040					**$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)$=0.5399**

$$\text{Cov (NFCL,M)} = \frac{\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.5399}{5-1} = 0.1350$$

$$\beta_{NFCL} = \frac{\text{Cov (NFCL, M)}}{\sigma^2_m}$$

$$= \frac{0.1350}{0.0606} = 2.2277$$

Nepal Finance & Saving Co. Ltd.

FY	$HPR_{NEFINSCO}$	HPR_m	$HPR_{NEFINSCO} - \overline{HPR}_{NEFINSCO}$	$HPR_m - \overline{HPR}_m$	$(HPR_{NEFINSCO} - \overline{HPR}_{NEFINSCO})(HPR_m - \overline{HPR}_m)$
1	-0.0625	0.0981	-0.1056	-0.2816	0.0297

2	-0.1091	0.2801	-0.1522	-0.0996	0.0152
3	-0.0884	0.3436	-0.1315	-0.0361	0.0047
4	0.0275	0.7681	-0.0156	0.3884	-0.0061
5	0.0169	0.4085	-0.0262	0.0288	-0.0008
$\overline{HPR}_{NEFINSCO} = -0.0431$					**$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m) = 0.0427$**

$$\text{Cov (NEFINSCO,M)} = \frac{\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.0427}{5\text{-}1} = 0.0107$$

$$\beta_{NEFINSCO} = \frac{\text{Cov (NEFINCO,M)}}{\sigma^2_m}$$

$$= \frac{0.0107}{0.0606} = 1.1766$$

People's Finance Co. Ltd.

FY	HPR_{PEFIL}	HPR_m	$HPR_{PEFIL} - \overline{HPR}_{PEFIL}$	$HPR_m - \overline{HPR}_m$	$(HPR_{PEFIL} - \overline{HPR}_{PEFIL})(HPR_m - \overline{HPR}_m)$
1	0.1556	0.0981	-1.0008	-0.2816	0.2818
2	0.0577	0.2801	-1.0987	-0.0996	0.1094
3	0.2210	0.3436	-0.9354	-0.0361	0.0338
4	0.7559	0.7681	-0.4005	0.3884	-0.1556
5	4.5920	0.4085	3.4356	0.0288	0.0989
$\overline{HPR}_{PEFIL} = 1.1564$					$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m) = 0.3683$

$$\text{Cov (PEFIL,M)} = \frac{\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.3683}{5-1} = 0.0921$$

$$\beta_{PEFIL} = \frac{\text{Cov (PEFIL,M)}}{\sigma^2_m}$$

$$= \frac{0.0921}{0.0606} = 1.5198$$

Nepal Insurance Co. Ltd.

FY	HPR_{NICL}	HPR_m	$HPR_{NICL} - \overline{HPR}_{NICL}$	$HPR_m - \overline{HPR}_m$	$(HPR_{NICL} - \overline{HPR}_{NICL})(HPR_m - \overline{HPR}_m)$
1	-0.1776	0.0981	-0.1940	-0.2816	0.0546
2	-0.0133	0.2801	-0.0297	-0.0996	0.0030

3	0.4111	0.3436	0.3947	-0.0361	-0.0142
4	-0.1185	0.7681	-0.1349	0.3884	-0.0524
5	-0.0196	0.4085	0.0360	0.0288	0.0010
$\bar{\bar{HPR}}_{NICL}$ = 0.0164					**$\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)$= -0.0080**

$$\text{Cov (NICL,M)} = \frac{\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)}{n-1}$$

$$= \frac{-0.0080}{5-1} = -0.0020$$

$$\beta_{NICL} = \frac{\text{Cov (NICL, M)}}{\sigma^2_m}$$

$$= \frac{-0.0020}{0.0606} = -0.0330$$

Premier Insurance Co. Ltd.

FY	**HPR_{PICL}**	**HPR_m**	**$HPR_{PICL} - \bar{\bar{HPR}}_{PICL}$**	**$HPR_m - \bar{\bar{HPR}}_m$**	**$(HPR_{PICL} - \bar{\bar{HPR}}_{PICL})$ $(HPR_m - \bar{\bar{HPR}}_m)$**
1	0.0938	0.0981	-0.0062	-0.2816	0.0017
2	0.0000	0.2801	-0.1000	-0.0996	0.0100
3	-0.0476	0.3436	-0.1476	-0.0361	0.0053
4	0.3000	0.7681	0.2000	0.3884	0.0777
5	0.1538	0.4085	0.0538	0.0288	0.0015
$\bar{\bar{HPR}}_{PICL}$ = 0.1000					**$\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)$=0.0962**

$$\text{Cov (PICL,M)} = \frac{\sum(HPR_j - \bar{\bar{HPR}}_j)(HPR_m - \bar{\bar{HPR}}_m)}{n-1}$$

$$= \frac{0.0962}{5\text{-}1} \quad = 0.0241$$

$$\beta_{PICL} \quad = \frac{\text{Cov (PICL, M)}}{\sigma^2_m}$$

$$= \frac{0.0241}{0.0606} \quad = 0.3977$$

United Insurance Co. Ltd.

FY	**HPR_{UICL}**	**HPR_m**	**$HPR_{UICL} - \overline{HPR}_{UICL}$**	**$HPR_m - \overline{HPR}_m$**	**$(HPR_{UICL} - \overline{HPR}_{UICL})$ $(HPR_m - \overline{HPR}_m)$**
1	-0.2391	0.0981	-0.5260	-0.2816	0.1481
2	0.2190	0.2801	-0.0679	-0.0996	0.0068
3	-0.0234	0.3436	-0.3103	-0.0361	0.0112
4	0.7520	0.7681	0.4651	0.3884	0.1806
5	0.7260	0.4085	0.4391	0.0288	0.0126
$\overline{HPR}_{UICL} = 0.2869$					**$\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m) = 0.3593$**

$$\text{Cov (UICL,M)} \quad = \frac{\sum(HPR_j - \overline{HPR}_j)(HPR_m - \overline{HPR}_m)}{n-1}$$

$$= \frac{0.3593}{5\text{-}1} \quad = 0.0899$$

$$\beta_{UICL} \quad = \frac{\text{Cov (UICL, M)}}{\sigma^2_m}$$

$$= \frac{0.0899}{0.0606} = 1.4835$$

ANNEX-5

HYPOTHESIS I

Company	HPR_{SC}	$HPR_{SC} - \overline{HPR}_{SC}$	$(HPR_{SC} - \overline{HPR}_{SC})^2$
NBL	0.5781	0.2026	0.0410
SCBL	0.3935	0.0100	0.0002
HBL	0.3941	0.0186	0.0003
PEFIL	1.1564	0.7809	0.6098
NEFINSCO	-0.0431	-0.4186	0.1752
NFCL	0.7040	0.3285	0.1079
KFCL	0.1686	-0.2069	0.0428
NICL	0.0164	0.3591	0.1290
PICL	0.1000	-0.2755	0.0759
UICL	0.2869	-0.0886	0.0078
Total	**$\sum HPR_{SC} = 3.7549$**		**$\sum(HPR_{SC} - \overline{HPR}_{SC})^2 = 1.1899$**

$$\overline{HPR}_{SC} = \frac{\sum HPR_{SC}}{N} = \frac{3.7549}{10} = 37.55\%$$

$$\sigma_{SC} = \sqrt{\frac{(HPR_{SC} - \overline{HPR}_{SC})^2}{n-1}}$$

$$= \sqrt{\frac{1.1899}{10-1}} = 0.1322 = 13.22\%$$

HYPOTHESIS II

Company	$_j$	W_j	$_j W_j$	$_j - \bar{}_j$	$(_j - \bar{}_j)^2$
NBL	1.2673	0.3736	0.4735	0.1962	0.0385
SCBL	0.5594	0.4362	0.2440	-0.5117	0.2618

HBL	0.9455	0.1654	0.1564	-0.1256	0.0158
PEFIL	1.5198	0.0048	0.0073	0.4487	0.2013
NEFINSCO	1.1766	0.0010	0.0012	0.1055	0.0111
NFCL	2.2277	0.0113	0.0252	1.1566	1.3377
KFCL	1.1667	0.0010	0.0012	0.0956	0.0091
NICL	-0.0330	0.0037	-0.0001	-1.1041	1.2190
PICL	0.3977	0.0009	0.0004	-0.6734	0.4535
UICL	1.4835	0.0020	0.0030	0.4124	0.0701
Total	**$\sum_j = 10.7112$**		**$\sum_j W_j = 0.9122$**		**$\sum(_j - \bar{}_j)^2 = 3.6179$**

$\bar{\beta}_j = \frac{\sum B_j}{N} = \frac{10.7112}{10} = 1.0711$

$\sigma_\beta = \sqrt{\frac{\sum(\beta j - \bar{\beta}_j)^2}{n-1}} = \sqrt{\frac{3.6179}{10-1}} = 0.6140$

$\beta_P = \sum \beta_j W_j = 0.9122$

ANNEX-6

PORTFOLIO (TWO ASSETS CASE)

Let security A and B be NBL and PEFIL respectively

FY	$HPR_A - \overline{HPR_A}$	$HPR_B - \overline{HPR_B}$	$(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})$
2003/04	-0.1495	-1.0008	0.1496
2004/05	-0.0081	-1.0987	0.0089
2005/06	-0.0432	-0.9354	0.0404
2006/07	0.7143	-0.4005	-0.2861
2007/08	-0.5137	3.4356	-1.7649
Total			$\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B}) = -1.8521$

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})}{n - 1}$

$= \dfrac{-1.8521}{5 - 1} = -0.4630$

$W_A = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(1.9396)^2 - (-0.4630)}{(0.4768)^2 + (1.9396)^2 - 2 \times -0.4630}$

$= 0.86$

$W_B = 1 - W_A$

$= 1-(0.86) \quad = 0.14$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.86 \times 0.5781 + 0.14 \times 1.1564$

$= 0.4972+0.1619 \quad = 0.6591 \sim 65.91\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$=\sqrt{(0.86)^2\times (0.4468)^2 + (0.14)^2 \times (1.9396)^2 + 2\times (-0.4630) \times (.86) \times .14}$

$= 31.14\%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{-0.4630}{0.4768 \times 1.9396} \quad = -0.5343$

Let security A and B be SCBL and NEFINSCO respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-0.2624	-0.1056	0.0277
2004/05	0.0134	-0.1522	-0.0020
2005/06	0.2675	-0.1315	-0.0352
2006/07	0.2039	-0.0156	-0.0032
2007/08	-0.2223	-0.0262	0.0058
Total			**$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$ =-0.0069**

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n-1}$

$= \dfrac{-0.0069}{5-1}$ $=-0.0017$

W_A $= \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.1148)^2 - (-0.0017)}{(0.2706)^2 + (0.1148)^2 - 2 \times (-0.0017)}$

$= 0.16$

W_B $= 1 - W_A$

$= 1 - (0.71) = 0.84$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.16 \times 0.3935 + 0.84 \times (-0.0431)$

$= 2.68\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.16)^2 \times (0.2706)^2 + (0.84)^2 \times (0.1148)^2 + 2 \times (-0.0017) \times (.16) \times .84}$

$= \sqrt{0.0107} = 10.34\%$

$$\rho_{AB} = \frac{Cov(A,B)}{\sigma_A \sigma_B}$$

$$= \frac{-0.0017}{0.2706 \times 0.1148} = 0.0746$$

Let security A and B be NFCL and HBL respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-0.7831	-0.3893	0.3049
2004/05	-0.7357	-0.0370	0.0272
2005/06	-0.6565	0.1950	-0.1280
2006/07	0.4443	0.3232	0.1436
2007/08	1.7308	-0.0918	-0.1589
Total			$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B) = 0.1888$

$$\text{Covariance, Cov (A, B)} = \frac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$$

$$= \frac{0.1888}{5 - 1} = 0.0472$$

$$W_A = \frac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$$

$$= \frac{(0.2757)^2 - (0.0472)}{(1.0730)^2 + (0.2757)^2 - 2 \times (0.0472)} = 0.02$$

W_B $= 1 - W_A$

$= 1 - 0.02 \quad = 0.98$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.02 \times 0.7040 + 0.98 \times 0.3941$

$= 0.4003 \quad = 40.03\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.02)^2 \times (1.0730)^2 + (0.98)^2 \times (0.2757)^2 + 2 \times (0.0472) \times 0.98 \times 0.02}$

$= \sqrt{0.0755}$

$= 27.48\%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{0.0472}{1.0730 \times 0.2757} \quad = 0.1567$

Let security A and B be PEFIL and UICL respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-1.0008	-0.5260	0.5264
2004/05	-1.0987	-0.0679	0.0746
2005/06	-0.9354	-0.3103	0.2903
2006/07	-0.4005	0.4651	-0.1863
2007/08	3.4356	0.4391	1.5086
Total			$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B) = 2.2136$

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$

$= \dfrac{2.2136}{5 - 1} \quad = 0.5534$

$W_A \quad = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.4735)^2 - (0.5533)}{(1.9396)^2 + (0.4735)^2 - 2 \times (0.5533)} \quad = 0.13$

$W_B \quad = 1 - W_A$

$= 1 - 0.13 \quad = 0.87$

$\overline{HPR}_P \quad = W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.13\times 1.1564 + 0.87 \times 0.2869 \quad = 40\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.13)^2 \times (1.9396)^2 + (0.87)^2 \times (0.4735)^2 + 2 \times 0.5533 \times 0.13 \times 0.87}$

$= \sqrt{0.3069} = 55.40\ \%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{0.5533}{1.9396 \times 0.4735} = 0.6432$

Let security A and B be NEFINSCO and PICL respectively

FY	$HPR_A - \overline{HPR_A}$	$HPR_B - \overline{HPR_B}$	$(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})$
2003/04	-0.1056	-0.0062	0.0007
2004/05	-0.1522	-0.1000	0.0152
2005/06	-0.1315	-0.1476	0.0194
2006/07	-0.0156	0.2000	-0.0031
2007/08	-0.0262	0.0538	-0.0014
Total			$\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B}) = 0.0308$

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})}{n - 1}$

$= \dfrac{0.0308}{5 - 1} = 0.0077$

$W_A = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.1367)^2 - (0.0077)}{(0.1148)^2 + (0.1367)^2 - 2 \times (0.0077)} = 0.80$

$W_B = 1 - W_A$

$= 1 - 0.80 = 0.20$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.80 \times -0.0431 + 0.20 \times 0.1011 = 1.45\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.80)^2 \times (0.1148)^2 + (0.20)^2 \times (0.1367)^2 + 2 \times 0.0077 \times 0.80 \times 0.20}$

$= \sqrt{0.0154} = 12.41\%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{0.0077}{0.1148 \times 0.1367} = 0.5500$

Let security A and B be UICL and HBL respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-0.5260	-0.3893	0.2048
2004/05	-0.0679	-0.0370	0.0025
2005/06	-0.3103	0.1950	-0.0605
2006/07	0.4651	0.3232	0.1503
2007/08	0.4391	-0.0918	-0.0403
Total			**$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$ =0.2566**

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$

$= \dfrac{0.2566}{5 - 1} \quad = 0.0642$

$W_A \quad = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.2757)^2 - (0.0642)}{(0.4735)^2 + (0.2757)^2 - 2 \times (0.0642)} \quad = 0.07$

$W_B \quad = 1 - W_A$

$= 1 - (0.07) \quad = 0.93$

$\overline{HPR}_P \quad = W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.07 \times 0.2869 + 0.93 \times 0.3941$

$= 0.3866 \quad = 38.66\%$

$\sigma_P \quad = \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.07)^2 \times (0.4735)^2 + (0.93)^2 \times (0.2757)^2 + 2 \times 0.0642 \times 0.07 \times 0.93}$

$= \sqrt{0.0752} \quad = 27.41\ \%$

$\rho_{AB} = \frac{Cov(A,B)}{\sigma_A \sigma_B}$

$= \frac{0.0642}{0.4735 \times 0.2757} = 0.4920$

Let security A and B be PICL and NBL respectively

FY	**$HPR_A - \overline{HPR}_A$**	**$HPR_B - \overline{HPR}_B$**	**$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$**
2003/04	-0.0062	-0.1495	0.0009
2004/05	-0.1000	-0.0081	0.0008
2005/06	-0.1476	-0.0432	0.0064
2006/07	0.2000	0.7143	0.1429
2007/08	0.0538	-0.5137	-0.0276
Total			**$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$ =0.1234**

Covariance, Cov (A, B) $= \frac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$

$= \frac{0.1234}{5 - 1} = 0.0309$

$W_A = \frac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \frac{(0.4768)^2 - (0.0309)}{(0.1367)^2 + (0.4768)^2 - 2 \times (0.0309)} = 1.08$

W_B $= 1 - W_A$

$= 1- (1.08) = -0.08$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 1.08 \times 0.1011 + (-0.08) \times 0.5781$

$= 0.0629 \quad = 6.29\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(1.08)^2 \times (0.1367)^2 + (-0.08)^2 \times (0.4768)^2 + 2 \times (0.0309) \times 1.08 \times -0.08}$

$= \sqrt{0.0178} = 13.34\%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{0.0309}{0.1367 \times 0.4768} = 0.4740$

Let security A and B be NICL and SCBL respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-0.1940	-0.2624	0.0510
2004/05	-0.0297	0.0134	-0.0004
2005/06	0.3947	0.2675	0.1056

2006/07	-0.1349	0.2039	-0.0275
2007/08	0.0360	-0.2223	-0.0080
Total			**$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B) = 0.1237$**

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$

$= \dfrac{0.1237}{5 - 1} = 0.0309$

$W_A = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.2706)^2 - (0.0309)}{(0.2313)^2 + (0.2706)^2 - 2 \times (0.0309)} = 0.67$

$W_B = 1 - W_A$

$= 1 - 0.67 = 0.33$

$\overline{HPR}_P = W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.67 \times 0.0164 + 0.33 \times 0.3935 = 14.07\%$

$\sigma_P = \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.67)^2 \times (0.2313)^2 + (0.33)^2 \times (0.2706)^2 + 2 \times 0.0309 \times 0.67 \times 0.33}$

$= \sqrt{0.0456} = 21.35\%$

$\rho_{AB} = \frac{Cov(A,B)}{\sigma_A \sigma_B}$

$= \frac{0.0309}{0.2313 \times 0.2706} = 0.4736$

Let security A and B be KFCL and NICL respectively

FY	**$HPR_A - \overline{HPR_A}$**	**$HPR_B - \overline{HPR_B}$**	**$(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})$**
2003/04	-0.2963	-0.1940	0.0135
2004/05	-0.4954	-0.0297	0.0147
2005/06	-0.0070	0.3947	-0.0028
2006/07	0.3528	-0.1349	-0.0076
2007/08	0.4459	0.0360	0.0161
Total			**$\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B}) = -0.0061$**

Covariance, Cov (A, B) $= \frac{\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})}{n - 1}$

$= \frac{-0.0061}{5 - 1} = -0.0015$

W_A $= \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.2313)^2 - (0.0015)}{(0.4051)^2 + (0.2313)^2 - 2 \times (-0.0015)} = 0.25$

W_B $= 1 - W_A$

$= 1 - 0.25 \quad = 0.75$

$\overline{HPR}_P$ $= W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= 0.25 \times 0.1686 + 0.75 \times 0.0164 \quad = 5.45\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(0.25)^2 \times (0.4051)^2 + (0.75)^2 \times (0.2313)^2 + 2 \times -0.0015 \times 0.25 \times 0.75}$

$= \sqrt{0.0398} = 19.95\%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{-0.0015}{0.4051 \times 0.2313} = -0.0160$

Let security A and B be NFCL and PICL respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)$
2003/04	-0.7831	-0.0062	0.0049
2004/05	-0.7357	-0.1000	0.0736
2005/06	-0.6565	-0.1476	0.0969
2006/07	0.4443	0.2000	0.0889
2007/08	1.7308	0.0538	0.0931
Total			$\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B) = 0.3574$

Covariance, Cov (A, B) $= \dfrac{\sum(HPR_A - \overline{HPR}_A)(HPR_B - \overline{HPR}_B)}{n - 1}$

$= \dfrac{0.3574}{5 - 1} = 0.0894$

$W_A = \dfrac{\sigma^2_B - Cov(A, B)}{\sigma^2_A + \sigma^2_B - 2Cov(A, B)}$

$= \dfrac{(0.1367)^2 - (0.0894)}{(1.0930)^2 + (0.1367)^2 - 2 \times (0.0894)} = -0.06$

$W_B = 1 - W_A$

$= 1 - (-0.06) = 1.06$

$\overline{HPR}_P = W_A \overline{HPR}_A + W_B \overline{HPR}_B$

$= -0.06 \times (0.7040) + 1.06 \times 0.1011 = 6.38\%$

σ_P $= \sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + 2Cov(A,B)W_AW_B}$

$= \sqrt{(-0.06)^2 \times (1.0930)^2 + (1.06)^2 \times (0.1367)^2 + 2 \times 0.0894 \times -0.06 \times 1.06}$

$= \sqrt{0.0147}$

$= 12.12\ \%$

ρ_{AB} $= \dfrac{Cov(A,B)}{\sigma_A\sigma_B}$

$= \dfrac{0.0894}{1.0930 \times 0.1367}$

$= 0.5475$

ANNEX-7

PORTFOLIO (OTHER ASSET CASES)

Let NBL, PICL and KFCL be A, B, and C respectively

FY	$HPR_A - \bar{HPR}_A$	$HPR_B - \bar{HPR}_B$	$HPR_C - \bar{HPR}_C$	$HPR_A - \bar{HPR}_A)(HPR_B - \bar{HPR}_B$	$HPR_A - \bar{HPR}_A)(HPR_C - \bar{HPR}_C$	$HPR_B - \bar{HPR}_B)(HPR_C - \bar{HPR}_C$
2003/04	-0.1495	-0.0062	-0.2963	0.0009	0.0443	0.0018
2004/05	-0.0081	-0.1000	-0.4954	0.0008	0.0040	0.0495
2005/06	-0.0432	-0.1476	-0.0070	0.0064	0.0003	0.0010
2006/07	0.7143	0.2000	0.3528	0.1429	0.2520	0.0706
2007/08	-0.5137	0.0538	0.4459	-0.0276	-0.2291	0.0240
Total				**$\Sigma(HPR_A - \bar{HPR}_A)(HPR_B - \bar{HPR}_B)$ = 0.1234**	**$\Sigma(HPR_A - \bar{HPR}_A)(HPR_C - \bar{HPR}_C)$ = 0.0715**	**$\Sigma(HPR_B - \bar{HPR}_B)(HPR_C - \bar{HPR}_C$ = 0.1469**

Covariance

$$\text{Cov (A,B)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})}{n - 1}$$

$$= \frac{0.1234}{5 - 1} = 0.0309$$

$$\text{Cov (B,C)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_C - \overline{HPR_C})}{n - 1}$$

$$= \frac{0.1469}{5 - 1} = 0.0367$$

$$\text{Cov (A,C)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_C - \overline{HPR_C})}{n - 1}$$

$$= \frac{0.0715}{5 - 1} = 0.0179$$

Standard Deviations

σ_P = Portfolio Standard Deviation

$$= \sqrt{W^2_A\sigma^2_A + W^{2B}\sigma^2_B + W^2_C\sigma^2_C + 2\rho_{AB}\sigma_A\sigma_B W_A W_B + 2\rho_{AC}\sigma_A\sigma_C W_A W_C + 2\rho_{BC}\sigma_B\sigma_C W_B W_C}$$

σ_A = Standard Deviation of NBL's Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{36444.03} = 0.9949$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{36444.03} = 0.0025$$

W_C = Weight of KFCL's Wealth

$= 1 - W_A - W_B$

$= 1 - 0.9949 - 0.0025 \qquad = 0.0026$

Correlation Coefficients

ρ_{AB} = Correlation Coefficient between NBL and PICL

$$= \frac{Cov(A,B)}{\sigma_A \sigma_B}$$

$$= \frac{0.0309}{0.4768 \times 0.1367} = 0.4740$$

ρ_{BC} = Correlation Coefficient between PICL and KFCL

$$= \frac{Cov(B,C)}{\sigma_B \sigma_C}$$

$$= \frac{0.0367}{0.1367 \times 0.4051} = \quad 0.6625$$

ρ_{AC} = Correlation Coefficient between NBL and KFCL

$$= \frac{Cov(A,C)}{\sigma_A \sigma_C}$$

$$= \frac{0.0179}{0.4768 \times 0.4051} = 0.0726$$

Now,

$\overline{HPR}_P = W_A \overline{HPR}_A + W_B \overline{HPR}_B + W_C \overline{HPR}_C$

$= 0.9949 \times 0.5781 + 0.0025 \times 0.1011 + 0.0026 \times 0.1686$

$= 0.5752 + 0.0002 + 0.0004 = 57.58\%$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{\sigma_A^2 W_A^2 + \sigma_B^2 W_B^2 + \sigma_C^2 W_C^2 + 2W_A W_B \rho_{AB} \sigma_A \sigma_B + 2W_A W_C \rho_{AC} \sigma_A \sigma_C + 2W_B W_C \rho_{BC} \sigma_B \sigma_C}$$

$$= \sqrt{(0.4768)^2 \times (0.9949)^2 + (0.1367)^2 \times (0.0025)^2 + (0.4051)^2 \times (0.0026)^2}$$

+2 x 0.9949 x 0.0025x 0.4740 x0.4768 x 0.1367+2 x 0.9949 x 0.0026 x 0.0726 x 0.4768 x 0.4051

+2 x 0.0025 x 0.0026 x 0.6625 x 0.1367 x 0.4051

= 42.25%

Let NBL, PICL, KFCL and SBCL be A, B, C, and D respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$HPR_C - \overline{HPR}_C$	$HPR_D - \overline{HPR}_D$	$(HPR_A - \overline{HPR}_A)(HPR_D - \overline{HPR}_D)$	$(HPR_B - \overline{HPR}_B)(HPR_D - \overline{HPR}_D)$	$(HPR_C - \overline{HPR}_C)(HPR_D - \overline{HPR}_D)$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	0.0392	0.0016	0.0777
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0001	-0.0013	-0.0066
2003/04	-0.0432	-0.1476	-0.0070	0.2675	-0.0116	-0.0395	-0.0019
2004/05	0.7143	0.2000	0.3528	0.2039	0.1456	0.0408	0.0719
2005/06	-0.5137	0.0538	0.4459	-0.2223	0.1142	-0.0120	-0.0991

Total					$\sum(HPR_A - \overline{HPR_A})(HPR_D - \overline{HPR_D})$ **= 0.2873**	$\sum(HPR_B - \overline{HPR_B})(HPR_D - \overline{HPR_D})$ **= -0.0104**	$\sum (HPR_C - \overline{HPR_C})(HPR_D - \overline{HPR_D})$ **= 0.0420**

Covariances

$$\text{Cov (A,B)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_B - \overline{HPR_B})}{n-1}$$

$$= 0.0309$$

$$\text{Cov (B,C)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_C - \overline{HPR_C})}{n-1}$$

$$= 0.0367$$

$$\text{Cov (A,C)} = \frac{\sum(HPR_A - \overline{HPR_C})(HPR_C - \overline{HPR_C})}{n-1}$$

$$= 0.0179$$

$$\text{Cov (A,D)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_D - \overline{HPR_D})}{n-1}$$

$$= \frac{0.2873}{5-1} = 0.0718$$

$$\text{Cov (B,D)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_D - \overline{HPR_D})}{n - 1}$$

$$= \frac{-0.0104}{5 - 1} = -0.0026$$

$$\text{Cov (C,D)} = \frac{\sum(HPR_C - \overline{HPR_C})(HPR_D - \overline{HPR_D})}{n - 1}$$

$$= \frac{0.0420}{5 - 1} = 0.0105$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{78781.98} = 0.4603$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{78781.98} = 0.0011$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{78781.98} = 0.0012$$

W_D = Weight of SCBL's Wealth

$= 1 - W_A - W_B - W_C$

$= 1 - 0.4603 - 0.0011 - 0.0012 \qquad = 0.5374$

Correlation Coefficients

ρ_{AD} = Correlation Coefficient between NBL and SCBL

$$= \frac{Cov(A,D)}{\sigma_A \sigma_D}$$

$$= \frac{0.0718}{0.4768 \times 0.2706} = 0.5765$$

ρ_{BD} = Correlation Coefficient between PICL and SCBL

$$= \frac{Cov(B,D)}{\sigma_B \sigma_D}$$

$$= \frac{-0.0026}{0.1367 \times 0.2706} = -0.0702$$

ρ_{CD} = Correlation Coefficient between KFCL and SCBL

$$= \frac{Cov(C,D)}{\sigma_C \sigma_D}$$

$$= \frac{0.0105}{0.4051 \times 0.2706} = 0.0958$$

Now,

$$\overline{HPR}_P = W_A\,\overline{HPR}_A + W_B\,\overline{HPR}_B + W_C\,\overline{HPR}_C + W_D\,\overline{HPR}_D$$

$$= 0.4603 \times 0.5781 + 0.0011 \times 0.1011 + 0.0012 \times 0.1686 + 0.5374 \text{ x } 0.3935$$

$$= 0.2660 + 0.0001 + 0.0002 + 0.2114 = 47.77\%$$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + W^2_C\sigma^2_C + W^2_D\sigma^2_D + 2\rho_{AB}\sigma_A\sigma_B W_A W_B + 2\rho_{AC}\sigma_A\sigma_C W_A W_C + 2\rho_{BC}\sigma_B\sigma_C W_B W_C}$$
$$+ 2\rho_{AD}\sigma_A\sigma_D W_A W_D + 2\rho_{BD}\sigma_B\sigma_D W_B W_D + 2\rho_{CD}\sigma_C\sigma_D W_C W_D$$

$$= \sqrt{(0.4603)^2\times(0.4768)^2+(0.0011)^2\times(0.1367)^2+(0.0012)^2\times(0.4051)^2+ (0.5374)^2\times(0.2706)^2}$$
$$+ 2\times0.4740\times0.4768\times0.1367\times0.4603\times0.0011 + 2\times0.0726\times0.4768\times0.4051\times0.4603\times0.0012$$
$$+ 2\times0.6625\times0.1367\times0.4051\times0.0011\times0.0012 + 2\times0.5765\times0.4768\times0.2706\times0.4603\times0.5374$$
$$+ 2\times(-0.0702)\times0.1367\times0.2706\times0.0011\times0.5374 + 2\times0.0958\times0.4051\times0.2706\times0.0012\times0.5374$$

$$= \sqrt{0.136}$$

$$= 36.87\%$$

Let NBL, PICL, KFCL, SBCL, and NICL be A, B, C, D, and E respectively

FY	$HPR_A - \overline{HPR_A}$	$HPR_B - \overline{HPR_B}$	$HPR_C - \overline{HPR_C}$	$HPR_D - \overline{HPR_D}$	$HPR_E - \overline{HPR_E}$	$(HPR_A - \overline{HPR_A})(HPR_E - \overline{HPR_E})$	$(HPR_B - \overline{HPR_B})(HPR_E - \overline{HPR_E})$	$(HPR_C - \overline{HPR_C})(HPR_E - \overline{HPR_E})$	$(HPR_D - \overline{HPR_D})(HPR_E - \overline{HPR_E})$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	0.0290	0.0012	0.0574	0.0509
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	0.0002	0.0029	0.0147	-0.0004
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.0170	-0.0582	-0.0027	0.1055
2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0963	-0.0269	-0.0475	-0.0275
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	0.0184	-0.0019	-0.0160	0.0080
Total						**$\sum(HPR_A - \overline{HPR_A})(HPR_D - \overline{HPR_D})$ =-0.0657**	**$\sum(HPR_B - \overline{HPR_B})(HPR_D - \overline{HPR_D})$ = -0.0829**	**$\sum (HPR_C - \overline{HPR_C})(HPR_D - \overline{HPR_D})$ = 0.0059**	**$\sum (HPR_C - \overline{HPR_C})(HPR_D - \overline{HPR_D})$ = 0.1365**

Covariances

$$\text{Cov (A,E)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_E - \overline{HPR_E})}{n-1}$$

$$= \frac{-0.0657}{5-1} = -0.0164$$

$$\text{Cov (B,E)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_E - \overline{HPR_E})}{n-1}$$

$$= \frac{-0.0829}{5-1} = -0.0207$$

$$\text{Cov (C,E)} = \frac{\sum(HPR_C - \overline{HPR_C})(HPR_E - \overline{HPR_E})}{n-1}$$

$$= \frac{0.0059}{5-1} = 0.0014$$

$$\text{Cov (D,E)} = \frac{\sum(HPR_D - \overline{HPR_D})(HPR_E - \overline{HPR_E})}{n-1}$$

$$= \frac{0.1365}{5-1} = 0.0341$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{79141.42} = 0.4582$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{79141.42} = 0.0011$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{79141.42} = 0.0012$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{79141.42} = 0.5350$$

W_E = Weight of NICL's Wealth

$= 1 - W_A - W_B - W_C - W_D$

$= 1 - 0.4582 - 0.0011 - 0.0012 - 0.5350$

$= 0.0045$

Correlation Coefficients

ρ_{AE} = Correlation Coefficient between NBL and NICL

$$= \frac{Cov(A,E)}{\sigma_A \sigma_E}$$

$$= \frac{-0.0164}{0.4768 \times 0.2313} = -0.1786$$

ρ_{BE} = Correlation Coefficient between PICL and NICL

$$= \frac{Cov(B,E)}{\sigma_B \, \sigma_E}$$

$$= \frac{-0.0207}{0.1367 \times 0.2313} = -0.6750$$

ρ_{CE} = Correlation Coefficient between KFCL and NICL

$$= \frac{Cov(C,E)}{\sigma_C \, \sigma_E}$$

$$= \frac{0.0014}{0.4051 \times 0.2313} = 0.0149$$

ρ_{DE} = Correlation Coefficient between SCBL and NICL

$$= \frac{Cov(D,E)}{\sigma_D \, \sigma_E}$$

$$= \frac{0.0341}{0.2706 \times 0.2313} = 0.5456$$

Now,

$\overline{HPR}_P = W_A \overline{HPR}_A + W_B \overline{HPR}_B + W_C \overline{HPR}_C + W_D \overline{HPR}_D + W_E \overline{HPR}_E$

$= 0.4582 \times 0.5781 + 0.0011 \times 0.1011 + 0.0012 \times 0.1686 + 0.5350x\ 0.3935 + 0.0045\ x\ 0.0164$

=47.56%

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A + W^{2B}\sigma^2_B + W^2_C\sigma^2_C + W^2_D\sigma^2_D + W^2_E\sigma^2_E + 2\rho_{AB}\sigma_A\sigma_B W_A W_B + 2\rho_{AC}\sigma_A\sigma_C W_A W_C}$$

$$+ 2\rho_{BC}\sigma_B\sigma_C W_B W_C + 2\rho_{AD}\sigma_A\sigma_D W_A W_D + 2\rho_{BD}\sigma_B\sigma_D W_B W_D + 2\rho_{CD}\sigma_C\sigma_D W_C W_D$$

$$+2\rho_{AE}\sigma_A\sigma_E W_A W_E + 2\rho_{BE}\sigma_B\sigma_E W_B W_E + 2\rho_{CE}\sigma_C\sigma_E W_C W_E + 2\rho_{DE}\sigma_D\sigma_E W_D W_E$$

$$= \sqrt{(0.4582)^2 \times (0.4768)^2 + (0.0011)^2 \times (0.1367)^2 + (0.0012)^2 \times (0.4051)^2 + (0.5350)^2 \times (0.2706)^2 + (0.0045)^2 \times (0.2313)^2}$$

$$+2 \times (0.4740) \times 0.4768 \times 0.1367 \times 0.4582 \times 0.0011 + 2 \times 0.0726 \times 0.4768 \times 0.4051 \times 0.4582 \times 0.0012 + 2 \times 0.6625 \times 0.1367$$

$$\times 0.4051\times 0.001\times 0.0012+2\times 0.5765\times 0.4768\times 0.2706\times 0.4582\times 0.5350+2\times(-0.0702)\times 0.1367\times 0.2706\times 0.0011$$
$$\times 0.5350+2\times 0.0958\times 0.4051\times 0.2706\times 0.0012\times 0.5350+2\times -0.1786\times 0.4768\times 0.2313\times 0.4582\times 0.0045$$
$$+2\times(-0.6750)\times 0.1367\times 0.2313\times 0.0011\times 0.0045+2\times 0.0149\times 0.4051\times 0.2313\times 0.0012\times 0.0045+$$
$$2\times 0.5456\times 0.2706\times 0.2313\times 0.5350\times 0.0045$$

$= \sqrt{0.115}$

$= 31.91\%$

Let NBL, PICL, KFCL, SBCL, NICL, and NEFINSCO be A, B, C, D, E, and F respectively

FY	$HPR_A - \overline{HPR_A}$	$HPR_B - \overline{HPR_B}$	$HPR_C - \overline{HPR_C}$	$HPR_D - \overline{HPR_D}$	$HPR_E - \overline{HPR_E}$	$HPR_F - \overline{HPR_F}$	$(HPR_A - \overline{HPR_A})(HPR_F - \overline{HPR_F})$	$(HPR_B - \overline{HPR_B})(HPR_F - \overline{HPR_F})$	$(HPR_C - \overline{HPR_C})(HPR_F - \overline{HPR_F})$	$(HPR_D - \overline{HPR_D})(HPR_F - \overline{HPR_F})$	$(HPR_E - \overline{HPR_E})(HPR_F - \overline{HPR_F})$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	-0.1056	0.0157	0.0006	0.0312	0.0277	0.0204
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	-0.1522	0.0012	0.0152	0.0753	-0.0020	0.0045
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.1315	0.0056	0.0194	0.0009	-0.0351	-0.0519
2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0156	-0.0111	-0.0031	-0.0055	-0.0031	0.0021
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	-0.0262	0.0134	-0.0014	-0.0116	0.0058	0.0009
Tot							**$\sum(HPR_A - \overline{HPR_A})(HPR_F - \overline{HPR_F})$ = 0.0248**	**$\sum HPR_B - \overline{HPR_B})(HPR_F - \overline{HPR_F})$ = 0.0307**	**$\sum(HPR_C - \overline{HPR_C})(HPR_F - \overline{HPR_F})$ = 0.0903**	**$\sum(HPR_D - \overline{HPR_D})(HPR_F - \overline{HPR_F})$ = -0.0067**	**$\sum(HPR_E - \overline{HPR_E})(HPR_F - \overline{HPR_F})$ = -0.0240**

Covariances

$$\text{Cov (A,F)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_F - \overline{HPR_F})}{n - 1}$$

$$= \frac{0.0248}{5 - 1} = 0.0062$$

$$\text{Cov (B,F)} = \frac{\sum(HPR_B - \overline{HPR}_B)(HPR_F - \overline{HPR}_F)}{n-1}$$

$$= \frac{0.0307}{5-1} = 0.0076$$

$$\text{Cov (C,F)} = \frac{\sum(HPR_C - \overline{HPR}_C)(HPR_F - \overline{HPR}_F)}{n-1}$$

$$= \frac{0.0903}{5-1} = 0.0225$$

$$\text{Cov (D,F)} = \frac{\sum(HPR_D - \overline{HPR}_D)(HPR_F - \overline{HPR}_F)}{n-1}$$

$$= \frac{-0.0067}{5-1} = -0.0016$$

$$\text{Cov (E,F)} = \frac{\sum(HPR_E - \overline{HPR}_E)(HPR_F - \overline{HPR}_F)}{n-1}$$

$$= \frac{-0.0240}{5-1} = -0.006$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

σ_F = Standard Deviation of NEFINSCO's Return = 0.1148

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{79236.42} = 0.4576$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{79236.42} = 0.0011$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{79236.42} = 0.0012$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{79236.42} = 0.5343$$

W_E = Weight of NICL's Wealth

$$= \frac{\text{Market Capitalization of E}}{\text{Total Market Capitalization}}$$

$$= \frac{359.44}{79236.42} = 0.0045$$

W_F = Weight of NEFINSCO's Wealth

$= 1 - W_A - W_B - W_C - W_D - W_E$

$= 1 - 0.4576 - 0.0011 - 0.0012 - 0.5343 - 0.0045 \quad = 0.0013$

Correlation Coefficients

ρ_{AF} = Correlation Coefficient between NBL and NEFINSCO

$$= \frac{Cov(A,F)}{\sigma_A \sigma_F}$$

$$= \frac{0.0062}{0.4768 \times 0.1148} = 0.1133$$

ρ_{BF} = Correlation Coefficient between PICL and NEFINSCO

$$= \frac{Cov(B,F)}{\sigma_B \sigma_F}$$

$$= \frac{0.0076}{0.1367 \times 0.1148} = 0.4071$$

ρ_{CF} = Correlation Coefficient between KFCL and NEFINSCO

$$= \frac{Cov(C,F)}{\sigma_C \sigma_F}$$

$$= \frac{0.0225}{0.4051 \times 0.1148} = 0.4038$$

ρ_{DF} = Correlation Coefficient between SCBL and NEFINSCO

$$= \frac{Cov(D,F)}{\sigma_D \sigma_F}$$

$$= \frac{-0.0016}{0.2706 \times 0.1148} = -0.0716$$

ρ_{EF} = Correlation Coefficient between NICL and NEFINSCO

$$= \frac{Cov(E,F)}{\sigma_E \sigma_F}$$

$$= \frac{-0.006}{0.2313 \times 0.1148} = -0.2264$$

Now,

$\overline{HPR}_P$

$= W_A\,\overline{HPR}_A + W_B\,\overline{HPR}_B + W_C\,\overline{HPR}_C + W_D\,\overline{HPR}_D + W_E\,\overline{HPR}_E + W_F\,\overline{HPR}_F$

$=0.4576\times 0.5781 + 0.0011 \times 0.1011+0.0012 \times 0.1686 + 0.5343x\ 0.3935 +0.0045\ x\ 0.0164+0.0013\ x\ (-0.0431)$

$= 0.4750$

$=47.50\%$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + W^2_C\sigma^2_C + W^2_D\sigma^2_D + W^2_E\sigma^2_E + W^2_F\sigma^2_F + 2\rho_{AB}\sigma_A\sigma_B W_A W_B + 2\rho_{AC}\sigma_A\sigma_C W_A W_C}$$
$$+ 2\rho_{BC}\sigma_B\sigma_C W_B W_C + 2\rho_{AD}\sigma_A\sigma_D W_A W_D + 2\rho_{BD}\sigma_B\sigma_D W_B W_D + 2\rho_{CD}\sigma_C\sigma_D W_C W_D + 2\rho_{AE}\sigma_A\sigma_E W_A W_E$$
$$+2\rho_{BE}\sigma_B\sigma_E W_B W_E+2\rho_{CE}\sigma_C\sigma_E W_C W_E+2\rho_{DE}\sigma_D\sigma_E W_D W_E+2\rho_{AF}\sigma_A\sigma_F W_A W_F+2\rho_{BF}\sigma_B\sigma_F W_B W_F$$
$$+2\rho_{CF}\sigma_C\sigma_F W_C W_F+2\rho_{DF}\sigma_D\sigma_F W_D W_F+2\rho_{EF}\sigma_E\sigma_F W_E W_F$$

$$= \sqrt{(0.4576)^2\times(0.4768)^2+(0.0011)^2\times(0.1367)^2+(0.0012)^2\times(0.4051)^2+(0.5343)^2\times(0.2706)^2+ (0.0045)^2}$$
$$\times(0.2313)^2+(0.0013)^2\times(0.1148)^2+2\times0.4740\times0.4768\times0.1367\times0.4576\times0.0011+2\times0.0726\times0.4768\times0.0.4051$$
$$\times0.4576\times0.0012+2\times0.6625\times0.1367\times0.4051\times0.0011\times0.0012+2\times0.5765\times0.4768\times0.2706\times0.4576\times0.5343+$$
$$2\times(-0.0702)\times0.1367\times0.2706\times0.0011\times0.5343+2\times0.0958\times0.4051\times0.2706\times0.0012\times0.5343+2\times-0.1786\times0.4768$$
$$\times0.2313\times0.4576\times0.0045+2\times(-0.6750)\times0.1367\times0.2313\times0.0011\times0.0045+2\times0.0149\times0.4051\times0.2313\times0.0012\times$$
$$0.0045+2\times0.5456\times0.2706\times0.2313\times0.5343\times0.0045+2\times0.1133\times0.4768\times0.1148\times0.4576\times0.0013+2\times0.4071$$
$$\times0.1367\times0.1148\times0.0011\times0.0013+2\times0.4038\times0.4051\times0.1148\times0.0012\times0.0013+2\times(-0.0716)\times0.2706\times0.1148$$
$$\times0.5343\times0.0013+2\times(-0.2264)\times0.2313\times0.1148\times0.0045\times0.0013$$

$= \sqrt{0.1050}$

$= 32.40\%$

Let NBL, PICL, KFCL, SBCL, NICL, NEFINSCO, and PEFIL

be A, B, C, D, E, F, and G respectively

FY	$HPR_A - \overline{HPR_A}$	$HPR_B - \overline{HPR_B}$	$HPR_C - \overline{HPR_C}$	$HPR_D - \overline{HPR_D}$	$HPR_E - \overline{HPR_E}$	$HPR_F - \overline{HPR_F}$	$HPR_G - \overline{HPR_G}$	$(HPR_A - \overline{HPR_A})(HPR_G - \overline{HPR_G})$	$(HPR_B - \overline{HPR_B})(HPR_G - \overline{HPR_G})$	$(HPR_C - \overline{HPR_C})(HPR_G - \overline{HPR_G})$	$(HPR_D - \overline{HPR_D})(HPR_G - \overline{HPR_G})$	$(HPR_E - \overline{HPR_E})(HPR_G - \overline{HPR_G})$	$(HPR_F - \overline{HPR_F})(HPR_G - \overline{HPR_G})$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	-0.1056	-1.0008	0.1496	0.0062	0.2965	0.2626	0.1942	0.1057
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	-0.1522	-1.0987	0.0089	0.1099	0.5443	-0.0147	0.0326	0.1672
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.1315	-0.9354	0.0404	0.1381	0.0065	-0.2502	-0.3692	0.1230
2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0156	-0.4005	-0.2861	-0.0801	-0.1413	-0.0817	0.0540	0.0062
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	-0.0262	3.4356	-1.7649	0.1848	1.5319	-0.7637	0.1237	-0.0900
Total								**$\sum(HPR_A - \overline{HPR_A})(HPR_G - \overline{HPR_G})$ = -1.8521**	**$\sum(HPR_B - \overline{HPR_B})(HPR_G - \overline{HPR_G})$ = 0.3589**	**$\sum(HPR_C - \overline{HPR_C})(HPR_G - \overline{HPR_G})$ =2.2379**	**$\sum(HPR_D - \overline{HPR_D})(HPR_G - \overline{HPR_G})$ =-0.8477**	**$\sum(HPR_E - \overline{HPR_E})(HPR_G - \overline{HPR_G})$ = 0.0353**	**$\sum(HPR_F - \overline{HPR_F})(HPR_G - \overline{HPR_G})$ = 0.3121**

Covariances

$$\text{Cov (A,G)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{-1.8521}{5-1} = -0.4630$$

$$\text{Cov (B,G)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{0.3589}{5-1} = 0.0897$$

$$\text{Cov (C,G)} = \frac{\sum(HPR_C - \overline{HPR_C})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{2.2379}{5-1} = 0.5595$$

$$\text{Cov (D,G)} = \frac{\sum(HPR_D - \overline{HPR_D})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{-0.8477}{5-1} = -0.2119$$

$$\text{Cov (E,G)} = \frac{\sum(HPR_E - \overline{HPR_E})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{0.0353}{5-1} = 0.0088$$

$$\text{Cov (F,G)} = \frac{\sum(HPR_F - \overline{HPR_F})(HPR_G - \overline{HPR_G})}{n-1}$$

$$= \frac{0.3121}{5-1} = 0.0780$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

σ_F = Standard Deviation of NEFINSCO's Return = 0.1148

σ_G = Standard Deviation of PEFIL's Return = 1.9396

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{79700.51} = 0.4550$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{79700.51} = 0.0011$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{79700.51} = 0.0012$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{79700.51} = 0.5312$$

W_E = Weight of NICL's Wealth

$$= \frac{\text{Market Capitalization of E}}{\text{Total Market Capitalization}}$$

$$= \frac{359.44}{79700.51} = 0.0045$$

W_F = Weight of NEFINSCO's Wealth

$$= \frac{\text{Market Capitalization of F}}{\text{Total Market Capitalization}}$$

$$= \frac{95.00}{79700.51} = 0.0012$$

W_G = Weight of PEFIL's Wealth

$= 1 - W_A - W_B - W_C - W_D - W_E - W_F$

$= 1 - 0.4550 - 0.0011 - 0.0012 - 0.5312 - 0.0045 - 0.0012$

$= 0.0058$

Correlation Coefficients

ρ_{AG} = Correlation Coefficient between NBL and PEFIL

$$= \frac{Cov(A,G)}{\sigma_A \sigma_G}$$

$$= \frac{-0.4630}{0.4768 \times 1.9396} = -0.5006$$

ρ_{BG} = Correlation Coefficient between PICL and PEFIL

$$= \frac{Cov(B,G)}{\sigma_B \sigma_G}$$

$$= \frac{0.0897}{0.1367 \times 1.9396} = 0.3384$$

ρ_{CG} = Correlation Coefficient between KFCL and PEFIL

$$= \frac{Cov(C,G)}{\sigma_C \, \sigma_G}$$

$$= \frac{0.5595}{0.4051 \times 1.9396} = 0.7121$$

ρ_{DG} = Correlation Coefficient between SCBL and PEFIL

$$= \frac{Cov(D,G)}{\sigma_D \, \sigma_G}$$

$$= \frac{-0.2119}{0.2706 \times 1.9396} = -0.4037$$

ρ_{EG} = Correlation Coefficient between NICL and PEFIL

$$= \frac{Cov(E,G)}{\sigma_E \, \sigma_G}$$

$$= \frac{0.0088}{0.2313 \times 1.9396} = 0.0196$$

ρ_{FG} = Correlation Coefficient between NEFINSCO and PEFIL

$$= \frac{Cov(F,G)}{\sigma_F \, \sigma_G}$$

$$= \frac{0.0780}{0.1148 \times 1.9396} = 0.3502$$

Now,

$\overline{HPR}_P$

$= W_A \overline{HPR}_A + W_B \overline{HPR}_B + W_C \overline{HPR}_C + W_D \overline{HPR}_D + W_E \overline{HPR}_E + W_F \overline{HPR}_F + W_G \overline{HPR}_G$

=0.4550× 0.5781 + 0.0011 × 0.1011+0.0012 × 0.1686 + 0.5312x 0.3935 +0.0045 x 0.0164+0.0012 x (-0.0431)

+ 0.0058 × 1.1564

=47.90%

Portfolio Standard Deviation $\pm_p$

$$\sqrt{W^2_A\sigma^2_A+W^2_B\sigma^2_B+W^2_C\sigma^2_C+W^2_D\sigma^2_D+W^2_E\sigma^2_E+W^2_F\sigma^2_F+W^2_G\sigma^2_G+2\rho_{AB}\sigma_A\sigma_B W_A W_B+2\rho_{AC}\sigma_A\sigma_C W_A W_C}$$

$$+2\rho_{BC}\sigma_B\sigma_C W_B W_C+2\rho_{AD}\sigma_A\sigma_D W_A W_D+2\rho_{BD}\sigma_B\sigma_D W_B W_D+2\rho_{CD}\sigma_C\sigma_D W_C W_D+2\rho_{AE}\sigma_A\sigma_E W_A W_E+2\rho_{BE}\sigma_B\sigma_E$$

$$W_B W_E+2\rho_{CE}\sigma_C\sigma_E W_C W_E+2\rho_{DE}\sigma_D\sigma_E W_D W_E+2\rho_{AF}\sigma_A\sigma_F W_A W_F+2\rho_{BF}\sigma_B\sigma_F W_B W_F +2\rho_{CF}\sigma_C\sigma_F W_C W_F$$

$$+2\rho_{DF}\sigma_D\sigma_F W_D W_F +2\rho_{EF}\sigma_E\sigma_F W_E W_F+2\rho_{AG}\sigma_A\sigma_G W_A W_G+2\rho_{BG}\sigma_B\sigma_G W_B W_G+2\rho_{CG}\sigma_C\sigma_G W_C W_G$$

$$+2\rho_{DG}\sigma_D\sigma_G W_D W_G+2\rho_{EG}\sigma_E\sigma_G W_E W_G+2\rho_{FG}\sigma_F\sigma_G W_F W_G$$

$$= \sqrt{(0.4550)^2\times(0.4768)^2+(0.0011)^2\times(0.1367)^2+(0.0012)^2\times(0.4051)^2+(0.5312)^2\times(0.2706)^2+ (0.0045)^2}$$

$$\times(0.2313)^2 +(0.0012)^2\times(0.1148)^2+(0.0058)^2\times(1.9396)^2 +2\times0.4740\times0.4768\times0.1367\times0.4550\times0.0011+$$

$$2\times0.0726\times0.4768\times0.4051\times0.4550\times0.0012+2\times0.6625\times0.1367\times0.4051\times0.0011\times0.0012+2\times0.5765\times0.4768$$

$$\times0.2706\times0.4550\times0.5312+2\times(-0.0702)\times0.1367\times0.2706\times0.0011\times0.5312+2\times0.0958\times0.4051\times0.2706\times0.0012$$

$$\times0.5312+2\times(-0.1786)\times0.4768\times0.2313\times0.4550\times0.0045 +2\times(-0.6750)\times0.1367\times0.2313\times0.0011\times0.0045$$

$$+2\times0.0149\times0.4051\times0.2313\times0.0012\times0.0045+2\times0.5456\times0.2706\times0.2313\times0.5312\times0.0045+2\times0.1133\times$$

$$0.4768\times0.1148\times0.4550\times0.0012+2\times0.4071\times0.1367\times0.1148\times0.0011\times0.0012+2\times0.4038\times0.4051\times0.1148$$

$$\times0.0012\times0.0012+2\times(-0.0716)\times0.2706\times0.1148\times0.5312\times0.0012+2\times(-0.2264)\times0.2313\times0.1148\times0.0045\times0.0012$$

$$+2\times(-0.5006)\times0.4768\times1.9396\times0.4550\times0.0058+2\times0.3384\times0.1367\times1.9396\times0.0011\times0.0058+2\times0.7121\times0.4051$$

$$\times1.9396\times0.0012\times0.0058+2\times(-0.4037)\times0.2706\times1.9396\times0.5312\times0.0058+2\times0.0196\times0.2313\times1.9396\times0.0045\times0.0058+2\times0.3502\times0.1148\times1.9396\times0.0012\times0.0017$$

$= \sqrt{0.1038}$ = 32.22%

Let NBL, PICL, KFCL, SBCL, NICL, NEFINSCO, PEFIL, and HBL be A, B, C, D, E, F, G, and H respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$HPR_C - \overline{HPR}_C$	$HPR_D - \overline{HPR}_D$	$HPR_E - \overline{HPR}_E$	$HPR_F - \overline{HPR}_F$	$HPR_G - \overline{HPR}_G$	$HPR_H - \overline{HPR}_H$	$(HPR_A - \overline{HPR}_A)(HPR_H - \overline{HPR}_H)$	$(HPR_B - \overline{HPR}_B)(HPR_H - \overline{HPR}_H)$	$(HPR_C - \overline{HPR}_C)(HPR_H - \overline{HPR}_H)$	$(HPR_D - \overline{HPR}_D)(HPR_H - \overline{HPR}_H)$	$HPR_E - \overline{HPR}_E)(HPR_H - \overline{HPR}_H)$	$(HPR_F - \overline{HPR}_F)(HPR_H - \overline{HPR}_H)$	$(HPR_G - \overline{HPR}_G)(HPR_H - \overline{HPR}_H)$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	-0.1056	-1.0008	-0.3893	0.0582	0.0024	0.1153	0.1022	0.0755	0.0411	0.3896
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	-0.1522	-1.0987	-0.0370	0.0003	0.0037	0.0183	-0.0005	0.0011	0.0056	0.0407
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.1315	-0.9354	0.1950	-0.0084	-0.0280	-0.0014	0.0522	0.0770	-0.0256	-0.1825
2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0156	-0.4005	0.3232	0.2309	0.0646	0.1140	0.0659	-0.0436	-0.0050	-0.1294
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	-0.0262	3.4356	-0.0918	0.0472	-0.0049	-0.0409	0.0204	-0.0033	0.0024	-0.3154

Total
$\sum(HPR_A - \overline{HPR}_A)(HPR_H - \overline{HPR}_H) = 0.3282$
$\sum(HPR_B - \overline{HPR}_B)(HPR_H - \overline{HPR}_H) = 0.0378$
$\sum(HPR_C - \overline{HPR}_C)(HPR_H - \overline{HPR}_H) = 0.2053$
$\sum(HPR_D - \overline{HPR}_D)(HPR_H - \overline{HPR}_H) = 0.2402$
$\sum(HPR_E - \overline{HPR}_E)(HPR_H - \overline{HPR}_H) = 0.1067$
$\sum(HPR_F - \overline{HPR}_F)(HPR_H - \overline{HPR}_H) = 0.0185$
$\sum(HPR_G - \overline{HPR}_G)(HPR_H - \overline{HPR}_H) = -0.1970$

Covariances

$$\text{Cov (A,H)} = \frac{\sum(HPR_A - \overline{HPR}_A)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.3282}{5-1} = 0.0821$$

$$\text{Cov (B,H)} = \frac{\sum(HPR_B - \overline{HPR}_B)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.0378}{5-1} = 0.0095$$

$$\text{Cov (C,H)} = \frac{\sum(HPR_C - \overline{HPR}_C)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.2053}{5-1} = 0.0513$$

$$\text{Cov (D,H)} = \frac{\sum(HPR_D - \overline{HPR}_D)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.2402}{5-1} = 0.0601$$

$$\text{Cov (E,H)} = \frac{\sum(HPR_E - \overline{HPR}_E)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.1358}{5-1} = 0.0340$$

$$\text{Cov (F,H)} = \frac{\sum(HPR_F - \overline{HPR}_F)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{0.1067}{5-1} = 0.0267$$

$$\text{Cov (G,H)} = \frac{\sum(HPR_G - \overline{HPR}_G)(HPR_H - \overline{HPR}_H)}{n-1}$$

$$= \frac{-0.1970}{5-1} = -0.0493$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

σ_F = Standard Deviation of NEFINSCO's Return = 0.1148

σ_G = Standard Deviation of PEFIL's Return = 1.9396

σ_H = Standard Deviation of HBL's Return = 0.2757

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{95754.55} = 0.3787$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{95754.55} = 0.0009$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{95754.55} = 0.0010$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{95754.55} = 0.4422$$

W_E = Weight of NICL's Wealth

$$= \frac{\text{Market Capitalization of E}}{\text{Total Market Capitalization}}$$

$$= \frac{359.44}{95754.55} = 0.0038$$

W_F = Weight of NEFINSCO's Wealth

$$= \frac{\text{Market Capitalization of F}}{\text{Total Market Capitalization}}$$

$$= \frac{95.00}{95754.55} = 0.0010$$

W_G = Weight of PEFIL's Wealth

$$= \frac{\text{Market Capitalization of G}}{\text{Total Market Capitalization}}$$

$$= \frac{464.09}{95754.55} = 0.0048$$

W_H = Weight of HBL's Wealth

$= 1 - W_A - W_B - W_C - W_D - W_E - W_F - W_G$

$= 1 - 0.3787 - 0.0009 - 0.0010 - 0.4422 - 0.0038 - 0.0010 - 0.0048$

$= 0.1676$

Correlation Coefficients

ρ_{AH} = Correlation Coefficient between NBL and HBL

$$= \frac{Cov(A,H)}{\sigma_A \sigma_H}$$

$$= \frac{0.0821}{0.4768 \times 0.2757} = 0.6243$$

ρ_{BH} = Correlation Coefficient between PICL and HBL

$$= \frac{Cov(B,H)}{\sigma_B \sigma_H}$$

$$= \frac{0.0095}{0.1367 \times 0.2757} = 0.2520$$

ρ_{CH} = Correlation Coefficient between KFCL and HBL

$$= \frac{Cov(C,H)}{\sigma_C \sigma_H}$$

$$= \frac{0.0513}{0.4051 \times 0.2757} = 0.4593$$

ρ_{DH} = Correlation Coefficient between SCBL and HBL

$$= \frac{Cov(D,H)}{\sigma_D \sigma_H}$$

$$= \frac{0.0601}{0.2706 \times 0.2757} = 0.8056$$

ρ_{EH} = Correlation Coefficient between NICL and HBL

$$= \frac{Cov(E,H)}{\sigma_E \sigma_H}$$

$$= \frac{0.0267}{0.2313 \times 0.2757} = 0.4185$$

ρ_{FH} = Correlation Coefficient between NEFINSCO and HBL

$$= \frac{Cov(F,H)}{\sigma_F \, \sigma_H}$$

$$= \frac{0.0046}{0.1148 \times 0.2757} = 0.1451$$

ρ_{GH} = Correlation Coefficient between PEFIL and HBL

$$= \frac{Cov(G,H)}{\sigma_G \, \sigma_H}$$

$$= \frac{-0.0493}{1.9396 \times 0.2757} = -0.0922$$

Now,

$\overline{HPR}_P$

$= W_A\,\overline{HPR}_A + W_B\,\overline{HPR}_B + W_C\,\overline{HPR}_C + W_D\,\overline{HPR}_D + W_E\,\overline{HPR}_E + W_F\,\overline{HPR}_F + W_G\,\overline{HPR}_G + W_H\,\overline{HPR}_H$

$= 0.3787\times 0.5781 + 0.0009\times 0.1011 + 0.0010 \times 0.1686 + 0.4422\text{x } 0.3935 + 0.0038 \text{ x } 0.0164 + 0.0010 \text{ x } (-0.0431) + 0.0048 \times 1.1564 + 0.1676 \times 0.3941$

$=46.50\%$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A+W^2_B\sigma^2_B+W^2_C\sigma^2_C+W^2_D\sigma^2_D+W^2_E\sigma^2_E+W^2_F\sigma^2_F+W^2_G\sigma^2_G+W^2_H\sigma^2_H+2\rho_{AB}\sigma_A\sigma_B W_A W_B}$$
$$+2\rho_{AC}\sigma_A\sigma_C W_A W_C+2\rho_{BC}\sigma_B\sigma_C W_B W_C+2\rho_{AD}\sigma_A\sigma_D W_A W_D+2\rho_{BD}\sigma_B\sigma_D W_B W_D+2\rho_{CD}\sigma_C\sigma_D W_C W_D+2\rho_{AE}\sigma_A\sigma_E$$
$$W_A W_E+2\rho_{BE}\sigma_B\sigma_E W_B W_E+2\rho_{CE}\sigma_C\sigma_E W_C W_E+2\rho_{DE}\sigma_D\sigma_E W_D W_E+2\rho_{AF}\sigma_A\sigma_F W_A W_F+2\rho_{BF}\sigma_B\sigma_F W_B W_F$$
$$+2\rho_{CF}\sigma_C\sigma_F W_C W_F+2\rho_{DF}\sigma_D\sigma_F W_D W_F+2\rho_{EF}\sigma_E\sigma_F W_E W_F+2\rho_{AG}\sigma_A\sigma_G W_A W_G+2\rho_{BG}\sigma_B\sigma_G W_B W_G+2\rho_{CG}\sigma_C\sigma_G$$
$$W_C W_G+2\rho_{DG}\sigma_D\sigma_G W_D W_G+2\rho_{EG}\sigma_E\sigma_G W_E W_G+2\rho_{FG}\sigma_F\sigma_G W_F W_G+2\rho_{AH}\sigma_A\sigma_H W_A W_H+2\rho_{BH}\sigma_B\sigma_H W_B W_H$$
$$+2\rho_{CH}\sigma_C\sigma_H W_C W_{H+}2\rho_{DH}\sigma_D\sigma_H W_D W_{H+}2\rho_{EH}\sigma_E\sigma_H W_E W_{H+}2\rho_{FH}\sigma_F\sigma_H W_F W_{H+}2\rho_{GH}\sigma_G\sigma_H W_G W_H$$

$$= \sqrt{(0.3787)^2(0.4768)^2+(0.0009)^2(0.1367)^2+(0.0010)^2(0.4051)^2+(0.4422)^2(0.2706)^2+(0.0038)^2(0.2313)^2}$$
$$+(0.0010)^2(0.1148)^2+(0.0048)^2(1.9396)^2+(0.1676)^2(0.2757)^2+2\times(0.4740)\times 0.4768\times 0.1367\times 0.3787\times 0.0009$$
$$+2\times 0.0726\times 0.4768\times 0.4051\times 0.3787\times 0.0010+2\times 0.6625\times 0.1367\times 0.4051\times 0.0009\times 0.0010+2\times 0.5765\times 0.4768$$
$$\times 0.2706\times 0.3787\times 0.4422+2\times(-0.0702)\times 0.1367\times 0.2706\times 0.0009\times 0.4422+2\times 0.0958\times 0.4051\times 0.2706\times 0.0010$$
$$\times 0.4422+2\times -0.1786\times 0.4768\times 0.2313\times 0.3787\times 0.0038+2\times(-0.6750)\times 0.1367\times 0.2313\times 0.0009\times 0.0038+2$$
$$\times 0.0149\times 0.4051\times 0.2313\times 0.0010\times 0.0038+2\times 0.5456\times 0.2706\times 0.2313\times 0.4422\times 0.0038+2\times 0.1133\times 0.4768$$
$$\times 0.1148\times 0.4787\times 0.0010+2\times 0.4071\times 0.1367\times 0.1148\times 0.0009\times 0.0010+2\times 0.4038\times 0.4051\times 0.1148\times 0.0010$$
$$\times 0.0010+2\times(-0.0716)\times 0.2706\times 0.1148\times 0.4422\times 0.0010+2\times -0.2264\times 0.2313\times 0.1148\times 0.0038\times 0.0010+2$$
$$\times -0.5006\times 0.4768\times 1.9396\times 0.3787\times 0.0048+2\times 0.3384\times 0.1367\times 1.9396\times 0.0009\times 0.0048+2\times 0.7121\times 0.4051$$
$$\times 1.9396\times 0.0010\times 0.0048+2\times -0.4037\times 0.2706\times 1.9396\times 0.4422\times 0.0048+2\times 0.0196\times 0.2313\times 1.9396\times 0.0038$$
$$\times 0.0048+2\times 0.3502\times 0.1148\times 1.9396\times 0.0010\times 0.0048+2\times 0.6243\times 0.4768\times 0.2757\times 0.3787\times 0.1676+2\times(0.2520)$$

$\times 0.1367 \times 0.2757 \times 0.0009 \times 0.1676 + 2 \times 0.4593 \times 0.4051 \times 0.2757 \times 0.0010 \times 0.1676 + 2 \times 0.8056 \times 0.2706 \times 0.2757$

$\times 0.4422 \times 0.1676 + 2 \times 0.4185 \times 0.2313 \times 0.2757 \times 0.0038 \times 0.1676 + 2 \times 0.1451 \times 0.1148 \times 0.2757 \times 0.0010 \times 0.1676$

$+2 \times -0.0922 \times 1.9396 \times 0.2757 \times 0.0048 \times 0.2482$

$= \sqrt{0.0934}$

$=30.56\%$

Let NBL, PICL, KFCL, SBCL, NICL, NEFINSCO, PEFIL, HBL, and NFCL be A, B, C, D, E, F, G, H, and I respectively

FY	$HPR_A - \overline{HPR}_A$	$HPR_B - \overline{HPR}_B$	$HPR_C - \overline{HPR}_C$	$HPR_D - \overline{HPR}_D$	$HPR_E - \overline{HPR}_E$	$HPR_F - \overline{HPR}_F$	$HPR_G - \overline{HPR}_G$	$HPR_H - \overline{HPR}_H$	$HPR_I - \overline{HPR}_I$	$(HPR_A - \overline{HPR}_A)(HPR_I - \overline{HPR}_I)$	$(HPR_B - \overline{HPR}_B)(HPR_I - \overline{HPR}_I)$	$(HPR_C - \overline{HPR}_C)(HPR_I - \overline{HPR}_I)$	$(HPR_D - \overline{HPR}_D)(HPR_I - \overline{HPR}_I)$	$HPR_E - \overline{HPR}_E)(HPR_I - \overline{HPR}_I)$	$(HPR_F - \overline{HPR}_F)(HPR_I - \overline{HPR}_I)$	$(HPR_G - \overline{HPR}_G)(HPR_I - \overline{HPR}_I)$	$HPR_H - \overline{HPR}_H)(HPR_I - \overline{HPR}_I)$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	-0.1056	-1.0008	-0.3893	-0.7831	0.1171	0.0049	0.2320	0.2055	0.1519	0.0827	0.7837	0.3049
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	-0.1522	-1.0987	-0.0370	-0.7357	0.0060	0.0736	0.3645	-0.0099	0.0219	0.1120	0.8083	0.0272
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.1315	-0.9354	0.1950	-0.6565	0.0284	0.0969	0.0046	-0.1756	-0.2591	0.0863	0.6143	-0.1280

2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0156	-0.4005	0.3232	0.4443	0.3174	0.0889	0.1567	0.0906	-0.0599	-0.0069	-0.1779	0.1436
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	-0.0262	3.4356	-0.0918	1.7308	-0.8891	0.0931	0.7718	-0.3848	0.0623	-0.0453	5.9463	-0.1589
Total										$\sum(HPR_A - \overline{HPR_A})(HPR_I - \overline{HPR_I})$ **=-0.4202**	$\sum (HPR_B - \overline{HPR_B})(HPR_I - \overline{HPR_I})$ **= 0.3574**	$\sum (HPR_C - \overline{HPR_C})(HPR_I - \overline{HPR_I})$ **=1.5296**	$\sum (HPR_D - \overline{HPR_D})(HPR_I - \overline{HPR_I})$ **= -0.2742**	$\sum HPR_E - \overline{HPR_E})(HPR_I - \overline{HPR_I})$ **= -0.0829**	$\sum (HPR_F - \overline{HPR_F})(HPR_I - \overline{HPR_I})$ **=0.2288**	$\sum (HPR_G - \overline{HPR_G})(HPR_I - \overline{HPR_I})$ **=7.5383**	$\sum HPR_H - \overline{HPR_H})(HPR_I - \overline{HPR_I})$ **=0.1888**

Covariances

$$\text{Cov (A,I)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{-0.4202}{5-1} = -0.1051$$

$$\text{Cov (B,I)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{0.3574}{5-1} = 0.0894$$

$$\text{Cov (C,I)} = \frac{\sum(HPR_C - \overline{HPR_C})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{1.5296}{5-1} = 0.3824$$

$$\text{Cov (D,I)} = \frac{\sum(HPR_D - \overline{HPR_D})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{-0.2742}{5-1} = -0.0686$$

$$\text{Cov (E,I)} = \frac{\sum(HPR_E - \overline{HPR_E})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{-0.0829}{5-1} = -0.0207$$

$$\text{Cov (F,I)} = \frac{\sum(HPR_F - \overline{HPR_F})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{0.2288}{5-1} = 0.0572$$

$$\text{Cov (G,I)} = \frac{\sum(HPR_G - \overline{HPR_G})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{7.5383}{5-1} = 1.8846$$

$$\text{Cov (H,I)} = \frac{\sum(HPR_H - \overline{HPR_H})(HPR_I - \overline{HPR_I})}{n-1}$$

$$= \frac{0.1888}{5-1} = 0.0472$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

σ_F = Standard Deviation of NEFINSCO's Return = 0.1148

σ_G = Standard Deviation of PEFIL's Return = 1.9396

σ_H = Standard Deviation of HBL's Return = 0.2757

σ_I = Standard Deviation of NFCL's Return = 1.0730

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{96852.61} = 0.3744$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{96852.61} = 0.0009$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{96852.61} = 0.0010$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{96852.61} = 0.4371$$

W_E = Weight of NICL's Wealth

$$= \frac{\text{Market Capitalization of E}}{\text{Total Market Capitalization}}$$

$$= \frac{359.44}{96852.61} = 0.0037$$

W_F = Weight of NEFINSCO's Wealth

$$= \frac{\text{Market Capitalization of F}}{\text{Total Market Capitalization}}$$

$$= \frac{95.00}{96852.61} = 0.0010$$

W_G = Weight of PEFIL's Wealth

$$= \frac{\text{Market Capitalization of G}}{\text{Total Market Capitalization}}$$

$$= \frac{464.09}{96852.61} = 0.0048$$

W_H = Weight of HBL's Wealth

$$= \frac{\text{Market Capitalization of H}}{\text{Total Market Capitalization}}$$

$$= \frac{16054.04}{96852.61} = 0.1658$$

W_I = Weight of NFCL's Wealth

$= 1 - W_A - W_B - W_C - W_D - W_E - W_F - W_G - W_H$

$= 1 - 0.3744 - 0.0009 - 0.0010 - 0.4371 - 0.0037 - 0.0010 - 0.0048 - 0.1658$

$= 0.0113$

Correlation Coefficients

ρ_{AI} = Correlation Coefficient between NBL and NFCL

$$= \frac{Cov(A,I)}{\sigma_A \sigma_I}$$

$$= \frac{-0.1051}{0.4768 \times 1.0730} = -0.2017$$

ρ_{BI} = Correlation Coefficient between PICL and NFCL

$$= \frac{Cov(B,I)}{\sigma_B \sigma_I}$$

$$= \frac{0.0894}{0.1367 \times 1.0730} = 0.5984$$

ρ_{CI} = Correlation Coefficient between KFCL and NFCL

$$= \frac{Cov(C,I)}{\sigma_C \sigma_I}$$

$$= \frac{0.3824}{0.4051 \times 1.0730} = 0.8636$$

ρ_{DI} = Correlation Coefficient between SCBL and NFCL

$$= \frac{Cov(D,I)}{\sigma_D \sigma_I}$$

$$= \frac{-0.0686}{0.2706 \times 1.0730} = -0.2319$$

ρ_{EI} = Correlation Coefficient between NICL and NFCL

$$= \frac{Cov(E,I)}{\sigma_E \, \sigma_I}$$

$$= \frac{-0.0207}{0.2313 \times 1.0730} = -0.0819$$

ρ_{FI} = Correlation Coefficient between NEFINSCO and NFCL

$$= \frac{Cov(F,I)}{\sigma_F \, \sigma_I}$$

$$= \frac{0.0572}{0.1148 \times 1.0730} = 0.4558$$

ρ_{GI} = Correlation Coefficient between PEFIL and NFCL

$$= \frac{Cov(G,I)}{\sigma_G \, \sigma_I}$$

$$= \frac{1.8846}{1.9396 \times 1.0730} = 0.8890$$

ρ_{HI} = Correlation Coefficient between HBL and NFCL

$$= \frac{Cov(H,I)}{\sigma_H \, \sigma_I}$$

$$= \frac{0.0472}{0.2757 \times 1.0730} = 0.0142$$

Now,

$\overline{HPR}_P$

$= W_A \overline{HPR}_A + W_B \overline{HPR}_B + W_C \overline{HPR}_C + W_D \overline{HPR}_D + W_E \overline{HPR}_E + W_F \overline{HPR}_F + W_G \overline{HPR}_G + W_H \overline{HPR}_H + W_I \overline{HPR}_I$

$= 0.3744 \times 0.5781 + 0.0009 \times 0.1011 + 0.0010 \times 0.1686 + 0.4371 \text{x } 0.3935 + 0.0037 \text{ x } 0.0164 + 0.0010 \text{ x } (-0.0431) + 0.0048 \times 1.1564 + 0.1658 \times 0.3941 + 0.0113 \times 0.7040$

$= 46.77\%$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A+W^2_B\sigma^2_B+W^2_C\sigma^2_C+W^2_D\sigma^2_D+W^2_E\sigma^2_E+W^2_F\sigma^2_F+W^2_G\sigma^2_G+W^2_H\sigma^2_H+W^2_I\sigma^2_I}$$

$$+2\rho_{AB}\sigma_A\sigma_B W_A W_B+2\rho_{AC}\sigma_A\sigma_C W_A W_C+2\rho_{BC}\sigma_B\sigma_C W_B W_C+2\rho_{AD}\sigma_A\sigma_D W_A W_D+2\rho_{BD}\sigma_B\sigma_D W_B W_D+2\rho_{CD}\sigma_C\sigma_D$$

$$W_C W_D+2\rho_{AE}\sigma_A\sigma_E W_A W_E+2\rho_{BE}\sigma_B\sigma_E W_B W_E+2\rho_{CE}\sigma_C\sigma_E W_C W_E+2\rho_{DE}\sigma_D\sigma_E W_D W_E+2\rho_{AF}\sigma_A\sigma_F W_A W_F$$

$$+2\rho_{BF}\sigma_B\sigma_F W_B W_F+2\rho_{CF}\sigma_C\sigma_F W_C W_F+2\rho_{DF}\sigma_D\sigma_F W_D W_F+2\rho_{EF}\sigma_E\sigma_F W_E W_F+2\rho_{AG}\sigma_A\sigma_G W_A W_G$$

$$+2\rho_{BG}\sigma_B\sigma_G W_B W_G+2\rho_{CG}\sigma_C\sigma_G W_C W_G+2\rho_{DG}\sigma_D\sigma_G W_D W_G+2\rho_{EG}\sigma_E\sigma_G W_E W_G+2\rho_{FG}\sigma_F\sigma_G W_F W_G$$

$$+2\rho_{AH}\sigma_A\sigma_H W_A W_H+2\rho_{BH}\sigma_B\sigma_H W_B W_H+2\rho_{CH}\sigma_C\sigma_H W_C W_H+2\rho_{DH}\sigma_D\sigma_H W_D W_H+2\rho_{EH}\sigma_E\sigma_H W_E W_H$$

$$+2\rho_{FH}\sigma_F\sigma_H W_F W_H+2\rho_{GH}\sigma_G\sigma_H W_G W_H+2\rho_{AI}\sigma_A\sigma_I W_A W_I+2\rho_{BI}\sigma_B\sigma_I W_B W_I+2\rho_{CI}\sigma_C\sigma_I W_C W_I+2\rho_{DI}\sigma_D\sigma_I W_D W_I+2\rho_{EI}\sigma_E\sigma_I W_E W_I+2\rho_{FI}\sigma_F\sigma_I W_F W_I+2\rho_{GI}\sigma_G\sigma_I W_G W_I+2\rho_{HI}\sigma_H\sigma_I W_H W_I$$

$$=\sqrt{(0.3744)^2(0.4768)^2+(0.0009)^2(0.1367)^2+(0.0010)^2(0.4051)^2+(0.4371)^2(0.2706)^2+(0.0037)^2(0.2313)^2}$$

$$\sqrt{(0.0010)(0.1148)^2+(0.0048)^2(1.9396)^2+(0.1658)^2(0.2757)^2+(0.0113)^2(1.0730)^2}$$

$$+2\times0.4740\times0.4768\times0.1367\times0.3744\times0.0009+2\times0.0726\times0.4768\times0.4051\times0.3744\times0.0010+2\times0.6625\times0.1367$$

$$\times0.4051\times0.0009\times0.0010+2\times0.5765\times0.4768\times0.2706\times0.3744\times0.4371+2\times(-0.0702)\times0.1367\times0.2706\times0.0009$$

$$\times0.4371+2\times0.0958\times0.4051\times0.2706\times0.0010\times0.4371+2\times(-0.1786)\times0.4768\times0.2313\times0.3744\times0.0037$$

$$+2\times(-0.6750)\times0.1367\times0.2313\times0.0009\times0.0037+2\times0.0149\times0.4051\times0.2313\times0.0010\times0.0037+2\times0.5456\times0.2706$$

$$\times0.2313\times0.4371\times0.0037+2\times0.1133\times0.4768\times0.1148\times0.3744\times0.0010+2\times0.4071\times0.1367\times0.1148\times0.00009$$

$$\times0.0010+2\times0.4038\times0.4051\times0.1148\times0.0010\times0.0010+2\times(-0.0716)\times0.2706\times0.1148\times0.4371\times0.0010+2\times(-0.2264)$$

$$\times0.2313\times0.1148\times0.0037\times0.0010+2\times(-0.5006)\times0.4768\times1.9396\times0.3744\times0.0048+2\times0.3384\times0.1367\times1.9396$$

$$\times0.0009\times0.0048+2\times0.7121\times0.4051\times1.9396\times0.0010\times0.0048+2\times(-0.4037)\times0.2706\times1.9396\times0.4371\times0.0048$$

$$+2\times0.0196\times0.2313\times1.9396\times0.0037\times0.0048+2\times0.3502\times0.1148\times1.9396\times0.0010\times0.0048+2\times0.6243$$

$$0.4768\times0.2757\times0.3744\times0.1658+2\times0.2520\times0.1367\times0.2757\times0.0009\times0.1658+2(0.4593)\times0.4051\times0.2757$$

$$\times0.0010\times0.1658+2\times0.8056\times0.2706\times0.2757\times0.4371\times0.1658+2\times0.4185\times0.2313\times0.2757\times0.0037\times0.1658$$

$$+2\times0.1451\times0.1148\times0.2757\times0.0010\times0.1658+2\times(-0.0922)\times1.9396\times0.2757\times0.0048\times0.1658$$

$+2\times(-0.2017)\times0.4768\times1.0730\times0.3744\times0.0113+2\times0.5984\times0.1367\times1.0730\times0.0009\times0.0113+2\times0.8636\times0.4051$

$+2\times0.4740\times0.4768\times0.1367\times0.3744\times0.0009+2\times0.0726\times0.4768\times0.4051\times0.3744\times0.0010+2\times0.0142\times0.2757$

$=\sqrt{1.0730\times 0.1658\times0.0113}$

$=\sqrt{0.1428}$

$=37.78\%$

Let NBL, PICL, KFCL, SBCL, NICL, NEFINSCO, PEFIL, HBL, NFCL, and UICL be A, B, C, D, E, F, G, H, I, and J respectively

FY	$HPR_A - \bar{HPR}_A$	$HPR_B - \bar{HPR}_B$	$HPR_C - \bar{HPR}_C$	$HPR_D - \bar{HPR}_D$	$HPR_E - \bar{HPR}_E$	$HPR_F - \bar{HPR}_F$	$HPR_G - \bar{HPR}_G$	$HPR_H - \bar{HPR}_H$	$HPR_I - \bar{HPR}_I$	$HPR_J - \bar{HPR}_J$	$(HPR_A - \bar{HPR}_A)(HPR_J - \bar{HPR}_J)$	$(HPR_B - \bar{HPR}_B)(HPR_J - \bar{HPR}_J)$	$(HPR_C - \bar{HPR}_C)(HPR_J - \bar{HPR}_J)$	$(HPR_D - \bar{HPR}_D)(HPR_J - \bar{HPR}_J)$	$(HPR_E - \bar{HPR}_E)(HPR_J - \bar{HPR}_J)$	$(HPR_F - \bar{HPR}_F)(HPR_J - \bar{HPR}_J)$	$(HPR_G - \bar{HPR}_G)(HPR_J - \bar{HPR}_J)$	$(HPR_H - \bar{HPR}_H)(HPR_J - \bar{HPR}_J)$	$(HPR_I - \bar{HPR}_I)(HPR_J - \bar{HPR}_J)$
2001/02	-0.1495	-0.0062	-0.2963	-0.2624	-0.1940	-0.1056	-1.0008	-0.3893	-0.7831	-0.5260	0.0786	0.0033	0.1559	0.1380	0.1020	0.0555	0.5264	0.2048	0.4119
2002/03	-0.0081	-0.1000	-0.4954	0.0134	-0.0297	-0.1522	-1.0987	-0.0370	-0.7357	-0.0679	0.0005	0.0068	0.0336	-0.0009	0.0020	0.0103	0.0746	0.0025	0.0500
2003/04	-0.0432	-0.1476	-0.0070	0.2675	0.3947	-0.1315	-0.9354	0.1950	-0.6565	-0.3103	0.0134	0.0458	0.0022	-0.0830	-0.1225	0.0408	0.2903	-0.0605	0.2037
2004/05	0.7143	0.2000	0.3528	0.2039	-0.1349	-0.0156	-0.4005	0.3232	0.4443	0.4651	0.3322	0.0930	0.1641	0.0948	-0.0627	-0.0073	-0.1863	0.1503	0.2066
2005/06	-0.5137	0.0538	0.4459	-0.2223	-0.0360	-0.0262	3.4356	-0.0918	1.7308	0.4391	-0.2256	0.0236	0.1958	-0.0976	0.0158	-0.0115	1.5086	-0.0403	0.7600

Total
$\sum(HPR_A - \overline{HPR_A})(HPR_J - \overline{HPR_J}) = 0.1991$
$\sum(HPR_B - \overline{HPR_B})(HPR_J - \overline{HPR_J}) = 0.1725$
$\sum(HPR_C - \overline{HPR_C})(HPR_J - \overline{HPR_J}) = 0.5516$
$\sum(HPR_D - \overline{HPR_D})(HPR_J - \overline{HPR_J}) = 0.0513$
$\sum(HPR_E - \overline{HPR_E})(HPR_J - \overline{HPR_J}) = -0.0654$
$\sum(HPR_F - \overline{HPR_F})(HPR_J - \overline{HPR_J}) = 0.0878$
$\sum(HPR_G - \overline{HPR_G})(HPR_J - \overline{HPR_J}) = 2.2136$
$\sum(HPR_H - \overline{HPR_H})(HPR_J - \overline{HPR_J}) = 0.2566$
$\sum(HPR_I - \overline{HPR_I})(HPR_J - \overline{HPR_J}) = 1.6322$

Covariance

$$\text{Cov (A,J)} = \frac{\sum(HPR_A - \overline{HPR_A})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.1991}{5-1} = 0.0498$$

$$\text{Cov (B,J)} = \frac{\sum(HPR_B - \overline{HPR_B})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.1725}{5-1} = 0.0431$$

$$\text{Cov (C,J)} = \frac{\sum(HPR_C - \overline{HPR_C})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.5516}{5-1} = 0.1379$$

$$\text{Cov (D,J)} = \frac{\sum(HPR_D - \overline{HPR_D})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.0513}{5-1} = 0.0128$$

$$\text{Cov (E,J)} = \frac{\sum(HPR_E - \overline{HPR_E})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{-0.0654}{5-1} = -0.0164$$

$$\text{Cov (F,J)} = \frac{\sum(HPR_F - \overline{HPR_F})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.0878}{5-1} = 0.0220$$

$$\text{Cov (G,J)} = \frac{\sum(HPR_G - \overline{HPR_G})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{2.2136}{5-1} = 0.5534$$

$$\text{Cov (H,J)} = \frac{\sum(HPR_H - \overline{HPR_H})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{0.2566}{5-1} = 0.0642$$

$$\text{Cov (I,J)} = \frac{\sum(HPR_I - \overline{HPR_I})(HPR_J - \overline{HPR_J})}{n-1}$$

$$= \frac{1.6322}{5-1} = 0.4081$$

Standard Deviations

σ_P = Portfolio Standard Deviation

σ_A = Standard Deviation of NBLs Return = 0.4768

σ_B = Standard Deviation of PICL's Return = 0.1367

σ_C = Standard Deviation of KFCL's Return = 0.4051

σ_D = Standard Deviation of SCBL's Return = 0.2706

σ_E = Standard Deviation of NICL's Return = 0.2313

σ_F = Standard Deviation of NEFINSCO's Return = 0.1148

σ_G = Standard Deviation of PEFIL's Return = 1.9396

σ_H = Standard Deviation of HBL's Return = 0.2757

σ_I = Standard Deviation of NFCL's Return = 1.0730

σ_J = Standard Deviation of UICL's Return = 0.4735

Weights

W_A = Weight of NBL's Wealth

$$= \frac{\text{Market Capitalization of A}}{\text{Total Market Capitalization}}$$

$$= \frac{36259.98}{97050.61} = 0.3736$$

W_B = Weight of PICL's Wealth

$$= \frac{\text{Market Capitalization of B}}{\text{Total Market Capitalization}}$$

$$= \frac{90.00}{97050.61} = 0.0009$$

W_C = Weight of KFCL's Wealth

$$= \frac{\text{Market Capitalization of C}}{\text{Total Market Capitalization}}$$

$$= \frac{94.05}{97050.61} = 0.0010$$

W_D = Weight of SCBL's Wealth

$$= \frac{\text{Market Capitalization of D}}{\text{Total Market Capitalization}}$$

$$= \frac{42337.95}{97050.61} = 0.4362$$

W_E = Weight of NICL's Wealth

$$= \frac{\text{Market Capitalization of E}}{\text{Total Market Capitalization}}$$

$$= \frac{359.44}{97050.61} = 0.0037$$

W_F = Weight of NEFINSCO's Wealth

$$= \frac{\text{Market Capitalization of F}}{\text{Total Market Capitalization}}$$

$$= \frac{95.00}{97050.61} = 0.0010$$

W_G = Weight of PEFIL's Wealth

$$= \frac{\text{Market Capitalization of G}}{\text{Total Market Capitalization}}$$

$$= \frac{464.09}{97050.61} = 0.0048$$

W_H = Weight of HBL's Wealth

$$= \frac{\text{Market Capitalization of H}}{\text{Total Market Capitalization}}$$

$$= \frac{16054.04}{97050.61} = 0.1654$$

W_I = Weight of NFCL's Wealth

$$= \frac{\text{Market Capitalization of I}}{\text{Total Market Capitalization}}$$

$$= \frac{1098.06}{97050.61} = 0.0113$$

W_J = Weight of NFCL's Wealth

$$= 1 - W_A - W_B - W_C - W_D - W_E - W_F - W_G - W_H - W_I$$

$$= 1 - 0.3736 - 0.0009 - 0.0010 - 0.4362 - 0.0037 - 0.0010 - 0.0048 - 0.1654 - 0.0113$$

$$= 0.0021$$

Correlation Coefficients

ρ_{AJ} = Correlation Coefficient between NBL and UICL

$$= \frac{Cov(A,J)}{\sigma_A \sigma_J}$$

$$= \frac{0.0498}{0.4768 \times 0.4735} = 0.2205$$

ρ_{BJ} = Correlation Coefficient between PICL and UICL

$$= \frac{Cov(B,J)}{\sigma_B \sigma_J}$$

$$= \frac{0.0431}{0.1367 \times 0.4735} = 0.6662$$

ρ_{CJ} = Correlation Coefficient between KFCL and UICL

$$= \frac{Cov(C,J)}{\sigma_C \sigma_J}$$

$$= \frac{0.1379}{0.4051 \times 0.4735} = 0.7190$$

ρ_{DJ} = Correlation Coefficient between SCBL and UICL

$$= \frac{Cov(D,J)}{\sigma_D \sigma_J}$$

$$= \frac{0.0128}{0.2706 \times 0.4735} = 0.0999$$

ρ_{EJ} = Correlation Coefficient between NICL and UICL

$$= \frac{Cov(E,J)}{\sigma_E \sigma_J}$$

$$= \frac{-0.0164}{0.2313 \times 0.4735} = -0.1498$$

ρ_{FJ} = Correlation Coefficient between NEFINSCO and UICL

$$= \frac{Cov(F,J)}{\sigma_F \sigma_J}$$

$$= \frac{0.0220}{0.1148 \times 0.4735} = 0.4044$$

ρ_{GJ} = Correlation Coefficient between PEFIL and UICL

$$= \frac{Cov(G,J)}{\sigma_G \sigma_J}$$

$$= \frac{0.5534}{1.9396 \times 0.4735} = 0.6026$$

ρ_{HJ} = Correlation Coefficient between HBL and UICL

$$= \frac{Cov(H,J)}{\sigma_H \sigma_J}$$

$$= \frac{0.0642}{0.2757 \times 0.4735} = 0.4920$$

ρ_{IJ} = Correlation Coefficient between NFCL and UICL

$$= \frac{Cov(I,J)}{\sigma_I \sigma_J}$$

$$= \frac{0.4081}{1.0730 \times 0.4735} = 0.7886$$

Now,

$\overline{HPR}_P$

$= W_A \overline{HPR}_A + W_B \overline{HPR}_B + W_C \overline{HPR}_C + W_D \overline{HPR}_D + W_E \overline{HPR}_E + W_F \overline{HPR}_F + W_G \overline{HPR}_G + W_H \overline{HPR}_H +$
$W_I \overline{HPR}_I + W_J \overline{HPR}_J$

$= 0.3736 \times 0.5781 + 0.0009 \times 0.1011 + 0.0010 \times 0.1686 + 0.4362 \times 0.3935 + 0.0037 \times 0.0164 + 0.0010 \times$
$(-0.0431) + 0.0048 \times 1.1564 + 0.1654 \times 0.3941 + 0.0113 \times 0.7040 + 0.0021 \times 0.2869$

$= 46.74\%$

Portfolio Standard Deviation $\pm_P$

$$\sqrt{W^2_A\sigma^2_A + W^2_B\sigma^2_B + W^2_C\sigma^2_C + W^2_D\sigma^2_D + W^2_E\sigma^2_E + W^2_F\sigma^2_F + W^2_G\sigma^2_G + W^2_H\sigma^2_H + W^2_I\sigma^2_I + W^2_J\sigma^2_J +}$$
$$2\rho_{AB}\sigma_A\sigma_B W_A W_B + 2\rho_{AC}\sigma_A\sigma_C W_A W_C + 2\rho_{BC}\sigma_B\sigma_C W_B W_C + 2\rho_{AD}\sigma_A\sigma_D W_A W_D + 2\rho_{BD}\sigma_B\sigma_D W_B W_D +$$
$$2\rho_{CD}\sigma_C\sigma_D W_C W_D + 2\rho_{AE}\sigma_A\sigma_E W_A W_E + 2\rho_{BE}\sigma_B\sigma_E W_B W_E + 2\rho_{CE}\sigma_C\sigma_E W_C W_E + 2\rho_{DE}\sigma_D\sigma_E W_D W_E +$$
$$2\rho_{AF}\sigma_A\sigma_F W_A W_F + 2\rho_{BF}\sigma_B\sigma_F W_B W_F + 2\rho_{CF}\sigma_C\sigma_F W_C W_F + 2\rho_{DF}\sigma_D\sigma_F W_D W_F + 2\rho_{EF}\sigma_E\sigma_F W_E W_F$$
$$+2\rho_{AG}\sigma_A\sigma_G W_A W_G + 2\rho_{BG}\sigma_B\sigma_G W_B W_G + 2\rho_{CG}\sigma_C\sigma_G W_C W_G + 2\rho_{DG}\sigma_D\sigma_G W_D W_G + 2\rho_{EG}\sigma_E\sigma_G W_E W_G$$
$$+2\rho_{FG}\sigma_F\sigma_G W_F W_G + 2\rho_{AH}\sigma_A\sigma_H W_A W_H + 2\rho_{BH}\sigma_B\sigma_H W_B W_H + 2\rho_{CH}\sigma_C\sigma_H W_C W_H + 2\rho_{DH}\sigma_D\sigma_H W_D W_H$$
$$+2\rho_{EH}\sigma_E\sigma_H W_E W_H + 2\rho_{FH}\sigma_F\sigma_H W_F W_H + 2\rho_{GH}\sigma_G\sigma_H W_G W_H + 2\rho_{AI}\sigma_A\sigma_I W_A W_I + 2\rho_{BI}\sigma_B\sigma_I W_F W_I$$
$$+2\rho_{CI}\sigma_C\sigma_I W_C W_I + 2\rho_{DI}\sigma_D\sigma_I W_D W_I + 2\rho_{EI}\sigma_E\sigma_I W_E W_I + 2\rho_{FI}\sigma_F\sigma_I W_F W_I + 2\rho_{GI}\sigma_G\sigma_I W_G W_I + 2\rho_{HI}\sigma_H\sigma_I W_H W_I$$
$$+2\rho_{AJ}\sigma_A\sigma_J W_A W_J + 2\rho_{BJ}\sigma_B\sigma_J W_B W_J + 2\rho_{CJ}\sigma_C\sigma_J W_C W_J + 2\rho_{DJ}\sigma_D\sigma_J W_D W_J + 2\rho_{EJ}\sigma_E\sigma_J W_E W_J + 2\rho_{FJ}\sigma_F\sigma_J W_F W_J$$
$$+2\rho_{GJ}\sigma_G\sigma_J W_G W_J + 2\rho_{HJ}\sigma_H\sigma_J W_H W_J + 2\rho_{IJ}\sigma_I\sigma_J W_I W_J$$

$$\sqrt{(0.3736)^2(0.4768)^2+(.0009)^2(0.1367)^2+(0.0010)^2(0.4051)^2+(0.4362)^2(0.2706)^2+(0.0037)^2(0.2313)^2}$$
$$+(.0010)^2(0.1148)^2+(0.0048)^2(1.9396)^2+(0.1654)^2(0.2757)^2+2\times(-0.0689)\times0.4520\times0.0963\times0.4281\times0.0023$$
$$+2\times0.6476\times0.4520\times0.1766\times0.4281\times0.0018+2\times0.1705\times0.0963\times0.1766\times0.0023\times0.0018+2\times0.8760\times0.4520\times$$
$$0.3411\times0.4281\times0.5505+2\times(-0.28)\times0.0963\times0.3411\times0.0023\times0.5505+2\times0.1477\times0.1766\times0.3411\times0.0018$$
$$\times0.5505+2\times0.5059\times0.4520\times0.2637\times0.4281\times0.0162+2\times(-0.3072)\times0.0963\times0.2637\times0.0023\times0.0162$$
$$+2\times0.5712\times0.1766\times0.2637\times0.0018\times0.0162+2\times0.8449\times0.3411\times0.2637\times0.5505\times0.0162+2\times(-0.017)\times0.4520$$
$$\times0.1822\times0.4281\times0.0010+2\times0.872\times0.0963\times0.1822\times0.0023\times0.0010+2\times0.4631\times0.1766\times0.1822\times0.0018\times$$
$$0.0010+2\times(-0.1384)\times0.3411\times0.1822\times0.5505\times0.0010+2\times0.0354\times0.2637\times0.1822\times0.0162\times0.0010+2\times$$
$$0.9377\times0.4520\times0.2921\times0.4274\times0.0017+2\times0.1564\times0.0963\times0.2921\times0.0023\times0.0017+2\times0.1318\times0.1766$$
$$\times0.2921\times0.0018\times0.0017+2\times0.8421\times0.3411\times0.2921\times0.5496\times0.0017+2\times0.5764\times0.2637\times0.2921\times0.0162$$
$$\times0.0017+2\times0.0846\times0.1822\times0.2921\times0.0010\times0.0017+2\times0.87\times0.4520\times0.3129\times0.3213\times0.2482+2\times(-0.01)$$
$$\times0.0963\times0.3129\times0.0018\times0.2482+2\times0.089\times0.1766\times0.3129\times0.0013\times0.2482+2\times0.966\times0.3411\times0.3129$$
$$\times0.4132\times0.2482+2\times0.785\times0.2637\times0.3129\times0.0122\times0.2482+2\times0.0509\times0.1822\times0.3129\times0.0008\times0.2482+$$
$$2\times0.8403\times0.2921\times0.3129\times0.0012\times0.2482+2\times(-0.6021)\times0.4520\times0.0316\times0.3190\times0.0072+2\times(-0.3286)\times$$
$$0.0963\times0.0316\times0.0017\times0.0072+2\times0.3584\times0.1766\times0.0316\times0.0013\times0.0072+2$$
$$(-0.1948)\times0.3411\times0.0316\times0.4102\times0.0072+2\times0.2280\times0.2637\times0.0316\times0.0121\times0.0072+2\times0.2779\times0.1822\times$$
$$0.0316\times0.0008\times0.0072+2\times(-0.5850)\times0.2921\times0.0316\times0.0012\times0.0072+2\times(-0.1416)\times0.3129\times0.0316\times$$
$$0.2464\times0.0072+2\times0.2205\times0.4768\times0.4735\times0.3736\times0.0021+2\times0.6662\times0.1367\times0.4735\times0.0009\times0.0021+$$
$$2\times0.7190\times0.4051\times0.4735\times0.0010\times0.0021+2\times0.0999\times0.2706\times0.4735\times0.4362\times0.0021+2\times-0.1498$$
$$\times0.2313\times0.4735\times0.0037\times0.0021+2\times0.4044\times0.1148\times0.4735\times0.0010\times0.0021+2\times0.6026\times0.1.9396\times0.4735$$
$$\times0.0048\times0.0021+2\times0.4920\times0.2757\times0.4735\times0.1654\times0.0021+2\times0.7886\times1.0730\times0.4735\times0.0113\times0.0021$$

$$=\sqrt{0.1432}$$

$$= 37.84\%$$

ANNEX-8

Required Rate of Return

Company	$E(R_i) = R_f + [E(\overline{HPR}_m) - R_f]_i$
HBL	0.0338 + (0.3797– 0.0338) (0.9455) = 36.08%
NBL	0.0338 + (0.3797 – 0.0338) 1.2673= 47.22%
SCBL	0.0338 + (0.3797 – 0.0338) (0.5594)= 22.73%
KFCL	0.0338 + (0.3797 – 0.0338)1.1667= 43.74%
NFCL	0.0338 + (0.3797 – 0.0338)2.2277= 80.44%
NEFINSCO	0.0338 + (0.3797– 0.0338)(0.1766)= 9.49%
PEFIL	0.0338 + (0.3797 – 0.0338) 1.5198 =55.95%
NICL	0.0338 + (0.3797 – 0.0338)(-0.0330)= 2.24%
PICL	0.0338 + (0.3797 – 0.0338)(0.3977) =17.14 %
UICL	0.0338 + (0.3797– 0.0338) 1.4818 = 54.64%

ANNEX-9

Hypothesis III

Calculation of $ò_1$ for JV Banks

FY / Banks	2003/04	2004/05	2005/06	2006/07	2007/08	Grand Total	Average ($ò_1$)
SCBL	0.1311	0.4069	0.6640	0.5974	0.1712	1.9676	0.3935
NBL	0.4286	0.5700	0.5349	1.2924	0.0644	2.8903	0.5781
HBL	0.0048	0.3571	0.5891	0.7173	0.3023	1.9706	0.3941

Calculation of $ò_2$ for Finance Companies

FY / FC	2003/04	2004/05	2005/06	2006/07	2007/08	Grand Total	Average ($ò_2$)
PEFIL	0.1556	0.0577	0.2210	0.7559	4.5920	5.7822	1.1564
NEFINSCO	-0.0625	-0.1091	-0.0884	0.0275	0.0169	-0.2156	-0.0431
KFCL	-0.1277	-0.3268	0.1616	0.5214	0.6145	0.8430	0.1686
NFCL	-0.0791	-0.0317	0.0475	1.1483	2.4348	3.5198	0.7040

Calculation of $ò_3$ for Insurance Companies

FY / IC	2003/04	2004/05	2005/06	2006/07	2007/08	Grand Total	Average ($ò_3$)
NICL	-0.1776	-0.0133	0.4111	-0.0196	-0.1185	-0.0196	0.0164
PICL	0.0938	0.0000	-0.0476	0.3000	0.1538	0.5000	0.1000
UICL	-0.2391	0.2190	-0.0234	0.7520	0.7260	1.4345	0.2869

Computation of MSC and MSE For JV Banks

$ò_1$	$ò_2$	$ò_3$	$(ò_1 - \bar{ò}_1)^2$	$(ò_2 - \bar{ò}_2)^2$	$(ò_3 - \bar{ò}_3)^2$
0.3935	1.1564	0.0164	0.0038	0.4355	0.0139
0.5781	-0.0431	0.1000	0.0151	0.2912	0.0012
0.3941	0.1686	0.2869	0.0037	0.1075	0.0233
	0.7040			0.0431	
$\sum ò_1 = 1.3657$	**$\sum ò_2 = 1.9859$**	**$\sum ò_3 = 0.4033$**	**$\sum(ò_1 - \bar{ò}_1)^2 = 0.0226$**	**$\sum(ò_2 - \bar{ò}_2)^2 = 0.8773$**	**$\sum(ò_3 - \bar{ò}_3)^2 = 0.0384$**

$$\bar{x}_1 = \frac{\sum x_1}{n_1} \qquad \bar{x}_2 = \frac{\sum x_2}{n_2} \qquad \bar{x}_3 = \frac{\sum x_3}{n_3}$$

$$= \frac{1.3657}{3} \qquad = \frac{1.9859}{4} \qquad = \frac{0.4033}{3}$$

$$= 0.4552 \qquad = 0.4965 \qquad = 0.1344$$

Grand mean (mean of the sample mean) = $(\bar{\bar{x}}) = \frac{\bar{x}_1 + \bar{x}_2 + \bar{x}_3}{N}$

$= \frac{0.4552+0.4965+0.1344}{3}$

$= 0.3620$

Now,

SSC = Sum of Square of variation between samples

$= n_1 (\bar{x}_1 - \bar{\bar{x}})^2 + n_2 (\bar{x}_2 - \bar{\bar{x}})^2 + n_3 (\bar{x}_3 - \bar{\bar{x}})^2$

$= 3 (0.4552 - 0.3620)^2 + 4 (0.4965 - 0.3620)^2 + 3 (0.1344 - 0.3620)^2$

$= 0.0261 + 0.0724 + 0.1554$

$= 0.2539$

SSE = Sum of Square of variation within samples

$= \sum\sum(x_j - \bar{x}_j)^2$

$= \sum(x_1 - \bar{x}_1)^2 + \sum(x_2 - \bar{x}_2)^2 + \sum(x_3 - \bar{x}_3)^2$

$= 0.0226 + 0.8773 + 0.0384$

$= 0.9383$

$\therefore$ SST = Total sum of square of variation

$= SSC + SSE$

$= 0.2539 + 0.9383$

$= 1.1922$

ONE-WAY ANOVA Table

SV	SS	d.f.	MSS	F-ratio
Between samples	SSC = 0.2539	$k - 1 = 3 - 1 = 2$	$MSC = \frac{SSC}{k-1} = \frac{0.2539}{2} = 0.1270$	$F = \frac{MSC}{MSE} = \frac{0.1270}{0.1340} = 0.9478$
Within samples	SSE = 0.9383	$n - k = 10 - 3 = 7$	$MSE = \frac{SSE}{n-k} = \frac{0.9383}{7} = 0.1340$	
Total	**SST = 1.1922**	**N – 1 = 10 –1 = 9**		

QUESTIONNAIRE

(PART ONE)

(For Thesis Purpose Only)

Dear Respondent,

Namaskar, this is to inform you that we are having a survey regarding the risk and return and its impact on share price. We assure you that the information provided by you will be kept fully confidential, this is only the purpose of completing the thesis work, and no other use will be acclaimed. So, I am sure that you will provide the necessary information to complete the thesis work at your earliest.

A. Respondent's Details (To be asked to general investors)

Name:

……

……

Age: ……

Gender: Male Female

Education: I) Illiterate ☐ II)Literate ☐

III) Graduate ☐ IV)Post Graduate and Above ☐

Status: I) Unemployed ☐ II) Employed ☐

III) Self employed ☐ IV) Professional ☐

1. Please tick which best describes you the following:

   a. Less informed investors ☐
   b. Informed investors ☐
   c. Well informed ☐
   d. Analysis /Profession investors ☐

2. In which category of investor you belong to regarding the amount of investment? (Please do not include other than common stock)

   a. Small investors (Less than 10000) ☐
   b. Medium investors (Between 10000 to 50000) ☐
   c. Large investors (more than 50000) ☐

B. Responses towards financial instruments

3. How did you come to know about investment alternatives?

   a. Relatives or friends ☐
   b. Media ☐
   c. Self education ☐

4. Please rank these alternatives (Mark 1 to the best and 4 to the worst)

	1	2	3	4
a. Corporate securities				
b. Government securities				
c. Real estates				
d. Bullion (Gold, Silver)				

5. Please mark the best three as per your preference among these financial instruments.

a. Common stock				
b. Preference share				
c. Debentures				
d. Treasury bill				
e. Government bond				

6. Please refer you suffered from the investment during the year.

a. Price increment (Capital gain)				
b. Dividend yield				
c. Less risk				
d. Marketability				

7. What made you buy cooperate securities?

a. Company's goodwill	
b. Company's forecasted profit	
c. Friend and relatives	
d. Advertisement	
e. Culture	

8. Show your preference regarding the return from investment.

a. Dividend	
b. Capital gain	
c. Bonus Share	
d. Presentation in board	
e. Voting rights	

9. Show your preference regarding investment sector.

a. Commercial bank	
b. Finance company	
c. Insurance company	
d. Development bank	
e. Manufacturing company	
f. Trading company	
g. Hotels	

10. Please mention how you take your investment according to risk factors. (Possibilities of losing investment)
    a. Less risky ☐
    b. Quite risky ☐
    c. Riskier ☐
    d. Riskiest ☐
11. Please mention what made you do investment in common stock.
    a. Friend/ relatives ☐
    b. Marketability ☐
    c. Safety ☐
    d. Culture ☐
12. What will you prefer to do if you have gain from your previous investment?
    a. Purchase more securities ☐
    b. Purchase other securities ☐
    c. Save it ☐
    d. Spend on assets ☐
13. Please mention most important factors before making investment?
    a. Company's goodwill ☐
    b. Forecasted profit ☐
    c. Management team and promoters ☐
    d. External environment ☐
    e. Taxation ☐
    f. Inflation ☐
    g. Expected risk level ☐
    h. Liquidity and maturity
14. Please show your preference towards the following:
    a. Normal return and no risk ☐
    b. Small return less risk ☐
    c. Moderate return moderate risk ☐
    d. High return high risk ☐
    e. Super return super risk ☐

15. Please give your opinion regarding following alternatives:

No.	Propositions	1	2	3	4	5
1.	One should not invest whole amount in the same investment instruments, he should form a portfolio of different alternatives					
2.	The best investment sector in the 'Banking'					
3.	Nepalese investors don't have defined preferences they just follow the whim and rumors					
4.	Nepalese investors do detained analysis before investing in corporate securities.					
5.	We don't have wide choice of instruments, so we buy whether floats in market					
6	Government securities yield less than corporate securities, so they are not attractive.					
7	One should first save a certain level of amount very safely like: deposits in bank, then only he has to invest the surplus amount.					

16. Please provide the return (loss) you have received during five fiscal years.

Fiscal year	Name of Company	Investment Amount	Proceed from sale of investment	Dividend received
2002/03				
2003/04				
2004/05				
2005/06				
2006/07				
2007/08				

Thank You.

Interviewer's Name: ……

Date & Place: ……

Name of Campus: Shanker Dev Campus, Putalisadak, Kathmandu.

The end

QUESTIONNAIRE

(PART TWO)

(For Thesis Purpose Only)

Dear Respondent,

Namaskar, this is to inform you that we are having a survey regarding the risk and return and its impact on share price. We assure you that the information provided by you will be kept fully confidential, this is only the purpose of completing the thesis work, and no other use will be acclaimed. So, I am sure that you will provide the necessary information to complete the thesis work at your earliest.

A. Respondent's Details

Name: ……

Age: ……

Designation: ……

B. Responses towards risk return and share price (To be asked to NEPSE members)

1. Information regarding share price and dividend.

1.Nabil Bank Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

2. Himalayan Bank Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

3. Standard Chartered Bank Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

4. Kathmandu Finance Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

5. Nepal Finance and Saving Co. Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	I. Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

6. People Finance co. Ltd

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

7. National Finance Co. Ltd.

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

8. Premier Insurance Co. Ltd

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

9. Nepal Insurance Co. Ltd

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

10. United Insurance Co. Ltd

Fiscal Year	MPS			DPS			Realized Return
	High	Low	Closing	Cash	Stock	Total	
2002/03							
2003/04							
2004/05							
2005/06							
2006/07							
2007/08							
Total							

2. Information regarding Market Capitalization and Outstanding Shares

Company's name	Outstanding Shares	Market Capitalization
NBL		
HBL		
SCBL		
NEFISCO		
PEFIL		
KFL		
NFCL		
PICL		
UICL		
NICL		

Note: This information is based on the date 16th July 2008.

3. Information regarding overall market return. (Please mention the holding period return achieved during six years fiscal period)

Fiscal Year	HPR	Population (listed companies)
2002/03		
2003/04		
2004/05		
2005/06		
2006/07		
2007/08		

4. Index

Fiscal Year	Beginning	Ending
2002/03		
2003/04		
2004/05		
2005/06		
2006/07		
2007/08		

5.T-Bill rate

Fiscal Year	364-days (T-Bill) %
2002/03	
2003/04	
2004/05	
2005/06	
2006/07	
2007/08	
Total	

Thank You

Interviewer's Name: …….

Date & Place:……

Name of Campus: Shanker Dev Campus, Putalisadak, Kathmandu

The end