CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Nepal is located in between the latitude 26°22′to 30°27′ north and in between the longitude 80°4′ to 8°812′ east, and elevation ranges from 90 to 8848 meters. The average length is 885 km east to west and the average breath is 193 km from north to south. The country is bordering between the two most populous countries in the world, India in the east, south and west and china in the north, Nepal is a land locked country and home place of natural beauty with rick natural resources, geographically, the country is divided in three regions, mountain, hill and terai accommodating 7.44 and 49 % of the population respectively, its hydro potentiality, tourist destinations and indigenous cultural wealth are incomparable assets as strengths for the potential economic growth, nevertheless, agricultural sector still occupies about 33 percent fraction of the total GDP of the country.

Nepal is the member of the United Nations and has established diplomatic relation with 113 countries of the world until June, 2001. Major export commodities are pulse, tea, ginger, paste, oil cake, cardamom, readymade garments, handicrafts; economic growth of the country has not improved remarkable over time to overtake population growth. As the country estimated population growth is 2.0 per annum, growing population has concealed the gain achieved by developmental activities.

Nepal stepped on the planned development system in 1957 AD and in these last five decades tenure it experienced. The fruitless taste if 10 plans

passed, away. But may be any reasons, it could not get the satisfactory outcomes that can be really felt.

Now, from the year 2010/11 three years interim plan has been in operation. This plans segment has targeted to achieve the economic growth rate of 5.5 percent. (Agriculture sector by 3.6% and non-agricultural sector by 6.5%)

Since, total growth rate at the end of 10^{th} plan remained just 2.5%. the expected 5.5% rate in coming three years seems ambitions. Industrialization plays a vital role for growth and development of a country. We can trace out industrial development process in Nepal mainly after the establishment of Biratnagar jute mill and udyogparishad in 1936 AD. Now the manufacturing sector contributes about 17% of the gross domestic product. This sector provides about 2 percent employment out of total labour of the country.

People hesitate to invest due to the lack of appropriate knowledge and because of lack of in sufficient capital for investment country should make efforts to encourage people for investment and should create new investment opportunities. For a successful invest one should know his/her own financial condition. Return is the fundamental requirement of investment and a certain level of risk is attached with it. Finance mostly deals with the monetary risk and return which is the most influencing subject matter for an individual and to small large corporation as well.

Securities market plays an important role in the development of economy. As economics develop, retained earnings of firms give away to bank intermediated debt finance and then to emergence of securities market as an additional sources of external finance. Development of securities market hence is necessary for the growth of corporate market makes investment less risky and more attractive.

A liquid security market helps investors to diversity and alters their portfolios to suit their preference of risk and return, now stock market has become a global phenomenon. Day by day, the stock market is becoming one of the important parts of the national economy. However, people do not have idea of how to invest and where to invest, due to the lack of proper investment opportunities.

There is only one stock exchange in the country and it is located in the capital, and there is no other alternative available. In the present trading system (Centralized open outcry trading system) all brokers should gather in the trading floor of the NEPSE to affect the deal. In Nepalese context, the institutional set up of securities market began along with the "Securities exchange Center" (Now Nepal Stock Exchange) in 1977". One serious weakness facing Nepal's stock market is the low participation of investors in securities transaction.

The stock market in Nepal is highly dominated by commercial banks in terms of market capitalization and annual turnover shares of manufacturing companies are taken as worthless instruments.

Industry is the backbone of economic development of nation. In Nepal industries have not been developed to the expected extent in Nepal. So, overcome weak economy of Nepal, it is quite essential to develop manufacturing and processing companies.

Establishing a new enterprise is a risky task because risk comes associated with the investment, so analysis of return is requires, our main objective behind this research is to provide conceptual knowledge of risk of return, which will obviously help to assess profitable investment. Risk is related to future and is uncertain, nevertheless, risk is measurable and manageable, and so it is different from uncertainty. Risk is the changes of losing investment value.

Return can be defined as income received from investment; people invest their belongings with an expectation of getting some reward forleaving its liquidity. Return is expressed as divided plus any change in market price of the share and usually expressed in percent. However, expected return may differ substantially from the actual return on investment in common stock. People show their willingness to invest in those opportunities where they can get higher return.

Capital Assets Pricing Model (CAPM) is an economic model for valuing stock securities derivative and assets by relating risk and expected return, it is based on the idea that investors demand additional expected return (Called the risk Premium) if they are asked to accept additional risk. This model says that this expected return that these investors would demand is equal to the rate on risk-free security plus a risk premium. If the expected return does not meet the required return. The investors will refuse to invest and the investment should not be under taken.

In finance, the Capital Assets Pricing Model (CAPM) is used to determine a theoretically appropriate required rate of return of an asset, if that asset is to be added to an already well-diversified portfolio, given that asset's non-diversifiable risk. The model takes in to account the asset’s sensitivity to non-diversifiable risk (also known as systematic risk or market risk), often represented by the quantity beta.In the financial industry, as well as the expected return of the market and the expected return of a theoretical risk-free asset.

The model was introduced by Treynor, (1961, 1962), Sharpe, (1964), Lintner, (1965) and Mosin, (1996) independently, building on the earlier work of Harry Markowitz on diversification and modern portfolio theory, Sharpe Markowitz and Merton Miller Jointly received

the Nobel memorial prize in economics for this contribution to the field of financial economics.

The CAPM is a model for pricing an individual security or a portfolio. For individual securities, we make use of the Security Market Line (SML) and its relation to expected return and systematic risk (Beta) to show how the market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. Therefore, when the expected rate of return for any security is deflated by its beta coefficient. The reward-to-risk ratio for any individual security in the market is equal to the market reward-to-risk ratio. Thus:

$$E(R_i) = R_F + B_i(E(R_M) - R_F)$$

Where

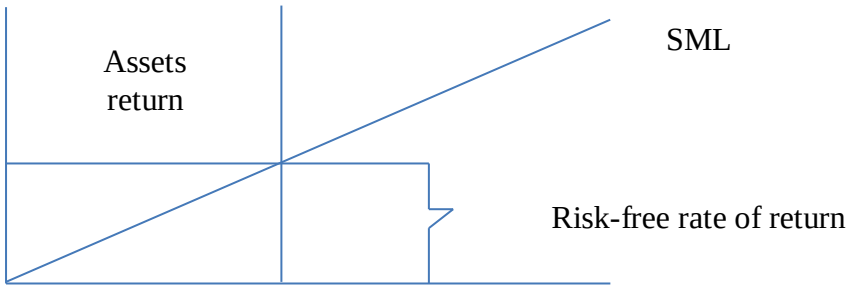
$$E(R_i) = The\ expected\ return\ on\ the\ capital\ assets$$

$$R_F = Risk\ free\ rate$$

$$R_M = The\ expected\ return\ of\ the\ market$$

$$B_i = Beta$$

The security market line, seen here in a graph, describes a relation between the beta and the assets expected rate of return.



Sources: www.google.com

As we know that investor always seeks higher return for undertaking a higher risk that is expressed as risk premium. Therefore, attention should be focused on those securities, which have lower risk and higher return, although return can be increased substantially, risk can be reduced by diversification of funds in different stocks making a portfolio, well diversification can eliminate unsystematic risk, which change in return on the market as a whole cannot be avoided by the diversification, portfolioperforms in terms of not only the earned, but also the risk experienced by the investor. That's way appropriate measure of risk, return and portfolio as well as relevant standard is needed.

1.1.1 Difference Between Manufacturing And Service Organization

Each organization produces some kind of goods and services; some organization produces physical and tangible products whereas the other produces intangible products. Organization manufacturing tangible products are called manufacturing organizations and intangible product are known as service organizations industrial enterprise act 2049 sections (3) sub-section (a) has described a manufacturing industry as "manufacturing goods, products by using of processing raw materials, semi-processed materials or waste materials."

Different Between the Manufacturing and Service Operations Can Be Shown As Follows:

Basis	Manufacturing Operations	Service Operations
Nature of output	It yields tangible output from conversion process.	Service operations produce intangible outputs.
Consumption of output	Output of the manufacturing operations can be consumed over.	Service output is consumed immediately.
Output	Time	Consumed immediately
Degree of Contact	Frequent customer contact is not required in manufacturing operation.	Without customer contact to service can be generated.
Customer participation	Once orders are received; there is no need of customer's participation in conversion process.	In service operations, service generation is impossible without participation customers in the process.
Market	They produce goods for local regional and international people.	They generally provide service for local people.
Process	Complex and interrelated processes are followed in manufacturing operations.	Simple service process is applied in service operations.

Sources: Books, Journals

1.2 Statement of the Problems

This study obviously shows how the Nepalese finance sector is lagged behind due to the lack of information and poor knowledge of investment. Even though individual investor is manipulated and exploited by the financial institution. Investor is responsible to me rational investment decision rather than switching blame to others. Their attitude and perception plays a greater role in investment decision which is influenced by the knowledge and access to the data required for analysis.

But not only general public but also the university graduates and post graduates are unable to analyze risk, return and portfolio while make stock investment decision, when required rate of return and expected rate of return are not equal, then intrinsic value and market value of stock will not be equal. It is also assumed that all stock remain is security market Line (SML) and if the case is not so, they strive towards this line, but theoretical and practical knowledge may not always match with each other.

People assume more risk in stock investment that is real risk. So, it is necessary to build their confident analysis in this field. The unavailability of clear and simple technique is also assumed as a constraint to analyze risk and return of individual stock and portfolio.

1.3 The Main Objectives of the Study

The main objectives of the study is to find out the relationship between stock return and risk of three manufacturing companies and other hand factor affecting return on investment on stock of these three manufacturing companies.

Secondary Objectives

1. To find out the relationships between stock return and risk.

2. To find out the factors affecting returns on investment on stock in Nepal Lever/Unilever Limited, Bottlers Nepal Limited and Arun Vanaspati Udyog Ltd.
3. To suggest and recommend on the basis of major findings.

1.4 Significance of the Study

This study will not only be limited as the partial fulfillment of MBS course of TU, but it is hoped to contributed to Nepalese stock market's development. The study will be more significant for exploring and increasing stock investment. It will also to provide clear vision to visualize manufacturing and processing companies, so that investors may strike their targets and the study will also open many doors to future research in the area of investment management for business.

1.5 Limitations of the Study

Many researches work their own limitation. This study is also not an exception to this fact. So, the study cannot cover all the subject matter.

1. The study is based on secondary data sources.
2. Only five year's recent historical observation are analyzed of three samples.
3. Analysis is mostly based on the tools developed in context of efficient market condition.
4. There may be innumerable factors showing some relationship with return but here, three selected variables are taken into account.

1.6 Organization of the Study

The study has five chapters in total and they include the following sub chapters as mentioned in each chapter as follows.

FIRST CHAPTER: is introduction and it includes background of the study, objectives of the study, statement of problem, significance of the study, limitation of study and its organizations.

SECOND CHAPTER: Review of literature deals with the issue related to the studies, which are already published from of books, articles, journals, reports and other relevant materials.

THIRD CHAPTER: Research Methodology covers on research Design, Research Question and Sample, Time Period, Sources and Nature of Data Collection and Analytical Tools.

FOURTH CHAPTER: Data Presentation and Analysis of the individual company, Inter-firm comparison, Comparison with market, Capital Assets Pricing Model (CAPM), Price Evaluation and Regression Analysis and major findings.

FIFTH CHAPTER: Summary, Conclusion and Recommendation in this chapter summary, conclusion, and recommendation are included based on the research findings.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Introduction

This chapter primarily is concerned with a comprehensive review of recent and relevant literature related to the topic. Theoretical aspect of return is explored on the ground of the research. It is the background of work. It reviews some basic academic courses, books, journals and other related studies, our stock market being in an emerging state, is unable to provide adequate information concerning to the study. So, most of the materials, which reviewed here are published in foreign countries. Some of the master's degree thesis available at Tribhuvan University, which is related to the topic, has also been reviewed to the account while making literature review.

2.1.1 Conceptual Framework

(a) Common Stock:- Common stockholders of a company are its ultimate owners. Collectively they own the company and it is known as risky security. Common stock is the most risky security because the common stock neither ensures an annual return nor ensures for the return of price of stock. Therefore the investment in the common stock is very sensitive on the ground of risk. Even though the context of Nepal. In Nepal, common stock has been a most preferred and popular investments for the corporate firms.

(b) Return:- Return is the required from investment. This reward is the motive towards investment. It is calculated as a single period, multi period and expected rate of return.

(c) Risk:- Risk is related to future and future is uncertain. But risk is the chance of losing investment value. It is a chance of happening some unfavorable event or danger of losing some material value.

(d) Investment:- An investment is a commitment of funds made in the expectation of some positive rate of return. If the investment is properly undertaken, the return will be commensurate with the risk the investor assumes or investment may be define as the purchase by an individual or institution investor of a financial or real asset. That produces a return proportion to the risk assumed over some future investment period.

(e) Finance:- Finance, can be defined as art and science of managing money virtually all individuals and organization earn or raise money and spend or invest money. Financial is concerned with the process institutions markets and instruments involved in the transfer of money among and between individuals business and governments.

(f) Financing Decision:- Financing decision is one of the most important decisions taken by the corporate firm because earning of a firm are also determined by the investment decisions financing decisions also play a crucial role in success of a business.

(g) CAPM:- CAPM is a model that describes the relationship between risk and expected (required) return. In this model a security expected (required) return is the risk-free rate plus a premium based on the systematic risk of the security.

The model is: $R_i = R_F + (R_M-R_F)B_i$ (Van Horne, 2000).

(h) Portfolio:- The objective of portfolio analysis is to develop portfolio that has the maximum return at whatever level or risk the investor deems appropriate. The portfolio manager seeking efficient investment works with two kinds of statistics, expected return statistics

and risk statistics. The expected return and risk statistics for individual assets are the exogenously determined input data analyzed by the portfolio analysis. (Francis, 2001)

A portfolio simply represents the practice among the investors of having their funds in more than on assets. The combination of investment assets is called a portfolio. (Western and Brigham, 2000)

(i) Market Capitalization:- Market capitalization is the market value of all the shares issued by the companies in the market. It is a tool which measures how much is the market value of the company. If the market value per share of the company is higher the company is considered as a better company, otherwise not.

2.1.2 Relation Between Manufacturing Companies And Securities Market

All companies are required to raise funds through different sources of the purpose of acquiring their assets. If the funds are collected through loan, another option for them is to raise the fund through the issuance of and it is possible only with the help of securities market. Hence securities board has provided the facilities for the companies to raise the required funds through the issuance of shares in the primary market. Once, the shares are issued in the primary market. They are needed to be traded in the stock exchange for providing the liquidity for the shareholders. But Nepalese manufacturing companies share are traded in very low quantity in NEPSE which finally shows that the performance of manufacturing companies is NEPSE can be identified by analyzing the market capitalization of manufacturing companies, paid up value of manufacturing companies, NEPSE index of manufacturing companies etc. Some of the factor

showing the performance of manufacturing companies is low in comparison to other and total listed companies in NEPSE.

2.2 Reviews from Books

Books provide the concept knowledge of its related field, our central focus of the review is the trade off return and its implication in the field of investment. Different scholars have defined risk and return differently. Here, some well-known writers' definitions and worldwide accepted books are into considerations.

The returns from holding an investment over some period say, a year is simply any cash payments received due to ownership plus the change in market price, derived by the beginning price. Thus, an investor can obtain two kinds of income from an investment in a share of stock.

1. Income from price appreciation (or losses from price depreciation), sometimes called capital gains (or losses). This quantity is denoted $P_t - P_{t-1}$.
2. Cash flow income from cash dividend or coupon interest payments, represented by the conversation C_t.
3. The sum of these two sources of income (or loss) equals the change in the invested wealth during any given holding period. The rate of return formula can be restated in a form appropriate for almost any investment.

The explanation of return on common stock investment is based on the historical dividend and price data or its expected future data. The return can also be defined on the basis of probability distribution alternative outcome:

Return is defined as the dividend yield plus the capital gain or loss. The relationship between different levels of return on their relative

frequencies is called a probability distribution. We could formulate a probability distribution for the relative frequency of a firm's annual return by analyzing its historical return over the previous year. But we know that history never repeats itself exactly. Hence, analyzing relative frequencies of historical return for the individual company we can form a probability distribution based on historical data plus the analysis for the outlook for the economy and the outlook for the industry the outlook for the firms in its industry and author factors. (Francis, 2001)

The study focuses the common stock investment, Benjamin Graham has described the nature of common stock very apply common stock has one important characteristic and one important speculative characteristic. Their investment value and average market price tend to increase irregularly but persistently over the decades as their net worth builds up through the investment of undistributed earnings. However, most of the time common stocks are subject irrational excessive price fluctuations. in both direction as the consequence of the ingrained tendency of most people to speculate or gamble, i.e. to give way to hope, fear and greed.

Common stocks are also termed as risky securities. But why is it called risky security? What is risk and how is it measured "Risk defined most generally is the probability of the occurrence of unfavorable outcomes. But risk has different meanings is different context. In our context two measures developed from the probability distribution have been as initial measures of return and risk. There are the mean ($\overline{X}$) and the standard deviation of the probability distribution (Western, 1999).

Standard deviation is a measurable that does this since it is an estimate of the likely divergence of actual return from an expected return (Sharpe, 1998).

Investment decision is based on expectation about the future. The expected rate of return for only asset is the weighted average rate of return, using the probability of each rate of return as the weight. The expected rate of return is calculated by summing the products of the rates of returned and their respective probabilities.

Another parameter of return distribution is a measure of dispersion of variability around expected return. The conventional measure of dispersion is the standard deviation. The greater standard deviation of returns is greater the risk of the investment. The variance of an assets rates of return equals the sum of the products of the squared deviations of each possible rate of return occurs.

The square root of the variance of the rates of return is called the standard deviation of the rates of return.

The standard deviation and the variance are equally acceptable and conceptually equivalent quantitative measures of an assets total risk.

But, the standard deviation can sometimes be misleading in comparing. The risk on uncertainty surrounding alternative of they differ in size. To adjust the size, or scale, problem. The standard deviation can be divided by the expected return to compute the coefficient of variation (CV). Thus, the coefficient of variation is a measure of relative dispersion (risk) – a measure of risk per unit of expected return. The larger the CV the larger the relative risk of the investment. (Van Horne, 2000)

Investors rarely place their entire wealth into a single asset or investment. Rather they construct a portfolio or group of investment. Portfolio is simply a combination of two or more securities or assets. (Van Horne, 2000) Combined two or more than two securities help to reduce risk without sacrificing expected return.

The expected return or a portfolio is simply a weighted average of the expected returns of the securities comparing that portfolio. The weighted are equal to the proportion of total funds invested in each security (The weight must sum to 100 percent).

The expected return on a portfolio is simply a weighted of the expected returns on the individual stocks in the portfolio.

However, unlike returns, the riskiness of a portfolio, 6p, is generally not a weighted average of the standard deviations of the individual securities in the portfolio: the portfolio in risk will be smaller than the weighted average of the stocks 6s. (Francis, 2001)

2.3 Reviews from Related Studying

2.3.1 Review from Journals

The underlying fact of finance sector is to show overall financial picture of this related field. Our main aim is to explore the return on common stock and CAPM analysis so as to obtain conclusion of these fact. On the above ground, the journals published in different countries in the context of topic are crucial for the study purpose. But journals are hardly found in Nepal. So, most of the journals published abroad, which is related to the topic, are reviewed here.

The journal of finance, published monthly by American Finance Association from many decades is taken into account. An article published in its value of August 1999 in title Expected Return, Realized return and Assets Pricing Tests. (Elton, 1999)

Elton has attempted to distinguish expected return from the realized rate of return. Almost all of the researchers have been using realized returns as a proxy for expected returns. The use of average realized returns as a proxy for expected returns relies on a belief that information surprise tend

to cancel out over the period of a study and realized returns are, therefore an unbiased estimated of expected returns.

The more logical explanation for those anomalous results is that realized returns are a very poor measure of expected returns and that information surprised highly influence a number of factors in our assets pricing model.

On this ground, he describes the set used in the empirical analysis: The Gov. Px bond price data and the MMS forecast survey data. In order to obtain estimates of expected return, we first need to construct a realized return series on zero coupon bonds of different maturities. To show the relationship between realized return and expected rate of return, he has used price data, survey and announcements data, regression model using different maturity periods. Furthermore, assets pricing in the common stock area has universally involved realized returns as a proxy expected returns.

Testing generally takes one of the three forms. First is the time series testing where sensitivities and risk premiums are simultaneously estimated and the principal tests involve examining the change in explanatory power of the regression constrained to conform to the pricing model relative to the unconstrained regression second is the two-pass procedure-where sensitivities are first estimated and then risk premiums are estimated and the principal test involves the reasonableness of the estimates of the premiums. Both of these case can be done conditionally where sensitivities or premiums of both are allowed to be time varying.

The third procedure is the test of the efficiency of the market portfolio. The problem with using realized returns as a proxy for expected returns is prevalent in all three tests. The nature of this problem is easiest to understand with the third test. The test for the efficiency of the market

portfolio involves the distance between the market portfolio and the efficient frontier.

After scrutinizing all those facts, he finally concluded the anyone using realized returns as expected returns in the long run should get what one expects. Even this weak defense is no longer used and researchers generally treat realized returns as expected returns in their tests without any qualifications. The purpose of this article is to convince the reader that there is a distention and that it is worth our collective efforts to think about alternative ways to estimate expected returns. He has tried to examine some alternatives and confesses that he doesn't have the final answer. However he does hope that he has convinced us that it is a worthwhile search.

A study conducted by Shmuel Kandel and Robert F. Stambaugh in the title, "Portfolio inefficiency and The Cross-Section of Expected Return" is more useful to draw conclusion for the study purpose, Expected returns on a set of risky assets obey an exact linear relation to beats computed an index portfolio that lies on the minimum variance boundary of those assets. If the betas are computed instead against an index portfolio that lies inside the minimum variance boundary, then expected returns must deviate to some degree from any fitted cross-section linear relation.

In fact, the mean-variance location of an inefficient index portfolio bears essentially no relation to the plot of expected returns versus betas. For example, expected returns can display essentially no correlation with betas computed against index portfolios with the same variance. Alternatively, expected returns can display nearly perfect linear relation to betas computed an index portfolio that is grossly inefficient. (Kandel and Stambaugh, 1995)

The writers have finally concluded that an exact linear relation between expected return and betas with respect to a given portfolio ‘P’ occurs if and only if portfolio “p” lies exactly on the minimum variance boundary. If portfolio is at all inefficient, however a plot p in mean variance space. An ordinary least square (OLS) slop and R2 arbitrarily close to zero can occur. When portfolio P is arbitrarily close to the minimum-variance boundary. A near-perfect linear relation can occur, with and desired intercept and slop, if portfolio p is grossly inefficient.

What portfolio p is inefficient, it may be useful to adopt an economic context in which to fit a linear relation between expected return and beta and characterize at a theoretical level, that relations goodness-of-fit. We consider a context of which the quality of the linear relation is judged by its ability to provide fitted expected returns that useful substitute for true expected returns as inputs to a standard one-period portfolio optimization. For a given set of cross-sectional independent variables. Including but not limited to beta, using the expected returns fitted from a general list square (Gil) regression produces a portfolio with a higher expected return than using any other linear combination of the independent variables.

The absence of a relation between the index portfolio relative efficiency and a plot of expected returns versus betas illustrates the difficulty in using and assessing any model that delivers multiple implications. For example, the Capital Assets Pricing Model of Sharpe (1964). Lintner (1965) and Black (1972) deliver two major implications: (i) the market portfolio is mean-variance efficient, and (ii) The relation between expected returns and betas is linear, many finance academics prefer not to view those implications as separate. Since either, one implies the other but such a strict view does not easily accommodate the fact that any financial model is at best a convenient and useful abstraction rather than

an exact representation of reality. That is the strict view does not easily entertain the possibility that for practical purpose, one implication can hold nearly perfectly while the other grossly violated.

In some applications, the implication of interest may be that the market portfolio is mean-variance efficient or in practical terms, very nearly. So, this implication might lead, for example to an index fund portfolio strategy or to the use of a market index as a performance benchmark against which to compare other portfolios of similar volatility. If the models implication of interest in instead the cross-sectional mean-beta relation then we see that the relative efficiency of the index portfolio offers little guidance little guidance as to the properties of such a relation. An additional problem with the mean-beta implication arises, however, even if a linear mean beta relation fits arbitrarily well (but not perfectly) for a given set of "n" assets that all portfolio opportunities, the same relation can still provide a poor approximation for the expected return on another assets (a repacking an assets).

Many applications of the model are likely to use a relation fitted with one set of assets to approximate the expected return on another assets, such as a project in a capital budgeting problem of a managed portfolio in a performance evaluation. Thus unless one takes seriously the possibility that the linear mean beta relation holds perfectly. This implication of the model seems to offer limited applicability.

2.3.2 Review from Thesis

There are many research works or dissertations conducted by different scholars or student in the topic of return analysis. Previous. Dissertations, which are to some extent related to this study, would be taken into considerations. In this context, two these entitled, Risk and Return analysis of manufacturing and processing companies by Damber Bahadur

Gurung and Risk and return analysis of manufacturing company in Nepal by Tekendra Bhattarai are reviewed below.

Mr. Gurung conducted the study on Risk and Return Analysis of listed manufacturing and precession companies by using five-years data of 051/052 to 055/056 BS with taking three samples viz. Nepal battery company limited, Nepal Liver Ltd. And Jyoti Spinning Mills Ltd. Among different objectives the one to analyze and describe the risk and returned of common stock and their portfolio in a simple way has a little relation with this study. He has used different statistical and financial tools with a view to meet the objectives of the research work. He summarizes the finding as:

The beta coefficient of manufacturing and processing companies is not equal to market beta (or β). The correlation between the sample is negative, therefore unsystematic risk (σ) of the portfolio can be reduced.

The common stock of Nepal Battery Company Limited and Nepal Lever Limited are under – priced and that of Jyoti Spinning Mills is overpriced. This implies that under priced and that under priced stock tends to buy and overpriced stock tends to sell.

He further recommends and suggests to manufacturing and processing companies as follows:

Manufacturing and processing companies are getting less return in common stock investment in comparison to risk on it. So, manufacturing and processing companies are strongly advised to make portfolio investment to minimized risk as much as possible.

It is further advised to manufacturing and processing company to keep its financial record up to date.

Another study was conducted by Tekendra Bhattarai titled Risk and Return Analysis of Manufacturing Company in Nepal by using five year data of 1997 to 2001 with five samples. Out of different objectives, the one of to analyze risk of these sectors those can be eliminated through diversification without any cost. (Bhattarai, 2003)

He suggests for portfolio construction by the combination of stocks having negative correlation of return is for advantage than those of having positive. (Bhattarai, 2003)

Mr. Bhattarai concludes his findings as:

Closing price movement of JSM and AVUL stocks shows the prices constantly decreasing and it results into negative return for all the time periods, correlations coefficient of stocks varies from negative to positive range.

Multiple regression analysis based on dependent variable realized rate of return (R1) and independent variable total assets turnover (R2) and comment ratio (R3) shows that relationship of return and assets turnover is positive, but relationship for other independent variables is not clear as per their beta coefficients and other parameters.

Form the above findings and conclusions he further recommends and suggests are as follows:

Stock having negative correlation of returns is for more advantageous than those of having positive.

Investor must be concerned about the systematic risk of common stock. Sometimes stock having less total risk may have more systematic risk. Due to inherent character of systematic risk, that it cannot be diversified away, investors must care about it.

It is suggested to invest on or buy under priced stock whereas priced stock to be sold.

2.4 Reviews from Nepalese Studies

There are normal independent studies conducted in the topic of stock returns and their sensitivities on Nepalese financial sector. Although some studies are available on the same, in this context, various independent studies by finance experts are necessary to discuss to gain various knowledge regarding security market and status of shareholders. And such studies are ultimately helpful to search solutions to the research problems.

A study addressed fundamentals of stock return in the context of Nepal it examines if dividend yield, capital gain yield and total yield are related to farming yield size, book to market ratio and cash flow yield. The study is based on pooled cross sectional data of 40 enterprises whose stock are listed in NEPSE ltd and traded in the stock market. The overall results of study can be summarized as follows:

Earning yield and cash yield have significant positive impact on dividend yield and an insignificant impact on book to market value, whereas size has negative impact on dividend yield. In the case of earnings yield and cash flow yield has found to be more informative than earnings yield.

Capital gain yield is positive influenced by earnings yield and size, whereas the same is negatively influenced by book to market value and cash flow yield. Book to market value has been found to be statically strong in predicting capital gain yield.

Similarly, total yield is positively determined by earnings yield and size, whereas the same is negatively determined by book to market value has been found to be more informative than other variable.

The positive relationship exists among earnings yield, book to market value and cash flow yield. However the size is negatively related to these three variables.

Similarly Prof. Dr. Manohar Krishna Shrestha has also carried out a study in the topic of shareholders democracy and Annual General Meeting Feedback in 1992. This study critically analyzed the situation of common stock investors and the situation that is not improving till now.

Shrestha's study has been divided in two parts; the first part is about the right of shareholders regarding how can they exercise them in democratic prospective, and the second part consists of feedback and issues raised by shareholders at different annual general meeting of public limited companies and financial institutions.

In this study, he mentions that government is not interest in formulating separate act to protect the right of shareholders, although the size of shareholders population in Nepal has been growing constantly and he has viewed the need of separated act regarding the protection of shareholders rights. Company and other acts relating to financial and industrial sector has provisioned rights of the shareholders as: (i) voting right (ii) participation in general meeting (iii) right of getting information (iv) electing as a broad of director (v) participation in the profit and loss of the company (vi) transferring shares (vii) proxy representation.

The collective rights of the shareholders are:

(i) Amend the internal by laws.

(ii) Authorize the sale of assets.

(iii) Inter into mergers.

(iv) Change amount of authorize capital.

Focusing the state of negligence of shareholders Dr. Shrestha argues that some public limited companies have floated the share to the general public without having shareholders representation in the board. There are many such companies which conduct the annual general meeting just to fulfill their desire and do not consider the voice of the majority of the shareholders. Similarly, management involvement and government intervention in the board of election have brought a greater set back in the voting right of the shareholders.

Dr. Shrestha further argues – in many cases the existing authoritarian mentality of management seems to have considered. The shareholders in the managerial plans and policies. Top level decision often by passes the interest of shareholders.

As the management lacks serious concern about the protection of shareholders right and expectations. The annual general meeting has become a platform for shareholders to express opinions and grievance in front of the management and board of directors. Many general meeting feedbacks reveal no serious response to the felling of shareholders. It reflects unwillingness of the management and board of directors to change their traditionally held activities towards shareholders.

Above books, journals and independent studies by different authors are presented here in this chapter, knowledge relating to the topic has been achieved and those studies provided crucial cues for the research purpose.

2.5 Research Gap

This study aims to analyze the return of stock in manufacturing and processing companies. As explained in literature review, Mr. Tekendra

Bhatarrai and Mr. Damber Bahadur Gurung have analyzed the risk and return of five selected companies. Here, besides analyzing the risk and return, the study is designed to find Capital Assets Pricing Model (CAPM) of the selected companies as well. It is the mode, which gives the required rate of return of common stock comparison of Required Rate of Return (RRR) and Expected Rate of Return (ERR) determines whether the stock of overpriced or underpriced. The stock, which have underpriced, investor should make buying strategy for these type of stock, and vice-versa.

CHAPTER THREE

RESEARCH METHALOGY

3.1 Introduction

The research is based on historical data provided by the companies, Financial and statistical tools are used to analyze these data in a scientific manner. The research explores return pattern underlying in manufacturing companies, logical and technical aspects will be the major parts.

There are 18 listed manufacturing companies in Nepal Stock exchange limited, but only three of them viz. Nepal lever/Unilever, Bottlers Nepal limited and Arun Vanaspati Udyog limited, are taken as sample units.

3.2 Research Design

The study is based on analytical and descriptive research design which covers the five years recent historical data from fiscal year 2005/ 2006 to 2010/ 2011. This study deals with the common stock of manufacturing companies on the basics of available information. The study will completed within in a specified period.

3.3 Population and Sample

There are 18 listed manufacturing and processing companies in Nepal stock exchange limited. All listed manufacturing and processing companies and their investors have been considered as the population. This study covers three manufacturing and processing companies viz. Nepal lever/ Unilever limited, Bottlers Nepal limited and Arun Vanaspati Udhyog Limited as sample of total population. This covers the 16.67 percent of total manufacturing and processing companies.

3.4 Sources of Data

Data are mostly collected from the secondary sources. Financial statements and others related prices of the stock (DPS & EPS have been collected from website of NEPSE (www.Nepal stockexchange.com/ Nepal stock). During the study, informal opinion has been taken with the individual investors; annual reports of selected samples are also valuable for this purpose. Similarly, articles, journals related to the manufacturing origins, previous research report etc. Also been considerate into account while collecting information.

3.5 Tools for Analysis

Analytical tools are the key determines of the study. To make this research effective it is essential to analyze those, which influence the return of stock. During the study, various financial tools and statistical and mathematical tools are used for the financial interpretation of market price of stock dividend, return of common stock investment, expected return of common stock, portfolio return, and portfolio risk. Similarly for the statistical analysis and test standard deviation, coefficient of variation, beta coefficient, regression analyses have been used.

3.5.1 Financial Tools

- Market price of stock
- Dividend
- Return of common stock investment
- Expected return of common stock
- Portfolio return
- Portfolio risk

3.5.2 Statistical Tools

- Standard deviation

- Coefficient of variation
- Beta coefficient
- Regression analysis

Market Price of Stock (P):- Market price of stock one of the major data of this study. Each year closing prices has been taken as market price of the stock. Which has been specified time span of one year and the study has focused in annual basis?

Dividend (D):- Dividend is provided to the share holder as the reward on their investment which can be either cash dividend or stock dividend. The total dividend amount can be calculated as follows:

Total dividend amount = cash dividend + (stock dividend % X Next year's MPS)

Return of Common Stock Investment (R):- Income from price appreciation or losses from price depreciation plus cash dividend is known as return, which comes from the change in investor's wealth plus cash flow (if any), as dividend. This change is usually expressed in percent.

Symbolically,

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

Where,

R=rate of return on common stock at time t

P_t= price of a stock at time t

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

D_t= cash dividend received at time t

Expected Return of Common Stock ($\overline{R}$):

Expected return is obtained through summation of mean return of various years dividend by numbers of years. It is also expressed in percent.

Symbolically,

$$(\overline{R}) = \frac{\sum P_t}{N}$$

Where,

$\overline{R}$ = Expected rate of return on stock

N= no of year that the return is taken

$\sum$= sign of summation

Standard Deviation (σ): The square root of the variance of the rates of return is said to be standard deviation. It is used to measure the variability of return distributed or total risk of the investment.

Symbolically,

$$(\sigma) = \sqrt{Var\ (r)}$$

Where,

$$\text{Var (r)} = \sum \frac{\sum(R_t - \overline{R_t})2}{n-1}$$

σ = SD of return on stock t during the time period n.

Coefficient of Variation (CV): It is the ratio of standard deviation of returns to the mean of that distribution. It is generally used to measure the relative risk.

Symbolically,

$$\text{CVj} = \frac{\sigma_j}{R_j}$$

Where,

Cvj = Cofficent of variation on stock j

σ_j= Standard deviation on stock j

R_j= Expected rate of return on stock j

Portfolio Return ($\overline{Rp}$):- portfolio return is combination of two or more securities or asset. It is simply a weighted average of individual stock return. For our study purpose only two assets portfolio is taken into consideration.

Symbolically,

$\overline{Rp}$=W_i R_i+W_j R_j+…….+Wn Rn

Where,

$\overline{Rp}$ = Expected return on portfolio stock i and stock j

W_i = Weight of stock i

W_j = Weight of stock j

W_i+W_j+……+Wn = 1 (total weight)

Portfolio Risk (σ): – portfolio risk is the measure of combined standared deviation for stocks held in portfolio, with reference to individual stocks. Corresponding correlation contribution.

Symbolically,

$$\sigma_p = \sqrt{w_i^2\sigma_i^2 + w_j^2\sigma_j^2 + 2\,w_i w_j r_{ij}\sigma_j\sigma_i}$$

Where,

σ_p = Portfolio Risk or Standard deviation of Portfolio

w_i = Weight or proportion of stock i

w_j = Wight or proportion of stock j

r_{ij} = Corrlation between stock i and j

Regression Analysis

Regression analysis is a statistical device used to establish the functional relationship between two or more than two variables .It is simply a relationship between dependent variables and independent variables. This analysis helps to identify sensitivity of return to various functional variables. In this model, we study the following two relationships.

1. Simple regression model
2. Multiple regression model

In this model, we used the least square regression model.

Simple Regression Model; in this model one dependant variable and one independent variable is used to measure the regression. If y is a liner function of X, Y on X can be expressed as;

$$Y = a + bx$$

Where,

Y = dependant variable

X = independent variable

a, b = regression parameter

Multiple Regression Models :- The regression equation will one dependent variable and more than one independent variables is called multiple regressions. Multiple regression equation with two independent triple regressions can be expressed as:

$Y=a+b_1x_1 +b_2x_2$

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Analysis of Individual Company

Analysis of individual data itself is important for the decision purpose. The stock return and Capital Assets Pricing Model (CAPM) analysis is based on the data related to those terms. Common stocks of these respective companies are presented and analyzed here. Recent Nepalese market movement is analyzed and diagnosed taking special reference to manufacturing and processing companies (MPCs) sector. Table and diagrams are used to make the result more simple and understandable.

4.1.1 Nepal Lever Limited (NLL)

NLL was established in 1994 as a joint-venture company with an objective of establishing a factory to manufacturing soaps, detergents, cosmetic, toiletries, oleaginous, saponaceous, and other chemical products of Hindustan Lever Limited outside India. Authorized capital, paid up capital and issued capital of Nepal Lever Limited are Rs. 30,00,000 Rs. 9,20,70,000 and Rs. 9,20,70,000 respectively. Moreover, its par value per share is Rs. 100. The listed date of NLL's share on stock exchange is 1994/09/22 A.D.

4.1.1.1 Market Per Share (MPS) and Dividend Per Share (DPS)

MPS and DPS record of the common stock of Nepal Lever Limited (NLL) for five year period and shown in table in table 4.1 below.

Table 4.1

MPS and DPS Data of NLL

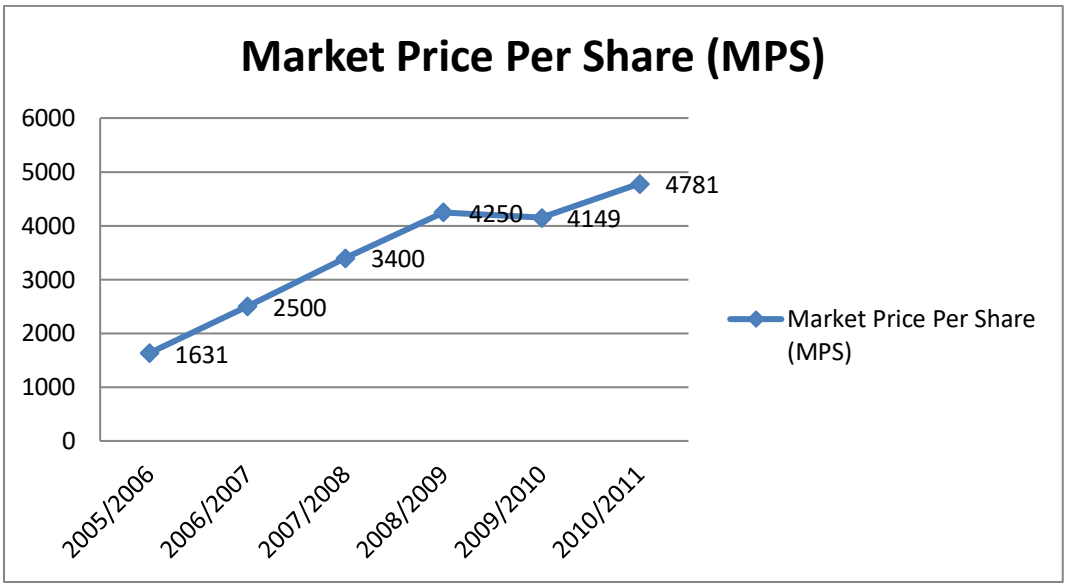
Fiscal Year	Market Price Per Share (MPS)	Dividend Price Per Share (DPS)		Total Dividend
	Closing Price in Rs.	Cash	Stock	
2005/2006	1631	250	-	250
2006/2007	2500	275	-	275
2007/2008	3400	325	-	325
2008/2009	4250	450	-	450
2009/2010	4149	560	-	560
2010/2011	4781	590	-	590

Source: www.nepalstock.com/nepalstock

As the above table 4.1 indicates that the company's closing price is in increasing order. DPS is also continuously increasing in these five years. Generally, company, declares cash dividend. It has not declared stock dividend till now. The price movement of Common Stock (CS) of Nepal Lever Limited (NLL) for the respective years is presented below in diagram 4.1, which shows the true picture of price movement of common stocks.

Figure No. 4.1

Closing Price Movement of CS of NLL



4.1.1.2 Realized Return (R), Expected Return, ($\overline{R}$), and Standard Deviation (σ) of NLL

Table No. 4.2

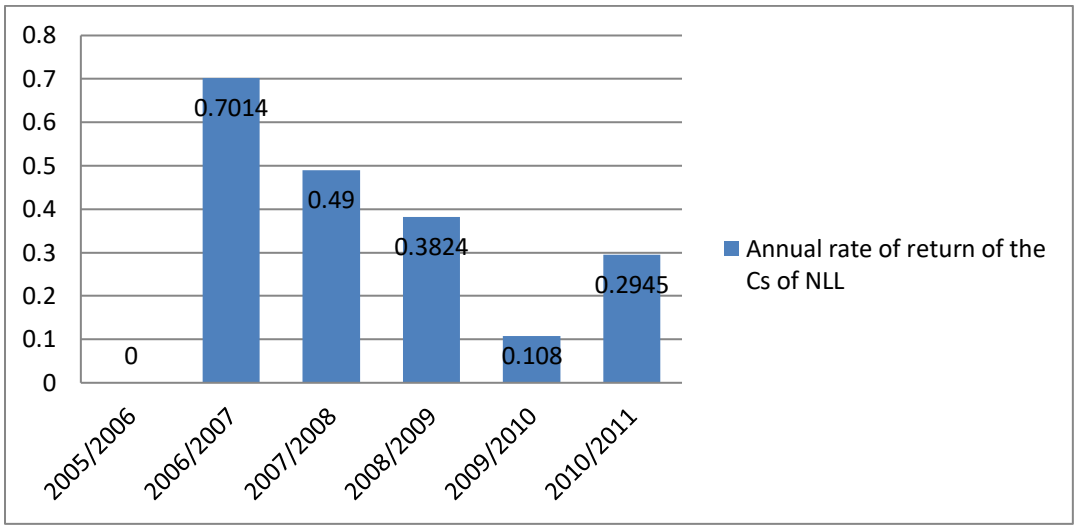
Calculation of R, $\overline{R}$ and σ of The Cs of NLL

Fiscal year	Year end Price	Dividend	R = $\frac{P_t - P_{t-1} + D_1}{P_{t-1}$	R - $\overline{R}$	(R - $\overline{R}$)^2
2005/2006	1631	250	-	-	-
2006/2007	2500	275	0.7014	0.3061	0.0937
2007/2008	3400	325	0.49	0.09474	0.008976
2008/2009	4250	450	0.3824	-0.01286	0.0001654
2009/2010	4149	560	0.108	-0.28726	0.08252
2010/2011	4781	590	0.2945	-0.10076	0.01015
	Total		ΣR_n = 1.9763		$\Sigma(R - \overline{R})^2$ = 0.1955

Source: www.nepalstock.com/nepalstock

Figure No. 4.2

Annual Rate of Return of The CS of NLL



4.1.2 Bottlers Nepal Limited (BNL)

Bottlers Nepal Limited was established as a private limited company in 1973 under the company act. 1964. In 1984, it was converted in to public limited company. The main objective of the company is to produce soft drinks under the brand name of Coke, Fanta, Sprite etc. The company has established a subsidiary company. Bottlers Nepal (Terai) Limited in Chitwan district. F&N Coca-Cola. Pvt. Ltd., Singapore, the major shareholder of the company is managing the company since September 1993. The installed capacity of the plant in 220 bottling per minute (BPM). The company was listed on Nepal Stock Exchange in 1986/11/05.

4.1.2.1 Market Per Share (MPS) and Dividend Per Share (DPS)

MPS and DPS record of the common stock of Bottlers Nepal Limited (BNL) for five year period are shown in Table No. 4.3 below.

Table No. 4.3

MPS and DPS Data of BNL

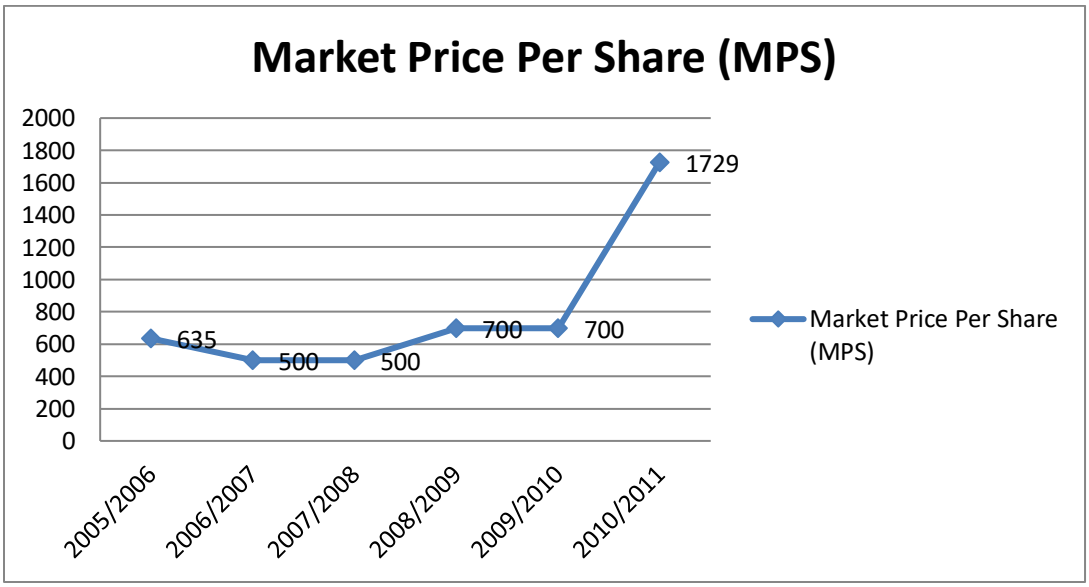
Fiscal Year	Market Price Per Share (MPS)	Dividend Price Per Share (DPS)		Total Dividend
	Closing Price in Rs.	Cash	Stock	
2005/2006	635	-	-	-
2006/2007	500	-	-	-
2007/2008	500	-	-	-
2008/2009	700	-	-	-
2009/2010	700	-	-	-
2010/2011	1729	-	-	-

Source: www.nepalstock.com/nepalstock

As the above table 4.3 indicates that the company's closing price is fluctuating. The company could not declares any dividend neither cash nor stock in last five year.

Figure No. 4.3

Closing Price Movement of CS of BNL



4.1.2.2 Realized Return , Expected Return, ($\overline{R}$), and Standard Deviation (σ) of BNL

Table No. 4.4

Calculation of R, $\overline{R}$ and σ of The Cs of BNL

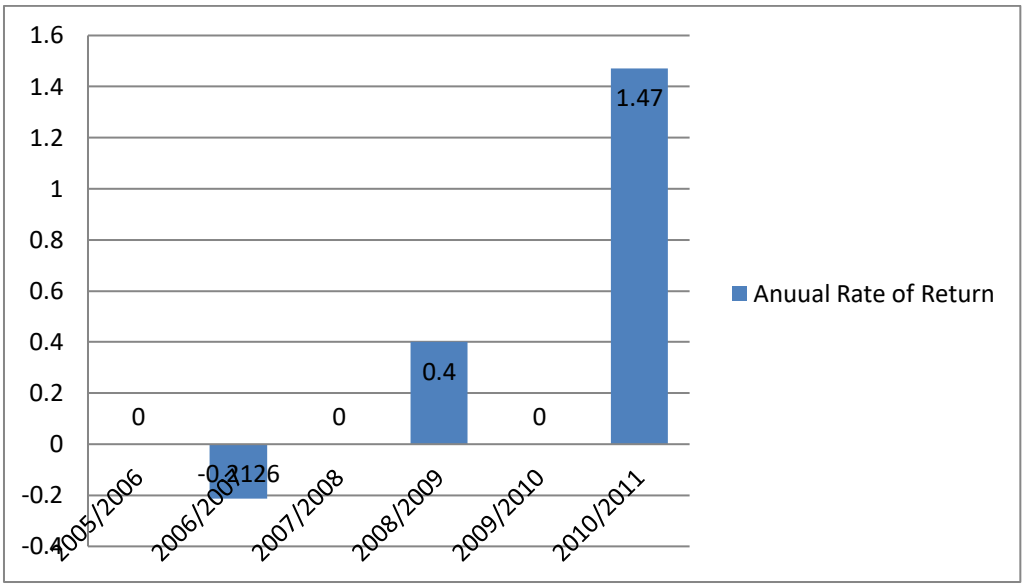
(Amount in Rs.)

Fiscal year	Year end Price	Dividend	R = $\frac{P_t - P_{t-1} + D_1}{P_{t-1}}$	R - $\overline{R}$	(R - $\overline{R}$)^2
2005/2006	635	-	-	-	-
2006/2007	500	-	-0.2126	-0.5440	0.2960
2007/2008	500	-	-	-0.33148	0.10990
2008/2009	700	-	0.4	0.0685	0.00469
2009/2010	700	-	-	-0.33148	0.10981
2010/2011	1729	-	1.47	1.1694	1.13870
	Total		ΣR_n = 1.6574		$\Sigma(R - \overline{R})^2$= 1.659

Source: www.nepalstock.com/nepalstock

Figure No. 4.4

Annual Rate of Return on The CS of BNL



4.1.3 Arun Vanaspati Udyog Limited (AVUL)

4.1.3.1 Market Per Share (MPS) and Dividend Per Share (DPS)

MPS and DPS record of the common stock of Arun Vanaspati Udyog Limited (AVUL) for five year period are shown in Table No. 4.5 below.

Table No. 4.5

MPS and DPS Data of AVUL

Fiscal Year	Market Price Per Share (MPS)	Dividend Price Per Share (DPS)		Total Dividend
	Closing Price in Rs.	Cash	Stock	
2005/2006	58	-	-	-
2006/2007	58	-	-	-
2007/2008	50	-	-	-
2008/2009	58	-	-	-
2009/2010	58	-	-	-
2010/2011	58	-	-	-

Source: www.nepalstock.com/nepalstock

As the above table 4.5 indicates that the company's closing price is slightly fluctuating. The company could not declares any dividend neither cash nor stock in last five year.

Figure No. 4.5

Closing Price Movement of CS of BNL

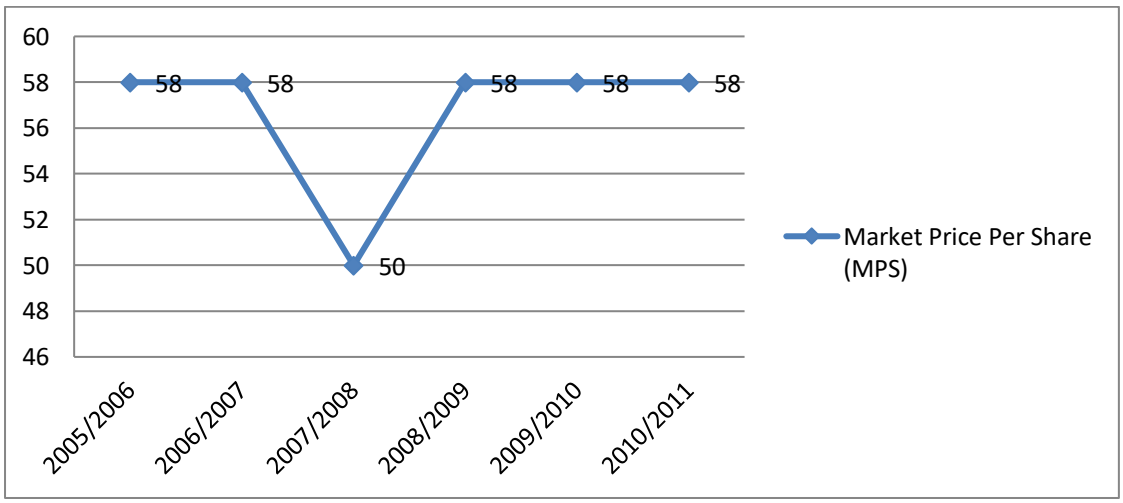


Table No. 4.6

Calculation of R, $\overline{R}$ and σ of The CS of AVUL

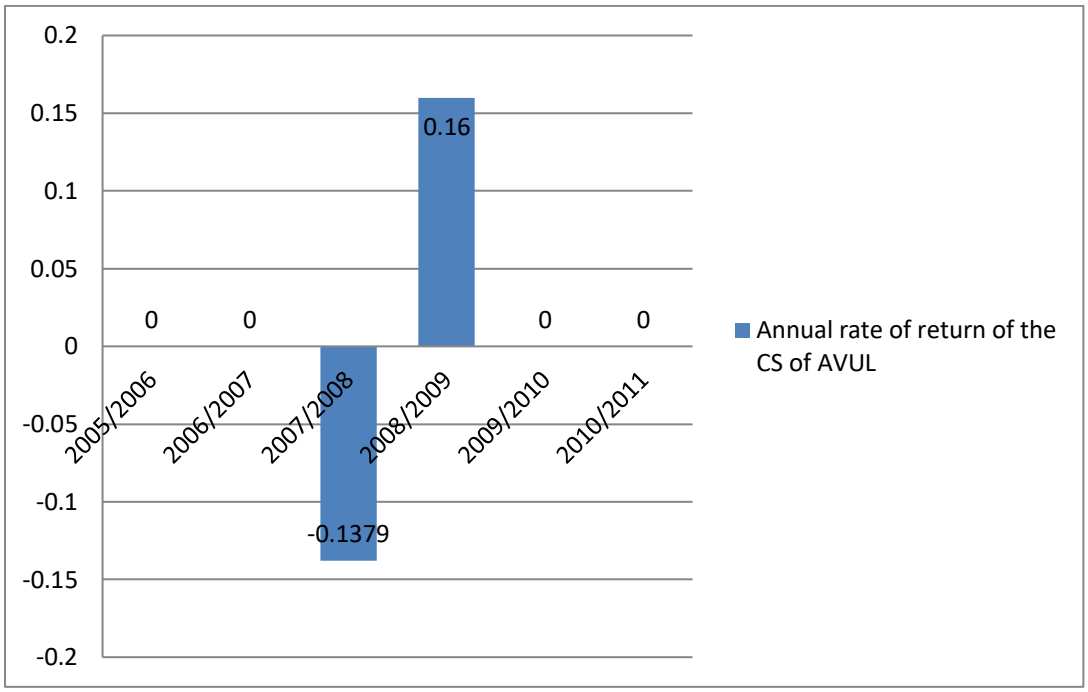
(Amount in Rs.)

Fiscal year	Year end Price	Dividend	R = $\frac{P_t - P_{t-1} + D_1}{P_{t-1}$	R - $\overline{R}$	(R - $\overline{R}$)^2
2005/2006	58	-	-	-	-
2006/2007	58	-	0	-0.00442	0.00001954
2007/2008	50	-	-0.1379	-0.14232	0.020255
2008/2009	58	-	0.16	0.15558	0.02421
2009/2010	58	-	0	-0.00442	0.00001954
2010/2011	58	-	0	-0.00442	0.00001954
	Total		ΣR_n = 0.0221		$\sum(R - \overline{R})^2$= 0.0445

Source: www.nepalstock.com/nepalstock

Figure No. 4.6

Annual Rate of Return on The CS of AVUL



4.2 Inter Firm Comparison

Market Capitalization of three manufacturing companies at 14th July 2011 is shown in the following table.

Table No. 4.7

Market Capitalization of Selected Manufacturing Companies

Companies	Market Capitalization (Rs.)	Percentage
NLL	4401866700	0.5641
BNL	3369625623	0.4318
AVUL	31919894	0.0041
Total	7803412217	

Source: www.nepalstock.com/nepalstock

Market capitalization of NLL is highest (i.e. 56.14%) among other two companies where as the lowest market capitalization is recorded of AVUL (i.e. 0.41%). The portion of capitalization can be shown in figure below:

Figure No. 4.7

Portion of Market Capitalization of Each Sample

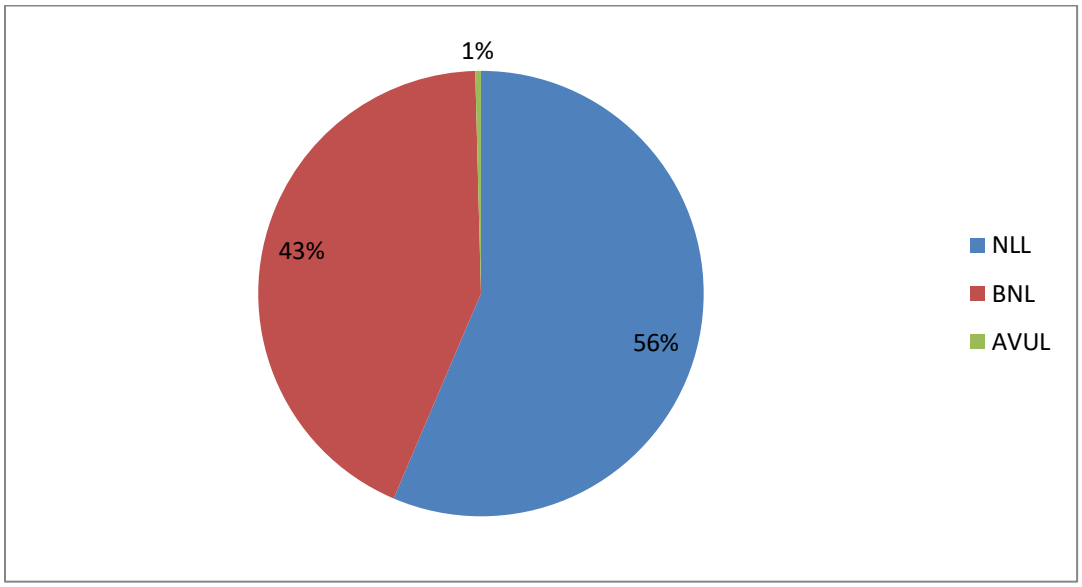


Table No. 4.8

Expected Return, Standard Deviation and Coefficient of Variation of Each Sample.

S.N.	Companies	Expected Return	Standard Deviation	Coefficient of Variations	Remarks
1	NLL	0.39526	0.2211	0.55932	Higher
2	BNL	0.33148	0.6440	1.9430	Lowest σ
3	AVUL	0.00442	0.10549	23.8685	Lowest σ

Source : Appendix IV

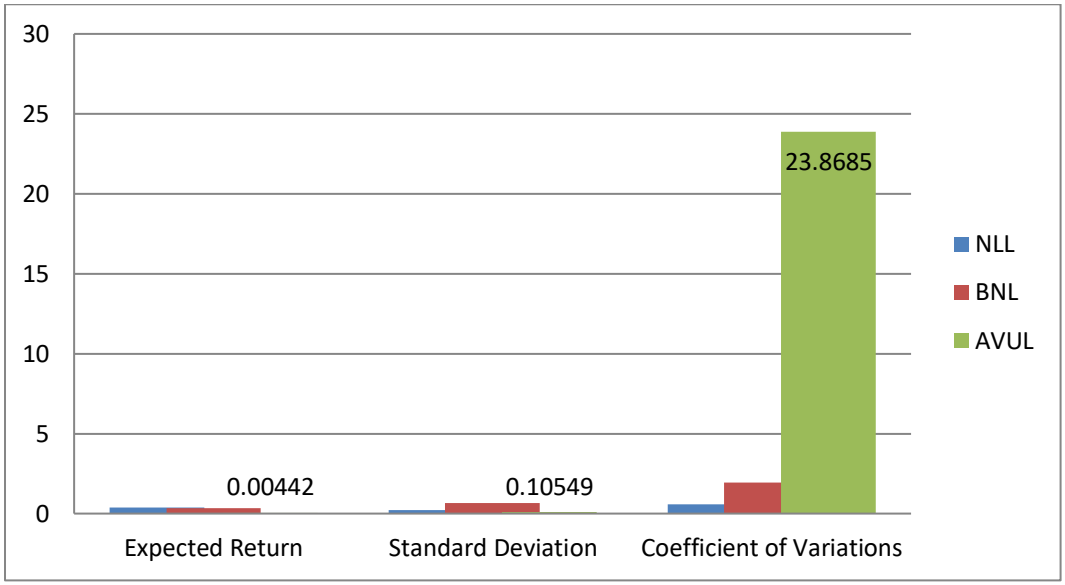
Expected Return, Standard Deviation and Coefficient of Variation are given in table no. 4.8 NLL has higher expected return and also a position

value. Expected return of other two companies are showing positive value but less than NLL. So we can choose NLL in those of other, which stood as 39.53%. It means if the investor invest Rs. 100 in the common in the common stock of NLL, its share holders can earn Rs. 39.53 at the end of the year. The expected returns of other two companies are also showing positive value. Depending exclusively upon expected return, we can say NLL is best of all to invest. CV gives relative measure of risk. It gives us risk per unit of return and hence, make easy to compare assets. Since CV of all three companies are positive.

Depending exclusively upon return statistics, it may lead to change unsuccessful company's stock. So we must use CV while evaluating common stocks. Figure below ascertains the expected return, standard deviation and coefficient of variation on common stock of five companies.

Figure No. 4.8

Expected Return, Standard Deviation and Coefficient of Variation of Each Sample



4.3 Industry-Wise Comparison

A comparison is made on the basis of market capitalization and NEPSE index. The industry wise proportion of the market capitalization is shown in the following table and figure.

Table No. 4.9

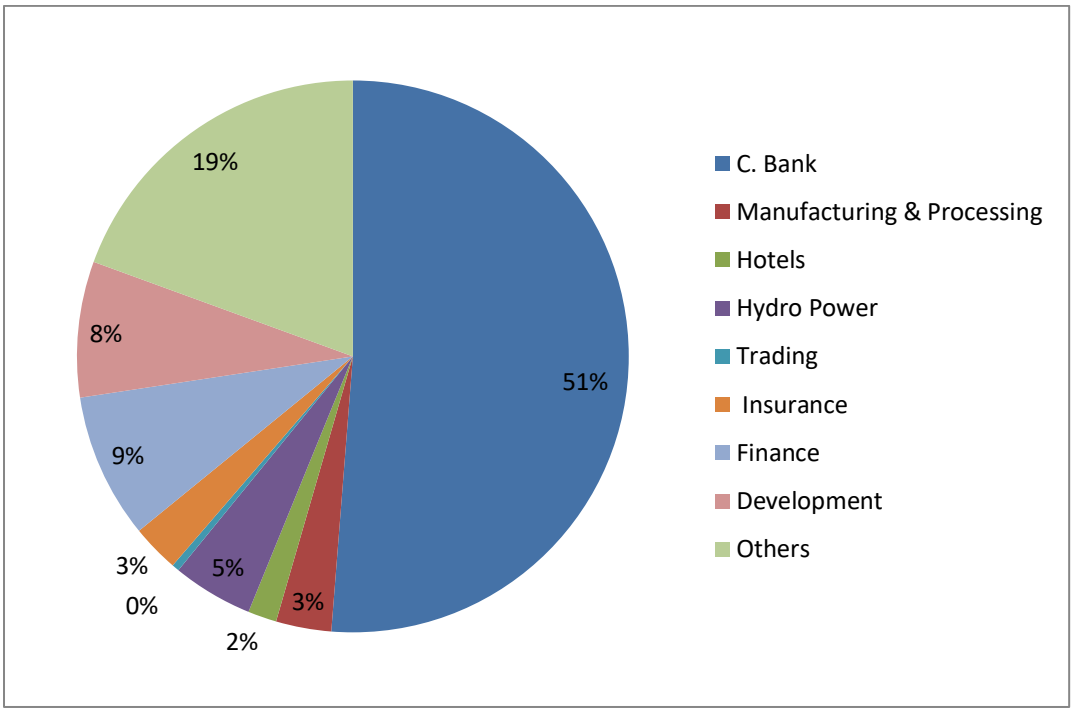
Industry-Wise Capitalization at 14th July 2011

Industry	Market Capitalizations (in Rs.)	Percentage
C. Bank	165775682489	51.25%
Manufacturing & Processing	10495125437	3.244%
Hotels	5448350507	1.684%
Hydro Power	15258747865	4.72%
Trading	1387478992	0.43%
Insurance	9034668202	2.79%
Finance	27476976706	8.495%
Development	25738891205	7.957%
Others	62688423188	19.435%
Total	323484344590	100%

Source: www.nepalstock.com/nepalstock

Figure No. 4.9

Portion of Market Capitalization of Each Sector



The above figure shows the market capitalization of each sector. The market capitalization of the banking sector is highest i.e. 59.20%. Whereas the market capitalization of trading sector is the lowest i.e. 0.43%. Manufacturing sector's market capitalization is 3.244%. The table below shows the year end market capitalization of different industries.

Table No. 4.10

Year End (F.Y.) Market Capitalization of Different Industries.

Year / Industry	2005/06 (Rs. in millions)	2006/07 (Rs. in millions)	2007/08 (Rs. in millions)	2008/09 (Rs. in millions)	2009/10 (Rs. in millions)	2010/11 (Rs. in millions)
C. Banking	39596.17	70068.73	144067.23	302219.29	206282.52	165775.68
Finance	3471.50	4930.63	11491.41	43007.126	29869.59	27476.98
Insurance	3659.86	4852.19	7959.78	10537.49	9756.61	9034.67
Mfg & Pro	4585.66	4619.20	3760.28	7706.089	7592.03	10495.13
Hotel	1016.45	2393.61	1935.59	4851.946	5285.58	5448.35
Trading	802.04	737.39	787.40	1696.355	1617.51	1387.48
Hydropower	-	-	-	21413.724	19959.51	15258.75
Others	4187.73	8012.20	16503.02	94369.457	69019.16	62868.42
D.B	-	-	-	27137.885	27488.87	25738.89

Table No. 4.11

Year / Industry	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
C. Banking	434.3	789.21	985.7	780.87	456.93	328.70
Mfg & Pro	299.94	348.63	423.7	434.32	427.89	591.52
Hotel	180.77	251.47	370.9	367.42	400.26	412.59
Other	410	818.12	768.3	738.99	540.48	492.31
Hydropower	0	847.93	1324.0	1044.81	881.00	673.44
Trading	1481.20	155.37	204.1	295.83	282.08	241.99
Insurance	380.25	612.46	817.3	656.41	548.52	407.14
Finance	261.05	471.82	1152.7	697.61	397.38	303.78
Dev. Bank	291.11	539.66	1285.9	772.56	478.53	294.15
Total	384.6	683.95	963.4	749.10	477.73	362.85

On the basis of industry wise NEPSE index, return of each industry (sector) is calculated and presented in the table given below. Details of calculation are shown in appendix at the end of the chapter.

Table No. 4.12

Year / Industry	2006/07	2007/08	2008/09	2009/10	2010/11
C. Banking	0.8172	0.24897	-0.2078	-0.4148	-0.281
Mfg & Pro	0.1623	0.2153	0.0251	-0.0148	0.3824
Hotel	0.391	0.4799	-0.00938	0.00894	0.0308
Other	0.9954	-0.061	-0.0381	-0.2686	-0.0891
Hydropower	-	0.5614	-0.2109	-0.1568	-0.2356
Trading	0.049	0.3136	0.4494	-0.0465	-0.1422
Insurance	0.6108	0.3345	-0.1969	-0.1644	-0.2577
Finance	0.8074	1.4431	-0.3948	-0.4304	-0.2355
Dev. Bank	0.8538	1.3828	-0.3992	-0.3806	-0.3853
Total	0.7783	0.4086	-0.2224	-0.3623	-0.2405

Table no. 4.12 shows the return of each industry (sector) calculated on the basis of industry wise NEPSE index. Even though industry wise NEPSE index is not available in NEPSE, it is calculated on the basis of data provided and model applied as per NEPSE. Details of calculation of index are not included in the report. Rate of return over the five year period is presented on the above table no. 4.12, which shows the highest return in FY 2006/07 of other sector. In 2006/07, the return of all sectors is positive except Hydropower. The return of manufacturing & processing sector seems so good except year 2009/10.

Table No. 4.13

Expected Return, Standard Deviation and Coefficient of Variation of Mfg & Processing Company

Fiscal year	Rate of return (R_t)	$R_t - \overline{R}_t$	$(R_t-\overline{R}_t)^2$
2006/2007	0.1623	0.00826	0.0000682276
2007/2008	0.2153	0.06126	0.003753
2008/2009	0.0251	-0.12894	0.016663
2009/2010	-0.0148	-0.16884	0.02851
2010/2011	0.3824	-0.22836	0.0521
	ΣR_t= 0.7703		$\sum(R_t-\overline{R}_t)^2$= 0.1011

Source : Appendix I

Table No. 4.14

S.N.	Industry (Sector)	Expected Return ($\overline{R}$)	Standard Deviation (σ)	Coefficient of variation (CV)
1	Com. Bank	0.032514	0.05047	15.53
2	Finance	0.23796	0.8582	3.5782
3	Insurance	0.06526	0.38594	50.914
4	Mfg & Processing	0.15406	0.15898	1.032
5	Hotel	0.1791	0.23404	1.307
6	Trading	0.12466	0.2487	1.99
7	Hydro Power	-0.00838	0.3317	-39.58
8	Dev. Bank	0.2143	0.8462	3.9487
9	Others	0.10772	0.505	4.69
10	Market (NEPSE)	0.07202	0.4965	6.894

Source: Appendix V

Details of calculation have been made of the variables of each industry (besides Mfg & Processing Company) in appendix at the end of chapter. According to the calculation, manufacturing & processing sector has 15.41% returns. On the basis of return point of view other sector is better to invest. But through the view point of risk, it is better to invest in Mfg & Processing sector which have the lower SD than rest sectors. Depending on the CV measure's Hydropower is better due to the (negative) lowest CV than other sector.

4.4 Comparison with Market

4.4.1 Market Risk and Return

In Nepal, there is only one stock market, which is the stock exchange (NEPSE). It is a non-profit organization operation under securities exchange act 1983. Market index of NEPSE index represents the overall market movement. Market return, it's so and CV is shown in the following table.

Table No. 4.15

Realization Rate of Return, Standard Deviation and the Coefficient of Variation of The Market

Fiscal year	**Market Index (MI)**	**R = $\frac{P_t - P_{t-1} + D_1}{P_{t-1}}$**	**R - $\overline{R}$**	**(R - $\overline{R}$)^2**
2005/2006	384.6	-	-	-
2006/2007	683.95	0.7783	0.721	0.5198
2007/2008	963.4	0.4086	0.3513	0.12341
2008/2009	749.10	-0.2224	-0.2797	0.07823
2009/2010	477.73	-0.3623	-0.4196	0.1761
2010/2011	326.85	-0.3158	-0.3731	0.1392
	Total	ΣR_m= 0.2864		$\Sigma(R_m - \overline{R}_m)^2$ = 1.037

Source : Appendix V

Figure No. 4.10

Market Index Movement

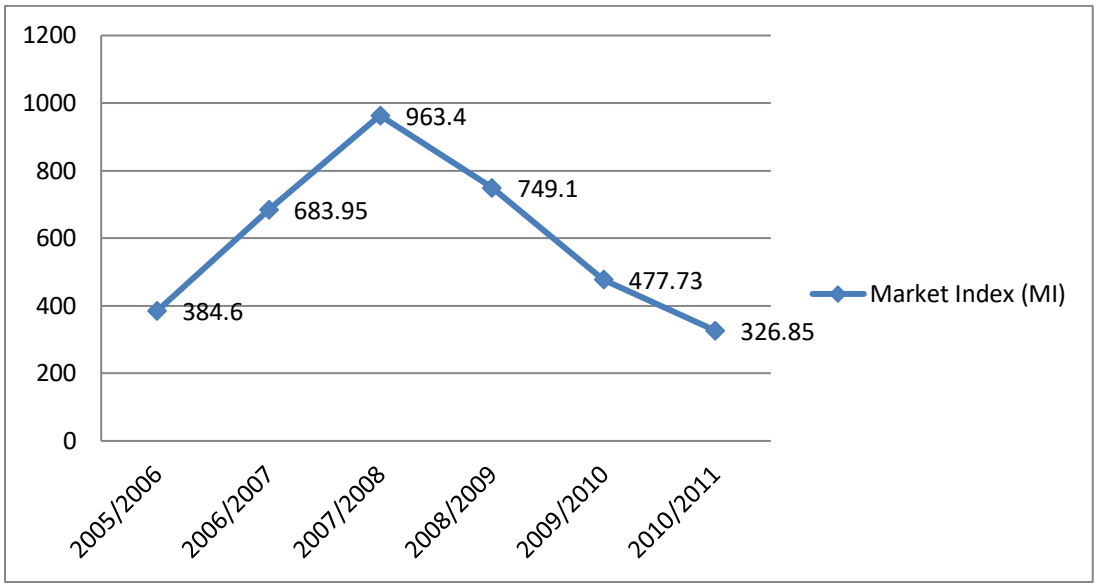
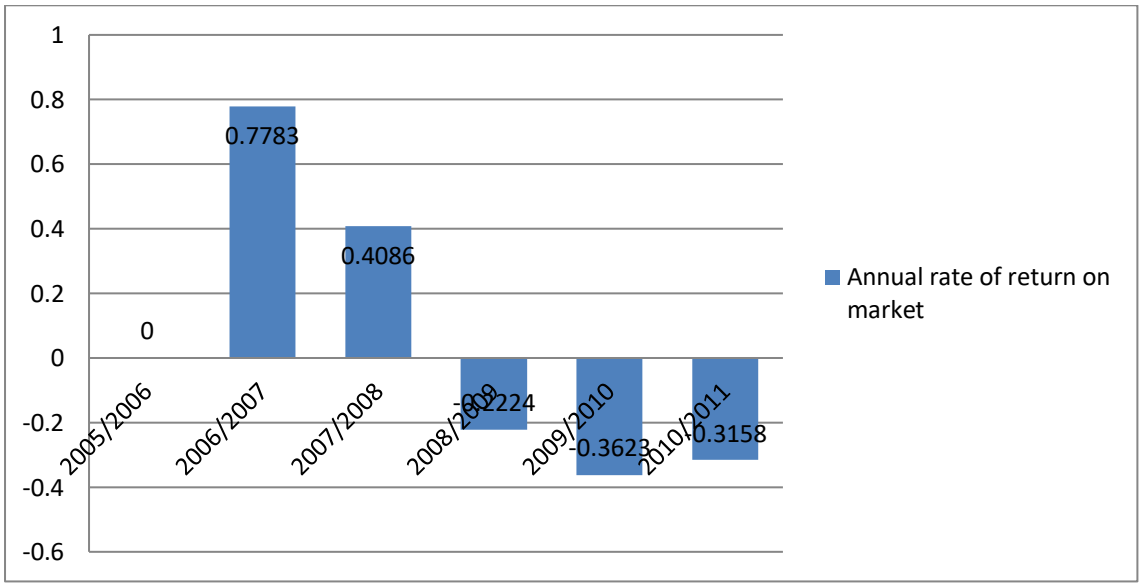


Figure No. 4.11

Annual Rate of Return on Market



4.5 Measurement of Systematic Risk (Beta Risk)

The systematic risk is a portion of the total risk which is the degree of sensitivity of a stock's return to market movement. To market investment choices, many professionals and investors use beta to compare stock's

market risk of that of other stock and the market as a whole. As per CAPM, expected return should relate to its degree of systematic risk and not to its degree of total risk, market sensitivity of sock is explained by its beta coefficient, measure of systematic risk.

Beta measure the systematic risk of a stock. Beta of market (β_m) = 1 (Always) $Beta^{-1}$, one percent change in the market return will cause exactly one percent change in the stock's return (average type).

Beta<1, a change in the market returns causes less than proportionate change in that stock's return. One percentage increase (or decrease) in the market returns will cause less than one percentage increase (or decrease) in stock's returns (defensive type).

Beta>1, a stock's return will increase (or decrease) by more than one percentage for ever percentage increase (or decrease) in the market returns (aggressive type).

Negative Beta: a beta less than zero are possible but highly unlike. In this case, the stock's return would tend to rise whenever return on other stock's falls.

Hence, the stock having lesser beta is always preferable to the company having higher beta.

As already mentioned, the knowledge of systematic risk helps to know details about effects of diversification, CAPM and price situation and in turn beta helps to identify portion of systematic of sample companies. Details of calculation are not presented here. It is presented in appendix at the end of the chapter.

Table No. 4.16

Beta Coefficient of Selected Mfg & Pro. Companies

S. N.	Companies	Beta	Remarks
1	Nepal Liver Limited (NLL)	0.401	B<1
2	Bottlers Nepal Limited (BNL)	-0.7958	Negative Beta
3	Arun Vanaspati Udyog Limited (AVUL)	-0.0898	Negative Beta

Source : Appendix II

Above table shows, the beta coefficient of three selected manufacturing companies. Beta of two companies stock (BNL, AVUL) has negative & the beta of NLL has less than 1 (one). It indicates that the stock return is less than the market returned. Therefore the B<1, implies that a stocks returns are less sensitivity to market fluctuations and the stock is considered to be the defensive type. Beta coefficient of BNL & AVUL are negative i.e. -0.07958, -0.0898 respectively. This movement pattern is just opposite to that of market after analyzing the above beta. BNL beta has the lowest than other stock beta. So, the BNL stock is less volatile than other stock.

4.6 Capital Assets Pricing Model (CAPM) and Price Evaluation

The CAPM is based on the efficient market hypothesis & provides a basis to measure the systematic risk (beta coefficient) in terms of covariance of its return with the market returns. It is the mode which gives the required rate of return of common stock. Required rate of return is risk free rate plus risk premium. Capital market theory shows the market premium ($_m$-R_F) weight by the systematic risk (β) of individual security. Comparison of required rate of return (RRR) and expected rate of return (ERR)

determines whether the stock is overpriced or underpriced. The capital assets pricing model addresses the following issues:

- Measurement of an assets systematic risk (beta).
- Appropriate premium for an asset's systematic risk (r_p).
- Required rate of return on risky asset.
- Basis for the selection of individual stocks according to individual preferences.

Table below shows the RRR, ERR and Price situation.

Table No. 4.17

RRR, ERR and Price Situation

S.N.	MPLs	Beta (β_j)	RRR = R_F + (R_m – R_F) β_j	ERR	Evaluation Price
1	NLL	0.401	0.0529	0.3953	Undervalued
2	BNL	-0.7958	0.0442	0.33148	Undervalued
3	AVUL	-0.0898	0.0493	0.00442	Overvalued

Where,

R_F = Risk free rate of return i.e. 5%.

R_m = Market rate of return i.e. 0.0573 = 5.73%

(R_m - R_F) = 0.0573 – 0.05 = 0.0073 is the risk premium MKT.

∴Risk free rate is assumed 5%.

Table no. 4.17 shows the RRR, ERR and Price Evaluation of sample companies. As we already mentioned, it can be determined whether the stock is underpriced or overpriced with comparison of ERR and RRR. If RRR is less than ERR, stock is said to be underpriced and investor should

buying strategy for these type of stock, and vice versa. Average rate of return of NLL and BNL are 39.53% and 33.148% respectively. Where RRR are less than ERR, so their stock have undervalued or underpriced. AVULs stock is called overprice/overvalued because its RRR is greater than ERR. To induce investors to accept their systematic risk, it is better to have stock undervalued.

4.7 Regression Analysis

Regression analysis is designed to ascertain if there is some kind of relationship between the average return and variance fundamental variation of the company. In this context, we are using only linear relationship (if any). For the analysis, average return of sample companies are taken as dependent variable and fundamental variables of return (i.e. Beta coefficient and Market Capitalization) are chosen as independent variables. The input data and details of regression result are presented in appendix.

4.7.1 Simple Regression Analysis

Simple regression model is applied as average return (AR) is dependent and beta coefficient (β) is independent variable. The model is:

$Y = a + bx$

Where,

Y = Average return

a = Intercept (Constant)

x = Beta Coefficient

The result is presented in table below:

Table No. 4.18

Regression of Average Return on Beta Coefficient Regression Equation AR = a + bβ

Dependent	Intercept	Regression Coefficient	R^2
AR	0.0173	0.2465	0.02699

Source: Appendix II

The results presented in table no. 4.18 indicate that the regression result shows a negative relationship between AR and Beta. One rupee decrease in beta leads to rupee 0.2465 decrease in A/R with keeping other variables constant. The coefficient of determination (R^2) is 0.02699 which indicates that 11.43% of total variation in average return can be explained by beta.

4.7.2 Multiple Regression Analysis

It is necessary to know the effect on average return of manufacturing and processing companies. For overall result, this study covered the data of FY 2006/07 to 2010/11 of sample companies. The study here, examined the relationship between average return with beta coefficient and market capitalization. For this purpose, following regression model is applied as:

$Y = a + b_1x_1 + b_2x_2$

Y = Average return

A = Intercept

x_1 = Beta Coefficient

x_2 = Market Capitalization

The results of the multiple regressions are presented in table below.

Table No. 4.19

Regression of Average Return on Beta and Market Capital

Regression Equation AR = a + $b_2\beta_1$ + $b_2$mc

Dependent	Intercept	Regression Coefficient of Beta		R^2
		Beta	MC	
AR	0.3049	0.621	0.1178	0.2521

Source: Appendix II

The above results presented the multiple regressions between beta and mc. In this expression average return and beta shows the positive relation. The value of coefficient determination R^2 is 0.2521. This indicates that 25.21% of total valuation in average return can be explained by independent variances.

4.8 Portfolio Analysis

The objective of portfolio analysis is to be reducing risk and maximize return. By combining securities of low risks with securities of high risks, success can be achieved by in making a choice of investment outlets. Here, we use the weighted proportion is equal in four selected companies (stock). Which is use in assumption i.e. equal in all securities?

- **Portfolio Return ($\overline{R}_p$):** The expected return on portfolio is simply the weighted average of expected return on the individual stock in the portfolio with the weights being. The fraction of the total portfolio invested in each stock. This is calculated by using this formula.

$$\overline{R}_p = W_N\overline{R}_N + W_B\overline{R}_B + W_A\overline{R}_A$$

$$= 0.3333 \times 0.3953 + 0.3333 \times 0.3315 + 0.3333 \times 0.00442$$

$$= 0.24373$$

Where,

W_N = Weight or proportion of NLL

$\overline{R}_N$ = Return of NLL

W_B = Weight of Proportion of BNL

$\overline{R}_B$ = Return of BNL

W_A = Weight of Proportion of AVUL

$\overline{R}_A$ = Return of AVUL

By using this formula we find that $R_p = 0.24373$ for three selected companies.

- **Portfolio Risk (σ_p):** Expected risk on a portfolio is a function of the proportions invested in the components the riskiness of the components and correlation of returns on the component securities. It is measured by standard deviation and calculated by using this formula:

$$\sigma_p^2 = W_N^2\sigma_N^2 + W_B^2\sigma_B^2 + W_A^2\sigma_A^2 + 2W_NW_B \text{ Cov } (R_NR_3) + 2W_BW_A \text{ Cov } (R_BR_F) + 2W_NW_A \text{ Cov } (R_NR_A)$$

Where,

σ_p^2 = Portfolio risk or standard deviation of portfolio

W_N = Weight or proportion of stock N

W_B = Weight or proportion of stock B

W_A = Weight or proportion of stock A

Cov. NB = Covariance between stock N and B

Cov. NA = Covariance between stock N and A

Cov. BA = Covariance between stock B and A

4.9 Major Findings

1. Among the three selected enterprises, the expected return on Nepal Lever Limited (NLL) is high return, i.e. (39.53%) and rest two companies Bottlers Nepal Limited (BNL) and Arun Vanaspati Udyog Limited (AVUL) has also positive return i.e. (33.148% and 0.442% respectively)
2. Standard deviation shows that most of the enterprises are quit risky as it compared with return. The ranking of the company from lower risk to higher risk can be found as AVUL, NLL and BNL. All enterprises have positive CV but CV of BNL and AVUL has more than one. It means less the CV, more will be the uniformity; consistency etc. and more the CV, less will be the uniformity, consistency etc.
3. Comparison among industries indicates the strong position of other sector as comparing with different sectors. Expected return, standard deviation and coefficient of variation of market 5.73%, 50.91% and 8.88 respectively.
4. The beta coefficient of selected companies rang in between 0.401 to -0.7959 times. NLL has lowest beta risk and AVUL and BNL shows the negative beta which shows the opposite relation with market.
5. CAPM provides a basis to measure the systematic risk in term of co-variance of its return with the market return: study shows the common stock of all sample enterprises (besides AVUL) are underpriced/undervalued as these lies above the CAPM line and investors should make better to buying strategy. AVUL stock is overpriced /overvalued as it lies below the CAPM and it is better to selling strategy.

6. Regression analysis shows the negative relationship between AR and Beta.
7. Portfolio analysis shows the portfolio return of three selected companies is 0.24373 and portfolio risk is 0.2066.

CHAPTER FIVE

Summary, Conclusion and Recommendation

5.1 Summary

Return is the primary requirement of any investment. It can be calculated by using various financial and statistical tools. People show their willingness to invest in those opportunities where they can get higher return. They invest their belongings with an expectation of getting same reward for leaving its liquidity.

Capital Assets Pricing Model (CAPM) is an economic model for valuing stock securities derivative and assets by relating risk and expected return. This model says that the expected return of investors is equal to the rate on risk-free-security plus a risk premium. If the expected return does not meet the required return, the investors will refuse to invest and the investment should not be undertaken.

Industry is the back bone of economic development of nation. In Nepal industries have not been developed to the expected extent. The stock market in Nepal is highly dominated by commercial banks in terms of market capitalization and annual turnover shares of manufacturing companies are taken as worthless instruments.

Due to the various limitation and constraints three manufacturing companies viz. Nepal Lever/Unilever Limited, Bottlers Nepal Limited and Arun Vanaspat Udyog Limited are taken as sample for the study which is listed in Nepal Stock Exchange (NEPSE).

1. In this research, NLL is giving highest return among the three selected companies. So we choose NLL in return point of view.
2. In comparison with risk, BNL has lower risk.

3. Among industry, wise comparison the "other sector" (except Hydro Power) has strong position in return point of view but it has higher risk low.
4. Study shows the common stock of all sample enterprises (besides AVUL) are underpriced/undervalued as these lie above the CAPM line and it is better for buying strategy. AVUL stock is overpriced/overvalued as these lie below the CAPM line and investor should make better to selling strategy.
5. Regression analysis shows the negative relationship between AR and Beta. Moreover, portfolio analysis shows the portfolio return of three selected companies is 0.24313 and portfolio risk is 2066.

5.2 Conclusion

From the statistical and financial analysis of the sample manufacturing and processing company's data, we can draw the following conclusions.

1. Among the three selected enterprises, the expected return of Nepal Lever Limited (NLL) is highest, so we choose NLL in return point of view. NLL stock is underpriced/undervalued as it lies above the CAPM and it is better to buying strategy.

2. SD shows that most of the enterprises are quit risky as it compared with return. AVUL has lower risk. So, it is better to invest this companies but it has overpriced/overvalued as it lies above the CAPM and it is better to selling strategy. BNL has higher risk but it has underpriced/undervalued as it lies below the CAPM and it is better to buying strategy.

3. The beta coefficient of selected companies range in between 0.401 to -0.7958 times, NLL has lowest beta risk and AVUL and BNL

shows the negative beta which shows the opposite relation with market.

4. Portfolio analysis shows that the portfolio return of three selected companies is 0.24373 and portfolio risk is 0.2066 main objective of portfolio analysis is to minimize risk and maximize return.

5.3 Recommendation

Recommendation and suggestions are prescribed here on the basis of analyzed data and findings of this research.

1. To assess profitable investment, it is better to measure the coefficient of variation because CV is a measure of relative dispersion (risk), a measure of risk per unit of expected return and more useful than absolute one i.e. SD of a give security.
2. Manufacturing company is stocks returns and risks have very divergent in nature. Therefore, it is suggest considering these while investing in this sector.
3. From the risk point of view, it is suggest to individual investor that the entire investment fund should not be invested only in single assets.
4. Investor should have a very close look to the company. Where he/she want varies widely from one company to another. Therefore, the investor should select the promising and top companies according to the ranking only then, his/her investment can be work full.
5. CAPM model provides a basis for the selection of individual stocks according to individual preference. It can be determined whether the stocks is underpriced or overpriced with comparison of ERR and RRR. If RRR is less than ERR, stock is said to be

undervalued/underpriced and if ERR is less than RRR, stock is said to be overvalued/overpriced. So, if suggests to buy the undervalued/underpriced stock and to sell overvalued/overpriced stock.

6. According to CAPM model, investors are rewarded for bearing market risk. Therefore, he/she must care about it.
7. Regression results suggest that beta coefficient tend to have positive effect average return. It means when the beta increases, the riskiness of the firm also increases and vice versa. So, additional increase in beta will be rewarded by extra return.

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Appendix-I

Table 4.14

Expected Return, Standard Deviation and Coefficient of Variation of Different Industry.

1. C. Banking

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.8172	0.7848	0.6158
2007/2008	0.24897	0.2165	0.04687
2008/2009	-0.2078	-0.240314	0.0578
2009/2010	-0.4148	-0.440314	0.2001
2010/2011	-0.281	-0.3135	0.09828
Total	$\Sigma R_t = 0.16257$		$\Sigma(R_t - t)^2 = 1.019$

We have,

(i) Expected Return ($\overline{R}$) = 0.032514 = 3.25%

(ii) Standard Deviation (σ) = 0.5047

(iii) Coefficient of Variation (CV) = 15.53

2. Finance

Fiscal Year	Rate of return (R_t)	$(R_t - \bar{t})$	$(R_t - \bar{t})^2$
2006/2007	0.8074	0.58944	0.3243
2007/2008	1.4431	1.22514	1.501
2008/2009	-0.3948	-0.61276	0.3755
2009/2010	-0.4304	-0.60836	0.4467
2010/2011	-0.23550	-0.47346	0.2239
Total	$\Sigma R_t = 1.18898$		$\Sigma(R_t - \bar{t})^2 = 2.90$

We have,

(i) Expected Return ($\overline{R}$) = 0.23796 = 23.796%

(ii) Standard Deviation (σ) = 0.8582

(iii) Coefficient of Variation (CV) = 3.5982

3. Insurance

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.6108	0.54554	0.2976
2007/2008	0.3345	0.26924	0.0725
2008/2009	-0.1969	-0.26216	0.06873
2009/2010	-0.1644	-0.22966	0.0527
2010/2011	-0.2577	-0.32296	0.1043
Total	$\Sigma R_t = 0.3263$		$\Sigma(R_t - t)^2 = 0.5958$

We have,

(i) Expected Return ($\overline{R}$) = 0.06526 = 6.526%

(ii) Standard Deviation (σ) = 0.38594

(iii) Coefficient of Variation (CV) = 50914

4. Mfg & Processing

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.1623	0.00824	0.0000679
2007/2008	0.2153	0.06124	0.00375
2008/2009	0.0251	-0.12896	0.0166
2009/2010	-0.0148	-0.16886	0.02851
2010/2011	0.3824	0.22834	0.05214
Total	$\Sigma R_t = 0.7703$		$\Sigma(R_t - t)^2 = 0.1011$

We have,

(i) Expected Return ($\overline{R}$) = 0.15406 = 15.406%

(ii) Standard Deviation (σ) = 0.15898

(iii) Coefficient of Variation (CV) = 1.032

5. Hotel

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.391	0.2119	0.0449
2007/2008	0.4749	0.2958	0.0875
2008/2009	-0.00938	-0.18848	0.0355
2009/2010	0.00894	-0.17076	0.0292
2010/2011	0.0308	-0.1483	0.02199
Total	$\Sigma R_t = 0.89566$		$\Sigma(R_t - t)^2 = 0.219$

We have,

(i) Expected Return ($\overline{R}$) = 0.179132 = 19.91%

(ii) Standard Deviation (σ) = 0.23404

(iii) Coefficient of Variation (CV) = 1.307

6. Trading

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.049	-0.07566	0.00572
2007/2008	0.3136	0.18894	0.0357
2008/2009	0.4494	0.32474	0.1055
2009/2010	-0.0465	-0.17116	0.0293
2010/2011	-0.1422	-0.26086	0.0712
Total	$\Sigma R_t = 0.6233$		$\Sigma(R_t - t)^2 = 0.247$

We have,

(i) Expected Return ($\overline{R}$) = 0.12466 = 12.47%

(ii) Standard Deviation (σ) = 0.2487

(iii) Coefficient of Variation (CV) = 1.99

7. Hydro Power

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	-	-	-
2007/2008	0.5614	0.56978	0.3246
2008/2009	-0.2109	-0.20252	0.0410
2009/2010	-0.1568	-0.14842	0.2203
2010/2011	-0.2356	-0.22722	0.05162
Total	ΣR_t = -0.0439		$\Sigma(R_t - t)^2$ = 0.44

We have,

(i) Expected Return ($\overline{R}$) = -0.00838 = -0.838%

(ii) Standard Deviation (σ) = 0.3317

(iii) Coefficient of Variation (CV) = -39.58

8. Development Bank

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.8538	0.6395	0.4089
2007/2008	1.3828	1.1685	1.3654
2008/2009	-0.3992	-0.6153	0.3764
2009/2010	-0.3806	-0.5949	0.3539
2010/2011	-0.3853	-0.5996	0.35952
Total	$\Sigma R_t = 1.0715$		$\Sigma(R_t - t)^2 = 2.864$

We have,

(i) Expected Return ($\overline{R}$) = 0.2143 = 21.43%

(ii) Standard Deviation (σ) = 0.8462

(iii) Coefficient of Variation (CV) = 3.9487

9. Others

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.9954	0.88768	0.788
2007/2008	-0.061	-0.16872	0.02847
2008/2009	-0.0381	-0.14582	0.02126
2009/2010	-0.2686	-0.37632	0.1416
2010/2011	-0.0891	-0.19682	0.03874
Total	$\Sigma R_t = 0.5386$		$\Sigma(R_t - t)^2 = 1.02$

We have,

(i) Expected Return ($\overline{R}$) = 0.10772 = 10.772%

(ii) Standard Deviation (σ) = 0.505

(iii) Coefficient of Variation (CV) = 4.69

10. Market (NEPSE)

Fiscal Year	Rate of return (R_t)	$(R_t - t)$	$(R_t - t)^2$
2006/2007	0.7783	0.7063	0.4988
2007/2008	0.4086	0.3366	0.1133
2008/2009	-0.224	-0.29602	0.0876
2009/2010	-0.3623	-0.4343	0.1886
2010/2011	-0.2405	-0.3125	0.0977
Total	$\Sigma R_t = 0.3601$		$\Sigma(R_t - t)^2 = 0.986$

We have,

(i) Expected Return ($\overline{R}$) = 0.07202 = 7.202%

(ii) Standard Deviation (σ) = 0.4965

(iii) Coefficient of Variation (CV) = 15.53

Appendix II

Details of calculation of Beta Coefficient of sample companies

Calculation of Beta (β) of NLL

Fiscal Year	$R_N - _N$	$(R_m - m)$	$(R_N - _N)(R_m - m)$
2006/2007	0.3061	0.721	0.2207
2007/2008	0.09474	0.3513	0.03328
2008/2009	-0.01286	-0.2797	0.003597
2009/2010	-0.28726	-0.4196	0.12053
2010/2011	0.10076	-0.3731	0.3759
$\Sigma(R_N - _N)(R_m - m)$			0.4147

We have,

Cov (R_m, R_N) = 0.1039

Beta (β) = 0.401

Calculation of Beta (β) of BNL

Fiscal Year	$R_N - _N$	$(R_m - _m)$	$(R_N - _N)(R_m - _m)$
2006/2007	-0.5440	0.721	0.392224
2007/2008	-0.33148	0.3513	-0.11645
2008/2009	0.0685	-0.2799	0.01916
2009/2010	-0.33148	-0.4196	0.1391
2010/2011	1.1694	-0.3731	-0.4363
$\Sigma(R_N - _N)(R_m - _m)$			-0.825

We have,

Cov (R_m, R_N) = -0.2063

Beta (β) = -0.7958

Calculation of Beta (β) of AVUL

Fiscal Year	$R_N - _N$	$(R_m - _m)$	$(R_N - _N)(R_m - _m)$
2006/2007	-0.00442	0.721	-0.003187
2007/2008	-0.14232	0.3513	-0.0499
2008/2009	0.15558	-0.2797	-0.04352
2009/2010	-0.00442	-0.4196	0.001855
2010/2011	-0.00442	-0.3731	0.001649
$\Sigma(R_N - _N)(R_m - _m)$			-0.0931

We have,

Cov (R_m, R_N) = -0.02328

Beta (β) = -0.0898

Appendix III

Regression Result as Average Return (AR) Depends on Beta Coefficient (β) & Market Capitalization (MC)

S.N.	Companies	Dependent (AR)	Independent	
			Beta (β)	Market Capitalization (MC)
1	NLL	0.3953	0.401	0.5641
2	BNL	0.33148	-0.7958	0.4318
3	AVUL	0.00442	-0.0898	0.0041

Calculation of Simple Regression

Beta (X)	AR (Y)	X^2	Y^2	XY
0.401	0.3953	0.161	0.1563	0.1585
-0.7958	0.33148	0.6333	0.1099	-0.2638
-0.0898	0.00442	0.00806	0.00001954	-0.000397
ΣX = -0.0485	ΣY = 0.7312	ΣX^2 = 0.8024	ΣY^2 = 0.2662	ΣXY = -0.1057

According to principle of least square two normal equations for estimating two numerical constants a and b are given by

$\Sigma Y = na + bx$ …….. (i)

$\Sigma XY = a\Sigma X + b\Sigma X^2$ …….. (ii)

Now putting the above value in the normal equation

$0.7312 = 3a + (-0.485)\ b$ …….. (iii)

$-0.1057 = -0485a + 0.8024b$ …….. (iv)

Again,

Solving eq. (iii) and eq. (iv)

$$\begin{array}{r} 0.3546 = 1.455a - 0.2352b \\ -0.03171 = -1.455a +\_\ 2.4072b \\ \hline 0.0375 = 2.172b \end{array}$$

$\therefore b = 0.0173$

Again, putting the value of b in the eq. (iii)

$0.7312 = 3a + (-0.485 \times 0.0173)$

$0.7312 = 3a + (-0.00837)$

$\therefore a = 0.2465$

Again, calculation of coefficient of determination (R)

We have,

$r = -0.1643$

Again, $r2 = -0.1643 \times -0.1643$

$= 0.02699$

From the above calculation we find,

Regression coefficient of beta (β) = 0.2465

Intercept (a) = 0.0173

Coefficient of determination (r) = -0.1643

$(r^2) = 0.02699$

Calculation of multiple regressions

X_1 (AR)	X_2 (Beta)	X_3 (MC)	X_1^2	X_2^2	X_3^2	X_1X_2	X_1X_3	X_2X_3
0.3953	0.401	0.5614	0.1563	0.161	0.3152	0.1585	0.2219	0.2251
0.3315	-0.7958	0.4318	0.1099	0.6333	0.1865	-0.02638	0.1431	-0.03436
0.00442	-0.0898	0.0041	0.00020	0.0081	0.0000168	-0.0003969	0.000018	-0.00037
ΣX_1 = 0.7312	ΣX_2 = -0.485	$\Sigma X_3 = 1$	ΣX_1^2 = 0.266	ΣX_2^2 = 0.8024	ΣX_3^2 = 0.5017	ΣX_1X_2 = -0.1057	ΣX_1X_3 = 3650	ΣX_2X_3 = 0.11887

The multiple regression equation of dependent variable AR (X_1) on two independent variable $\beta(X_2)$ and MC (X_3) is given by

$\Sigma X_1 = na + b_1\Sigma X_2 + b_2\Sigma X_3$ Eq. (i)

$\Sigma X_1X_3 = a_1\Sigma X_1 + b_1\Sigma X_1^2 + b_2\Sigma X_1X_2$ Eq. (ii)

$\Sigma X_2X_3 = a_1\Sigma X_2 + b_1\Sigma X_1X_2 + b_2\Sigma X_2^2$ Eq. (iii)

Substituting these values in above equation

$0.7321 = 3a + (-0.485)\, b_1 + 1 \times b_2$ Eq. (iv)

$0.3650 = 0.7312 + 0.266 \times b_1 + (-0.1057)\, b_2$ Eq. (v)

$-0.11887 = (-0.485a) + (-0.1057)\, b_1 + 0.8024 \times b_2$ Eq. (vi)

Now, multiplying equation (iv) by 0.7312 and eq. (v) by 3 then subtracting equation (v) from (iv) we

$0.5347 = 2.1936a + (-0.3546)\, b_1 + b_2$

$\_1.095 = \_2.1936 +\_\ 0.798b_1 + (-0.3171)\, b_2$

$-0.5603 = -1.1526b_1 + 1.3171b_2$ Eq. (vii)

Again, multiplying eq. (iv) by 0.485 and eq. (v) by 3 they from eq. (vi) from eq. (iv), we get adding

$0.3546 = 1.455a + 235\ b_1 + 0.485\ b_2$

$-0.3566 = \_1.455a - 0.3171b_1 + 2.4072\ b_2$

$-0.002 = -0.5521b_1 + 2.8922b_2$ Eq. (viii)

Also multiplying equation (vii) by 0.5521 and eq. (viii) by 1.1526. They are subtracting eq. (viii) from eq. (vii). We get,

$-0.3093 = -0.6364b_1 + 0.7272b_2$

$-_{+}0.00231 = -_{+}0.6364b_1 +\_\ 3.334b_2$

$-0.30699 = 2.6068b_2$

$\therefore b_2 = 0.1178$

Again, putting the value of b_2 in eq. (vii)

$-0.5603 = -1.152b_1 + 1.3171 \times 0.1178$

Or $-0.5603 = -1.1526b_1 + 0.1551$

Or $-0.7154 = -1.1526b_1$

$\therefore b_1 = 0.621$

Again, putting the value of b_1 and b_2 in eq. (iv). we get,

$0.7312 = 3a – 0.485 \times 0.62 + 0.1178$

Or $0.7312 = 3a – 0.3012 + 0.1178$

Or $0.7312 = 31 – 0.1834$

$\therefore a = 0.3049$

Calculation of coefficient of multiple determinations is given by

Calculation of Covariance Between NLL and BNL

Fiscal Year	$R_N - _N$	$(R_B - _B)$	$(R_N - _N)(R_B - _B)$
2006/2007	0.3061	-0.5440	-0.1665
2007/2008	0.09474	-0.33148	-0.314
2008/2009	-0.01286	0.0685	-0.00088091
2009/2010	-0.28726	-0.33148	0.09523
2010/2011	-0.10076	1.1694	-0.11783
$\Sigma(R_N - _N)(R_B - _B)$			-0.22138

We have,

Cov. (R_N, R_B) = -0.055345

Calculation of Covariance Between NLL and AVUL

Fiscal Year	$R_N - _N$	$(R_A - _A)$	$(R_N - _N)(R_A - _A)$
2006/2007	0.3061	-0.00442	-0.00135252
2007/2008	0.09474	-0.14232	-0.01348
2008/2009	-0.01286	0.15558	-0.002
2009/2010	-0.28726	-0.00442	0.00127
2010/2011	-0.10076	-0.00442	0.000445
$\Sigma(R_N - _N)(R_A - _A)$			-0.0151

We have,

Cov. (R_N, R_A) = -0.003775

Calculation of Covariance Between BNL and AVUL

Fiscal Year	$(R_B - \bar{B})$	$(R_A - \bar{A})$	$(R_B - \bar{B})(R_A - \bar{A})$
2006/2007	-0.5440	-0.00442	0.0024
2007/2008	-0.33148	-0.14232	0.0472
2008/2009	0.0685	0.15558	0.01066
2009/2010	-0.33148	-0.00442	0.001465
2010/2011	1.1694	-0.00442	-0.00517
$\Sigma(R_B - \bar{B})(R_A - \bar{A})$			0.05656

We have,

$\text{Cov}(R_B, R_A) = 0.01414$

Appendix IV

1. **Calculation of Expected Return, Standard Deviation and Coefficient of Variation of NLL.**

(i) Expected Return $(\overline{R}) = \frac{\sum_{t-1}^{n} R_t}{n}$

$= \frac{R_1 + R_2 + R_3 + R_4 + R_5}{5}$

$$= \frac{1.9763}{5}$$

$$= 0.39526$$

$$= 39.526\%$$

(ii) Standard Deviation (σ) = $\sqrt{\frac{\sum_{t-1}^{n}(R_t - \overline{R}_t)^2}{n-1}}$

$$= \sqrt{\frac{0.1955}{5-1}}$$

$$= 0.2211$$

(iii) Coefficient of Variation (CV) = $\frac{\sigma}{\overline{R}}$

$$= \frac{0.2211}{0.39526}$$

$$= 0.55932$$

2. Calculation of Expected Return, Standard Deviation and Coefficient of Variation of BNL.

(i) Expected Return ($\overline{R}$) = $\frac{\sum_{t-1}^{n} R_t}{n}$

$$= \frac{R_1 + R_2 + R_3 + R_4 + R_5}{5}$$

$$= \frac{1.6574}{5}$$

$$= 0.33148$$

$$= 33.15\%$$

(ii) Standard Deviation (σ) = $\sqrt{\frac{\sum_{t-1}^{n}(R_t - \overline{R}_t)^2}{n-1}}$

$$= \sqrt{\frac{1.659}{5-1}}$$

$$= 0..644$$

(iii) Coefficient of Variation (CV) = $\frac{\sigma}{\overline{R}}$

$$= \frac{0.644}{0.33148}$$

= 1.9428

3. Calculation of Expected Return, Standard Deviation and Coefficient of Variation of AVUL.

(i) Expected Return $(\overline{R}) = \frac{\sum_{t-1}^{n} R_t}{n}$

$= \frac{R_{1+} R_2 + R_3 + R_4 + R_5}{5}$

$= \frac{1.0221}{5}$

= 0.00442

= 442%

(ii) Standard Deviation $(\sigma) = \sqrt{\frac{\sum_{t-1}^{n}(R_t - \overline{R}_t)^2}{n-1}}$

$= \sqrt{\frac{0.04452}{5-1}}$

= 0.10549

(iii) Coefficient of Variation (CV) $= \frac{\sigma}{\overline{R}}$

$= \frac{0.10549}{0.00442}$

= 23.8685

Appendix V

1. Calculation of Expected Return, Standard Deviation and Coefficient of Variation of Mfg & Processing Company

(i) Expected Return $(\overline{R}) = \frac{\sum_{t-1}^{n} R_t}{n}$

$= \frac{R_{1+} R_2 + R_3 + R_4 + R_5}{5}$

$= \frac{0.7703}{5}$

= 0.15406

$$= 15.41\%$$

(ii) Standard Deviation (σ) = $\sqrt{\frac{\sum_{t-1}^{n}(R_t - \overline{R}_t)^2}{n-1}}$

$$= \sqrt{\frac{0.1011}{5-1}}$$

$$= 0.15898$$

(iii) Coefficient of Variation (CV) = $\frac{\sigma}{\overline{R}}$

$$= \frac{0.15898}{0.15404}$$

$$= 1.0321$$

2. Calculation of Expected Return, Standard Deviation and Coefficient of Variation of The Market

(i) Expected Return ($\overline{R}$) = $\frac{\sum R_m}{n}$

$$= \frac{R_{1+} R_2 + R_3 + R_4 + R_5}{5}$$

$$= \frac{0.2864}{5}$$

$$= 0.0573$$

$$= 5.73\%$$

(ii) Standard Deviation (σ) = $\sqrt{\frac{\sum(R_m - \overline{R}_m)^2}{n-1}}$

$$= \sqrt{\frac{1.037}{5-1}}$$

$$= 0.5091$$

(iii) Coefficient of Variation (CV) = $\frac{\sigma}{\overline{R}}$

$$= \frac{0.5091}{0.0573}$$

$$= 8.88$$