Chapter -1

Introduction

1. Background of the Study

Looking at the history of the Nepal the Nepalese Banking system is recent practice the institutional form of banking was started only after the establishment of Nepal Bank Ltd. in1994 BS. With in the short span of time, there has been tremendous growth of bank in Nepal. Economic liberalization policy of the Government is the main element to welcome so many of banks in the country.

Commercial Banks plays a vital role in the economic development of the country. It occupies an important place in the framework of the every economy. It provides capital for the development of industry, trade, business, and other resource deficit sectors by investing the savings collected as deposits. Beside this, commercial bank provides numerous services to their customers in view of facilitating their economic and social life.

The term "commercial" was used to distinguish it from an investment bank. Since the two types of banks no longer have to be separate companies, some have used the term "commercial bank" to refer to banks, which focus mainly on companies. In some English-speaking countries outside North America, the term "trading bank" was and is used to denote a commercial bank. After the great depression and the stock market crash of 1929, the U.S. Congress passed the Glass-Steagal Act 1930 (Khambata 1996) requiring that commercial banks only engage in banking activities (accepting deposits and making loans, as well as other fee based services), whereas investment banks were limited to capital markets activities. This separation is no longer mandatory.

- The primary objective of Commercial banking is to maximize profit. Commercial banking can also refer to a bank or a division of a bank that mostly deals with deposits and loans from corporations or large businesses, as opposed to normal individual members of the public (retail banking).

  Commercial banks are established to improve people's economic welfare and facility, to provide loan to the agriculture, industry, and commerce and to offer banking services to the people and the country. It raises funds by collecting deposits from businesses and consumers via checkable deposits, savings deposits, and time (or term) deposits. It makes loans to businesses and consumers. It also buys corporate bonds and government bonds. Its primary liabilities are deposits and primary assets are loans and bonds. It is the heart of the financial system. They make funds available through their lending and investing activities to borrowers, individuals, business, and services for producer to customers and financial activities of the Government. Commercial Banks also provides technical and administrative assistance to the industries trade and business enterprises.

  As we know that the primary motive of the commercial bank is to maximize profit, it has to lend and borrow funds from the customer to the customer. The return gained from doing the activity of lending and borrowing is the profit. The interest rate applied plays a great role in earning capacity of the commercial banks. To get higher return it has to invest its fund in a productive sector where it can maximize its profit.

  The principle and primary function of banks is to serve as intermediaries in the making of payments. In doing so, they transform inactive money capital into yielding capital a profit. There are already 32commercial banks that have been listed until the FY 2012in nepal and they are:

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S.NO.	Name of the commercial bank	Establishment year
1	Nepal Bank limited	1937
2	Rastriya Banijya Bank	1956
3	Nabil Bank limited	1984
4	Nepal investment Bank	1985
5	Standard Chartered Bank limited	1986
6	Himalayan Bank limited	1993
7	Nepal SBI Bank limited	1993
8	Nepal Bangladesh Bank limited	1993
9	Everest Bank limited	1994
10	Bank of Kathmandu limited	1995
11	Nepal credit and commerce Bank	1996
12	Lumbini bank limited	1998
13	Nepal Industrial and commercial Bank limited	1998
14	Machapuchre Bank limited	2000
15	Kumari Bank limited	2001
16	Laxmi Bank limited	2002
17	Siddartha Bank limited	2002
18	Agricultural Bank limited	2006
19	Global Bank limited	2007
20	Citizen Bank limited	2007
21	Prime commercial Bank limited	2008
22	Bank of Asia	2008
23	Sunrise Bank limited	2008
24	NMB Bank limited	2008
25	DCBL Bank limited	2008
26	Kist	2009

27	Janata Bank limited	2009
28	Mega Bank limited	2009
29	Commerz and Trust Bank Nepal Ltd	2010
30	Civil Bank limited	2010
31	Century Bank limited	2011
32	senima bank	2012

The establishment of new commercial banks has brought an environment of healthy competition in front of the existing commercial banks. The increased competition forces the existing banks to improve their quality and extend their services by simplifying procedures and by training, motivating their own staff to respond to the new challenges. Thus, these banks contributed towards introducing new technology, new banking system and efficient service delivery in the country. These banks have been contributing in the line with the thrust of economic liberalization and financial sector reform, i.e. making with financial system more competitive, efficient, and profitable.

Bank Profile under Study

- Nabil Bank Limited:

  Nabil Bank, the 1st joint venture bank set up in the nation with an objective to introduce modern banking services, commenced its operations on 12th of July 1984 with Rs. 28 million capitals and around 50 staff. Dubai Bank Limited, Dubai was the foreign joint venture partner who extended Nabil a technical service agreement in the initial period. Nabil Bank Limited is one of the leading commercial banks of Nepal. The bank, founded in 1984 has branches all across the nation with its head-office in Kathmandu. Nabil was incorporated with the objective of extending international standard modern banking services to various sectors of the society. Pursuing its objective, Nabil provides a

full range of commercial banking services through its 19 points of representation across the kingdom and over 170 reputed correspondent banks across the globe. The bank, through its quality customer service and innovative products, has today attained a distinguished recognition in the banking industry of Nepal.

Nabil, as a pioneer in introducing many innovative products and marketing concepts in the domestic banking sector, represents a milestone in the banking history of Nepal as it started an era of modern banking with customer satisfaction measured as a focal objective while doing business.

Today Nabil stands in the position to claim that it is the "Bank of 1st choice" to all its Stakeholders. In the span of 27 years, it has already distributed Rs. 48 billion as at mid July 2011. Spectacular return on assets and return on equity even during a turbulent and competitive time highlight the inherent strength of the bank.

The bank provides a complete range of customer, retail, SME and corporate banking services through its offices spread across the country. Nabil is the sole banker to a multitude of large corporates, international aid agencies, NGOs and embassies. It is the largest private bank in the country in terms of branch and ATM network. All its branches are interconnected on real time basis. On the technological front, the Bank has earned a reputation in providing an array of card products and Internet /Tele-banking facilities besides ATMs and Any Branch Banking Service.

The statement 'Your Bank at Your Service' that the Bank holds on firmly is a resemblance that the Bank's stakeholders are at the core of everything it does. As for the culture embraced by the entire Nabil team, a set of Values, referred to as 'C.R.I.S.P.' in short, represents the fact that the bank uninterruptedly strives to be Customer Focused, Result Oriented, Innovative, Synergistic and Professional. By living

these Values, individually as professionals and collectively as a Team, Nabil Bank is committed to Surge Ahead to continue to be the Bank of 1st Choice in Nepal.

With the opening of nine branches, Nabil is now able to reach and services customers from Mechi to Mahakali through the hills and terai through online connectivity via VSAT, Radio modems, and fiber optics. Bank plans to continue to enhance its branch network to meet the financial needs of the larger Nepali population. Today, amongst all private banks, Nabil has the largest Branch and ATM Networks. Nabil has always been a pioneer in launching innovative products and services.

- Standard Chartered Bank Nepal Ltd (SCBNL)

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

  Standard Chartered Group employs almost 60,000 people, representing over 100 nationalities in over 50 countries in the Asia Pacific Region, South Asia, the Middle East, Africa, the United Kingdom and the Americas. This diversity lies at the heart of the Bank's values and supports the Bank's growth as the world increasingly becomes one market.

  With strong organic growth supported by strategic alliances and acquisitions and driven by its strengths in the balance and diversity of its business, products, geography and people, Standard Chartered is well positioned in the emerging trade corridors of Asia, Africa and the Middle East.

An integral part of the only international banking Group currently operating in Nepal, the Bank enjoys an impeccable reputation of a leading financial institution in the country. With 18 points of representation and 32 ATMs across the Kingdom and with around 525 local staff, Standard Chartered Bank Nepal Ltd. is in a position to serve its customers through a large domestic network. In addition to which the global network of Standard Chartered Group gives the Bank a unique opportunity to provide truly international banking in Nepal.

Standard Chartered Bank Nepal Limited offers a full range of banking products and services in Wholesale and Consumer banking, catering to a wide range of customers encompassing individuals, mid-market local corporate, multinationals, large public sector companies, government corporations, airlines, hotels as well as the DO segment comprising of embassies, aid agencies, NGOs and INGOs.

The Bank has been the pioneer in introducing 'customer focused' products and services in the country and aspires to continue to be a leader in introducing new products in delivering superior services. It is the first Bank in Nepal that has implemented the Anti-Money Laundering policy and applied the 'Know Your Customer' procedure on all the customer accounts.

2. Statement of the Problem

Investors are primarily responsible to make a rational investment decision. Their attitude and perception plays a vital role in investment decision, which is influenced by the knowledge, and access to the data required for analysis. It is necessary to built up confidence analysis in investing. The unavailability of clear and simple technique is also assumed as a constraint to analyze risk and return of individual as well as the portfolio that an investor is making.

During the 1990s and 1960s, Harry Markowitz, James Tobin, Jack Treynor, Bill Sharpe, and others showed that rational investors should ignore the investment characteristics of individual assets and focus instead of diversified portfolio selection. The CAPM Model of Sharpe (1965) and Lintner (1965) and its multifactor extensions are most widely used tools in empirical studies. Numerous authors have carefully examined the CAPM. Recently, a number of anomalies against the unconditional versions of CAPM have been identified. The evidence against this constant beta model is so forceful that some argue that the CAPM is dead.

A challenging issue arises in studies of conditional beta-pricing models. These models imply that the conditional expected return on an asset is a linear function of one or more conditional betas that measures the asset's sensitivity to source of un-diversifiable risk. While this tradeoff between time-varying risk and expected return makes such models intuitively appealing. It is empirically challenging, since there is no theoretical guidance on how betas and risk premium vary with variables that represent model. (Typically linear models) relating betas to conditioning variables.

3. Significance\ Importance\ Focus of the Study

In this study, an attempt is made to apply conditional versions of the Sharpe-lintner CAPM. It is based on a testing methodology that completely avoids specifications of time varying betas. The extensions of CAPM by Jaganathan and Wang in 90s have attracted considerable attention. Jaganathan and Wang argue that it is important to include labor income risk when pricing the cross section of stock returns. While this model is well motivated, this study indicated that the labor income risk factor is, surprisingly, not significant in capturing dynamics for the deviations from the conditional CAPM.

The study devoted to the application of CAPM in Commercial Bank may be rewarding one. A number of studies have been conducted on CAPM in developed and big capital markets but their relevance is yet to be seen in

the context of smaller and under-developed capital markets. The CAPM analysis and efficient diversification of the investment is smaller where commercial banks are also one of the major parts to be studied. Information on CAPM analysis of commercial bank would help in development of realistic theoretical model and formulation of relevant hypothesis for empirical testing in finance. It is necessary to research on CAPM. This study conducted with reference to selected commercial bank is a small attempt towards CAPM analysis.

The study deals with the following issues.

- How can risk and return be determined in referred commercial banks? Do the commercial banks with higher mean expected return have higher risk?
- Should Investor decide whether to invest or not to invest on a basis of risk and return?
- What is the market return in Nepal? What are the required rates of return based on CAPM analysis in referred commercial banks? How can CAPM equation are estimated of the referred commercial banks.
- How can beta be estimated in the referred commercial bank? How can they be compared across referred commercial banks?
- What is the role of beta that it contributes to CAPM? How can CAPM be used to across required rate of return?
- What are the required rate of return and expected rates of return in referred commercial banks? How can they be compared?
- What is the systematic risk position in relation to total risk?
- Does this risk and return vary significantly/
- How can CAPM be applied to commercial banks?
- Would diversification of investment across the nature of the commercial bank be profitable?

- How can a total risk be separated into systematic and unsystematic risks in commercial banks? How can they be computed and compared?

4. Objective of the Study

The main objective of the study is to apply CAPM in commercial banks with reference to Nabil Bank Ltd. and Standard Chartered Bank Nepal Ltd. The specific objective of this study is:

- To determine and compare the risk and return across the referred commercial Bank.
- To assess realized rate of return for the referred commercial bank.
- To compute and analyze beta & CAPM equations for the referred commercial banks.
- To analogize capital gain yields and dividend yields in the referred commercial banks.
- To examine the correlation between returns across the referred commercial banks.
- To compare required rate of returns with expected rates of return.
- To analyze the systematic and unsystematic portion of risk.
- To identify whether stocks of referred commercial bank using are under priced or over priced in CAPM.
- To examine applicability of CAPM in referred commercial bank.

5. Limitation of the study

Every works have its own restriction and limitation due to the lack of time, resources and knowledge, likewise other studies, this study is also not free from certain limitations since the study is for the partial fulfillment of master of business studies. The efforts have been made to present and analyze the fact clearly, truly and within the boundary. However, reliability of tools, lack of research experience and lack of data are the primary limitation of this report. Other limitations are:

1. Of the total 32 commercial banks operating in the country. Only two commercial banks are taken as sample for study.
2. The sample taken for the study mayn't be represents the whole population.
3. Only selected financial indicators and statistical tools are used to analyze the data.
4. Surrounding environment is also the limitation for the study.
5. This study is only for suggestion not for direction.
6. The necessary data couldn’t be found as well as it was too hard to get time for management level and its rules and regulation .

6. Organization of the Study

The Study has been organized into five chapters, each devoted to some aspects of CAPM analysis in Commercial Banks.

The Chapters included in this study are

- Chapter 1: Introduction
- Chapter 2: Review of Literature
- Chapter 3: Research Methodology
- Chapter 4: Presentations and Data Analysis
- Chapter 5 Summary, Conclusion, and Recommendations

Chapter one deals with the introductory part of the study which is based on major issues and is related to introduction of CAPM analysis, about commercial banks, and brief history on selected commercial banks. It contains background of the study, statement of the problem, objective of the study, and organization of the study.

Chapter two deals with theoretical analysis and review of the Literature which is based on available literature and related matters. This chapter builds conceptual framework and reviews from major studies, books, journal, articles, thesis, and other related study matters.

Chapter three involves the research methodology dealing with nature and sources of data, methods of analysis, and limitations of the study.

Chapter Four is a major part of the study. It is the presentation and data analysis of the study. It gives the analysis base with the help of financial tools and statistical tools.

Lastly, Chapter five summarizes the study, gives conclusion to the findings, and also gives recommendations to the referred commercial banks.

Chapter 2:

Literature Review

2.1 Conceptual Framework

Investors are generally risk averse. This implies that risky investment must offer higher expected return than less risky investment in order to make the people buy and hold them. This risk aversion attitude of investor's portfolio theory was developed and getting very important subject in the field of finance.

Central focus of the finance is tradeoff between risk and return. Here, the main focus is implication in the investment of common stock. The return on investment returns to cash payments received due to ownership, plus the change in the market price, divided by the beginning price. The common stock return for one period can be computed by using the following formula.

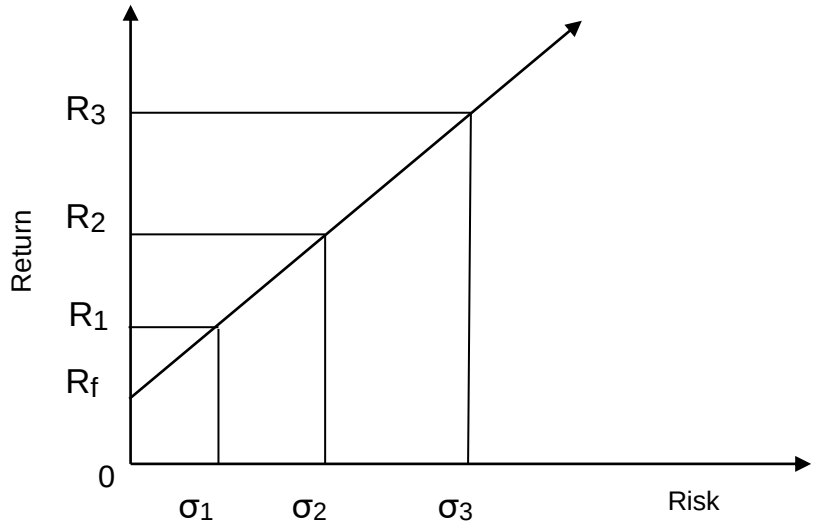
$$R = \frac{D_t + (P_t - P_{t-1})}{P_{t-1}}$$

Where R is the actual return when it refers to a particular times period in the past. D_t is the cash dividend at the end of the time period. Pt is the stock's price at time period t, and P_{t-1} is the stock's price at the period $t-1$. Notice that this formula can be used to determine both actual return for one period when based on historical figures, as well as expected returns for one period (when based on expected dividends and prices). Also note that the term in parenthesis in the number of the above equation represents the capital gain or loss during the period.

Relation between Risk and Return

The relationship between risk and return is described by investors' perception about risk and their demand for comparison. No investors will like to invest their money in risky asset unless he is assured of adequate compensation for the assumption of risk. The relationship between risk and return is positively elastic in nature. This means higher risk offers higher return and vice-versa.

Figure 2.1
Relationship between Risk and Return



The Fig 2.1 represents a higher premium for higher risk in a linear fashion indicating a premium of (R1- Rf) for σ degree of risk and so on. Here, Rf is the risk free rate of return on risk free security whereas σ_1, σ_2, and σ_3 refer to different level of risk lying in the x-axis. Risk increases as the risk premium is added depending upon the type of the security. R1, R2, and R3 refer to the returns that are earned by investing in such risky assets. The figure makes clear that when the return increases, the risk increases. When there is no risk, the return is RF. This shows that risk is positively associated with return. Thus, the SML line created by the risk and return shows the relationship between the risk and return. The increment in risk will increase return and vice-versa. Thus, rational investors always take rational decision on the basis of the risky asset and its return. Those investors, who are afraid of the risk, take less risky assets and those investors who like to take risk, prefer risky assets.

The partial interest is the differences in rates of return across securities, since they provide valuable clues to the market's trade-off between risks and return scientific progress in any field depends on accurate measurement. Since most financial theory is focused in an explanation of the level, structure and behavior of rates of return, their accurate measurement is essential if the theory is to be tested and improved.

In the financial market, many outcomes are possible; the dominant influence in financial investments in the general state of the economy. The relationship between the expected future state of the economy and the performance of the individual firm enables a relationship to be set forth between the state of the economy and returns from investments in firms. The relationship between

different levels of return and their relative frequency is called a probability distribution.

The study is focusing the common stock investment. While fixed income Investment Avenue may be more important to the most of the investors, equity share seems to capture their interest most. The potential reward and penalties associated with equity shares make them interesting even exciting proposition, no wonder; equity investment is a favorite topic for further investigation.

Risk Analysis & Measurement of Risk

"The measurement of risk has always been a subject for debate. This disagreement stamp primarily from the various ways investor perceives risk." Financial analysis and statistical analysis prefer to use a quantitative risk surrogate called the variance of return.

Risk is defined as the variability of the returns of a period. The one-period rate of return is the basic random variable used in measuring an investment's risk. The description of investment performance is made by focusing on mainly two factors a) the measures of location and b) dispersion of the distribution of investment returns. The foundation, on which the methodology to quantify investment returns and risk is based, is stock market performance. Several studies have found that short interval observations of rates of returns of common stock generally confirm closely to a normal distribution. The main purpose of risk and return analysis is to appraise investment performance and to explore combinations of investments that maximize returns, minimize risk, or achieve both. The risk minimization is not possible by holding one asset or only one type of asset but can be minimized by the means of diversification of

investment. Therefore, the analysis of risk of an investment in isolation is meaningful for understanding the risk minimization process.

Risk plays a central role in the analysis of investments. Investors often ask about the total risk they will be assuming in an investment and like to know, is the risk premium provided enough? Investors generally do not invest their money in only one risky asset but they hold a portfolio of many assets with the hope of diversification of investments risk. The market risk depends on the degree of variability in the market returns. The relevant risk of an asset, on the other hand, depends on how sensitive the returns on the asset are to the changes in the market average returns. The relevant risk of individual asset is measured in terms of the sensitivity of its returns to changes in the market returns. It is known as systematic or beta risk. The term beta is popularly used to measure the sensitivity of asset returns to the changes in the market returns.

The various force of risk, both systematic and unsystematic, cause variations in returns. Risk can be measured by the following methods:

1) Probability Distribution: The variability of return around the expected average is a quantitative description of risk. The most useful method for calculating variability is a) standard deviation, b) variance, and c) co-variance when there are two or more stocks on the portfolio.
2) Market Model or Beta Concept: The riskiness of stocks in terms of systematic and unsystematic components is tested through the market model which is based on "Empirical Testing" i.e., returns of stocks regressed against the return of the market index. This measure of quantifying risk is also referred to as beta analysis or 'volatility', which is done through regression equation.

   The formula is:

$$R = \alpha + \beta_i + \varepsilon$$

Where,

R = Return from the security in a given period.

α = Alpha or the intercept crossing vertical axis.

β = Beta or slope of the regression formula.

ε = Epsilon or error involved in estimating the value of stock.

i = Return of the market index.

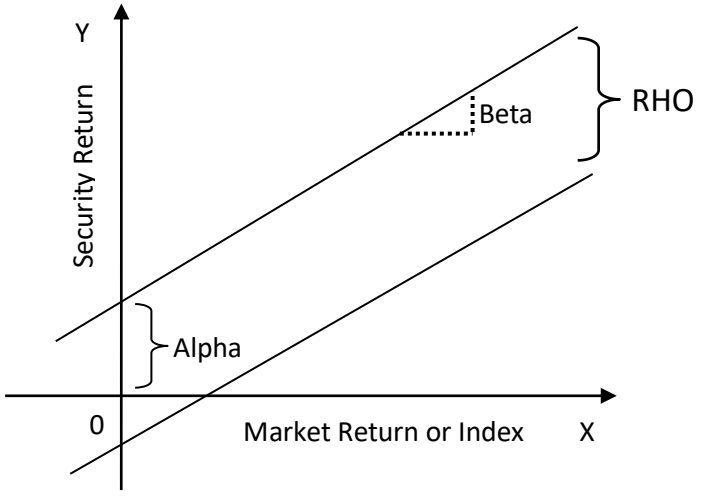
Alpha refers to the risk free asset. It's a point where a risk free asset intersects a vertical line on the return while a unit of risk is added. It exhibits the stock's unsystematic return and its average return independent of the market's return.

Rho (ρ) is the correlation coefficient which describes the dispersion of observations around the regression line between stocks.

$\propto + \varepsilon$ is the unsystematic risk.

The above is illustrated in the form of a diagram.

Figure 2.2 Market Model or Beta Concept



A useful measure of risk should somehow take into account both the probabilities of various possible bad outcomes and their associated magnitudes. Instead of measuring the probability of a number of different possible outcomes, the measures of risks should somehow estimate the extent to which the actual outcome is likely to diverge from the expected outcome. Standard deviation is a tool that measures risk.

Why do actual returns deviate from an expected return? Various factors play roles to make the actual return differ from expected return and such factors are known as sources of risk. Numerous factors may contribute to investment uncertainty. The sources of uncertainty that makes investment risky are:

Interest Rate Risk: Interest rate risk is the potential variability of a return caused by changes in the market interest rates. Market interest rate influences the value of an asset and hence its return. The risk in a stock or a bond rises or decreases according to the change in interest rate in the market. The interest rate risk affects the prices of a bond, stocks, real estate, gold, puts, calls, future contracts, and other investments as well.

Purchasing Power Risk: Purchasing power risk is the variability of return an investor suffers because of inflation. Inflation erodes the purchasing power of the rupees and increases investment risk. The rate of inflation is measured by percentage change in the Consumer Price Index (CPI). Inflation for a single period can be measured as follows:

$$q_t = \frac{CPI_{t+1} - CPI_t}{CPI_t}$$

Where,

q_t = rate of inflation at time t

CPI_t = consumer price index at time t or at the beginning.

CPI_{t+1} = consumer price index at time t+1 or at the end.

Nominal rate of return (r) is the return calculated or earned without an adjustment of nflation or elimination of inflation. When a saving account in a bank as an example pays a return, the return earned is nominal rate of return. It can be derived as follows:

Nominal Rate of Return (rr) $\frac{1+r}{1+q}-1$

Where,

rr = real rate of return

r = nominal rate of return

q = rate of inflation.

Liquidity Risk: Liquidity risk is that portion of an asset's total variability of return, which results from price discounts given or sales commission paid in order to sell the asset without delay. It is associated with uncertainty created by the inability to sell the investment quickly for cash. The less the liquidity, the greater will be the risk.

Liquidity risk' arises from situations in which a party interested in trading an asset cannot do it because nobody in the market wants to trade that asset. Liquidity risk becomes particularly important to parties who are about to hold or currently hold an asset, since it affects their ability to trade.

Liquidity risk is financial risk due to uncertain liquidity. An institution might lose liquidity if its credit rating falls, it experiences sudden unexpected cash

outflows, or some other event causes counterparties to avoid trading with or lending to the institution. A firm is also exposed to liquidity risk if markets on which it depends are subject to loss of liquidity.

Callability Risk: The callability risk is the portion of a security's total variability that derives from the possibility that the issue may be called. Callability risk commands a risk premium that comes in the form of slightly higher average rate of return. Sometimes it is called before its maturity, creating a risk is called callability risk. Investors face this kind of risk when they by preferred stock or callable bonds.

Convertibility Risk: Convertibility risk is that portion of the total variability of return from a convertible bond or convertible preferred stock that reflects the possibility that the investment may be converted into the issuer's common stock at a time or under terms harmful to the investor's best interests.

Political Risk: Political risk is that portion of asset's total variability of return caused by changes in the political environment (domestic and international changes of the company). Political risk arises from the exploitation of a week group of the benefit of a politically strong group, with the efforts of a various groups to improve their relative positions increasing the variability of return of the affected assets. The risk created by the change in political strategy and other variability in political situation is political risk.

As barriers to international trade fall, the dynamic global marketplace continues to attract investors who are eager to capitalize on the opportunities they see in emerging markets around the world. Compared to a quarter century ago, these markets enjoy greater stability and are experiencing steady growth.

However, these emerging markets remain vulnerable to a host of forces known as political risk that are largely beyond the control of investors. Among these risk factors are currency instability, corruption, weak government institutions, unreformed financial systems, patchy legal and regulatory regimes, and restrictive labor markets.

Industry Risk: Industry risk is that portion of the investment's total variability of return caused by events that affect the products and firms that make up and down to the industry. Some of the factors which affect all the firms in an industry is industries life cycle, product or industry related taxes, international tariff and quotas, and many others.

Management Risk: It is the risk associated with the Board of Director's decision on investor's investment. A company's management and Board of Directors are involved in the decisions ranging from product innovation and production methods to financing and acquisitions. All these decision made by the management materially affect the risk faced by the investors. Sometime, management may make a decision, which turns out to be wrong later on. Since, management errors are difficult to analyze, investors can reduce their risk by buying shares in those corporations in which the executives have the significant equity investment instead of buying shares in the corporation in which executives have no equity investment.

Bull-Bear Market Risk: Market trends are described as sustained movements in market prices over a period. The terms "bull market" and "bear market" describe upward and downward movements respectively: this can relate either to the market as a whole or to specific securities and sectors. The expressions "bullish" and "bearish" mean optimistic and pessimistic respectively

Expectations play a large part in financial markets and in the changes from bull to bear environments. More precisely, attention should be paid to reactions to information, chiefly positive surprises and negative surprises. Positive surprises will of course normally increase prices, and vice versa. Also, some behavioral finance studies (Richard Thaler) show the role of the under reaction-adjustment-over reaction process in the formation of market trends.

Many investors and analysts use technical analysis to try to identify whether a market or security is likely to increase or decrease in value, and to generate trading strategies to exploit this. Some technical analysts believe that financial markets are cyclical and move in and out of bull and bear market phases regularly.

Default Risk: In Finance, default occurs when a debtor has not met its legal obligations according to the debt contract, e.g. it has not made a scheduled payment, or has violated a loan covenant (condition) of the debt contract. Default may occur if the debtor is either unwilling or unable to pay their debt. This can occur with all debt obligations including bonds, mortgages, loans, and promissory notes.

The term default should be distinguished from the terms insolvency and bankruptcy. "Default" essentially means a debtor has not paid a debt. "Insolvency" is a legal term meaning that a debtor is unable to pay his debts. "Bankruptcy" is a legal finding that imposes court supervision over the financial affairs of those, who are insolvent or in default.

In corporate finance, upon an uncured default, the holders of the debt will usually initiate proceedings (file a petition of involuntary bankruptcy) to

foreclose on any collateral securing the debt. Even if the debt is not secured by collateral, debt holders may still sue for bankruptcy, to ensure that the corporation's assets are used to repay the debt

These risk factors sum up to total risk that investor has to face while investing. This does not mean that they have to face all these factors but may face few of them. These source risks are uncertainty. The table below shows the risk factors that may affect an asset.

Table 2.1 Some Risk Factors that may affect an Asset

	(a) Interest Rate Risk (if present)
Plus:	(b) Purchasing Power Risk (if present)
Plus:	(c) Bull-Bear Market Risk (if present)
Plus:	(d) management Risk (if present)
Plus:	(e) Default Risk (if present)
Plus:	(f) Liquidity Risk (if present)
Plus:	(g) Callability Risk (if present)
Plus:	(h) Convertibility Risk (if present)
Plus:	(i) Taxability Risk (if present)
Plus:	(j) Political Risk (if present)
Plus:	(k) industry Risk (if present)
Plus:	(l) The First Additional Risk(if present)
Plus:	(m) Other Additional Risk Factors (if present)
Equals:	Total Risk, Variance of Return σ^2

Standard Deviation (σ) and Coefficient of Variation (C.V.)

In probability and statistics, the standard deviation is a measure of the dispersion of a set of values. It can apply to a probability distribution, a random variable, a population or a multi-set. The standard deviation is usually denoted with the letter σ (lowercase sigma). It is defined as the root-mean-square (RMS) deviation of the values from their mean, or as the square root of the variance.

Formulated by Galton in the late 1860s, the standard deviation remains the most common measure of statistical dispersion, measuring how widely spread the values in a data set are. If many data points are close to the mean, and then the standard deviation is small; if many data points are far from the mean, then the standard deviation is large. If all data values are equal, then the standard deviation is zero. A useful property of standard deviation is that, unlike variance, it is expressed in the same units as the data.

In finance, standard deviation is a representation of the risk associated with a given security (stocks, bonds, property, etc.), or the risk of a portfolio of securities (actively managed mutual funds, index mutual funds, and others). Risk is an important factor in determining how to efficiently manage a portfolio of investments because it determines the variation in returns on the asset and/or portfolio and gives investors a mathematical basis for investment decisions (known as mean-variance optimization). The overall concept of risk is that as it increases, the expected return on the asset will increase as a result of the risk premium earned – in other words, investors should expect a higher return on an investment when said investment carries a higher level of risk, or uncertainty of that return. When evaluating investments, investors should

estimate both the expected return and the uncertainty of future returns. Standard deviation provides a quantified estimate of the uncertainty of future returns.

Standard deviation is an absolute measure of variability; it is generally not suitable for comparing investments with different expected returns. In these cases, the C.V. provides a better measure of risk. A standard deviation can sometimes be misleading in comparing the risk, or uncertainty surrounding alternatives if they differ in size. To adjust for the size or scale, the standard deviation can be divided by the expected return to compare the coefficient of variation (C.V.) "if risk is measured by the standard deviation, then risk per unit of expected return can be measured by the C.V.". The C.V. is a measure of relative dispersion – a measure of risk per unit of expected return. The larger the C.V. the larger the relative risk of the investment.

"If rate of return should increase as the risk increases, the C.V. provides a quick summary of the relative trade-off between expected return and risk". Thus the C.V. is a measure of a relative dispersion measure of risk per unit of expected return.

Capital Market Line (CML) and Security Market Line (SML)

Capital Market Line:

The set of portfolio obtained by combining the market portfolio with risk free borrowing or lending assuming homogeneous expectation and perfect market is called CML. CML represents the efficient set. In other words, the linear efficient set of the CAPM is known as the CML. Potential investors who are bound to make investment decisions in the context of uncertainty use this concept.

The CML may be used for determining the required rate of return only for those efficient portfolio that are perfectly correlated with the market portfolio they fall on the CML but SML may be used to explain the required rate of return on all securities whether or not they are efficient. The CML is calculated by using the following equation.

$$E(R_p) = R_f + \left[\frac{E(R_m) - R_f}{\sigma_m}\right]\sigma(R_p)$$

Where,

$E(R_p)$ = the expected rate of return for portfolio along the CML, that is combinations of R_p and R_f.

R_f = the riskless borrowing and lending rate

$E(R_m)$ = the expected rate of return on the market portfolio M

σ_m = the standard deviation of returns on the market portfolio M

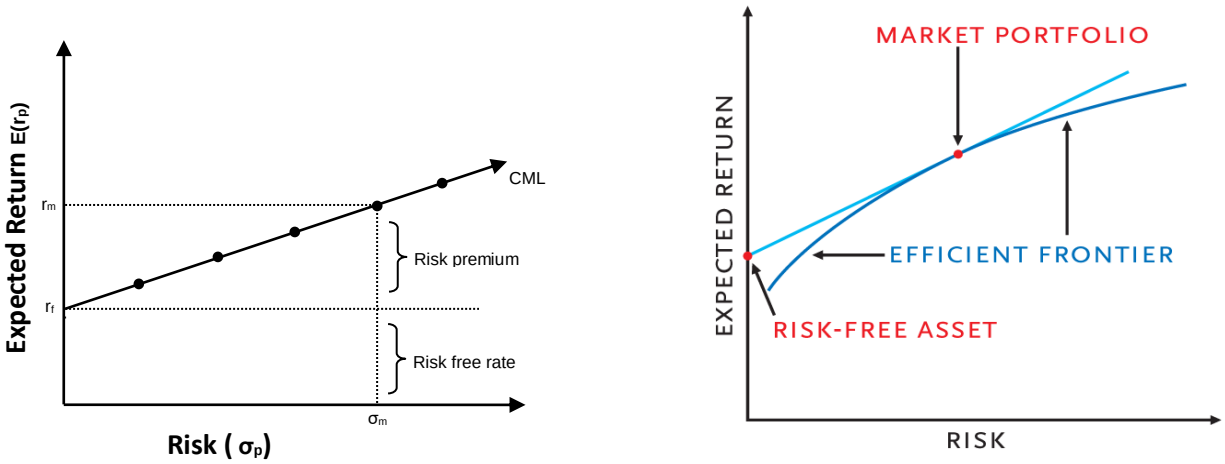
$\sigma(R_p)$ = the standard deviation of portfolio along the CML

The slope of CML is equal to the difference between the expected return of the market portfolio and that of the risk free security ($r_m - r_f$), divided

by the difference in their risks σ_m. Thus, market price of risk or slope of CML defines the magnitude of risk premium (extra return over risk free rate) required for one unit of market risk. The slope of CML or market price of risk is given by:

$$\text{Slope of CML} = \frac{E(r_m - r_f)}{\sigma_m}$$

Figure 2.3 Capital Market Line



In this way, CML defines the relationship between expected return for efficient portfolio consisting of the risk free assets and market portfolio. The concept of CML is valid only for pricing portfolio that is perfectly diversified. Individual assets will not lie on the CML.

Security Market Line:

In Modern Portfolio Theory, the Security Market Line (SML) is the graphical representation of the Capital Asset Pricing Model. It displays the expected rate of return for an overall market as a function of systematic (non-diversifiable) risk (beta).

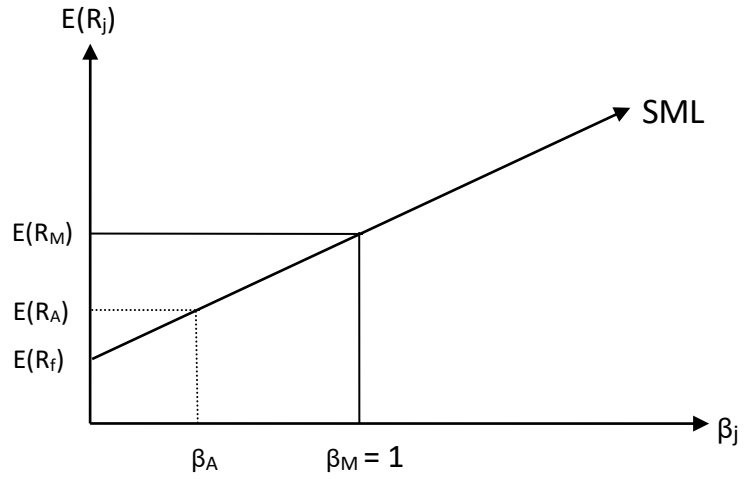
The Y-Intercept (beta=0) of the SML is equal to the risk-free interest rate. The slope of the SML is equal to the Market Risk Premium and reflects investors' degree of risk aversion at a given time.

When used in portfolio management, a single asset is plotted against the SML using its own beta and historical rate of return. If the plot of the asset falls above the SML it is considered to have a good rate of return relative to its risk, and vice versa if it falls below.

The SML can be calculated by using the following equation.

SML of an asset $E(r_j) = r_f + [E(r_m) - r_f]b_i$

Figure 2.4: Security Market Line:



The Characteristic Line and CAPM

Characteristic line:

The total risk of any asset can be assessed by measuring its variability of returns. The total risk can be partitioned into two main parts: Systematic and Unsystematic risk. Both can be estimated by using the characteristic regression line. The characteristic line describes the relationship between the returns on a stock and the returns on the market portfolio. Moreover, the characteristic regression line of an asset explains the assets' systematic variability of return in terms of market forces that affect all assets simultaneously. The characteristic line is known as a regression line and it is used to measure statistically the undiversified risk and diversifiable risk of individual assets and portfolio.

$$R_{I,t} = a_i + b_t r_{m,t}$$

Where,

$R_{I,t}$ = total return on i^{th} asset at time t

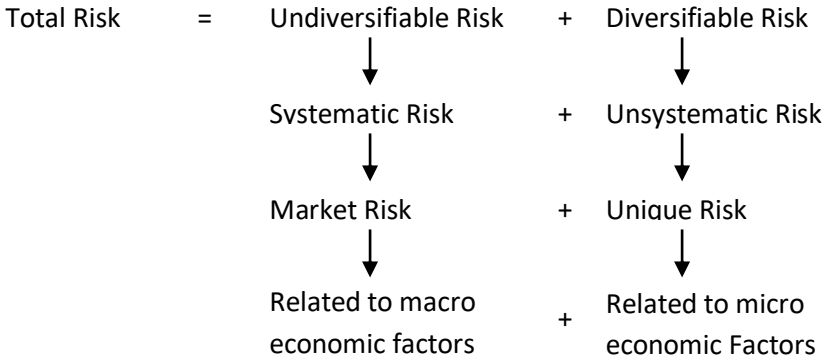
a_i = Alpha or intercept of characteristic line or an estimate of the i^{th} asset's rate of return when the market return is zero.

b_t = beta coefficient or slope of characteristic line

$r_{m,t}$ = market rate of return at time t

Diversifiable and Undiversifiable Risk

Total risk or total variability or returns of as asset or portfolio is measured by variance and standard deviation. The total risk can be divided into two portions; diversifiable and undiversifiable risks,



Diversifiable Risk

Diversifiable risk is also known as unsystematic risk. This type of risk is unique to an organization and can be largely eliminated by holding a diversified portfolio of investment. Diversifiable risk occurs through the events like, labor strikes, management errors, inventions, advertising campaigns, availability of raw materials etc. More precisely, the unsystematic risk is unique to each firm. An efficient diversified portfolio of securities can successfully eliminate most of the unsystematic risk inherent in individual securities.

Undiversifiable Risk

Systemic risk is a specific term used in finance; it means the market risk or the risk that cannot be diversified away, as opposed to "idiosyncratic risk", which is specific to individual stocks. It refers to the movements of the whole economy. Even if there is a perfectly diversified portfolio there is some risk that cannot be avoided and this is the systemic risk. However, the systemic risk is not the same for all securities or portfolios. Different companies respond differently to a recession or a booming economy.

Risks can be reduced in four main ways: Avoidance, Reduction, Retention and Transfer. Systemic risk is a risk of security that cannot be reduced through diversification. It is sometimes also called market risk or un-diversifiable risk.

Participants in the market, like hedge funds, can themselves be the source of an increase in systemic risk and transfer of risk to them may, paradoxically, increase the exposure to systemic risk.

Undiversifiable risk is that part of the total risk that cannot be eliminated by allocating capital to a diversified portfolio on investments. A statistical measure of Undiversifiable risk index is beta coefficient.

Beta Coefficient (b_i) = $\frac{Cov(r_i r_m)}{\sigma_m^2}$

Where,

b_i = Beta Coefficient of i^{th} asset

σ^2_m= Variance of market return

COV (r_i, r_m) = Covariance between the returns of security and market.

Market Beta (β_m)

Beta of a market return equals to 1 and beta coefficient as an index of systematic risk is used to rank the assets. If beta is larger than 1, then the asset is more volatile than the market and is called and aggressive beta. If the beta is less than 1, the asset is called a defensive beta and its price fluctuation is less volatile than in the market.

Market Beta (β_m) = $\frac{COV_{mm}}{\sigma_m^2} = \frac{\rho_{mm}\sigma_m\sigma_m}{\sigma_m^2} = \frac{1\times\sigma_m^2}{\sigma_m^2} = +1$

Market beta (βm) serves as a benchmark or a measuring scale for the evaluation of risk of individual stock. For an individual stock, the β could be less that, equal to, or more than 1 depending upon the volatility of that sock's return relative to market returns.

Portfolio Beta (βp):

Portfolio beta is the weighted average beta of the total securities included in the portfolio. It can be calculated by using the following equation:

Portfolio beta (βp) $= \sum^{n} w_i b_1 + w_2 b_2 + \ldots\ldots\ldots\ldots + w_n b_n$

Partitioning of Risk

Partitioning risk is the division of the total risk (variance) into systematic and unsystematic components.

Total risk = Systematic risk + Unsystematic risk

$Var(ri) = b_i^2 \, Var\,(r_m) + Var\,(e)$

Alternatively,

$\sigma^2_i = b_i^2 \, \sigma^2_m + \sigma^2_e$

Where,

σ^2_i = Total risk of i^{th} asset

$b_i^2 \, \sigma^2_m$ = Systematic risk

σ^2_e = Unsystematic Risk or variance of standard error

Or, Unsystematic risk = total risk – systematic risk

Capital Asset Pricing Model (CAPM)

The valuation of any assets is an extremely complex process because of the uncertainties involved in the assets' performance. Markowitz first addressed the issue of asset valuation in the portfolio context in 1952, and since then the

concept of portfolio has been applied in assets pricing. Coming to mid-sixties, Sharp, Lintner, Mossin, and Treynor simplified the Markowitz model of asset pricing within risk and return framework and introduced an interesting model known as “Capital Asset Pricing Model” (CAPM).

Capital assets are the long term financial as well as real assets and CAPM is based on the pricing of these assets. Modern portfolio theory of Markowitz suggests that the investment decision should be based on the total risk and the price of asset should also be determined on the basis of the total risk. But, the CAPM suggests that, any investor can create a portfolio of assets that will eliminate virtually all diversifiable risk, the only relevant risk is non-diversifiable risk. Therefore, the investment decision and the pricing of capital assets should be based on the un-diversifiable risk.

The CAPM is based on the efficient market hypothesis and provides a basis to measure the systematic risk in terms of covariance of its return with the market returns. Precisely, the relevant risk is defined as the ratio of variance of asset returns to the variance of market returns. With the estimated systematic risk, the model determines the market price of assets.

The CAPM is an equilibrium theory of how to price and measure risk. The advantage of CAPM approach is to measure the risk adjustment factor and the required rate of return on an investment are that the relationships can be quantified and that they have been subjected to considerable statistical testing.

The model explains the relationship between the expected return, unavoidable risk, and the valuation of securities. The greater the unavoidable risk of security, the greater is the return expected by the investor from that security. Hence, in case a security does not provide adequate return commensurate with

its unavoidable risks, the security will not find favor with the investors and thus its market value will fall.

The CAPM specifies the relationship between expected return and beta. This model provides the intellectual basis for a number of the current practices in the investment industry. Although many of these practices are based on various extensions and modifications of the CAPM, a sound understanding of the original versions is necessary to understand these practices. It is the mode which gives the required rate of return of common stock. CAPM model is often referred as Separation Theory.

Assumption of CAPM

The relevant question to ask about the "assumptions" of a theory is not whether they are descriptively "realistic", for they are never are, but whether they are significantly good approximations for the purpose in hands and this question can be answered only by seeing whether the theory works, which means whether it yield sufficient accurate predictions.

Some of the assumptions behind the CAPM are also behind the normative approach. The assumptions of CAPM are as follows:

1. Investors evaluate portfolios by looking as the expected returns and standard deviations of the portfolios during one period horizon.
2. Investors are never satiated, so when a given a choice between two portfolios with identical standard deviations, they will choose the one with the higher expected return.
3. Investors are risk-averse, so when given a choice between two portfolios with identical expected returns, they will choose the one with lower standard deviations.

4. Individual assets are infinitely divisible, meaning that an investor can buy a fraction of a share if s/he so desires.
5. There is a risk free rate at which investors may either lend or borrow money.
6. Taxes and transactions costs are irrelevant.

To these assumptions the followings are added.

7. All investors have the same one period horizon.
8. The risk free rate is the same for all the investors.
9. Information is freely and instantly available to all investors.
10. Investors have homogeneous expectations, meaning that they have the same perceptions regarding the expected returns, standard deviations, and co-variances of securities.

The CAPM reduces the situation to an extreme case. Everyone has the same information and agrees about the future prospects for securities. Implicitly this means that investors analyze and process information in the same way. There are perfect markets for securities because potential impediments such as finite divisibility, taxes, transactions costs, and different risk free borrowing and lending rates have been assumed away. This approach allows the focus to shift from how an individual should invest to what would happen to security prices if everyone invested in a similar manner. Examining the collective behavior of all investors in the market place enables one to develop resulting equilibrium relationship between each security's risk and return.

2.2 Reviews from Journal and Articles

The objective of the study is to find what other has been said about the matter. The theme of the review of literature is to know what already been discovered

or what others have experienced. Here are few of them, which have been extracted from various journal and articles. There are not much articles and journal about CAPM, but I have tried to collect as much I could.

Fama and MacBeth (1973) explained the importance of portfolio construction for empirical tests of CAPM. Tests involving portfolios not only result in smaller measurement error in the estimated risk measure but also increase precision of the estimates by providing a greater number of degrees of freedom. We formulate portfolios from the stocks based on the market capitalization. For size sorted portfolios the data of mid sample (July 1999) market capitalization are used to rank the stocks into 17 portfolios, from the lowest to the highest capitalized stocks. The first portfolio consists of 5 stocks, while the rest comprise 6 stocks each. The portfolio return is calculated as the equally weighted average return of the stocks in the portfolio. The construction method for the beta portfolios is similar to that of the size portfolios, except that the ranking of the stocks is based on their beta estimated for the full sample time series regression. Keeping in view the critique of Lo and Mac kinlay (1990) that the portfolio formulation according to stocks characteristics such as the size and beta may bias the test results, we have also formulated the industry portfolios. The stocks are classified into 16 major industrial sectors. The sector sizes range from two stocks in Transport and Communication to 13 stocks in both the Textiles and Investment Banks and Financial Companies sectors. These sectors serve as natural portfolios.

While there are advocates of portfolio formulation in asset pricing tests, Roll (1977) points out that portfolio formulation may conceal the security related information present in the individual stocks. This is important especially for the emerging market research where the market is driven by a few blue chip stocks. Keeping this fact in mind, the tests are also performed on individual

stocks. The method of testing is similar to that of Fama - MacBeth (1973), that is, basically predictive in nature. In each of the three cases the sample period of 13 years and seven months is divided into three roughly equal parts of four and a half years. The three sub periods are September 1992 to March 1997, April 1997 to October 2001, and November 2001 to April 2006 respectively. The first period data are used to estimate independent variables measuring risk. For daily frequency the first period has 1190 return observations. At weekly frequency there are 238 data points for estimation of risk variables and for monthly data there are 54 observations. The estimates of the risk are updated by discarding the first observation and including the next observation in the sample.

This is continued till the last available data range for conducting the market model regression or the modified version. The next sub period data are employed for testing empirical implications of the CAPM. For a given period a cross section regression of average return from the stocks or portfolios is run on the independent variables estimated from the last estimation sample. The first estimates of the risk premium are thus obtained. The process is repeated for all the time periods available. Thus we have a time series for each of the coefficients in equations. The statistical significance of the estimated risk premium is tested using a t-statistic given by and are the average and standard deviation of the estimated coefficient, respectively. The cross section tests are performed for two disjoint sub periods i.e. April 1997 to October 1997 and November 1997 to April 2006. The objective here is to examine the stability of the risk return relationship in the two sub periods. This is important because the volatile political and macroeconomic scenario in emerging markets might make the risk return relationship unstable. The test is also performed for the whole period April 1997 to April 2006 in order to estimate a more precise risk premium.

Black (1986) so memorably observes, the world is a noisy place, but it seems to have little impact on mainstream thinking about Assets Pricing and Market Efficiency. They believe that this is due to its focus on subjective believe of investors rather than empirical properties of returns. They show that learning can significantly affect assets pricing tests. Prices in their model satisfy that commodity accepted nations of market efficiency and rational expectations. Investors use all available information when making decisions and, in equilibrium, the perceived pricing function equals the true pricing function. In spite of this, the empirical properties of returns differ significantly from the properties perceived investors. Excess returns can appear to be too volatile even though investors attempt to hold mean variance efficient portfolios.

Mitchell and Pulvion (Aug 1987) in "Characteristic of Risk and Return in Risk Arbitrage" journal of finance, had to determine whether he returns to risk arbitrage reflect market inefficiency or rewards for bearing rate-event risk over the 1963 to 1986 time period.

"Using a comprehensive sample of cash and stock-for stock mergers, we examined returns generated from risk arbitrage. For constraints merger an investment in any merger cannot exceed 10 % of total capital, sizes are limited by the equity of the under lying securities. The index fund must have an adequate amount of cash reserves to undertake the investment.

In the most market environments, risk arbitrage returns are uncorrelated with market returns however, during market downturns, the correlation between market return and risk arbitrage returns increase dramatically. From this, study suggests that the risk arbitrage returns are similar to those obtained from

writing uncovered index put options. Risk arbitrage may be better evaluated using a contingent claims analysis rather than a linear asset pricing model such as CAPM. However, this analysis shows that when measuring excess returns, the error associated with CAPM is significant only when the nonlinearity in return is severe. This tends to be the case in time periods when cash, rather than stocks, is the predominant from merger consideration. Although, linear asset pricing model mark the true risk in the risk arbitrage, they do not result in large errors when measuring excess returns."

Fama and French (1992), conducted the study on Cross-Section of Expected Stock Return. They identified the relationship of average returns with the market beta and size. They also examined the role of earning price ratio, book to market equity, and leverage in predicting time average returns. Their goal was to evaluate the joint role of market beta, size, E/P, leverage and book to market equity in the cross section of average returns on NYSE, AMEX and NASDAQ stosks. They used the monthly data for the period of July 1941 to December 1990 for different specification.

They found that the sample relationship market beta (β) and average returns disappeared during the more recent 1963-1990 period, even when β was used alone to explain average returns. The appendix of the study has showed that the simple relation between β and average return was also weak in the last half century (1941-1990) of returns on NYSE stocks. In short, their tests did not support the central prediction of the SLB model that average stock returns positively related to market β. Their results on the absence of a relation between β and average stock returns for 1963 -1990 were so contrary to the tests of the Sharpe-Litner-Black model by Black, Jensen, and Scholes (1972), Fama and Mcbeth (1973), and Chan and Chen (1988).

Unlike the sample relation between β and average return and size, leverage, E/P and book to market ratios were strong. In multivariate tests, the negative relation between size and average market ratio and average also persisted in completion with other variables. The positive relation between book to market ratio and average return also persisted in completion with other variables. Moreover, the size effect has attracted more attention and book to market ratio has a consistently stronger role in average returns. Their bottom results are a) β do not seem to help in explaining the cross-section of average return, and b) the combination of size and book to market ratio seems to absorb the roles of leverage and E/P in a average stock returns, at least during their 1963-1990 sample periods.

Malkiel (1995) analyzed the returns from investing in equity mutual funds 1971 to 1991 utilizing a unique data set including returns from all mutual existing each year. He also evaluated the performance of mutual funds in terms of risk adjusted returns. For this, he applied CAPM as,

R_{Fd}-R_F =;+β (R_{MKT}-R_F)+E_{Fd}

Where,

R_{Fd} = Funds Return

RF = Risk – Free Return

; (alpha) = is intercept and

β = Beta that measures risk. Positive implies risk adjusted returns.

He found that in an aggregate, funds had performed benchmark portfolios both after management expenses and even gross expenses. The average; was negative when net returns were used and positive when gross returns were used. While considerable performance persistence existed during the 1970s,

there was no consistency in fund returns during the 1980s. Funds betas and returns were not related as the CAPM suggests.

Porta (1996), on the analysis of relationship between expected growth rate and stock returns, identified that one year post information now return for stocks with low expected growth rates was 20 percent higher than the return for the socks with high expected growth rates. He found that investment strategy based on buying stocks with low price to expect growth ratio and selling short stocks with a high price to expect growth ratio yielded excess returns within his samples.

Jagannathan and Wang (1996), made an attempt allowing betas and expected returns to vary over time by assuming that the CAPM holds period by period. They concluded that the size effect became much weaker in predicting expected returns. They found that the conditional version of the CAPM explained the cross-section of stock returns. Doing so, they implicitly assumed that the portfolios, of stocks used in the study were economically important. For this, they evaluated three betas where the standard CAPM has only on beta.

However, Robert G. Bowman (1997), at his article has presented the theoretical relationship between systematic risk and financial variables. Robert utilized the assumptions of CAPM and additional assumption that corporation can borrow and lend at risk free interest rate. He presented theoretical relationship of systematic risk the firm's leverage, accounting beta, earning variability, dividend or payout and growth.

The purpose of Robert was to provide theoretical basis for empirical research into the relationship between risk and financial variables. They have shown

there is theoretical relationship between systematic risk, firm's leverage, and accounting beta. They also demonstrated that systematic risk is not a function of earning variability, growth, and size or dividend policy. The assumptions employed provide vary general model. It is not surprising that the results are to the point. Additional relationship between systematic risk and other variables may be obtained by imposing more severe assumptions.

They have utilized the assumptions of CAPM and the additional assumption that corporation can borrow and lend at risk free rate of interest may of these assumptions are obviously violated in the real world (e.g. homogeneous expectations). However, as Fama pointed out the assumption of CAPM are sufficient but may not be necessary. The violation of which are observed do not necessarily negate the theory.

Bowman (1998, Feb) in "The theoretical relationship between systematic risk and financial variable" examined the relationship between risk and financial variables. Systematic risk of livered firm is equal to the systematic risk of the same firm without leverage. There is no direct relationship between earning variability and market risk. Systematic risk is directly related to the accounting beta. There is theoretical basis for relationship of dividend payout and beta. There is not only theoretical relationship between dividends and systematic risk but also size and growth of the firm and systematic risk. The study shows that there is a theoretical relationship between systematic risk and firms accounting beta and systematic function are not a function of earning variability, dividends policies and size and growth of the firm.

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arbitrage reflect market inefficiency or rewards for bearing rate-event risk over the 1963 to 1986 time period.

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An article published by Chandra Thapa on Kathmandu Post Daily (2003) entitled "Managing a Banking Risk" had the following sequence.

Banking and financial service are among the fastest growing industries in developed world and also emerging as cornerstones for other developing and underdeveloped nations as well. Banks primary function is to trade risk. Risk

cannot be avoided by the bank but can only be managed. There are two types of risk. The first is the diversifiable risk or the firm specific risk which can be mitigated by maintaining an optimum and diversified portfolio. This is due to the fact that when one sector does no well the growth in another might offset the risk. Thus depositor must have the knowledge of the sectors in which their banks are making their lending. The second is un-diversifiable risk and it is correlated across borrower, countries, and industries. Such risk is not under control of the firm and bank.

According to Mr. Thapa, risk management of the banks is not only crucial for optimum tradeoff between risk and profitability but it is also one of the deciding factors for overall business investment lending growth of the economy. Managing risk not only needs sheer professionalism at the organization level but appropriate environments also need to develop. Some of the major environmental problems Nepalese banking sector is under government intervention, relatively weak regulatory fame, if we consider the international standard, meager corporate governance and the biggest of all is lack of professionalism. The only solution to mitigate the banking risk is to develop the badly needed commitment eradication of corrupt environment especially in the disbursement of lending and formulate prudent and conducive regulatory framework.

Lewellene and Shaken in their journals entitled “Learning Assets Pricing Test and Market Efficiency” studies the asset-pricing implication of parameter experimental test can find patterns in the data that differ from those perceived by the rational inventor. Returns might appear predictable to an econometrician or appear to depart from capital asset pricing model. But, saver can neither perceive nor exploits this uncertainty. Returns appear excessively volatile even though prices react efficiently to cash flows news.

They conclude the parameter uncertainty can be important for characterizing and testing market efficiency.

Financial economists generally assume that, unlike themselves, investors know the mean, variance, and the covariance of the cash flow process. Practitioners do not have the luxury to apply the elegant framework of the modern portfolio theory. They must estimate the process using whatever information is available.

In an article entitled "What Is Systemic Risk, and Do Bank Regulators Retard or Contribute to It?" written by GEORGE G. KAUFMAN AND KENNETH E. SCOTT, has explained about the systematic risk and the danger of systematic risk in the paper called *The Independent Review, v. VII, n. 3, Winter 2003, ISSN 1086-1653, Copyright © 2003, pp. 371– 391*.

Many bank regulatory actions have been double-edged, if not counterproductive. With regard to systemic risk, circumstances may exist in which complete reliance cannot be placed on private ordering; however, excessive reliance on deposit insurance and other government safety-net measures, even if well intentioned, has been very costly.

Their purpose in this article was to emphasize some of those costs and to urge bank regulators to be more sensitive than they often have been to how their actions can impair private-market incentives and thus reduce the benefits of their actions. Indeed, we suggest a deliberate strategy of seeking to minimize the scope of the government's backup role and to maximize the effectiveness of private actors as the first line of defense against systemic risk. That approach was not much in evidence through the latter two-thirds of the twentieth century. It is not possible either theoretically or empirically to draw

up a comprehensive balance sheet of all the benefits and costs produced by bank regulation and intervention over that period, but, in our own view, it is arguable that the costs outweighed the benefits, and the regulators may well have contributed to systemic risk as much as they retarded it. We hope that a new strategy that reduces potentially counterproductive government policies will play a larger role in the twenty-first century.

Chapter 3:

Research Methodology

3.1 Research Design

The research is designed on the basis of secondary data available from the selected commercial banks and NEPSE and this study is analytically cum-descriptive research.

3.2 Nature and Sources of Data.

This study is primarily based on secondary data provided by NEPSE (www.nepalstock.com), Security Board Nepal (www.sebonp.com), banking and financial statistics of NRB, and financial reports from the concerned commercial banks. This study is based on the facts collected from the concerned commercial banks.

Concerning the type of data used, the literatures offer a rich variety: indices, average, daily, weekend, month-end closing prices, year-end prices and others. For some reasons, even use of daily closing prices may be unsatisfactory. Alexander (1961), for example, in his study of filters found that his initial results were affected materially by neglecting the with-in day fluctuations of share prices. One of the consequences of the use of daily closing prices is that an institutional cycle might be introduced as there is no trading at weekends. On the same occasion, daily closing prices were not available for some of the sample shares either because there was no trading in those shares. The use of month-end closing pricing involves an unnecessary neglect of easily available data. Hence, in view of the above, the alternative considered appropriate was to examine week-end closing price of selected equity shares. Though there are 135 listed companies in Nepal Stock

Exchange Limited (see SEBO/N, annual report 2010/11) all of them do not provide scope of the study.

3.3 Selection of Enterprises

There were 138 Nepalese Enterprises listed in NEPSE by the end of the FY 2010/2011, taken as size of the population for the study (SEBO/N, Annual Report 2010/2011). Out of 32 listed commercial banks, two commercial banks were selected for the present study. The commercial banks were selected on the basis of data availability. The selected commercial banks are as follows.

Table 3.1

List of the Commercial Banks and Number of Observations Selected for the study.

S. No.	Name of the Commercial Bank	Study Period	Observations
1.	Nabil Bank Ltd.	2007-2011	5
3.	Standard Chartered Bank Nepal Ltd.	2007-2011	5
Total Observations of Fiscal Years			**10**

3.4 Method of Analysis

The various financial and statistical tools were used to analyze and interpret the data. The tools used in the analysis are described below.

a) Return on the Common Stock Investment (R):

The return on shareholders' is the touchstone of financial analysis. The return on common stock investment is defined as the average of the sum of the dividend yield plus capital gains per year over the measurement period. Return is the income received on an investment plus any change in the market price, usually expressed as a percent of the beginning market price of the

investment. The return on common stock invested is calculated by using the following formula.

$$R = \frac{D_t + (P - P_{t-1})}{P_{t-1}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-1)$$

Dividend yield and capital gains can be ascertained out of the total return using equation 3-1.1 and 3-1.2 respectively.

$$Dividend\ Yield = \frac{D_t}{P_{t-1}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-1.1)$$

$$Capital\ Gain = \frac{P_t - P_{t-1}}{P_{t-1}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-1.2)$$

Where,

R= Actual rate of return on common stock at time t.

D_t = Cash Dividend received at time t.

P_t= Price of stock at the end of the year.

P_{t-1}= Price of stock at the beginning of the year.

b) Required Rate of Return, [E(R_j)]:

The CAPM is used to determine the equilibrium expected rate of return. It is the return that investor expects for bearing the certain risk on investment made. The CAPM is undoubtedly the most successful model to link the risk and expected return of capital assets. According to the CAPM, the differences in the risk premium assets are due to differences in the systematic risk of the assets. The risk is measured by beta which measures the sensitivity of the return of assets. Given the risk free rate, CAPM predicts that the expected return on an individual security or productive investment is presented y a risk-free rate of interest plus a risk premium. (Weston and Copeland, 1992: 407)

$$\sum(R_i) = R_f + \sum(\bar{R}_m - R_f)\,\beta_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-2)$$

Where,

$\Sigma(R_i)$ = Required rate of return of an assets "I"

R_f = Risk free rate.

$\sum(\bar{R}_m)$ = Expected overall return for the market portfolio.

β_i = Beta coefficient of security 'I"

C) Beta Coefficient (β):

The standard deviation is a measure of total risk of the asset. It measures the dispersion of average returns. Total risk can be classified as systematic and unsystematic risk. Beta is a tool that measures the systematic risk of the assets. Securities with above the market beta (β_m=1) are more risky than the securities which are less than market beta. Beta shows how the price of a security responds to market forces. Beta measures changes in stocks return resulting from per unit change in the market return. It is also known as index of a systematic risk. The beta coefficient is calculated by using the following formula.

$$\beta_j = \frac{Cov(R_j R_m)}{\sigma_m^2} = \frac{Cov_{jm}}{\sigma_m^2} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3-3)$$

Where,

β_j = Beta coefficient of Stock j

$Cov(R_j R_m)$ = Covariance between Return on asset "j" and returns on market "m".

It is equal to;

$$Cov(R_j R_m) = \sum \frac{[R_j - E(R_j)][R_m - E(R_m)]}{n-1} \dots\dots\dots\dots\dots (3-4)$$

σ_m^2= Variance of market return.

A systematic risk can be sorted out of total risk using total risk below.

Total Risk = Systematic Risk + Unsystematic Risk

$$Var(R_{i,t}) = b^2\ Var\ (R_m) +\ Var\ (E_{i,t}) \dots\dots\dots\dots\dots (3-5)$$

$$Proportion\ of\ Systematic\ Risk = \frac{Systematic\ Risk}{Total\ Risk}$$

$$= \frac{b_i^2\sigma_m^2}{\sigma_i^2} \dots\dots\dots\dots\dots (3-6)$$

Proportion of unsystematic risk will simply be (1- proportion of systematic risk) or $\left[1 - \frac{b_i^2\sigma_m^2}{\sigma_i^2}\right]$

The proportion of systematic risk is also measured by the coefficient of determination. It is the square of correlation coefficient. Beta is a relative market risk, but the actual market risk of stock J is $b^2_j\sigma^2_m$. Market risk can also be expressed in standard deviation form, $b_i\sigma_m$. (Gapenski, 2001:219)

d) Correlation Coefficient

Correlation analysis refers to the techniques used in measuring the closeness of the relationship between the variables. Correlation is an appropriate tool for discovering the relationship and expressing it in brief formula when the relationship is in quantitative nature. Correlation analysis reduces the range of uncertainty and measures in one figure the degree of relationship existing between the variables. The extent correlation among securities also determines the level of risk reduction of a portfolio with higher correlation between returns, the diversification effect is lower. The correlation coefficient can be calculated by using the following formula.

$$\gamma_{AB} = \frac{Cov_{AB}}{\sigma_A \sigma_B} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-7)$$

Where,

γ_{AB} = Correlation between the return of stock A and stock B.

e) Expected return of Common Stock, $E(R_j)$;

One of the main aims of the study was to determine the expected rate of return on the investment in the common stock. The expected rate of return is based upon the expected cash receipt and expected capital appreciation. Generally, expected rate of return is obtained by arithmetic mean of past years return. The expected return of common stock is calculated by using the following formula.

$$E(R) = \bar{R}_j = \frac{\sum R_j}{N} \ldots\ldots\ldots\ldots\ldots (3-8)$$

Where,

$E(R) = \bar{R}_j$ = Expected rate of return on common stock "j"

ΣR_j = Sum of realized rate of return on common stock "j"

N = Numbers of years that the return is taken

f) Standard Deviation (σ):

Standard deviation is the most popular and most useful measure of dispersion and gives uniform, correct and stable results. The chief characteristic of standard deviation is that it is based on mean return, which gives uniform and dependable results. It is an absolute measure of variation. Mainly it measures

the chance of deviation from the expected mean return. The main advantage of standard deviation is that the uncertainties can be summarized into a single, easily calculated number and the main draw back is that it coincides possible return above the expected return to be as risky as return below the expected return. Thus the standard deviation is defined as the positive square root of average sum of square deviation from the arithmetic mean of distribution. Alternatively it can be calculated as a weighted deviation from the expected return considering both the rate of return and probabilities associated with the return. The large is the standard deviation the greater is the volatility of the return from any investment. The standard deviation is calculated using the following formula:

$$(\sigma_j) = \sqrt{\frac{\sum(R_j - \bar{R}_j)^2}{N-1}} = \sqrt{\sum_{j=1}^{n}(R_j - \bar{R})^2(P_j)} \ldots\ldots\ldots\ldots\ldots\ldots (3-9)$$

Where,

$\bar{R}_j$ = Expected rate of return on stock "j"

R_j = Realized rate of return on stock "j" at time "t"

σ_j = Standard deviation of return on stock "j" during the time period "n"

g)Coefficient of Variation (C.V.);

Standard deviation is an absolute measure of dispersion. The relative measure of variation based on the standard deviation is known as the coefficient of variation. It is the ratio of standard deviation of return to the mean of that distribution. Alternatively, it means the risk per unit of expected return. It is

independent unit so; observation can be compared with the help of C.V. for their variability. The C.V. can be calculated by using the following formula.

$$C.V. = \frac{\sigma_j}{E(R_j)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-10)$$

Where,

C.V. = Coefficient of Variation

σ_j = Standard deviation on stock "j"

$E(R_j)$ = Expected rate of return of stock "j"

h) Portfolio Return (R_p);

Portfolio is the combination of two or more securities or assets and portfolio return is simply a weighted average of individual stock return. The portfolio return can be calculated by the following formula:

$$E(R_p) = W_A E(R_A) + W_B E(R_B) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-11)$$

Where,

$E(R_p)$ = Expected rate of return on portfolio of stocks A and B

W_A = Weight of stock A

$E(R_A)$ = Expected rate of return on stock A

W_B = Weight of stock B

$E(R_B)$ = Expected rate of return on stock B

g) Portfolio Risk (σ_p):

Unlike expected return on portfolio, it is generally, not a weighted average of risk of individual security. It also depends upon co-movement of returns making up those portfolios. Co-movement is measured by covariance or correlation of return of the stock in portfolio. It measures the combined standard deviation of the standard deviation of individual's stock return. The portfolio risk can be calculated by the following formula.

$$\sigma_p = [W_A^2\sigma_A^2 + W_B^2\sigma_B^2 + 2W_AW_BCov(R_AR_B)]^{1/2}$$

Or, $\sigma_p = [W_A^2\sigma_A^2 + W_B^2\sigma_B^2 + 2W_AW_B\rho_{AB}\sigma_A\sigma_B)]^{1/2} \ldots\ldots\ldots\ldots\ldots (3-12)$

Where,

σ_p = Standard deviation of portfolio

W_A^2 = Square of weight of stock A

$\sigma_A 2$ = Variance of stock A

Cov (R_AR_B) = Covariance of return of stock A and B

ρ_{AB} = Correlation of return of stock A and B

h) Linear Regression (R_{it}):

Regression analysis represents a more general method of forecasting financial requirements and is less subject to the potential pitfalls of the percent of the sales method. Regression methods are widely used by other managers in addition to financial managers, who need to be familiar with the techniques in order to communicate successfully with others. To convey the basic ideas, two variables are used in the linear regression. The spirit of calculation is that Y

represents the NEPSE return and X represents returns of the selected commercial banks. The equation for the linear regression analysis is

$$R_{it} = a + bR_{mt} + E_{it} \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3-13)$$

Where,

$a = \bar{Y} - b(\bar{X})$

b = Beta Coefficient of the stock

R_m = Market return at time "t"

$E_{it} = y - y^*$

$y^* = a + bx$

3.5 Definition of Terms:

a) Market Price of Stock (Ps):

One of the major data of this study is market price of the stocks. Market price of stock is determined by demand and supply forces. NEPSE quotes in three price records are available (i.e. high, low, and closing price of each year). So two approaches either average price or closing price can be used. "Average price" represents the price of whole year which can be a subject of argument. To get real average, volume and price of each transaction in the stock and duration of time of each transaction in the whole year are essential. It is very difficult to obtain and include these all information, and average if high and low price may not be reliable. In the present study closing price of common stock at the end of fiscal year (16^{th} July) is used as market price of the stock, which has a specific time span of one year. Hence, the study focuses in annual basis.

b) Dividend per Share (DPS):

Few firms attempt to maintain a constant ratio of dividends to current earnings; doing so would result in a fluctuating rupees amount of dividends. The dividends would fluctuate because earnings on a year-to-year basis are likely being quite variable. Instead, firms attempt to maintain a desired ratio of dividends to earning over some relatively long period, meaning that there is a target payout ratio of dividends to long run or sustainable earnings (William Gordon, Jeffery, 2003: 152). As a result, dividends are usually kept at a constant rupees amount and are increased only when management is confident that it will be relatively easy to keep paying this increased amount in the future. If companies declare only the cash dividend, there are no problems to take the dividend amount. However, if companies declare stock dividend (bonus share), it is difficult to obtain the amount that really shareholder has gained. In this case, they get extra number of shares as dividend and simultaneously price of the stock declines as a result of increased number of stocks. To get a real amount of dividend there are no model (formula), the models have been developed considering practical as well as theoretical aspect.

i) In the case of stock dividend:

   Total dividend amount = Cash dividend + stock div% X nest year's MPS

ii) In the case of "right issued" at par:

   Total dividend amount = cash div + % of price share X (next year's MPS-(PV)

c) Dividend Yield: Dividend yield explains the relationship between the market price of the stock and the return provided by the enterprise in the form of dividend in the respective year.

$$R = \frac{DPS}{MVPS} \quad \text{..... (3-14)}$$

Where,

DPS = Dividend per share

MVPS = Market value per share

d) Capital Gain Yield:

Capital gain yield is known as the rate of return of the form of share price appreciation (depreciation) during the period of one year. It is calculated dividend capital gain/loss by the beginning market price per share. The above equation 3-12 is the algebraic expression for the Capital Gain Yield.

e) Total Yield:

Total yield constitutes aggregate of dividend yield and capital gain yield. It is the total rate of return on stock investment (Weston & Brigham, 1996: 247). Equation 3-1 gives the total yield on the stock.

3.6 Limitation of the Study:

Considering the above matter, the following are the limitation of the research:

- σ This study was mainly based on secondary data, partially depended upon primary data.
- σ In the context of Nepal, data problem are crucial.
- σ The study is based on two commercial banks covering the period from 2007 to 2011only.
- σ There may be innumerable factors showing some degree of relationship with return. Thus, here only selected variables were taken into account.

Chapter - 4

Presentation and Analysis of Data

4.1 Analysis of Risks and Returns in the Selected Commercial Banks

Jack Clark Francis defines the expected rate of return is the increase in the expected return after tax of the initial investment over the holding period. The overall rate of return can be decomposed into capital appreciation and dividend components as defined by Weston & Copeland. The return on an investment of a company's stock is usually dividend plus change in market price of share (capital appreciation plus cash receipt). Capital appreciation means the difference between ending value and beginning value of an investment. The actual return of investment in common stock may differ substantially, since both capital appreciation and dividend receipt on common stock are uncertain items. The relationship between different level of returns and their relative frequencies are called probability distribution. The expected return on an investment is the mean value of its probability distribution of returns as stated by Sharpe, Alexander, and Bailey.

Table 4.1 presents the expected return, standard deviation, and coefficient of variation of the selected commercial banks. Among the listed commercial banks, NABIL Bank ltd (NABIL) has the highest expected return of 44.47% while Standard Chartered Bank Nepal has expected rate of return -14.04 %.

Table 4.1

Measures of Expected Return, Standard Deviation, and Coefficient of Variation

This table shows the return and risk position of the banks. Results are based on pooled cross sectional data of 2 commercial banks with 10 observations for the period of the FY 2006/07to 2010/11 by using equation 3-8, 3-9, and 3-10.

Sector	Name of the Commercial Banks	Expected Return ($\bar{R}_j$)	Standard Deviation(σ)	Coefficient of Variation (C.V.)
Commercial Banking	Standard Chartered Bank Nepal Limited.	-14.04	0.3976	0.1416
	NABIL Bank Ltd.	44.47	0.7528	0.0842

4.2 Measurement and Analysis of Risk

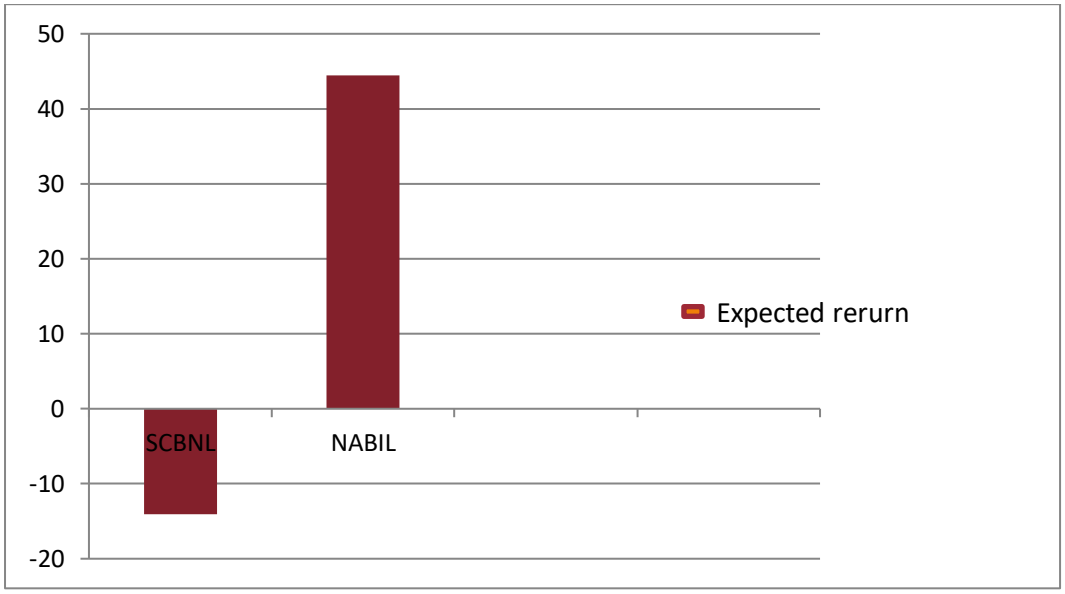
Standard deviation is the measure of the tightness or variability of a set of outcomes according to Cheney and Moses. Standard deviation measures the magnitude of the difference between best possible return and worst possible return. It is a measure of the risk of a company's stock. In other works, standard deviation is the measure of the tightness of the probability distribution. Smaller the standard deviation tighter the probability distribution. Thus, the standard deviation is the weighted average of the deviation from the expected value, and it provides an idea of how far above or below the expected value the actual is likely to be.

Among the listed commercial banks, Standard Chartered Bank has the lowest standard deviation in comparison with NABIL Bank. NABIL Bank has highest standard deviation in comparison with Standard Chartered bank. Table

4.1 clarifies that Standard Chartered bank has the lowest standard deviation of 39.76%, NABIL Bank has highest standard deviation of 75.28%.

The coefficient of variation (C.V.) is another measure of risk. It simply is calculated by dividing standard deviation by expected return. The coefficient of variation shows the risk per unit of return, and it proves a more meaningful basis for comparison when the expected return on alternative is not the same. Generally, people consider return as "good" and risk as "bad". The psychology of the people is to achieve higher return and less risk as possible. Another way to measure rather than looking at return and risk is coefficient of variation. An investment is said to be more risky, if the C.V. of that investment is yielding higher C.V. and the investment is said to be less risky if the C.V. of that investment is yielding less C.V. Comparing C.V. of the selected commercial banks, NABIL Bank has less C.V. of 0.0842stating less risky. Standard Chartered Bank has a negative C.V. of -0.1416stating no risk.

Fig 4.1 Expected Returns of Selected Commercial Banks.



The above figure shows that NABIL Bank has highest return than Standard Chartered Bank.

4.3 Analysis of Market Risk and Return

A portfolio consisting of all stocks is called market portfolio. The market return is simply the weighted average of all expected returns on the individual assets in the portfolio. Market return is the summation of market capital gain and average market dividend yield. As the number of securities in the portfolio increases, the standard deviation of the portfolio decreases at decreasing rate. The risk is divided into two parts, diversifiable and un-diversifiable risk.

Table 4.2

Computation of Market Return and Risk

This table shows the return and risk position of the two commercial bank, results are based on pooled cross sectional data of 2 commercial banks with 10 observations for the period of FY 2006/07 to FY 2010/2011 by using equation 3.1.

year	NEPSE Price Index	NEPSE Return
2005/06	386.83	
2006/07	684	0.768219
2007/08	963.4	0.40848
2008/09	749.1	-0.22244
2009/10	477.73	-0.36226
2010/11	362.85	-0.24047
	Total	0.351525
	Expected Return	0.070305
	Standard Deviation	0.2463
	Coefficient of Variation	3.50

Data Source: NEPSE Ltd.

Table 4.2 represents market return of NEPSE calculated for various years. In the fiscal year, 2005/06 NEPSE had price index of 386.83, which was increased in the fiscal year 2006/07 by 297.17, making a price index 684. In the year 2007/08, the price index of NEPSE increased to 963.40. The price index of NEPSE has steadily decreased then after. During the fiscal years 2008/09, 2009/10 and 2010/11, the price index of the NEPSE was 749.10, 477.73, and 362.85 respectively. The expected return of the market is 7.03%. The risk of the market is 24.63% and the coefficient of variation of the market is 3.05%.

The given graph has been plotted from the NEPSE Return that has been calculates in Table 4.2.

Fig 4.2 Annual Rate of Return of Market

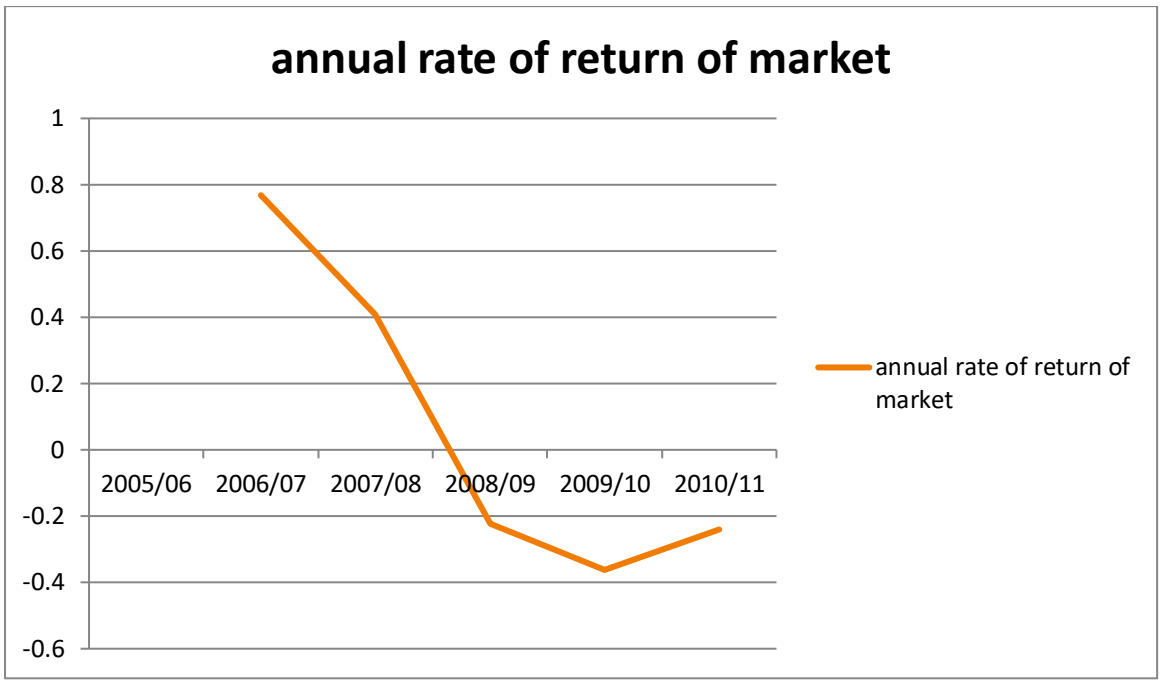


Figure 4.2 shows the annual rate of market return of NEPSE. Using the holding period return formula, NEPSE return has been calculated. Holding period return of NEPSE is the difference ending price and beginning price divided by beginning price. In the year 2006/07, the NESPSE return was (76.82%). In the preceding years 2007/08, 2008/09, 2009/10, and 2010/11, the NEPSE return was 40.84%, -22.24%, -36.22%, and -24.05% respectively. The above figure clearly shows that the slope of return of the market has not been growing throughout the period. Between the years 2008/09, 2009/10 and2010/11 the market return had negative.

4.4 Evaluation and Analysis of Required Return

The required rate of return has been estimated by using CAPM and the results are presented in table 4.3. The required rate of return on the investment of various stocks is computed by using the linear regression equation.

Table 4.3

Comparison of Market Return and Required Rate of Return

This table shows the return and risk premium position of the commercial banks, results are based on pooled cross-sectional data of 2 commercial banks with 10 observations for the period of the FY 2006/07 to 2010/11 by using equation 3-13 of regression model.

Sector	Name of the Commercial Bank	Market Return(R_m)	Regression Equation $R_{it} = a+bR_{mt}+E_{it}$	R_{it}
Commercial Banking	Standard Chartered Bank Nepal Ltd	7.03	-0.01955 +0.8417R_m+0	5.81
	NABIL Bank Ltd.	7.03	-0.02145 +1.3201R_m+0	9.25

Table 4.3 shows the comparison of market return and required rate of return. The market return is 7.03% as calculated above. Among two commercial

banks, Standard Chartered Bank has the lowest required rate of return of 5.81% and NABIL Bank has a required rate of return of 9.25%.

4.5 Analysis of Beta

Markowitz (1956), SLB Model Sharpe (1964), Linter (1965), and Black (1972) have focused that the returns are determined by risk (beta) factors. Besides, they have suggested that the axiological variables such as earnings yield, size, book to market value, cash flow yield, and leverage etc. are also the important determinants of the stock analysis in terms of risk and return. To make investment choices, many professionals and investors use beta to compare stock's market risk to that of the other stocks and the market as whole. As per CAPM, expected return should relate to its degree of systematic risk and not to its degree of total risk. Systematic risk is risk that is mattered to the investors holding a well-diversified portfolio. Market sensitivity of stock is explained by its beta coefficient. Beta measures a stock's volatility, the degree to which a stock price fluctuates in relation on the overall market.

Beta = 1: A beta of 1 indicates that the sensitivity's price will move with the market. (Moderate Stock)

Beta > 1: This indicates that the securities price will be more volatile than the market. (Aggressive Stock)

Beta < 1: This means that it will be less volatile than the market. (Conservative/Defensive Stock)

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

From the table 4.4 it can be seen that NABIL Bank has the highest beta coefficient of 1.32. Standard Chartered Bank has a beta coefficient of 0.8417.

Table 4.4

Estimation of Beta

This table shows the return and risk position of the commercial banks, results are based on pooled cross-sectional data of 2 commercial banks with 10 observations for the period of FY 2006/07 to 2010/11 by using equation 3-3, and 3-4.

Sector	Name of the Commercial Bank	Market Risk (Beta)	Type of Stocks
Commercial Banking	Standard Chartered Bank Nepal Ltd.	0.8417	Defensive Stock
	NABIL Bank Ltd.	1.32	Aggressive Stock

The table 4.4 above indicates that the Standard Chartered Bank have defensive stock, as their beta coefficient is less than one. NABIL Bank has an aggressive stock, as its beta coefficient is greater than one.

4.5.1 Computation of Expected Rate of Return and Required Rate of Return using Capital Market Line and Security Market Line:

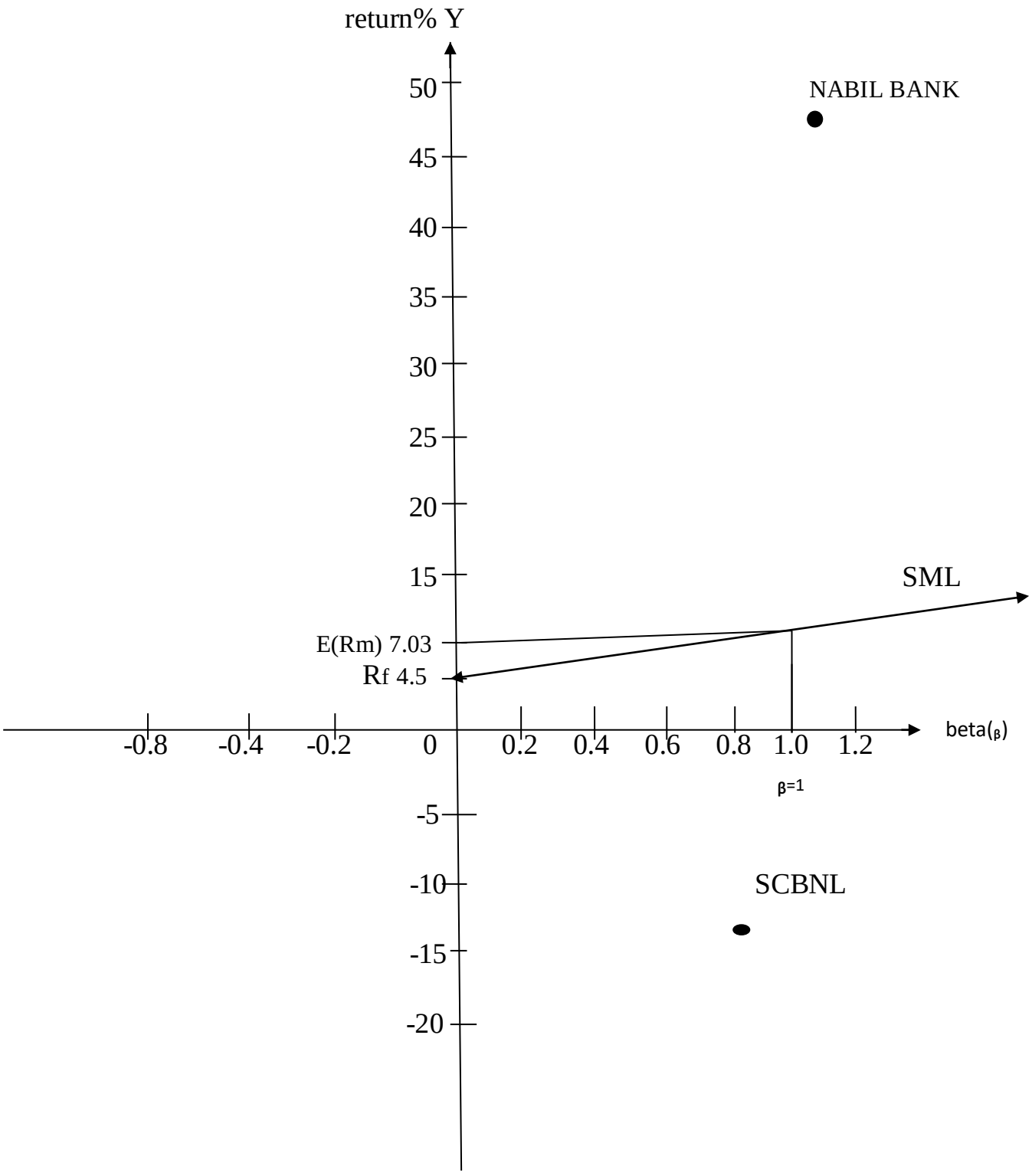
The significant contribution of the Capital Asset Pricing Model (CAPM) is that it provides a measure of the risk of an individual security, which is consistent with portfolio theory; it enables us to estimate the undiversified risk of a single asset and compare it with the diversifiable risk in a well-diversified portfolio.

The Capital Market Line (CML) and the Security Market Line are merely different pictures of the same market equilibrium. The CML may be used for determining the required return only for those efficient portfolio that are perfectly correlated with the market portfolio because they fall on the CML but SML may be used to explain the required rate of return on all securities whether or not they are efficient. The SML provides a unique relationship between undiversified risks (measured by beta and expected return).

The risk free rate of return has been calculated by using the average fixed rate of return used in the selected commercial banks. The calculation of risk free rate is shown in the appendix 3.

The given graph has been plotted by the help of the beta and expected rate of return of the two commercial banks as calculated in appendix 1 and 2. The two commercial banks has been plotted accordance to their beta in X-axis and expected rate of return in Y- axis.

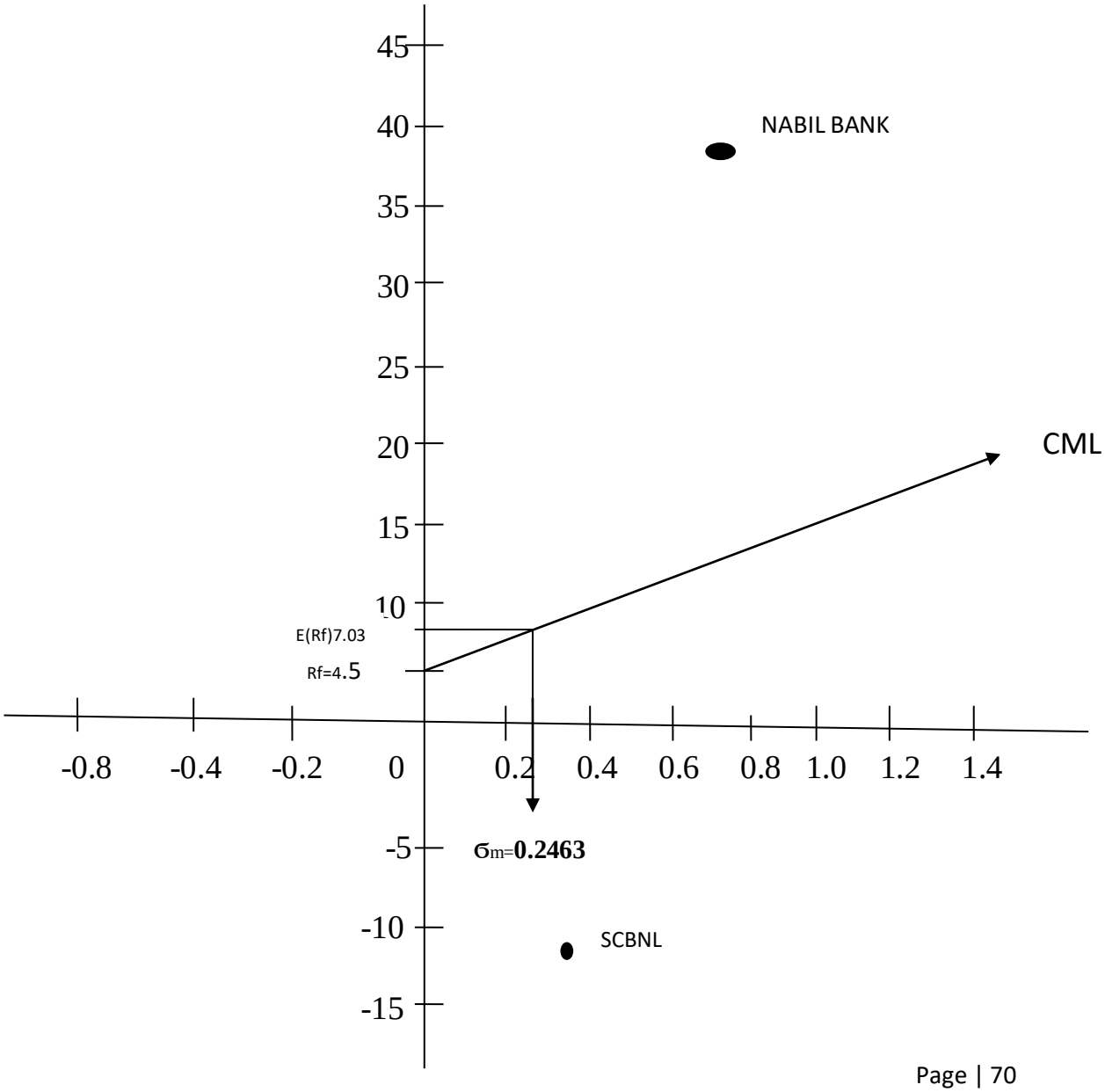
Figure 4.3 Security Market Line (SML)



The above figure shows that and NABIL are above the SML line indicating their stock being under-priced.

The given graph has been plotted by the help of the standard deviation and expected rate of return of the selected commercial banks as calculated in appendix 1, and 2. All the two commercial banks has been plotted accordance to their standard deviation in X-axis and expected rate of return in Y- axis

Figure 4.4 Capital Market Line



Comparison of an equilibrium required rate of return with the expected rate of return provides a basis for investments decision. If the required rate of return is higher than the expected rate of return, stock is said to be overpriced and an investor sells the held stock or many involve in short selling strategy. If the required rate of return is lower than the expected rate of returns a stock is said to be under priced security and an investor makes buying strategy for this type of stock.

Table 4.5

Comparison of Required Rate of Return and Expected Rate of Return

This table shows the beta, required rate of return, and expected rate of return of the commercial banks, results are based on pooled cross-sectional data of 2 commercial banks with 10observations for the period of 2006/07to 2010/11 by using equation 3-3, 3-2, and 3-8 respectively.

Sector	Name of the Commercial Banks	Beta (β)	Required Rate of Return (RR) E(Rj)=Rf+[E(Rm)-Rf]β	Expected Rate of Return	Under/Over priced
Commercial Banks	Standard Chartered Bank Nepal Ltd.	0.8417	-11.10%	-14.04	No -Priced
	NABIL Bank Ltd.	1.32	57.26%	44.47	Over-Priced

Source: Appendix- 3

From the table below, it can be seen that among the selected two commercial banks, NABIL Bank has the highest required rate of return as compared with the expected rate of return. It is said to be over-priced stock as its required rate of return is higher than its expected rate of return. It has a required rate of return of 57.26% with a low expected rate of return of 44.47% only. Whereas,

Standard Chartered Bank is no-priced because it's required rate of return and expected rate of return both have negative.

4.6 Total Risk Analysis

As the number of securities in the portfolio increases the standard deviation (σ) and portfolio returns decreases at falling rate. However, even a well-diversified portfolio possesses some level of risk that cannot be diversified. The risk of the portfolio can be divided into two portions;

a) Diversifiable Risk:

   Diversifiable risk is that portion of the total risk that can be reduced through diversification. It is also called unsystematic risk.

b) Un-diversifiable Risk

   Un-diversifiable risk is that portion of the total risk that cannot be reduced or eliminated. It is also called systematic risk or market related risk.

   Hence, total risk is the sum of un-diversifiable risk and diversifiable risk.

   Total Risk = Un-diversifiable Risk + Diversifiable Risk

   $Var(R_{i,t}) = b^2 Var(R_m) + Var(E_{i,t})$

Total risk can be classified as the diversifiable (unsystematic) and un-diversifiable (systematic) risk. Making portfolio between the securities can be diversified away and investor should expect to receive additional return associated with the systematic risk. The systematic risk can be measured.

Since the sources of systematic risk are market persuasive, it is logical to measure systematic risk as the covariance between the return of individual assets or portfolio and return of the market portfolio, which consists of all risky assets. The measure of systematic risk is represented by beta (β). Securities with beta above market beta (β_m=1) are classified as more risky (aggressive) and securities less than the market beta as less risky (defensive) in comparison with the market risk. Beta shows how the price of a security responds to the market forces. In effect, the more responsive the price of a security is to change in the market; the higher will be its beta. Beta measures changes in stocks return resulting from per unit change in the market return. It is an index of systematic risk.

Table 4.6

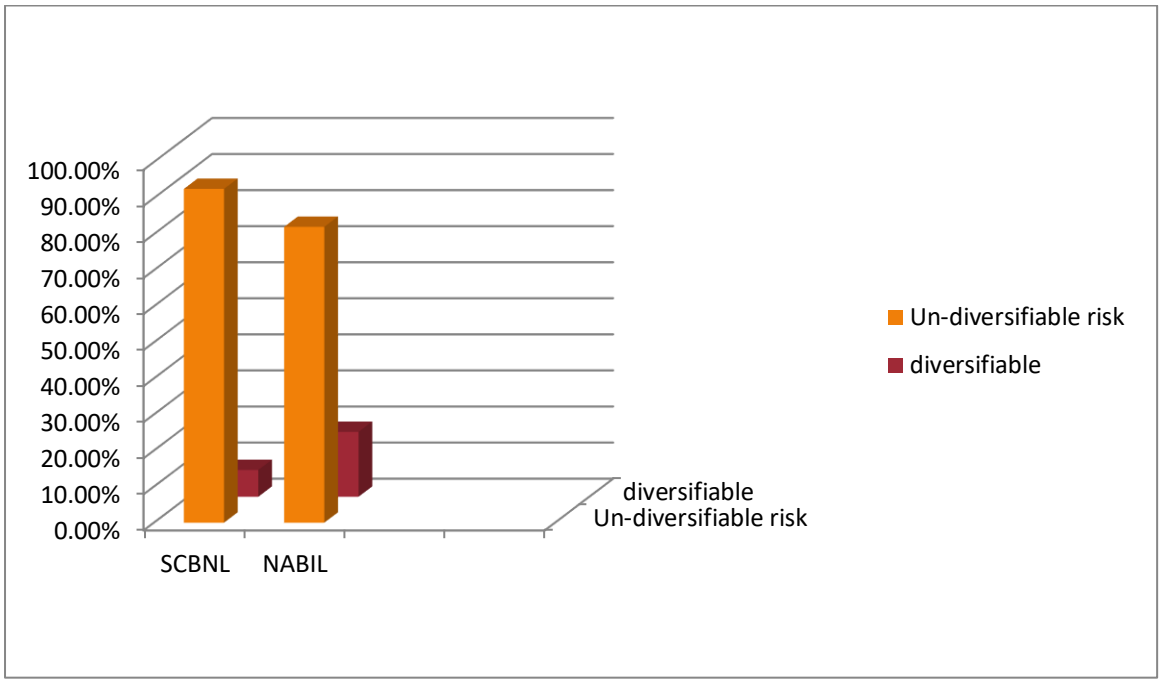
Partition of Diversifiable and Un-Diversifiable Risk from Total Risk

This table indicated that the partition of diversifiable and un-diversifiable risk from total risk of the commercial banks, results are based on pooled cross-sectional data of 2 commercial banks with 10 observation for the period of the FY 2006/07 to 2010/11 by using equation 3-9 and 3-5 of linear regression model.

Sector	Name of the Commercial Banks	Total Risk Var (Rt)	Un-diversifiable Risk	Diversifiable Risk
Commercial Banking	Standard Chartered Bank Nepal Ltd.	0.1857	0.719	0.01375
	Percentage (%)	100%	92.56%	7.43%
	NABIL Bank Ltd.	0.5157	0.04229	0.0927
	Percentage (%)	100%	82.02%	17.98%

Source – Appendix 3

Figure 4.5 Division of Diversifiable and Un-Diversifiable Risk from Total Risk



The above table 4.6 and the figure shows that the portion of diversifiable risk and un-diversifiable risk of the two commercial banks. Standard Chartered Bank has the highest portion of the un-diversifiable risk of 92.56% as compared with NABIL Bank. 92.56% of total risk of the Standard Chartered Bank cannot be diversified resulting greater market risk. NABIL Bank has un-diversifiable risk of 82.02%. Standard Chartered Bank and NABIL Bank have 7.43%, and 17.98% of risk that can be diversified or reduced.

4.7 Major Findings

The study of role and impact of axiological variables using various statistical data has given following major results.

1. Among the two selected commercial banks, the expected return of NABIL Bank is highest (44.47%) than Standard Chartered Bank.

2. The standard deviation shows the riskiness of the asset. NABIL Bank Ltd has the highest standard deviation of 75.28% than standard Chartered Bank (39.76%).
3. The coefficient of variation shows that the variation is the measurement of risk where low coefficient of variation is recommended. Here, NABIL Bank has the lowest coefficient of variation than Standard Chartered Bank. Standard Chartered Bank has highest coefficient in variation as compared with NABIL banks.
4. The NEPSE index, which is also used as measure of return of market, indicates that there is negative movement in 2008/09, 2009/10 and 2010/11.
5. The required rate of returns on stock of the two commercial banks has a linear relationship with the market index. Among the selected two commercial banks, NABIL bank has the highest future return of 9.25%. Standard Chartered Bank had only 5.80% of future return.
6. The beta coefficient which measures the systematic risk of the company reveals that the systematic risk of a selected two commercial banks range in between 0.8417to 1.3201 times.
7. Market sensitivity of stock is explained by its beta coefficient. Beta is the systematic risk measure. Beta explains the sensitivity or volatility of the stock with the market. Beta of market is always one. Stocks having beta more than one are known as aggressive stock and stocks having less than one are known as defensive stock. Among the selected two commercial banks, Standard Chartered Bank has defensive stock, as their beta is less than one. NABIL Bank has aggressive stock, as their beta is more than one.
8. The expected return of overall market is 7.03% and its standard deviation (risk) is 24.63%. The Coefficient of variation of the market is

3.05. It means the market itself is aggressive. For earning one unit of return n market portfolio, an investor has to bear a risk of 3.05.

9. Under the CAPM, the relevant of overall measure of determining a security's expected return is its covariance with the market.
10. Under the CAPM, the total of security can be separated into market risk and non-market risk. Each security's non-market is unique to that security and hence is termed its unique risk.

Chapter- 5

Summary, Conclusions, and Recommendations

5.1 Summary

Stock Market serves as a link between suppliers and users of capital funds. It is mechanism for the mobilization of public savings and channelizing them in productive investment (Gupta, 1978: 325). In order to enhance the role of stock market in economic activities, it is essential to flow financial resources easily and in a simple manner, which would, in turn, help to achieve desired results from the economic development of the nation. It is possible only when there is existence of developed and healthy stock market in the country. Investors in general, expect two kinds of return on stock investment in the form of dividend and capital gains (stock appreciation). Rational investors consciously examine the behavior of stock risk, return with different axiological variables, and then invest their funds in efficient portfolios from which they can realize higher rate of return at same level of risk.

This study mainly aims of exploring the application of CAPM in the commercial banks. Its specific objectives are:

1. To determine and compare the risk and return across the referred commercial Bank.
2. To assess realized rate of return for the referred commercial bank.
3. To compute and analyze beta & CAPM equations for the referred commercial banks.
4. To analogize capital gain yields and dividend yields in the referred commercial banks.
5. To examine the correlation between returns across the referred commercial banks.
6. To compare required rate of returns with expected rates of return.

7. To analyze the systematic and unsystematic portion of risk.
8. To identify whether stocks of referred commercial bank using are under priced or over priced in CAPM.
9. To examine applicability of CAPM in referred commercial bank.

The study covered two commercial banks among 32 listed commercial banks by NEPSE. The selected commercial banks were Standard Chartered Bank Nepal Ltd and NABIL Bank Ltd. For the purpose of the study, the necessary data and the other related variables were collected from three commercial banks with 10 observations for the period of the FY 2006/07 to 2010/11 from the Nepal Stock Exchange (www.nepalstock.com), Securities Board Nepal (www.sebonp.com), banking & statistics of NRB, financial statements of the concerned banks and their annual report. NEPSE has provided the data required while completing this study.

The study used a variety of financial and statistical tools to accomplish the objectives. It employed risk return analysis and linear regression equation to find out the application of CAPM in the selected commercial banks.

5.2 Conclusions

There are differences in expected return, required return and risk situation in the selected three commercial banks and it shows the real performance of the selected two commercial banks.

Under the CAPM Model, the price situation for the most stock of selected commercial banks is under-priced which indicated that the investors should find these securities attractive and these stocks should show upward price movement.

The linear efficient set of the CAPM is known as the Capital Market Line (CML). The CML represents the equilibrium relationship between the expected return and standard deviation of efficient portfolio.

The linear relationship between the market covariance and expected return is known as security market line (SML). It is the equilibrium relationship between the market beta and expected return.

The beta of a security is an alternative way of measuring the risk than a security adds to the market portfolio. Beta is a measure of the covariance between the security and market portfolio relative to the market portfolio's variance.

The beta from the CAPM is similar in concept to the beta from the market model. However, the market model is not an equilibrium model of a security prices as is the CAPM. Furthermore, the market model uses a market index, which is a subset of the CAPM's market portfolio.

5.3 Recommendations

1. There should be a system of publishing beta of the Nepalese commercial banks regularly, which will later help investors to make rational decision.
2. Investors must focus on both risk and return, as high returns are associated with high risk. Investors' must invest depending upon their nature. For instance, risk averter can invest on the moderate type of stocks having low risk and good return.
3. Before making an investment decision in stock market, investors should analyze their risk attitude, their need, and their requirements. One

should rely upon reliable information and should investigate about the stock with the agents/brokers before they invest.

4. The company themselves are responsible for increasing or decreasing the unsystematic risk (diversifiable risk), which badly affects the business and the profit. Proper and efficient management is essential for the progress of any organizations. There are several examples of that sort of companies declining from the peak due to mismanagement. So, attempt should be made to reduce diversifiable risk.
5. Besides investing the fund in single stock, it is better to invest making portfolio of more than single assets. Portfolio investment gives maximum return at very minimum risk, or increase the return keeping the risk in a constant way.
6. It would be better to welcome foreign portfolio investment.
7. The companies have higher returns are not able to provide stable returns. Their stock returns are more variable. Therefore, attempt should be made to achieve stability returns.
8. Due to increment in violence and unstable political situations, there is decrease in investment. Investment has become less due to the political situation in the nation. Thus, government must play a vital role to improve the security as well as political condition and to promote the investors.
9. The commercial Banks should give brief discussion about the beta and market risk in AGM's. They also should give the data related to beta and market risk in their annual reports.
10. There must be public awareness as well as publish of market related risk such as beta, market risk, etc., in their journals, articles so that shareholders can know whether to invest or not.

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APPENDIX-1 Standard Chartered Bank Nepal Limited. (SCBNL)

Year	NEPSE Index Price	NEPSE Total Return(Rm)	SCBNL Price	SCBNL Div. Yield	SCBNL Total Return
2005/06	386.83		3775		
2006/07	684	0.768218597	5900	0.022033898	0.584947806
2007/08	963.4	0.408479532	6830	0.019033675	0.17660794
2008/09	749.10	-0.222441354	6010	0.016638935	-0.10341963
2009/10	477.73	-0.36226138	3279	0.21347972	-0.43306134
2010/11	362.85	-240407559	1800	0.27777778	-0.42327437

Var(Rmt)=4 Var(rn) = 4

Var (Rm)= 0.2427 Var (SCBNL) =0.1857

SD (Rm)=0.2463 SD (SCBNL) =0.0.3976

Co-Variance (R_{SCBNL}, Rm) = $\sum \frac{[R_{SCBNL}-E(R_{SCBNL})][R_m-E(R_m)]}{n-1} =$ 0.2042

$\beta = \frac{Cov(R_{SCBNL}R_m)}{Var(R_m)}$ = 0.0.8417 $a = \bar{Y} - b(\bar{X})$ = -0.0987

Rit =a+bRmt+Eit =- 0.09879+ 0.8417Rm

Year	NEPSE Total Return (R_m) X	SCBNLTotal Return Y	$X-\bar{X}$	$(X-\bar{X})^2$	$Y-\bar{Y}$	$(Y-\bar{Y})^2$	$(X-\bar{X})(Y-\bar{Y})$
2005/06							
2006/07	0.768218597	0.584947806	0.69791363	0.487083435	0.624577155	0.390096623	0.43590091
2007/08	0.408479532	0.17660794	0.338174565	0.114362036	0.216290143	0.046781426	0.073143825
2008/09	-0.222441354	-0.10341963	-0.29274632	0.0857113645	-0.06379028	0.0040692	0.01867437
2009/10	-0.36226138	-0.43306134	-0.43274372	0.096581428	-0.39343199	0.154788736	0.170185442
2010/11	-240407559	-0.42327437	0.310775526	0.96581428	-0.38366450	0.147183503	0.119227484
Total	**0.351524837**	**-0.198146749**		0.970840952		**0.74291488**	0.81713203
N	**5**	**5**					
Mean	**0.070304967**	**-0.03962935**					

Working Notes:

Calculation of NEPSE Total Return			Calculation of SCBNL Total Return		
Year	**Total Return**	**Rm**	**Year**	**Total Return**	**R_{SCBNL}**
2005/06			2005/06		
2006/07	(684-386.83)/386.83=	0.768218597	2006/07	(59007-3775)/3775+0.02203=	0.5849
2007/08	(963.4-684)/684=	0.408479532	2007/08	(6830-5900)/5900+0.0.01903=	0.1766
2008/09	(749.1-963.40/963.40=	-0.22244135	2008/09	(6010-6830)/6830+0.0166=	-0.1035
2009/10	(477.73-749.1)/749.1=	-0.36226138	2009/10	(3279-6010)/6010+0.02134=	-0.4331
2010/11	(362.85-477.73)/477.73=	-240407559	2010/11	(1800-3279)/3279+0.02777=	-0.4233

APPENDIX-2 NABIL Bank Limited

Year	NEPSE Index Price	NEPSE Total Return(Rm)	NABIL Bank Price	NABIL Bank Div. Yield	NABIL Bank Total Return
2005/06	386.83		2240		
2006/07	684	0.768218597	5050	0.027722772	1.282187058
2007/08	963.4	0.408479532	5275	0.18957346	0.063511801
2008/09	749.10	-0.222441354	4899	0.01735048	-0.053929141
2009/10	477.73	-0.36226138	2384	0.29362416	-0.484007659
2010/11	362.85	-240407559	1252	0.023961661	-0.450870553

Co-Variance

$(R_{NABIL}, Rm) = \sum \frac{[R_{NABIL} - E(R_{NABIL})][R_m - E(R_m)]}{n-1} = 0.3204$

$a = \bar{Y} - b(\bar{X})$ =-0.02145

Rit =a+bRmt+Eit = -0.02129+ 1.3201Rm

Var(Rmt)=4

Var (Rm)= 0.2427

SD (Rm)=0.2463

Var(rn) = 4

Var (NABIL) = 0.5157

SD (NABIL) =0.7528

$\beta = \frac{Cov(R_{NABIL} R_m)}{Var(R_m)}$ = 1.3201

Year	NEPSE Total Return (Rm) X	NABIL Bank Total Return Y	$X - \bar{X}$	$(X - \bar{X})^2$	$Y - \bar{Y}$	$(Y - \bar{Y})^2$	$(X - \bar{X})(Y - \bar{Y})$
2005/06							
2006/07	0.768218597	1.282187058	0.69791363	0.487083435	1.2108088757	1.466057846	0.845039935
2007/08	0.408479532	0.063511801	0.338174565	0.114362036	-0.0078665	0.00265974	-0.00266025
2008/09	-0.222441354	-0.053929141	-0.292746321	0.085700408	-0.125307442	0.015701955	0.036683293
2009/10	-0.36226138	-0.484007659	-o.432566348	0.187113645	-0.55538596	0.308453565	0.240241277
2010/11	-240407559	-0.450870553	-0.319775526	0.096581428	-0.522248855	0.272743866	0.162302162
Total	**0.351524837**	**0.356891505**		**0.970840952**		**2.063019114**	**1.281606416**
N	**5**	**5**					
Mean	**0.070304967**	**0.0713783**					

Appendix – 3

Calculation of Required Rate of Return (RR)

Name of the Commercial Banks	Beta (β)	Risk Free Rate (R_f)	Expected Rate of Return [E(Rm)]	Required Rate of Return $=R_f + [E(R_m)-R_f]*\beta$	RR
Standard Chartered Bank Nepal Ltd.	0.8417	4.5	7.03	4.5+[(-14.04-4.5)*0.8417]=	-11.10
Nabil Bank Ltd.	1.32	4.5	7.03	4.5+[(44.47-4.5)*0.1.3201]=	1.32

Calculation of Total Risk, Diversifiable Risk, and Un-diversifiable Risk

Name of the Commercial Banks	Total Risk	Calculation of Un-Diversifiable Risk $= \beta^2 Var(R_m)$	Un-Diversifiable Risk	Diversifiable Risk
Standard Chartered Bank Nepal Ltd.	0.1857	0.8417*0.8417*0.2427	0.1719	0.03175
Nabil Bank Ltd.	0.5157	1.3201*1.3201*0.2427	0.4229	0.0927

Working Notes:

Calculation of NEPSE Total Return			Calculation of NABIL Bank Total Return		
Year	**Total Return**	**Rm**	**Year**	**Total Return**	**R_{NABIL}**
2005/06		0.768218597	2005/06		
2006/07	(684-386.83)/386.83=	0.768218597	2006/07	(5050-2240)/2240+1.2822=	1.2822
2007/08	(963.4-684)/684=	0.408479532	2007/08	(5275-5050)/5050+0.01895=	0.6355
2008/09	(749.1-963.40/963.40=	-0.22244135	2008/09	(4899-5275)/5275+0.05387=	-0.0539
2009/10	(477.73-749.1)/749.1=	-0.36226138	2009/10	(2384-4899)/1505+0.0294=	-0.4840
2010/11	(362.85-477.7)/477.7=	-240407559	2010/11	(1252-2384)/2384+0.02396=	-0.4508