Stock Market in Nepal:
Movements & Behaviors

By:

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Stock Market in Nepal: Movements and Behaviors

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DECLARATION

I here by declare that this thesis entitled "Stock Market in Nepal: Movements and Behaviors" is submitted to Office of Dean, Faculty of Management, Tribhuvan University is my original work done in the form of partial fulfillment of the requirement of Master of Business Studies (MBS) under the guidance and supervision of Dr. Kamal Das Manandhar, Shanker Dev Campus.

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Executive Summary

The development and growth of the stock market in Nepal has not so long history. However, the Nepalese stock market has come through the drastic changes from the open-out-cry system to current automated trading system. The study is focused on the movements and behaviors of the one and only stock market in Nepal.

The whole study tries to analyze the movements of the various sectors indices of the Nepalese stock market. It also tries to study on the various types of efficient market hypotheses (EMH).The banking sector covers the largest portion of the trading at Nepse. Similarly, under anomalies, Mid-July effects & bullish Tuesday prevails in the Nepalese stock market. The risk regarding the financial and management prevails in the Nepalese stock market.

The study tries to analyze portfolio attributes of the Nepalese stock market in relation to risk and return through market model & multi-factor CAPM or, Merton Model (ICAPM). Similarly, the study has tried to bring out the opinion regarding the Nepalese stock market among the general investors.

Nepalese stock market is not efficient enough to evaluate the prices of stocks. Most of the investors are not very responsive to many financial and economic changes. But it has been felt that they invariably respond to the dividend incomes, earnings per share, capitalization of profits to issue bonus and right shares. Thus, the market shows the non-competitive and inefficient characteristics.

The study shows that Nepse fails to represent itself as a barometer to Nepalese investors' confidence level as an indicator to the Nepalese economy as whole. The Nepalese investors at stock market has not followed the fundamental & technical analysis during investment but followed as gambling with the market trend. The market lies on a speculative bubble, in that nothing justifies by the underlying economic fundamentals in the rise in price except the hope that it will go higher still.

Table of Contents

Chapter I	**Introduction**	**1-8**
1.1.	Background of the Study	1
1.2.	Focus of the Study	4
1.3.	Statement of the Problem	5
1.4.	Objectives of the Study	6
1.5.	Limitations of the Study	7
1.6.	Organization of the Study	7
Chapter II	**Review of Literature**	**9-92**
2.1.	Conceptual Review	9
2.1.1.	Concept of Market	9
2.1.1.1.	Financial Market	10
2.1.1.2.	Capital Market	12
2.1.1.2.1.	Capital Market in Nepal	14
2.1.1.2.2.	Constituents of Capital Market in Nepal	16
2.1.1.2.2.1.	Securities Exchange Board of Nepal	16
2.1.1.2.2.2.	Nepal Stock Exchange Limited	17
2.1.1.2.2.2.1.	Trading System Automated	18
2.1.1.2.2.2.2.	Trading through WAN started	24
2.1.1.2.2.2.3.	Market Halt System Introduced	24
2.1.1.2.2.2.4.	Trading Hours Extended	25
2.1.1.2.2.2.5.	Real time Information Disseminated	25
2.1.1.2.2.2.6.	OTC Market Started	26
2.1.1.2.2.3.	NEPSE Converted to Profit Seeking Entity	26
2.2.	Introduction to Security Market	27
2.2.1.	Primary Market	28
2.2.2.	Secondary Market	29
2.2.3.	The Over-the-Counter Market	30
2.2.4.	The Stock Exchanges	31
2.3.	Introduction to Market Indexes	33
2.3.1.	Significance of Market Index	35
2.3.2.	Construction of an Index	36
2.3.3.	Methods of Calculating Market Indices	37
2.3.3.1.	Price Weighting	37
2.3.3.2.	Value Weighting	38
2.3.3.3.	Equal Weighting	39
2.3.3.4.	Geometric Mean	40

2.3.4.	Method of Calculating Nepse Index	41
2.4.	Risk in a Contemporary Mode	42
2.4.1.	Meaning of Beta	43
2.5.	A Single-factor CAPM	44
2.5.1.	Assumptions of the CAPM	49
2.5.2.	The Market Model	50
2.5.2.1.	Beta of Market is 1	54
2.5.3.	A Multifactor CAPM	55
2.5.3.1.	Gold as Store of Value and Hedge against Inflation	58
2.6.	Efficient Market Hypothesis	59
2.6.1.	Weak Form	61
2.6.1.1.	Runs Test	61
2.6.2.	Semi-strong Form	62
2.6.2.1.	Market Anomalies	64
2.6.2.1.1.	January Effect	65
2.6.2.1.2.	Day-of-the-Week Effect	65
2.6.3.	Strong Form	66
2.7.	Review of the Past Studies	67
Chapter III	**Research Methodology**	**93-103**
3.1.	Research Design	93
3.2.	Population and Sample of Data	93
3.3.	Sources of Data	94
3.4.	Data Collection Procedures	94
3.5.	Tools Used	94
3.5.1.	The CAPM Model	95
3.5.2.	The Market Model	95
3.5.3.	The Multifactor CAPM (ICAPM)	96
3.5.4.	The One-Sample Runs test (r-statistics)	97
3.5.5.	F-statistics	99
3.5.6.	Chi-square Test (χ^2)	99
3.5.7.	Spearman's Rank Correlation	101
3.5.8.	T-statistics	102
3.6.	Pretesting	103
3.7.	Research Gap	103
Chapter IV	**Presentation & Analysis of Data**	**104-149**
4.1.	Secondary Data Analysis	104
4.1.1.	Nepse Index Movements	104

4.1.2.	Sector-wise Indices Movement Analysis	105
4.1.2.1.	Banking Sub-Index Movements	105
4.1.2.2.	Mfg. & P Sub-Index Movements	107
4.1.2.3.	Hotel Sub-Index Movements	108
4.1.2.4.	Business (Trading) Sub-Index Movements	109
4.1.2.5.	Insurance Sub-Index Movements	111
4.1.2.6.	Finance Sub-Index Movements	112
4.1.2.7.	Development Bank Sub-Index Movements	114
4.1.2.8.	Hydro-power Sub-Index Movements	115
4.1.2.9.	Other Sectors Sub-Index Movements	117
4.1.3.	Month-of-the-Year Effect on Nepse	119
4.1.4.	Quarterly Effect on Nepse	122
4.1.5.	Day-of-the-Week Effect on Nepse	123
4.1.6.	Market Model Analysis	126
4.1.6.1.	Interpretation of Correlation Coefficient from Market Model	128
4.1.7.	Merton Model Analysis	129
4.2.	Primary Data Analysis	130
4.2.1.	Awareness about the Criteria to be fulfilled by the Companies to be listed at Nepse	130
4.2.2.	Opinion on Daily to Regulatory Activities of SEBON & Nepse	131
4.2.3.	Opinion on Share Prices of the Listed Companies	132
4.2.4.	Nepse Index as a Convenient Unit & a Good Representativeness of Secondary Market of Nepal	133
4.2.5.	Major Risk Associated with the Nepalese Stock Market	134
4.2.6.	Causes Mainly Affecting Nepse Index Movement	135
4.2.7.	Anomalies Affecting Nepse Index Movement	138
4.2.7.1.	Opinion on Anomalies Affecting Nepse Index Movement	138
4.2.7.2.	Opinion on Major Anomalies Affecting Nepse Index Movement	139
4.2.8.	Suitable Sector(s) Chosen for Investment in Nepalese Stock Market	141
4.3.	Test of Hypotheses	142
4.3.1.	Test on Nepse Index is highly affected mainly by Nepse Banking Sub-index Movement	142
4.3.2.	Test on a bilateral causality between the Nepalese Stock Market capitalization & nominal GDP	143
4.3.3.	Test on Statement that “Nepse index measures the change in the overall behavior of the market or sector over a period of time.”	143
4.3.4.	Test on a Randomness on Monthly Return in Nepse	144

4.3.5.	Test on a Rank Correlation in the population; i.e. risk and Returns on various sectors of Nepse are randomly mixed.	144
4.3.6.	Test on Homogeneity on Returns in the Various Sectors of the Nepalese Stock Market	145
4.4.	Major Findings of the Study	146
Chapter V	**Summary & Conclusions**	**150-160**
5.1.	Summary	150
5.2.	Conclusions	152
5.3.	Recommendations	158

Bibliography
Annexes

List of Tables

Table No.4.1.	Nepse index Movements	104
Table No.4.2.	Banking Sub-Index Movements	105
Table No.4.3.	Mfg. & P Sub-Index Movements	107
Table No.4.4.	Hotel Sub-Index Movements	108
Table No.4.5.	Business Sub-Index Movements	109
Table No.4.6.	Insurance Sub-Index Movements	111
Table No.4.7.	Finance Sub-Index Movements	112
Table No.4.8.	Development Bank Sub-Index Movements	114
Table No.4.9.	Hydro-power Sub-Index Movements	115
Table No.4.10.	Other Sectors Sub-Index Movements	117
Table No.4.11.	Month-of-the-Year Effect on Nepse	119
Table No.4.12.	Quarterly Effect	122
Table No.4.13.	Day-of-the-Week Effect on Nepse	123
Table No.4.14.1.	Market Model Analysis	126
Table No.4.14.2.	Interpretation of Correlation-coefficient from Market Model	128
Table No.4.15.	Merton Model Analysis	129
Table No.4.16.	Opinion on Awareness about the Criteria to be Fulfilled	130
Table No.4.17.	Opinion on Daily to Regulatory Activities of SEBON & Nepse	131
Table No.4.18.	Opinion on Share Prices of the Listed Companies	132
Table No.4.19.	Responses on Nepse as a Convenient Unit & a Good Representativeness	133
Table No.4.20.	Major Risk Associated with the Nepalese Stock Market	134
Table No.4.21.	Causes Mainly Affecting Nepse Index Movements	135
Table No.4.22.	Opinion of Anomalies Affecting Nepse Index Movement	138
Table No.4.23.	Opinion on Major Anomalies Affecting Nepse Movement	139
Table No.4.24.	Suitable Sector(s) Chosen for Investment in Nepalese Stock Market	141
Table No.4.25.	One-way ANOVA Table	145

List of Figures

Figure No.2.1.	Risks and Diversification	43
Figure No.2.2.	Single-factor CAPM	47
Figure No.2.3.	Under- price and over-priced stock during temporary Market disequilibrium	48
Figure No.2.4.	The Market Model	52
Figure No.4.1.	Nepse index Movements	104
Figure No.4.2.	Banking Sub-Index Movements	106
Figure No.4.3.	Mfg. & P Sub-Index Movements	107
Figure No.4.4.	Hotel Sub-Index Movements	109
Figure No.4.5.	Business Sub-Index Movements	110
Figure No.4.6.	Insurance Sub-Index Movements	111
Figure No.4.7.	Finance Sub-Index Movements	113
Figure No.4.8.	Development Bank Sub-Index Movements	114
Figure No.4.9.	Hydro-power Sub-Index Movements	116
Figure No.4.10.	Other Sectors Sub-Index Movements	117
Figure No.4.11.	Month-of-the-year Effect	120
Figure No.4.12.	Quarterly Effect	122
Figure No.4.13.1	Day-of-the-Week Effect-I	124
Figure No.4.13.2	Day-of-the-Week Effect-II	124
Figure No.4.14.	Awareness about the Criteria to be fulfilled by the Companies to be listed at Nepse	130
Figure No.4.15.	Opinion on Daily to Regulatory Activities of SEBON & Nepse	131
Figure No.4.16.	Opinion on Share Prices of the Listed Companies	132
Figure No.4.17.	Responses on Nepse as a Convenient Unit & a Good Representativeness	133
Figure No.4.18.	Major Risk Associated with the Nepalese Stock Market	134
Figure No.4.19.	Causes Mainly Affecting Nepse Index Movements	136
Figure No. 4.20.	Opinion of Anomalies	138
Figure No.4.21.	Opinion on Major Anomalies Affecting Nepse Movement	140
Figure No.4.22.	Suitable Sector(s) Chosen for Investment in Nepalese Stock Market	141

List of Annexes

Annex-I	Questionnaire
Annex-II	Nepalese Stock Market Indicators
Annex-III	Contribution of Secondary Market on GDP of Country
Annex-IV	Risk & Return on Stock Market
Annex-V	Karl Pearson's Correlation Coefficient Matrix among Sub-Indices
Annex-VI	Month-of-the-Year Return
Annex-VII	Day-of-the-Week Return
Annex-VIII	Calculation for Market Model
Annex-IX	Expected Return on the Hallmark Gold at Nepalese Market
Annex-X	Calculation for Merton Model
Annex-XI	Test on Nepse Index highly affected mainly by Nepse Banking Sub-index movement
Annex-XII	Test on a bilateral causality between the Nepalese Stock Market capitalization & nominal GDP
Annex-XIII	Test on Statement that "Nepse index measures the change in the overall behavior of the market or sector over a period of time."
Annex-XIV	Test on a randomness on monthly return in Nepse
Annex-XV	Test on a Rank Correlation in the population; i.e. Risk and Return on various sectors of Nepse are randomly mixed.
Annex-XVI	Test on Homogeneity on Returns in the Various Sectors of the Nepalese Stock Market
Annex-XVII	"A" Class Companies & Sensitive Index
Annex-XVIII	Float Index

Abbreviations

AGM	Annual General Meeting
A.M.	*(ante meridiem)*Before Noon
ANOVA	Analysis of Variance
Apr.	April
APT	Arbitrage Pricing Theory
ATS	Automated Trading System
Aug.	August
BAFIA	Bank and Financial Institutions Act
B_{ig}	Beta with respect to Gold Price Risk
B_{im}	Beta of Security i with respect to the Market Portfolio
CAPM	Capital Assets Pricing Theory
CBs	Commercial Banks
Chg.	Change
χ^2	Chi-square
Dec.	December
Dev. Bank	Development Bank
d.f.	Degree of freedom
DJIA	Dow Jones Industrial Average
DPS	Dividend per Share
e.g.	(*exempli gratia*)Example
EMH	Efficient Market Hypothesis
EPS	Earning per Share
$E(r_g)$	Expected Return on Gold
$E(r_i)$/RRR	Expected Return on 'i' Asset/Required Rate of return
et. al.	*(et alii)*and others
etc	*(et cetera)*and the rest, and so on
FDI	Foreign Direct Investment
Feb.	February
Fri./F.	Friday
F/Y	Fiscal Year
GDP	Gross Domestic Product
gm.	Gram
GNP	Gross National Product
GON	Government of Nepal
HMG/N	His Majesty of Government/Nepal
ICAPM	Intertemporal Capital Asset Pricing Model
i.e.	*(id est)* that is to say
IT	Information Technology

Jan.	January
Jul.	July
Jun.	June.
LTP	Last Traded Price
Mar.	March
Mfg. & P.	Manufacturing and Processing
Mon./M.	Monday
MPS	Market Price per Share
N/n	Number of observation
Nepse	Nepal Stock Exchange Limited
No.	Number
NRB	Nepal Rastra Bank
NYSE	New York Stock Exchange
Nov.	November
Oct.	October
OLS	Observed Line of Security
OTC	Over-the-counter
p./pp.	Pages
P.E.	Probable Error
P/E	Price-earning
Prof.	Professor
r	Karl Pearson's Correlation Coefficient
ρ_s	*(Rho)* Spearman's Rank Correlation
ROE	Return on Equity
Rs.	Rupees (Nepalese)
R Sqr.	R Squared
Resi. Std. Dev.	Residual Standard Deviation
S&P 500	Strong and Poor 500
S.E./Std. Err.	Standard Error
SEBON	Securities Board of Nepal
Sep.	September
SML	Security Market Line
Sun./S.	Sunday
Thrs./Th.	Thursday
Tue./T	Tuesday
U.S.	United States
WAN	Wide Area Network
Wed./W.	Wednesday
$\bar{X}$	Arithmetic Mean of 'X'

Chapter I

Introduction

1.1. Background of the Study:

The simple meaning of investment is employing money to generate more money in future. Investment is a process of sacrificing the amount of money at present for future additional benefit including the amount of sacrifice. There are two different attributes generally involved in investment process i.e. time and risk. The sacrifice takes place in the present and which is certain. The reward comes later and the magnitude is generally uncertain.

Return is the primary motive of investment, but it always comprises of some degree of risk. Buying common stocks, bonds, a piece of land, gold or silver are the examples of investment. All these examples involve sacrifice of current rupees in expectation of future return. Hence they all are investment. The main objective of investment is to maximize the wealth of an investor. Being a rational animal, we do not sacrifice anything without expecting return. Investment is nothing but putting money to increase its value in future. It is implied that investors want to maximize his/her wealth in a proper and safe way, investors always endeavor to invest in such sector which provide adequate return on their hard earn money. Whatever may be the type of investment; the major motto is to maximize the return with minimizing the risks involved there on.

Investment management has become the most critical determinant of the economy due to change in nature of competition and increasing pressure of globalization in today's business world. The most important fact of international business operation is continuous change in economic, political and social dimensions. These changes are beyond the control of international business concern. In recent years international investors are attracted towards the financial markets of developing countries. As a result many joint ventures and multinational companies are being established in the country.

Some investment alternatives are preferred over others since the risk and return characteristics on such underlying investment alternatives satisfy the individual investor's expectations. Return expected on share investment can be partitioned into dividend and capital gain components. Both these two components of the total return on share investment are not certain with investors having to make decisions in an uncertain environment. Investments in shares are risky in relation to the investments in other fixed income securities like treasury bills, saving certificates, etc. Despite the risk element inherent to investment in shares, most investors desire to invest in shares in anticipation that the future price of the stock will increase. The intrinsic, or theoretical, price of the stock today can be ascertained by analyzing publicly disclosed financial investments. Investors, in most cases, do not analyze published financial statement before they make the investment in shares of a given company. The actual market price of the stock striving towards equilibrium must reflect the theoretical value of the stock determined by using some valuation models. Determining the intrinsic value of stock today and comparing it with the actual market price however, are rare in practice.

Over the past decade, the investment in any business is become very risky due to highly volatile in Nepalese economy, inflation, government instability, and the major factor affecting to this is Maoist insurgency &

political instability. Nepalese stock market shows a high level of fluctuation when we look as at the overall picture of the stock market. People think twice before they invest in any stock market. This makes the investors more vulnerable towards possible risk, and encourages them to divert their investments to other safer alternatives such as gold, saving deposits, etc, or to spend on current consumption. In Nepalese context, handful of people knows and has interest in investing in stocks. It is very new concept to Nepalese context to invest money in stocks.

Making investment decision is not everybody's cup of tea. It is difficult do decide where to invest the excess fund. A detailed knowledge about share markets and stock is necessary to have expected return from the stock. If we analyze this in an individual's viewpoint, there are three types of people.

The growth of economy depends on availability of funds to finance the increased needs, not only of government and business, but also of individuals. Private domestic investment can be the contributor to economic growth and employment generation in the developing country. For the economic development of any country, public participation plays a vital role. If the people are rich, the country will be rich and people will have enough to invest on development of the country. "To the extent that public investment expenditure results in the provision of public services which reduce the cost of production of the private sector, they have a positive effect on private profitability and investment."***(Chhibbeer and Dailami, 1990: 47)***.

An investment in any funds is made to have some positive rate of return. Nobody is ready to bear risk without any return but to have returned one must ready to face some risk. To minimize the risk at the given rate of return the concept of portfolio diversification is necessary. Portfolio is simply a collection of securities gathered to achieve certain investment goals. Usually investors diversify their portfolios to have minimum risk and maximum the return. So, to meet the investment goals there should be well-managed portfolio. Most investors hope that if they hold several securities then even one goes bad; the others will provide some protection from an external loss.

If the security markets are highly efficient, a search for undervalued securities is not likely to yield return. If market is efficient, a passive portfolio management practices like indexing the portfolio to some market index may be the most cost effective approach. Active portfolio management practices are only appropriate because of significant market deficiencies that exploited legally and beneficially.

1.2. Focus of the Study:

The main focus of this study is the securities market and market indexes analysis of Nepal. An index is an indicator that indicates or represents the change in the values between two distinct time periods; a base period and another particular time period. An index has base period to facilitate the comparison. It means some past year is selected as the base year from which the index's base value is calculated in order to impart time perspective to the index. The securities market indexes are also used for the same purposes. Investors who own several securities in a given market or industry can quickly get an indication of how market movements have affected the value of their portfolio.

The main purpose of the study is to analyze how one can get sustainable profit by minimizing the risk. For this purpose, market return, expected return, total risk, are analyzed to give an idea to get sustainable profit by diversifying the risk to avoid future loss of the common stock investment.

Risk and return on portfolio is common problem of investment manager how to maximize the expected return of the portfolio subject to some target level of volatility. That is investment is made to have best performance for an expected level of standard deviation. The targeted standard deviation is determined by the investor's tolerance for risk. Expected returns depend upon the firm's life cycle and returns of mature firms with those of growth firms. Time variation can play an important role in determining expected returns of mature firms than of growth firms. Effective risk and return management strategy should be applied in order to manage portfolio risk and return.

Similarly, under the semi-strong form of the efficient market hypothesis, the few anomalies affects in the stock market of the Nepal are also tested in the study. Anomalies are situations that appear to violate the traditional view of market efficiency, suggesting that it may be possible for careful investors to earn abnormal returns.

1.3. Statement of the Problem:

Therefore it needs courage and at the some time faith to invest in stock market in most of the time which can be generated through proper evaluation with giving view to the prevailing market atmosphere. But what are the criteria for evaluation that the stock they are holding will give them favorable return?

Some of the research problems are as follows:

1. In what extent, the investors should be compensated for taking a certain degree of risk?
2. One expects favorable returns by holding stock. But what are the criteria for evaluation?
3. Is there bilateral causality between the stock market capitalization & nominal GDP?
4. Does weak form of EMH i.e. correlation between the indices and run tests and semi-strong form of EMH i.e. anomalies affects on the stock market of the country?
5. Does the indicator of the stock market reflect the actual picture of the overall economy of the country?

1.4. Objectives of the Study:

The main objectives of the study are as follows:

1. To find out the movement of the various sector-wise market indices of the Nepalese stock market.
2. To find out the relation between the indices of various sectors & Nepse Index of the Nepalese stock market.
3. To find out anomalies affects like day-of-the-week effect, month-of-the-year effect & quarterly effect on the Nepalese stock market.
4. To find out the major reasons for the Nepalese stock market movements.
5. To analyze portfolio attributes of the Nepalese stock market in relation to risk and return through market model & multi-factor CAPM or, Merton Model (ICAPM).
6. To find out the contribution of the Nepalese stock market to the country's GDP.

1.5. Limitations of the Study:

Though the study tries to cover the majority of the stock market-related attributes but still there are certain limitations in the study. The major limitations of the study are as follow:

1. The study is mainly concentrated on the Nepalese stock market.
2. Since the Treasury bill issued by NRB is only of short term of 91 days, there is confusion in calculating risk free rate. So, it is calculated required rate of return using treasury bills annualized rate as risk free rate.
3. There are various types of anomalies in the stock markets but only the calendar-based anomalies i.e. day-of-the-week effect, monthly affect & quarterly effect are analyze in detail in the study & remaining are interpreted only through the primary data. The day-of-the-week effect is done for the past five fiscal years only.
4. For the multifactor CAPM analysis, the price of the hallmark gold in the Nepalese market has been used in place of the energy price as hedging practice by Nepalese investors does on gold or silver.
5. The primary data collected are limited to the Kathmandu Valley & the surrounding districts.
6. The study is to fulfill the requirement of master's Degree in Business Studies. So, the study cannot cover all the dimension of the subject matter and time period is also limited.

1.6. Organization of the Study:

This research has been organized in five chapters. The titles of these chapters are listed below:

Chapter-One: Introduction

This chapter is introductory and deals with subject matter of the study including general background of the study, problem of the study, objectives, significance, limitation, organization of the study, etc.

Chapter-Two: Review of Literature

This chapter contains the profound review of available literature related to the area of this study. It is directed towards the review of conceptual framework and review of major related studies. Various theories & principles regarding the stock market have been reviewed in the chapter.

Chapter-Three: Research Methodology

This unit presents research methodology used in the study which includes various tools and techniques of data. It consists of research method, sources of data, population and sample, research design, methods of data analysis, etc.

Chapter-Four: Presentation and Data Analysis

This chapter presents the analysis and presentation of data by using various methods of statistical and financial tools. This chapter also includes major findings of the study.

Chapter-Five: Conclusion and Recommendation

This chapter is for summary of conclusion, recommendation and suggestions for further important. The major findings of the study have been summarized in this chapter. Similarly, further suitable recommendations have been also been enumerated.

Chapter II

Review of Literature

The basic framework for the present study on " Stock Market in Nepal-Movements and Behaviors” has been drawn from the past research study, books, articles, journals, policy documents, unpublished master degree thesis, etc. In this chapter attempts have been made to review the literatures pertinent to the study.

It includes theoretical framework and research review. Theoretical framework attempts to review the theoretical aspects of the study especially the financial market, security analysis, portfolio risk and return.

2.1. Conceptual Review

2.1.1. Concept of Market

The dictionary meaning of market is the gathering of people for buying and selling goods. A market consists of all the potential customers sharing a particular need or want who might be willing and able to engage in exchange to satisfy that need or want. Thus, the size of the market depends on the number of people who exhibit the need or want, have resources that interest others, and are willing and able to offer these resources in exchange for what they want.

Especially, the concept of transactions leads to the concept of a market. In other words, it is the set of actual and potential buyers of a product. Traditionally, market was the place where buyers and sellers gathered to exchange their goods. Each people gather in a place or in a central area called a market place, traders bring goods to the merchant and trades for desired goods. As a number of persons and transactions increases in a society, the number of merchants and market places also increases.

The increasing competition in the market gives rise to a strange form of market popularly known as credit market. Each buyer may not be able to pay for goods in cash and further each businessman may also not be succeeded without providing credit facilities in today's world. As a result, credit market has emerged. Credit facility to the customers is one of the most important factors in marketing environment. Similarly, debt facility to a manufacturer or financing to an individual business is also equally important. The large corporations require financing though financial instruments. This resulted not only physical but also financial market. Therefore, Markets are sub-divided into two broad categories - real sector and financial markets. The markets relevant to this study are only financial. ***(Kotler & Armstrong, 1992: 8)***

2.1.1.1. Financial Market

A financial system is a set of institutional arrangements through which financial surpluses in an economy are mobilized from surplus units to deficit unit (spenders). Financial assets, financial markets, and financial institutions are the basic ingredients of any financial system. Financial market refers to the place where the transactions of mobilizing funds are performed. It is especially the market for paper or documents. Analytically, financial markets are very much similar to the goods and service market. Instead of goods and services, it deals with financial assets and instruments of various kinds such as currency, deposits, cheques, bills, bonds, debentures, etc.

Financial markets are the centers where people with surplus funds interact with the business firms, which can utilize such funds efficiently. Speaking broadly, the purpose of financial markets in an economy is to allocate saving efficiently during a period of time to parties who use funds for investment in real assets or for consumption.

Efficient financial markets are essential to ensure adequate capital formation and economic growth in an economy. With financial intermediaries in an economy, the flow of savings from savers to user of the funds can be indirect. Financial intermediaries include institutions like commercial banks, life insurance companies, credit unions, and pension and profit sharing funds. These intermediaries come between ultimate borrowers and lenders by transforming direct claims into indirect ones. They purchase primary securities and, in turn, issue their own securities to the investors.

In sum, financial markets refer to the institutional arrangements for dealings in financial assets and credit instruments of different types such as currency, cheques, bank deposits, bills, bonds, debentures etc. Thus, financial markets facilitate a systematic transfer of funds to productive business companies and projects. ***(Luckett, 1984:146-147)***

Financial markets are broadly classified as negotiated-loan markets and open markets. Negotiated-loan market is a market in which lender and borrower personally negotiate the terms of the loan agreement. A businessperson borrowing from a bank and an individual borrowing from small loan companies are examples of negotiated loans. In contrast, the open market is an impersonal market in which standardized securities are traded in large volumes. Buyers and sellers may never meet, and there is comparatively little latitude for tailoring an instrument to the precise needs of a given issuer. The stock market is an example of an open market. Securities are bought and sold by a myriad of investors through stock market. Thus, the open market provides the binding that ties the country's financial institutions together into an integrated part. However, only the open market is the concern of this study.

Financial instruments facilitate the transfer of funds from surplus spending units to deficit-spending units on the basis of credit required for short run and long run. Short run credit is required for the purpose of working capital of the companies whereas long run credit is required to purchase fixed assets. Short run credit is provided by money market and long run by capital market. In this way, the open market further can be classified into money market and capital market. Moreover capital market is relevant to the present study. So this section primarily deals with the theoretical aspects of the capital market.

2.1.1.2. Capital Market

The capital market refers to the market where long-term funds are borrowed and lent. In other words, it refers to the links between lenders and borrowers of funds arranging a funds transfer process to seek each other's benefit. It is just the market for capital funds. The word "capital" used in this context implies a long-term commitment on the part of the lender and a long-term need for the funds on the part of the borrower. Both lenders and borrowers coming together in capital market play effective financial intermediary role in primary and secondary market through the use of various long-term capital market instruments like common stocks, bonds, preferred stocks, convertible issues, etc. Thus strictly speaking, the market encompasses any transaction involving long-term debt or equity obligations.

In literary sense, the term "capital market" is used to describe the institutional arrangements for facilitating the borrowing and lending of long-term funds. Businesses, in the form of public limited companies require long-term or permanent capital in order to finance their activities, or to undertake expansion schemes. Similarly, government needs large quantities of funds in order to be able to provide and expand services such as education, health-care, and defense. In order to meet their money demands to fulfill their objectives, both companies and government raise money by issuing different securities.

Stock exchange plays a significant role in mobilizing funds in capital market. Investment institutions, unit trusts, industrial banks, insurance companies, etc, also raise funds from public and sometimes from government too through various securities and use them in long-run investments. Securities dealt in capital market are long-term securities. Some securities are of perpetual nature and others are for a longer period. Debentures may be either redeemable or irredeemable, the proceeds of life insurance policies may be repayable at death or at maturity so stock exchange, investment trusts and insurance companies are the major segments of capital market.

In many developing countries, the unorganized capital market is still a prevailing characteristic of the economy. But it has crucial role to play in channeling funds from savers to users as they hold huge amounts of the financial assets.

The capital market can be usefully sub-divided into the primary market and the secondary market. The primary market deals with the selling of new securities whereas the secondary market deals the securities previously issued in the market. ***(Luckett, 1984: 147)***

2.1.1.2.1. Capital Market in Nepal:

The history of corporate securities in Nepal dates back to 1936 A.D. Biratnagar Jute Mill-the first corporate entity in Nepal-issued 8,000 ordinary shares of Rs.100 each. Ordinary shares were quite popular in early forties due to very high dividend (110 per-cent) declared by Biratnagar Jute Mill. It led to cases of over-subscription by 3-4 times in some companies.[1] Unlike ordinary shares and debentures, preference share was not included as corporate securities in Nepali Company Act 1936. It was embodied as corporate security only in Company Act 1964. Biratnagar Jute Mills also introduced the use of debentures as early as in 1936. The Mill issued 1,600 debentures of Rs. 500 each. But afterwards, its use has remained infrequent. ***(Shrestha and et. al., 2005: 45)***

At the same time, Nepal Bank Limited was established on Nov.15, 1937 as a first bank of the country issuing 25000 equity shares of Rs.100 face value, 40% was subscribed by the government & balance was offered to the public. But, the participation of public in the ownership structure of companies was not available and all the shares of companies were gone to Ranas' portfolio. In 1950, democracy was established in the country by throwing Rana regime and the interim government was much busy in devising measures to revive the sick industries and only very little attention could be given to initiate the development of capital market. Important actions were taken during these periods for this sake and various institutions and industries were established. Then, in 1960, Nepal entered into Panchayat System by sacking the elected government.

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[1] Pandey, Bhim Bahadur, (1987)***The Then Nepal (in Nepal),Kathmandu: Bhim Bahadur Pandey,*** pp. 171-72

GON (then HMG/Nepal) started to issue bonds in 1964. Government bonds still occupy a major chunk of trading in the securities market.

After an extensive study of the working of public limited company GON (then HMG/Nepal) announced Industrial Policy in 1974. This policy made a provision for the establishment of an institution named Securities Marketing Centre to deal with securities. It was established with the joint effort of Nepal Rastra Bank (NRB) and Nepal Industrial Development Corporation (NIDC) to mobilize the capital among the various industries and companies.

The Securities Exchange Center established in 1976 managed 26 issues between 1978 and 1992 until it was converted into Nepal Stock Exchange in 1993. Since then, primary issues are being managed by financial institutions, particularly by finance companies. ***(Shrestha and et. al., 2005: 45)***

Securities Exchange Act came into force on 13 April 1984. Since then, SEC started to operate under this act. Before this, it was operating under the Company Act. The main purpose of Securities Exchange Act was to provide systematic and regular environment of market of securities ensuring and protecting the interest of individual and institutional investors as to increase public participation in various firms and companies.

The interim government initiated financial reform program and established a Citizen's Investment Fund as pioneering capital market institution. The established of NIDC Capital Markets Limited is also another milestone in this regard. Now, Nepal has entered into market-oriented economic system. Thus, necessity was felt to change the whole operation of SEC to make it compatible with the changing economic system. As a result, GON (then HMG/Nepal) brought about changes in the existing structure of SEC by separation SEC into two distinct entities –Securities Exchange Board of Nepal (SEBO/N) and Nepal Stock Exchange Ltd. (NEPSE) at the policy level in 1993. ***(Shrestha, 1992: 15)***

2.1.1.2. 2.Constituents of Capital Market in Nepal

The constituents of capital market in Nepal include the following institutions and parties:

2.1.1.2.2.1. Securities Board of Nepal

GON (then HMG/Nepal) established the Securities Board of Nepal on May 26, 1993. The thrust of the board is to promote and protect the interest of investors by regulating the securities market. Besides the regulatory role, it is also responsible for the development of securities market in the country. The objectives of the Board are to ensure regulated and orderly market for the primary issues and secondary trading of securities and to foster the development of securities market by protecting the interest of investors.

The Board performs the following functions:

- To advise GON on the issues related to development of capital market and the protection of the interest of investors;
- To approve the stock exchanges and oversee them for healthy trading of securities;
- To register and regulate the members involved in the primary issues and secondary trading of securities;
- To regulate public issues of securities including the mutual and trust fund; and

- To conduct studies, provide training; organize educational programs on the regulatory and development aspects of capital market.

The Board consists of seven members including its chairman. GON (then HMG/Nepal) appoints a full time chairman for a term of four years. Line Ministries nominate three members, representing Ministry of Finance, Ministry of Law, Justice and Parliamentary Affair and Ministry of Industry, Commerce and Supply. Each of the remaining three is nominated by Nepal Rastra Bank, Federation of Nepal Chamber of Commerce and Industries, and Association of Chartered Accountants of Nepal. ***(GON/Nepal 1997: 1)***

2.1.1.2.2.2. Nepal Stock Exchange Limited

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

Government of Nepal, Nepal Rastra Bank, Nepal Industrial Development Corporation and members are the shareholders of the NEPSE. Securities Marketing Centre was established to deal with especially the government bonds in 1974. Securities Exchange Center was established with an objective of facilitating and promoting the growth of capital markets. Before conversion into stock exchange it was the only capital markets institution undertaking the job of brokering, underwriting, managing public issue, market making for government bonds and other financial services.

Securities Exchange Centre (SEC) involved in the management of public issues made by corporate bodies. After eighteen years of incorporation, the Securities Exchange Centre was converted into Nepal Stock Exchange Ltd. (NEPSE) in 1993.

Nepal Government, under a programme initiated to reform capital markets converted Securities Exchange Center into Nepal Stock Exchange in 1993. NEPSE is a non-profit organization, operating under Securities Exchange Act, 1983. NEPSE is a non-profit organization, operating under Securities Exchange Act. The basic objective of NEPSE is to impart free marketability and liquidity to the government bonds and corporate securities by facilitating transactions in its trading floor through market intermediaries, such as brokers, market maker, etc. Before the conversion into stock Exchange, SEC was only the capital market institution undertaking the job of brokering, underwriting, managing public issue, market making for government bonds and other financial services. ***(Nepal Stock Exchange Ltd., 1994: 1)***

The basic objective of NEPSE is to impart free marketability and liquidity to the government and corporate securities by facilitating transactions in its trading floor through member, market intermediaries, such as broker, market-makers, etc. ***(www.nepalstock.com.np)***

NEPSE opened trading floor on 13 Jan. 1994 for its newly appointed brokers and market makers.

2.1.1.2.2.2.1. Trading System Automated:

The Automated Trading System (ATS), an internationally compatible trading system was inaugurated by the then Finance Minister Dr. Ram Sharan Mahat on 24 August 2007. In order to adopt the ATS, NEPSE made an agreement with the British Company Comdaq Limited in November 2006 under the Asian Development Bank (ADB) loan assistance project--Corporate and Financial Governance (CFG)-at the cost of 300 thousand US dollars. The system has helped eliminate all possible human errors as seen in the open out cry trading procedures. Several international practices have been incorporated to make the system internationally compatible and modifications have also been made to customize the existing rules and regulations of the country. The following features are therefore found in the existing automated trading system.

1. Client Management

Client Management enables a broker to create a client. Without creating a client the broker will not be allowed to place any order. The broker has to insert various details of the client, including a client code, which is a unique code for that particular client. After receiving an order, the broker has to place the order for that client on the First in First out (FIFO) basis of the order registered by the client's in the broker's office.

2. Order

It is an expression of interest to either buy or sell a specified quantity of stock either at a specified price or at the current market price. An order is given by a client to a licensed broker. There is an order entry form in the system through which a broker places a purchase or sells order. Generally, four types of order can be placed in the system:

i) **Regular:** An order which is completed on the exchange and that confirms the order of lot size or greater than that.

ii) **Odd-Lot:** An order which is completed on the exchange and that confirms the order less than lot size.

iii) **Manual:** An order which is placed by brokers and is reported individually by the buying and selling brokers.

iv) **Block:** An order which is placed by brokers and confirms to the minimum block trade quantity specified by the exchange and is reported individually by the buying and selling brokers.

3. Price:

It is the price, which the buyer quotes in his/her buy or sell order. The investors as usual can quote either fixed price, price in range or market price. If broker find the price within range they enter the details to execute the transactions. In the present system the order entry form on computer has been developed to indicate a price either in limit or market. If the price is given in fixed, brokers insert the fixed price and if it is given in range they insert the best price for their clients. Brokers must always attempt to execute transactions to protect their clients' interest. If investors are sellers brokers must attempt to execute transactions at higher prices and if investors are buyers' brokers must attempt to buy at low prices. It is the negotiation process through which they execute the transactions. If the price is at market then brokers will execute orders at the market price, that is, they buy or sell the shares at market price.

4. Execute At:

This represents the phases of trading when to execute the order. There are three phases during which the broker can place the order to execute the transactions. Such phases are:

i) **At the Open (ATO):** ATO indicates the order should be executed when the market opens. In order to execute the transactions at ATO the member brokers have to place the orders to execute it at ATO. All the ATO orders will be accumulated in the system till the ATO execution time and only then the ATO orders will be executed at the best price at the opening of transactions. ATO gives the price, quantity and time priority for the execution. At present NEPSE has fixed 11:30 A.M. to 11:55 A.M. as time to place ATO orders. The engine calculates the best price and matches the order at 12:00 noon, that is, when the market opens. In this case, a price can be quoted within the range of 5 percent of the previous close price. Once the ATO phase is over a price can be quoted within the range of 2 percent of LTP. ATO determines the opening price for the stock. If there are no match-able ATO orders for a stock the open price of the stock will be equal to the previous close price.

ii) **Continuous Trading:** This is the phase that indicates orders should be executed while the market is in progress.

iii) **At the Close:** This is the last phase that indicates orders should be executed when the mark**et** closes. The system has provided facility to generate the ATC price of a stock either by taking the average of the price of last n transactions or the average of the price of the last in minutes. Currently NEPSE adopts the average of last n transactions where n equals to 1 i.e. the LTP of the stock at close is the ATC price or closing price.

5. Retain until Customers can give orders to retain until the specified period as below unless it is executed.

End of Day (EOD): This indicates the placed orders if not executed will be retained until the end of today.

Good till cancelled (GTC): This indicates the order if not executed should be retained until it is cancelled. The system has provided facility for exchange to set the time period in days till which the pending orders can be retained in GTC.

NEPSE has adopted an order-driven market system. So each and every order entered should be backed by a written order in which the client must specify the validity period of the order but if she/he does not mention the time period the order will be valid for 15 days. In this case GTC will be 15 days.

6. Conditions:

This specifies the conditions under which the order could be executed. The conditions are as below.

None: This indicates there are no conditions for execution of orders.

Immediate or Cancel (IOC): This condition indicates that the orders should be executed in full or part immediately if not executed immediately the unexecuted order will not be sent to Public order book but cancelled immediately by the system.

Fill or Kill (FOK): This condition indicates the order must get executed entirely or cancelled immediately. The unexecuted order is not sent to public order book but killed (cancelled) by the immediately. NEPSE has modified the system allowing entering the quantity of a stock to be traded either at the multiple of lot size or greater than that.

All or none (AON): This condition indicates the order must get executed entirely and if not executed the order is sent to public order book. In this condition too, NEPSE has modified the system allowing entering the quantity of a stock to be traded either at the multiple of lot size or greater than that.

7. Market Depth:

It is the provision, which the stock exchange has made to facilitate the bid and offers. Under this provision the member broker before inserting the bid and offers for certain quantities at certain price for the particular company can view the bid and offer placed by other brokers. This not only facilitates for the negotiation but also contributes for the execution of transactions at market price.

8. Settlement:

After automation NEPSE has continued T+3 for settlement but there is a little bit change in process. The trading is done at "T" and at T+1; the buying brokers have to submit bank vouchers for settlement with covering letter. At T+2, the selling brokers must submit share certificate with covering letter. At T+3, NEPSE prepares billing for payment and this will be forwarded to the bank.

Once the settlement is done the buying brokers with the consultation of the clients must decide and present the purchased shares if they want to record it as blank transfer. This must be completed within T+5.

9. Blank Transfer:

Under this mechanism an opportunities to derive the market benefit is provided. But presently, the buying brokers must complete the Blank Transfer (BT) process within T+5. The transactions that are executed can be recorded in different ways and NEPSE has considered all possible retention. ***(Nepse Annual Trading Report, 2007/08:13-15)***

2.1.1.2.2.2.2. Trading through WAN started:

After the introduction of the ATS and with the initiative and guidance of NEPSE, member brokers of NEPSE have started online trading through WAN from their own office from 13 October 2007. Because of this facility, stock brokers can now sell or buy shares from their office. The brokers who have the necessary infrastructure prescribed by NEPSE will get access to Wide Area Network (WAN). To get access a broker must have a price board, separate rooms along with separate computers for clients' order entry, settlement and must provide up to date information to the clients. In the first phase, NEPSE granted permission to Malla and Malla Stock Broking Limited, Nepal Stock House, Nepal Investment and Securities Trading Private Limited, Shreekrishna Securities Limited and Premiere Securities Company Limited for trading through WAN. From the end of the F/Y 2007/08 all the 23 brokers transact from their office via WAN. ***(Nepse Annual Trading Report, 2007/08:16)***

2.1.1.2.2.2.3. Market Halt System Introduced:

NEPSE introduced a string of measure to stabilize the volatility of the stock market. Previously, NEPSE used to halt transactions of respective individual company by imposing the circuit breaker whenever share prices of the companies move up or down over 10% in a single day transaction.

As per new measure, it can also suspend the whole market trading, which is known as index based circuit breaker or market halt. Now on NEPSE can halt the trading floor for 15 minutes if the index moves up or down by 3% during the first half an hour. After resumption of trading if the index moves up or down by 4%, NEPSE can suspend trading for another half an hour. After the resumption if again the index changes by 5%, NEPSE can suspend trading for rest of the day. The new measure also require brokers to clearly list orders of buying and selling shares and place those orders for transaction on priority basis. This provision has been enforced to address the rising concerns of small investors. ***(Nepse Annual Trading Report, 2007/08:16)***

2.1.1.2.2.2.4. Trading Hours Extended:

From 19 December 2007 NEPSE has increased the trading hours by one hour due to an increasing trading pressure after the automation of trading. Initially, NEPSE opened its trading activities for only two hours. Now the trading floor opens from 12:00 noon to 15:00. NEPSE has expected that investors in general and small investors in particular will benefit from the increase in trading hours. ***(Nepse Annual Trading Report, 2007/08:16-17)***

2.1.1.2.2.2.5. Real time Information Disseminated:

NEPSE has started providing real time information (live trading activity) to investors from 28 November 2008. Due to this facility investors can check share prices online from anywhere live during the trading hours. Additionally, without any time gap investors can check trading activities—

like top-gainers, top-losers, imposition of trading halt and resumption—on NEPSE's web page. ***(Nepse Annual Trading Report, 2007/08:17)***

2.1.1.2.2.2.6. OTC Market Started:

NEPSE started the over-the-counter (OTC) market from 4 June 2008 to give shareholders a chance to sell or buy the shares of companies that are de-listed and that are not listed on NEPSE for failing to meet the listing criteria. The shares of 43 companies can now be traded in the OTC market. But as per the request of Nepal Rastra Bank NEPSE has decided to restrict the shares trading of Nepal Bank Limited in the OTC, since shares trading of Nepal Bank Limited will have a negative impact on the on going Financial Sector Reform Project. In the OTC Market one does not have to go to brokers to trade shares; one can come to NEPSE and trade, paying a commission of two percent for transactions of up to Rs 25,000, 1.5 per cent for transactions of above Rs 25,000 but under Rs5,00,000, and one per cent for transactions of over Rs 5,00,000. However, no transaction has been made until the end of the fiscal year. ***(Nepse Annual Trading Report, 2007/08:17-18)***

2.1.1.2.2.3. NEPSE Converted to Profit Seeking Entity:

The 26th annual general meeting (AGM) of NEPSE held on 23 May 2008 has decided to convert the organization into a profit seeking entity. The Company Registrar Office approved the decisions made at the AGM. The approval allowed NEPSE to turn itself into a profit seeking company, change its board of directors and increase its capital. Accordingly, NEPSE's authorized capital increased to Rs 160 million from Rs 50 million. Likewise, the paid-up capital was raised to Rs 50million from the present Rs 34.9 million. Similarly, the structure of NEPSE's board was made more professional and representation having conflict of interest has been removed from the board. And there are no representatives from stock brokers and the Securities Board of Nepal on the board. The AGM also passed the decision to name the company as "Nepal Stock Exchange Limited" both in Nepali and English. ***(Nepse Annual Trading Report, 2007/08:18)***

2.2. Introduction to Security Market:

There are many ways to classify security markets. One way is by the type of financial claim, such as debt markets and equity markets. Debt market is market in which financial instruments (mainly bonds) dealing in outstanding debts are bought and sold. The New York Bonds Exchange is debt market. Equity market is market in which financial instruments (mainly equity) dealing in outstanding equity are bought and sold.

Another is by the maturity of the claim. For e.g., money market and capital market Money markets are the markets for short-term debt securities. Examples of money markets securities are treasury bills, bankers' acceptances, commercial paper and negotiable certificate of deposit issued by government, business and financial institutions. These instruments are very liquid and considered extraordinary safe. Because they are extremely conservative, money market securities offer significantly lower return than most other securities. Capital market is the market for long-term loans and equity capital. Companies and the government can raise funds for long-term investments via the capital market. Securities trading on organized capital markets are mentioned by the government; new issues are approved by authorities of financial supervision and monitored by participating banks.

Security markets can be categorized as those dealing with financial claims that are newly, called the primary market and those for exchanging financial claims previously issued, called the secondary market or the market for seasoned instruments.

Markets are classified as either cash or derivatives markets. The market in which financial assets trades for immediate delivery or sold for ‘on the spot’ delivery within a few days is called cash or spot market. A derivative market is the market where derivative securities like, options, futures, forward are traded.

A market can be classified by its organizational structure. It may be an auction market, an over-the-counter (OTC) market or an intermediated market. ***(Thapa & et. al, 2008:19)***

2.2.1. Primary Market

Securities available for the first time are offered through the primary markets. The issuer may be the brand new company or one that has been in business for many years. Primary market is used to denote the market for the original sale of securities by an issuer to the pubic. The volume of new issues in the primary market, particularly of common stock, is directly related to market conditions. When the market is high or rising, the number or new issues being offered to the public rises and when the market is low or falling, the number declines.***(Weston & Brigham, 1981: 375)***

The institution that dominates the primary market is the investment – banking house. It is a traditional middleman in the primary market. When a company decides to acquire new funds from the outside, it will frequently do so through the intermediation of an investment banker in the developed countries. The investment banker's principal activity is to bring sellers and buyers together in the market. They are specialists in the marketing of new securities. They advise companies in the design of the security. Although there are a number of possible arrangements, the investment-banking house underwrites a new issue of securities. In underwriting agreement, an investment banker agrees to buy the securities from the issuing company and sells them to the public. In addition, placing new securities through the intermediation of investment bankers, many companies engage in the private placement of securities. In private placement, the issuer of the securities sells securities directly to investors without the underwriting services of an investment banker. This method is cheaper, and it avoids the underwriting costs. ***(Luckett, 1984: 147)***

The primary securities market includes all transaction that result in the accumulation of financial capital by firms, government or individual to be used in consumption or real capital investment. The participations in this process are many and varied but important segment includes the money brokers who act as middlemen in the process of exchanging securities for fund. These brokers provide invaluable service. Their principal role is assist in the pooling of their funds by the help of security forms that will appeal to the ultimate investors. ***(Nancy and Richardson, 1984:147)***

2.2.2. Secondary Market

Securities that have been previously issued are traded in the secondary market. The majority of all capital market transactions occur in the secondary market. The majority of all capital market transactions occur in the secondary market. The proceeds from sale of securities in the secondary market do not go to the original issuer but to the owners of the securities. In other words, securities are traded among the individual as well as institutional investors.

The function of the secondary market is to provide liquidity for securities purchased in the primary markets. Once investors have purchased securities in the primary market, they need to place them in the secondary market in order to sell. Secondary markets are further divided into the over-the-counter market and the registered stock exchanges.

2.2.3. The Over-the-Counter Market

The over-counter-market (OTC) is the market for the securities not listed on the stock exchanges. When the company first sells its securities to the public, the securities are traded in the OTC. It includes all transactions in securities other than those taking place on registered stock exchanges. In practice, however, the term is usually limited to the activities of dealers and brokers may range in size from very large houses doing an international business to one person firms that trade only in local markets. ***(Brigham & Houston, 2001:174-186)***

The OTC market is made by dealers. A dealer differs from a broker in that the dealer acts as a principal to a trade. The dealer is similar to the specialist who has already been described or the dealers in other security markets that have already been described.

Some very big companies still have their stocks traded in the OTC market. Traditionally both banks and insurance companies avoided listing and so were traded in these markets. However, the development of one-bank holding companies and the financial conglomerates that owned insurance companies led to the listing of many leading banks and insurance companies. A big company may attract as many as twenty or more market makers. ***(Robinson and Wrightsman, 1981:376-378)***

2.2.4. The Stock Exchanges

Stock exchanges are voluntary associations of members who come together for the purpose of buying and selling, for the general public, the securities of the great companies. Only listed securities are traded in the exchanges and are bought and sold through "auction". The members of these exchanges are truly a national market in which virtually anyone may participate. ***(Luckett, 1984: 144)***

The principal characteristics of an organized exchange is that it provides a physical place for trading floor as well as the relationship of brokers to their public customers. The physical trading area involves a kind of face-to-face double auction. The spot at which a specific security is to be traded is designated. At this “post” records of past prices and trades are kept, and from it reports can be quickly dispatched both with respect to price (to the public) and execution (to the buyer and seller). All trades involve public “crying out” of bids and offers. A broker does well to have a strong and durable voice. ***(Robinson and Wrightsman, 1981:374)***

The trading rules not only require the public calling of bids and offers; they also require that the best price prevail, the highest available for sellers and lowest for buyers. No playing of favorites is allowed; a bidding broker must buy from the quoting broker who offers the lowest price. Furthermore, the rules forbid sham transactions used only to bull up prices or to bear then down. Any sort of ragging of the market or collision between brokers is forbidden. While these are hard rules to enforce and violations probably occur from time to time, trading almost certainly has become far more honest than was true in earlier and wider days. ***(Robinson and Wrightsman, 1981:374)***

The stock exchanges play an indispensable role in mobilizing funds in capital market. The essential function of a stock exchange is to provide active market for already issued securities. The essential function of a stock exchange is to provide active market place for corporate share and other listed securities. The various virtues governing stock exchange include enhanced marketability of securities, rational allocation of investible funds, enhanced economic growth and wealth generation and proper maturity, liquidity, marketability and diversification of investment. The growth of capital market through the vehicle of stock exchange has brought a flow of the information about various securities in addition to the sound listing criteria that prove worthwhile to the investors. However, the secondary market is said to give liquidity to primary issues, and this liquidity is an essential ingredient in the capital formation process of the economy.

The members of an organized exchange are subject to its rules, including the rules of conduct governing their relationships with customers. Most of the exchanges now have extensive procedures for the policing of their members and the discipline of those who violate their rules. This zeal is doubtlessly reinforced by the fact that the Securities and Exchange Commission stands ready to take over should their own zeal slacken. The principal purpose of trading rules and policing is to avoid the bilking of customers and the rigging of prices, practices that unfortunately were once rather more common than not. Violations may occur now, but they are the exception and not the rule in modern equity markets, particularly in the organized sector. ***(Robinson and Wrightsman, 1981:374-375)***

2.3. Introduction to Market Indexes:

The first index number was constructed by an Italian; Mr. Carli, in 1764 to compare the changes in price for the year 1750 (current year) with the price level in 1500 (base year) in order to study the effect of discovery of America on the price level in Italy. Though originally designed to study the general level of prices or accordingly purchasing power of money, today index numbers are extensively used for a variety of purposes in economics, business, management, etc., for comparing changes in the level of phenomenon for two periods, places, etc. In fact, there is hardly any field of quantitative measurements where index numbers are not constructed. They are used in almost all sciences-natural, social and physical. ***(Gupta, 2005:10.1-10.2)***

An index number measures how much a variable changes over time. We calculate an index number by finding the ratio of the current value to a base value. Then we multiply the resulting number by 100 to express the index as percentage. This final value is the percentage relative. Note that the index number for the base point in time is always 100. ***(Levin and Rubin, 2008:922)***

Market indexes have always been of great importance in the world of security analysis and portfolio management. People from different walks of life use and are affected by market indicators. Investors, both individual and institutional, use the market index as a benchmark against which they evaluate the performance of their own institutional portfolio. The technicians or the chartists often base their decisions to buy or sell on the pattern emerging out of the time series data of market indexes. Even the economists and statisticians use stock market indexes to study the trend of growth patterns in the economy, to analyze as well as forecast business cycles and to correlate stock market indexes to economic activities.

An index is a number used to represent the changes in a set of values between a base time period and another time period. A Stock Index is a number that helps measure the levels of the market. Most stock indices attempt to be proxies for the market they exist in. Returns on the Index thus are supposed to represent returns on the market i.e. the returns that an investor can get if he has the portfolio representing the entire market. ***(Bhalla, 2005:121)***

Market index from security view point is an indicator of stock price movements from time to time in the market. The interested participants especially the investors uses market index as guide lines to investigate on the process of making investment decision. As such, by any standard measure, market index provides to know how the stock is performing according to movements in the behavior of the stock prices. In highly advanced countries market index is often considered as a barometer to measure the temperature of the stock market to help investors to form opinion and ideas regarding where, how and when to invest in security market. ***(Shrestha and Bhandari, 2007:160)***

Securities market index helps in the evaluation of the performance of certain basket of the securities traded in the stock market in the same way as consumer’s price index (CPI) serve the purpose of measuring the indicator of overall development in macroeconomic perspective, ***(Shrestha and Bhandari, 2007:160)***

These indices differ from one another with respect to (1) the securities included in the index and (2) the method employed in calculating the value of the index.[2]

2.3.1. Significance of Market Index:

But to understand how the index works, it is necessary to know the significance of index for several reasons.

1. Stock indexes are an economic measure of the general performance of an economy. It is unusual to have a stock market that is sharply rising if the economy is sharply falling.
2. Indexes are useful as a benchmark for gauging the performance of money managers. For e.g.; a bond fund manager could be evaluated against a bond index to determine how well he or she is doing.
3. Indexes serve as a guide for passively managed mutual funds. That is, if you wanted to match the DJIA, you could invest in a mutual fund.
4. Indexes are used by investment analysis to assess the overall direction of the market.
5. Indexes are used to estimate statistical parameters such as beta, a measure of risk, and moreover the effectiveness of any index depends on many considerations to know how securities are included in the index, adjusted over time for changes in securities and which method is used to calculate the index. ***(Shrestha and Bhandari, 2007:161)***

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[2] Cutler, Marry M., "Market Indices: A Learning Exercise Using Warsaw Stock Exchange Prices", ***Financial Practice and Education*** 5, No.2 (Fall/Winter 1995):99-106.

2.3.2. Construction of an Index:

Construction of an index is not as easy as it involves various aspects to be covered to provide sensitive message into the minds of the investors as well as professionals interested in stock market. In technical term, a well-constructed index is an unbiased indication of the prices of the population under consideration because the sample size, representativeness of the sample size, weightage given in the sample and convenient units of measurement are the factors those must be considered before constructing an index. The factors are discussed below in brief.

1. **Sample Size:** The larger the sample, the better would be the clear indication of the underlying population. But, it is complicated in constructing index if the sample size is too large and diverse. Moreover, the sample size serves the same purpose in the populations.

2. **Representativeness:** The index should include all section of the population. In other words, all the section of population should be represented in the samples to construct an index. The board sample of securities should not contain only large firms or small firms which are all in the same industry.

3. **Weighting:** The selection of the sample size becomes meaningful if the weights given are carefully considered with adequate information and the study. In other words, care should be taken to construct an index while assigning the weights should be replicated in the sample to provide best judgment in the determination of the index.

4. **Convenient Units:** The index should be expressed in convenient units because index if it becomes vague makes difficult to understand. So, it is the rule that index should be state in convenient units that are easy to understand and that facilitate answering the relevant questions of the investors, professionals and other interested parties. ***(Shrestha and Bhandari, 2007:161-162)***

2.3.3. Methods of Calculating Market Indices:

Market indexes differ in their uses and the implications because of the various purposes hidden in the construction of the index. Thus, there are many methods used to construct indexes. Given the differences in the sentiments and the strategies of the investors and other interested parties, indexes can be categorized into price weighted index, value weighted index, equally weighed index and geometric mean. The difference depends on how much significance or weight is given to each security. ***(Shrestha and Bhandari, 2007:163)***

2.3.3.1. Price Weighting:

The price weighting, begins by summing the prices of the stocks that are included in the index and ends by dividing this sum by a constant (the "divisor") in order to calculate an average price. ***(Sharpe & et. al, 2006:830)***

The following formula is used to calculate price weighting index:

$$I_t = \sum_{i=1}^{n} P_{i,t} / Divisor\,(d) = \frac{P_{1,t} + P_{2,t} + \dots\dots\dots\dots\dots + P_{n,t}}{Divisor}$$

Where, I_t= Index at time t

$P_{i,t}$= Price of i^{th} stock at time t

n= Number of stock at time t

The disadvantage of price weighted index is a little bit complicated to construct. The divisor should adjust frequently with the stock dividend distribution and stock split in the securities included to construct the index. When the stock splits, the divisor becomes smaller. ***(Bhattarai, 2006:62)***

2.3.3.2. Value Weighting:

A second weighting method is known as value weighting or capitalization weighting**.** In this method, the prices of the stocks in the index are multiplied by their respective number of shares outstanding and then added up in order to arrive at a figure equal to the aggregate market value for that day. This figure is then divided by the corresponding figure for the index was started, with the resulting value being implied by an arbitrarily determined beginning index value. ***(Sharpe & et. al, 2006:833)*** It is calculated as under:

$$I_t = \frac{\sum_{i=1}^{n} P_{i,t} N_{i,t}}{\sum_{i=1}^{n} P_{i,B} N_{i,B}} \times I_B = \frac{P_{1,t} N_{1,t} + P_{2,t} N_{2,t} + \dots\dots\dots \dots\dots\dots . + P_{n,t} N_{i,t}}{P_{1,B} N_{1,B} + P_{2,B} N_{2,B} + \dots\dots\dots \dots\dots + P_{n,B} N_{i,B}} \times I_B$$

Where, I_t= Index at time t

$P_{i,t}$= Market Price of shares outstanding for i^{th} stock at time t

$N_{i,t}$= Number of shares outstanding for i^{th} stock at time t

$P_{i,B}$= Market Price of shares for i^{th} on stock on base period

N_{iB}= Number of shares outstanding for i^{th} stock on base period

n= Number of stocks included in an index

I_B= Index on base period

Alternatively, $I_t = \frac{MV_t}{MV_0} \times I_0$ Where, I_t= Index at time t

MV_t= Market value at time t

MV_0= Market value at time 0 or base period

I_0= Index at time 0 or base period

The stock split and stock dividend do not affect the index and any adjustment like price weighted index is not needed because the decrease in the stock price is offset by an increased in the number of share outstanding. But when the companies, included in the index, list their additional shares like, right shares, bonus shares and new shares of common stock, then the base value should be revised. Therefore, the adjustment of base value with the new listing is a disadvantage of value weighted index. Another disadvantage is that a specified percentage changes in the value of a large company has greater impact than a comparable percentage change for a small company.[3]

2.3.3.3. Equal Weighting:

The third method of weighting is known as equal weighting. This index is computed daily by multiplying the level of the index on the previous day by the arithmetic mean of the daily **price relatives** (today's price divided by yesterday's price) of the relevant stocks in the index. ***(Sharpe & et. al, 2006:834)***

[3]Op.cit., pp.65

The following formula is used to calculate equal weighting index: Index at time t, $\left(I_t\right) = \sum_{i=1}^{n} PR_{i,t} / n \times$ Previous Day's Index

$$= \frac{PR_{1,t} + PR_{2,t} + \dots\dots\dots\dots\dots\dots + PR_{n,t}}{n} \times \text{ Previous Day's Index}$$

Where, $PR_{i,t}$= Price of i^{th} stock at time t

n= Number of stock included in the index calculation

Price Relative (PR_t) = $\frac{Today's\ Price}{Yesterday's\ Price}$

Alternatively, Index (I_i)=Average Price Relative×Previous Day's Index

Note: *Index for the starting day is assumed to be an arbitrary value like 10, 100, 1000, etc.*

Equal weighted index has its own limitations. It follows a long process of calculation. Everyday the price relative must be calculated. Similarly, this method is costly as well. [4]

2.3.3.4. Geometric Mean:

Value Line also prepares a popular index that does not involve price weighting, value weighting, or equal weighting. This index is computed daily by multiplying the previous day's index by the geometric mean of the daily price relatives of the relevant stocks in the index. It is referred to as the Value Line Composite (Geometric) Index and is based on the same stocks that are used in the arithmetic version of the index. ***(Sharpe & et. al, 2006:834)***

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[4] Op.cit., pp.66

In summary, four types of indices have been presented. Investors often use these indices interchangeably when they refer to how “the market” has done. However, the indices interchangeably when they refer to how “the market” has done. However, the indices can give notably different answers. ***(Sharpe & et. al, 2006:835)***

It is calculated as under:
Index at time t, (I_t)= [Product of Price Relatives$_t$]$^{1/n}$× Previous Day’s Index

The disadvantage of geometric mean index is complicated and costly.[5]

2.3.4. Method of Calculating Nepse Index:

Nepse Index is an indicator of market capitalization of securities traded on Nepse. Nepse opened its trading floor on 13th January 1994 and started to calculate index, as Nepse index, since 12th February, 1994. Nepse is calculating the index on market value weight base and total market value of 12th February, 1994. The arbitrary index value for the base period has been assumed to be 100. It considers all the stocks listed in the exchange and their closing price, to calculate index. Therefore, the population has been taken as a sample and the index represents all sectors’ all stocks. The base value changes with the listing of new companies as well as the listing of new shares like bonus shares, right shares, etc. With such listing the base should be adjusted. Following formulae is used to calculate the Nepse Index:

$$Nepse\ Index = \frac{Total\ Market\ value\ of\ time\ (t)}{Total\ Market\ value\ on\ Base\ Period(Market\ Value\ on\ 12th\ Feb.1994)} \times 100$$ ***(Bhattarai, 2006:67)***

[5] Op.cit., pp.66

S&P 500 Index, widely used by institutional investors, is a value-weighted average of 500 large-size stocks. S&P's also computes value weighted indices for industrial, transportation, utility and financial stocks, as well as other sized-based indices. Industry indices are also calculated. In fact, although Nepalese stock market not comparable to highly developed stock market of U.S. but general understanding shows that Nepse is similar in using value weighted index as S&P 500 Index. ***(Shrestha and et.al., 2007:165)***

2.4. Risk In a Contemporary Mode:

Much time and effort has been expended on developing a measure of risk and a system for using this measure in assessing returns. The two key components of that have emerged from this theoretical effort are beta, which is a statistical measure of risk, and the CAPM, which links risk (beta) to the level of required return.

The total risk of an investment consists of two components: diversifiable and non-diversifiable risk. Diversifiable, or unsystematic, risk represents the portion of an investment's risk that can be eliminated by holding enough stocks. This risk results from uncontrollable or even random events that tend to be unique to an industry and/or a company such as management changes, labor changes, labor strikes, lawsuits, and regulatory actions. Non-diversifiable, or systematic, risk is external to an industry and/or business and is attributed to broad forces, such as war, inflation, and political and even sociological events, Such forces impact all investments and are therefore not unique to a given vehicle, The relationship between total risk, diversifiable risk, and non-diversifiable risk is given by the equation:

Total Risk= Diversifiable Risk+Non-diversifiable Risk

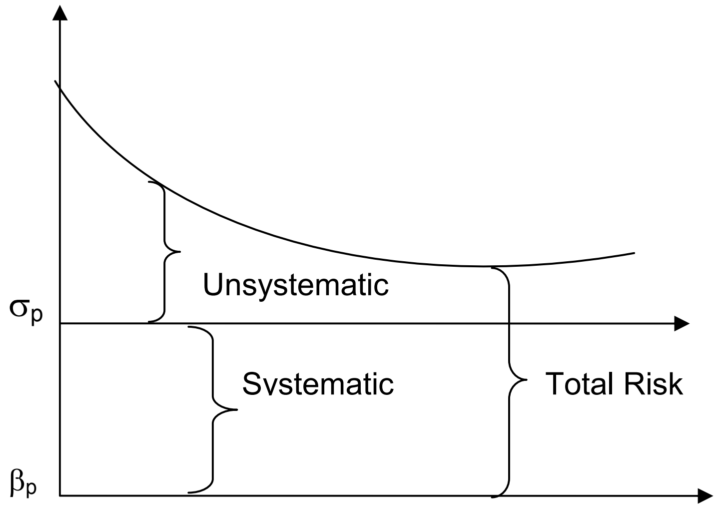

Figure No.: 2.1 Risks and Diversification

Source: James C. Van Horne. *Financial Management and Policy. 11th Edition (New Delhi: Prentice Hall of India Private Limited, 2000) pp. 61.*

Because any knowledgeable investor can eliminate diversifiable risk by holding a large enough portfolios of securities, the only relevant risk to be concerned about is non-diversifiable risk, Studies have shown that by carefully selecting as few as fifteen securities for a portfolio, diversifiable risk can be almost entirely eliminated. Non-diversifiable risk is unavoidable, and each security possesses its own level of non-diversifiable risk, measured using the beta coefficient. ***(Fisher and Jordan, 2001:81-82)***

2.4.1. Meaning of Beta:

Beta measures non-diversifiable risk. Beat shows how the price of a security responds to market forces. In effect, the more responsive the price of a security is to changes in the market, the higher will be its beta. Beta is calculated by relating the returns on a security with the returns for the market. Market return is measured by the average return of a large sample of stocks, such as the S&P 500 Stock Index. The beta for the overall market is equal to 1.00 and other betas are viewed in relation to this value.

Betas can be positive or negative. However, nearly all betas are positive and most betas lie somewhere between 0.4 and 1.9. ***(Fisher and Jordan, 2001: 82)***

2.5. A Single-factor CAPM:

Capital market theory is a major extension of the portfolio theory of Markowitz.[6] Portfolio theory is really a description of how rational investors should build efficient portfolios. Capital market theory tells us how assets should be priced in the capital markets if, indeed, everyone behaved in the way portfolio theory suggest. The Capital Asset Pricing Model (CAPM) is a relationship explaining how assets should be priced in the capital markets.

The real world is complex, to be sure. To understand it and build models of how it works, we need to sweep away those complexities we think have only a minor effect on its behavior. Most of the complexities that have to be removed in the stock market concern institutional frictions. These include such things as commissions, taxation, short-selling rules, and margin requirements, to name a few.

The specific assumptions underlying capital market theory are:

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[6] The development of capital market theory is traceable largely to William Sharpe, "Capital Assets Prices: A Theory of Market Equilibrium under Conditions of Risk", ***Journal of Finance*** (September 1964), pp.425-42

1. Investors make decisions based solely upon risk-and-return assessments. These judgments take the form of expected values and standard deviation measures.
2. The purchase or sale of security can be underwritten in infinitely divisible units.
3. Investors can short sell any amount of shares without limit.
4. Purchases and sales by a single investor cannot affect prices. This means that there is perfect competition where investors in total determine prices by their actions. Otherwise, monopoly power could influence prices (return).
5. There are no transaction costs. Where there are transaction costs, returns would be sensitive to whether the investor owned a security before the decision period.
6. The purchase or sale of securities is done in the absence of personal income taxes. This means that we are indifferent to the form in which the return is received (dividends or capital gains).
7. The investors can borrow or lend any amount of funds desired at an identical riskless rate (e.g., the Treasury bill rate).
8. Investors share identical expectations with regard to the relevant decision period, the necessary decision inputs, their form and size. Thus investors are presumed to have identical planning horizons and to have identical expectations regarding expected returns, variances of expected returns, and covariance of all pairs of securities. Otherwise, there would be a family of efficient frontiers because of differences in expectations.

This might seem too many creating a kind of “toy world” fabricated to satisfy the whims of eccentric academics. Many of the assumptions no doubt seem objectionable. However, despite the strict assumptions, the model we will view does a very good job of describing prices in the capital markets. Reality is not materially distorted by making these assumptions. ***(Fischer and Jordan, 2001:636-637)***

Harry M. Markowitz laid down the foundation of modern portfolio theory in 1952. Later three economists William Sharpe, John Linter and Jack Treynor developed Capital Asset Pricing Model or CAPM in mid 1960's. CAPM is a model that describes the relationship between risk and expected return. It explains the behavior of security price. It also describes how the price and interest rate on risky financial assets are determined in the capital market. In this model, a security's expected return is the risk free rate plus a premium based on the systematic risk of the security, where risk is measured by the beta coefficient. The main massage of the model is "in a competitive market, the expected risk premium varies in direct proportion to beta". This means that all investments must plot along the security market line.

CAPM provides a framework to determine the required rate of return on an asset and indicates the relationship between return and risk of the assets which helps in valuing an asset. ***(Pandey, 2008:96)***

CAPM provides a measure of risk and a method of estimating the market's risk- return line. The market (systematic) risk of security is measured in terms of its sensitivity to the market movement. This sensitivity is referred to the security's beta. ***(Pandey, 2008:102)***

The CAPM is sometimes used to estimate the required rate of return for any firm with publicly traded stock. The CAPM is based on the premise that the only important risk of a firm is systematic risk, or the risk that results from exposure to general stock market movements. The CAPM is not concerned with so called unsystematic risk, which is specific to an individual firm, because investors can avoids that type of risk by holding diversified portfolios. The CAPM states that the expected risk premium on each investment is proportional to its beta, this mean that each investment should lie on the sloping security market line connecting treasury bills and market portfolio."The graphical version of CAPM is called the security market line which shows the relation between risk and the required rate of return"***(Chandra, 2001:168-169)***.

The security market line clearly shows that return is the increasing function. The SML equation as suggested for the computation of expected rate of return on common stock. The model is,

$E(r_j) = r_f + [E(r_m) - r_f]\,\beta_j$ where, $E(r_j)$ = Expected return on security j.

r_f = Risk free rate.

$E(r_m)$ = The expected market return.

β_j = Assets beta

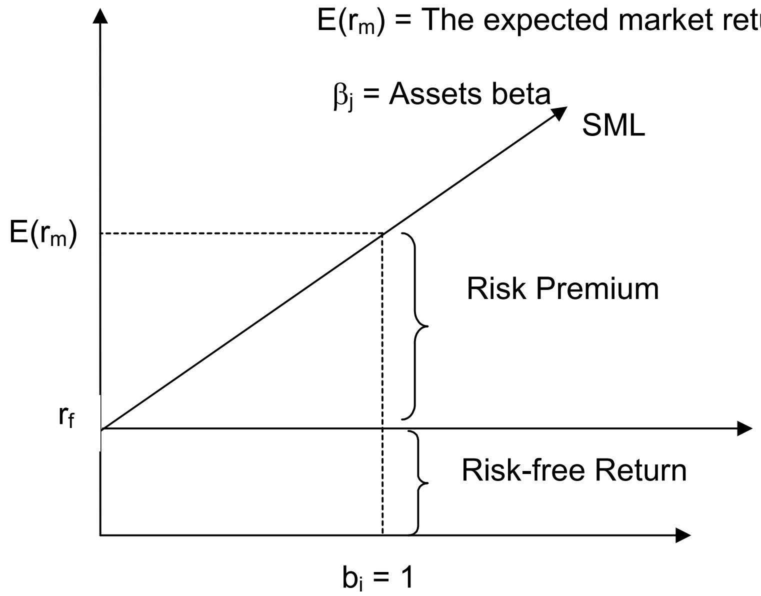

Figure No.: 2.2. Single-factor CAPM

Source: Francis, 1991: 627

"In market equilibrium the required rate of return on stock equals its expected return. That is all stocks will be on the security market line, what happens when this is not so? The primary concern of portfolio management is to identify the overpriced and under priced of security. Overpriced and under priced securities are identified either comparison of their value with market price or compassion of required rate of return and expected return.

Under-price and over-priced stock during temporary market disequilibrium

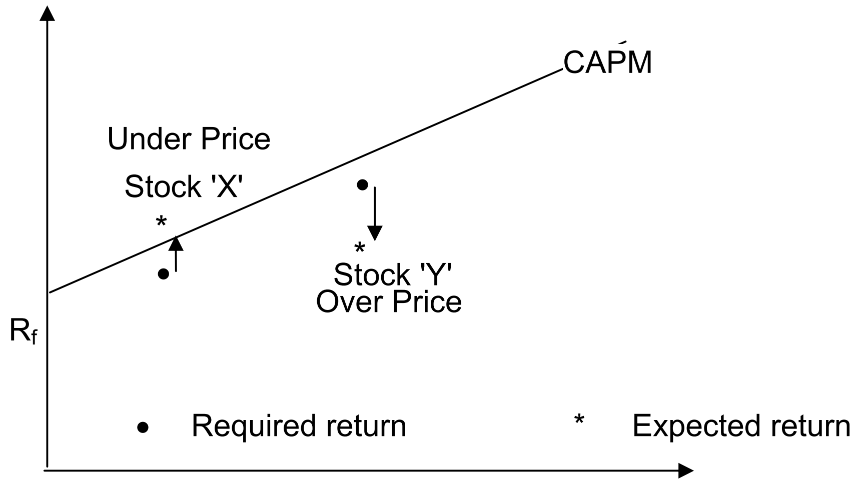

Figure No.: 2.3. Source: Francis, 1991: 628

As a result, stock 'X' is expected to provide a rate of return grater than the required, base on its systematic risk. Stock 'Y' is expected to provide a lower return than required to compensate for its systematic risk. Investors seeing the opportunity for superior returns by investing in stock X, should rush to buy it. In the case of stock 'Y' , investors holding this stock would sell it, recognizing than they could obtain a higher return for the same amount of systematic risk with other stocks."***(Francis, 1991:654-655)***

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 return.

2.5.1. Assumptions of the CAPM:[7]

Some of the assumptions behind the CAPM are also behind the normative approach for investing. These assumptions are as follows:

1. Investors evaluate portfolios by looking at the expected returns and standard deviations of the portfolios over a one-period horizon.
2. Investors are never satisfied, so when 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 the lower standard deviation.
4. Individual assets are infinitely divisible, meaning that an investors can buy a fraction of a share if he or she so desires.
5. There is a risk-free rate at which an investors may either lend (that is, invest) or borrow money.
6. Taxes and transaction costs are irrelevant.

To those assumptions the following ones are added:

7. All investors have the same one-period horizon.
8. The risk-free rate is the same for all investors.
9. Information is freely and instantly available to all investors.

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[7] Shrape and et.al. , (2006) ***Investments,*** New Delhi-110 001, Prentice-Hall of India Private Limited.pp.228

10. Investors have homogeneous expectations, meaning that they have the same perceptions in regard to the expected returns, standard deviations, and co-variances of securities.

2.5.2. The Market Model:

The index model, first suggested by Shape[8], also offers insight into portfolio diversification. William Sharpe simplifies the Markowitz method of diversification of portfolio. This model is known as the market model. The market model assumes that each security return is related to the market indexes. If the value of market indexes has increased, the value of stock also increased and vice versa. ***(Shrestha & et.al., 2005:129)***

Suppose that the return on a common stock over a given time period (say, a month) is related to the return over the same period that is earned on a market index such as the widely cited S&P 500. That is, if the market has gone up then it is likely that the stock has gone up, and if the market has gone down then it is likely that the stock has gone down. One way to capture this relationship is with

$r_i = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ Where:

r_i = return on security i for some given period

r_I = return on market index I for the same period

α_{iI} = intercept term

β_{iI} = slope term

[8] Sharpe, William F. "A Simplified Model of Portfolio Analysis", ***Management Science**,* January 1963.pp.277-83.

ε_{iI} = random error term

Assuming, that the slope term β_{iI} is positive, above equation indicates that the higher the return on the market index, the higher the return on the security is likely to be (note that the expected value of the random error term is zero). ***(Sharpe & et. al, 2006:181)***

According to the market model the various values are calculated using the returns of the specific type of security and the return on the market index as we see from the equation of the market model.

If 'X' be the index returns & 'Y' be the security return, then

1. Beta= $\dfrac{\left(T \times \sum XY\right) - \left(\sum Y \times \sum X\right)}{\left(T \times \sum X^2\right) - \left(\sum X\right)^2}$
2. Alpha=[∑Y/T]-[Beta $\times$ (∑X/T)]
3. Standard deviation of random error term=
   $\{[\sum Y^2 - (\text{Alpha} \times \sum Y) - (\text{Beta} \times \sum XY)] / [T-2]\}^{1/2}$
4. Standard error of beta=
   Standard deviation of random error term/$\{\sum X^2 - [(\sum X)^2/T]\}^{1/2}$
5. Standard error of alpha=
   Standard deviation of random error term/$\{T - [(\sum X)^2/\sum X^2]\}^{1/2}$
6. Correlation coefficient= $\dfrac{\left(T \times \sum XY\right) - \left(\sum Y \times \sum X\right)}{\left\{\left[\left(T \times \sum Y^2\right) - \left(\sum Y\right)^2\right] \times \left[\left(T \times \sum X^2\right) - \left(\sum X\right)^2\right]\right\}^{1/2}}$
7. Coefficient of determination= (Correlation coefficient)^2
8. Coefficient of non-determination=1- Coefficient of determination ***(Sharpe & et.al, 2006:477)***

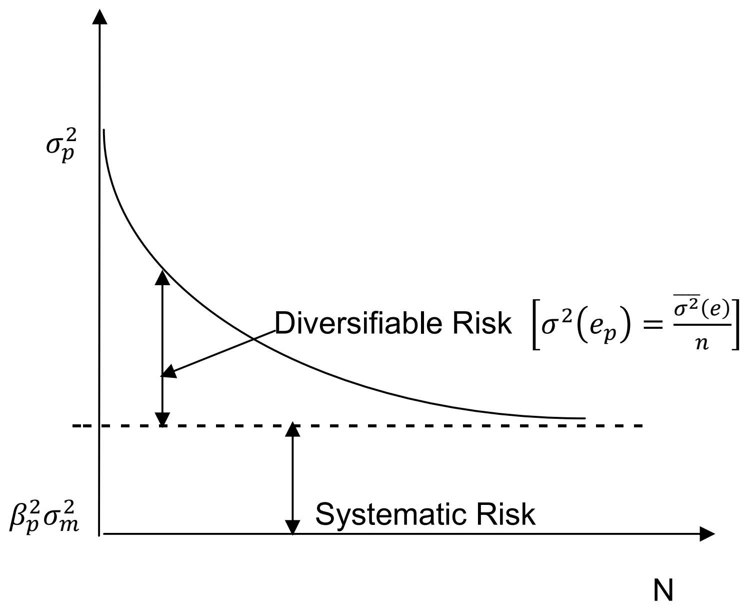

Figure No.2.4: The Market Model

Source: Bodie, Zvi, and et.al. (2006 Sixth Edition) ***Investments***, New Delhi: Tata McGraw-Hill Publishing Company Limited. Pp.333

The systematic risk component of the portfolio variance, which we defined as the component that depends on market wide movements, is $\beta_p^2\sigma_m^2$ and depends on the sensitivity coefficients of the individual securities. This part of the risk depends on portfolio beta and σ_m^2 and will persist regardless of the extent of portfolio diversification. No matter how many stocks are held, their common exposure to the market will be reflected in portfolio systematic risk.[9]

In contrast, the nonsystematic component of the portfolio variance is $\sigma^2(e_p)$ and is attributable to firm-specific components, e_i. Because these e_is are independent, and all have zero expected value, the law of averages can be applied to conclude that as more and more stocks are added to the portfolio,

[9] Of course, one can construct a portfolio with zero systematic risk by mixing negative β and positive β assets. The point of our discussion is that vast majority of securities have a positive β, implying that well-diversified portfolios with small holdings in large numbers of assets will indeed have positive systematic risk.

the firm-specific components tend to cancel out, resulting in ever-smaller nonmarket risk. Such risk is thus termed diversifiable. To see this more rigorously, examine the formula for the variance of the equally weighted "portfolio" of firm-specific components. Because the e_is are uncorrelated,

$$\sigma^2(e_p) = \sum_{i=1}^{n} \left(\frac{1}{n}\right)^2 \sigma^2\,(e_i) = \frac{1}{n}\bar{\sigma}^2(e)$$

Where $\bar{\sigma}^2(e)$ is the average of the firm-specific variances. Because this average is independent of n, when n gets large, $\sigma^2(e_p)$ becomes negligible.

To summarize, as diversification increases, the total variance of a portfolio approaches the systematic variance, defined as the variance of the market factor multiplied by the square of the portfolio sensitivity coefficient, β_p^2. This is shown in Figure No. 2.4.

Figure No. 2.4 shows that as more and more securities are combined into a portfolio, the portfolio variance decreases because of the diversification of firm-specific risk. However, the power of diversification is limited. Even for large n, part of the risk remains because of the exposure of virtually all assets to the common, or market, factor. Therefore, this systematic risk said to be non-diversifiable.

This analysis is borne out by empirical evidence. We saw the effect of portfolio diversification on portfolio standard deviations in Figure No. 2.4. ***(Bodie and et.al., 2005:332-334)***

2.5.2.1. Beta of Market is 1[10]:

It is natural to think about the relationship between the market model and the CAPM. After all, both models have a slope term called "beta" in them, and both models somehow involve the market. However, there are two significant differences between the models.

First, the market model is a factor model, or to be more specific, a single-factor model in which the factor is a market index. Unlike the CAPM, however, it is not an equilibrium model that describes how prices are set for securities.

Second, the market model utilizes a market index such as the S & P 500, whereas the CAPM involves the market portfolio. The market portfolio is a collection of all the securities in the marketplace, whereas a market index is based on a sample of the market broadly constructed (for example, 500 in the case of the S & P 500). Therefore, conceptually the beta of a stock based on the market model, β_{iI}, differs from the beat of the stock according to the CAPM, β_{iM} because the market model beta is measured relative to a market index whereas the CAPM beta is measured relative to the market portfolio. In practice, however, the composition of the market portfolio is not precisely known, so a market index is used. Thus, although conceptually different, beta determined with the use of a market index is often treated as if they were determined with the use of the market portfolio. That is β_{iI} is used as an estimate of β_{iM}. ***(Sharpe & et. al, 2006:239)***

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[10] Ibid pp.29

Beta of a market return equals to 1 and beta coefficient as an index of systematic risk the assets. If beta is larger than 1, then the asset is more volatile than the market and is called an *aggressive beta*. If the beta is less than 1, the asset is called a *defensive beta* and its price fluctuation is less volatile than the market. ***(Bhattarai, 2006:172)***

$$\text{Market Beta } (\beta_M) = \frac{Cov_{mm}}{\sigma_m^2} = \frac{\rho_{mm}\sigma_m\sigma_m}{\sigma_m^2} = \frac{1\times\sigma_m^2}{\sigma_m^2} = 1$$

2.5.3. A Multifactor CAPM:

The CAPM presupposes that the only relevant source of risk arises from variations in security returns, and therefore a representative (market) portfolio can capture this entire risk. As a result, individual-stock risk can be defined by the contribution to overall portfolio risk; hence, the risk premium on an individual stock is solely determined by its beta on the market portfolio. But is this narrow view of risk warranted?

Consider a relatively young investor whose future wealth is determined in large part by labor income. The stream of future labor income is also risky and may be intimately tied to the fortunes of the company for which the investor works. Such an investor might choose an investment portfolio that will help to diversify labor-income risk. For that purpose, stocks with lower-than-average correlation with future labor income would be favored, that is, such stocks will receive higher weights in the individual portfolio than their weights in the market portfolio. Put another way, using this broader notion of risk, these investors no longer consider the market portfolio as efficient and the rationale for the CAPM expected return-beta relationship no longer applies.

In principle, the CAPM may still hold if hedging demands of various investors are equally distributed across different types of securities so that deviations of portfolio weights from those of the market portfolio are offsetting. But if hedging demands are common to many investors, the prices of securities with desirable hedging characteristics will be bid up and the expected return reduced, which will invalidate the CAPM expected return-beta relationship. For example, suppose the prices of energy expenditures. At those higher stock prices, expected rates of return will be lower than dictated by the expected return-beta relationship of the CAPM. The simple SML relationship needs too be generalized to account for the effects of extra-market hedging demands on equilibrium rates of return.

Merton[11] has shown that hedging of stocks with energy expenditure demands will result in an expanded or multifactor version of the CAPM that recognizes the multidimensional nature of risk. His model is called the multifactor CAPM or, alternatively, the Intertemporal CAPM. The focal point of Metron's model is not dollar returns per se, but the consumption and investment made possible by the investor's wealth. Each source of risk to consumption or investment opportunities may in principle command its own risk premium.

In the case of energy price risk, for example, Merton's model would imply that the expected return-beta relationship of the single-factor CAPM would be generalized to the following two-factor relationship:

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[11] Merton, Robert C. "An Intertemporal Capital Assets Pricing Model", ***Econometrica*** 41 (1973) pp.867-87

$$E(r_i) = r_f + \beta_{iM}\left\lfloor E(r_M) - r_f \right\rfloor + \beta_{ie}\left\lfloor E(r_e) - r_f \right\rfloor$$

where β_{iM} is the beta of security i with respect to the market portfolio, and β_{ie} is the beta with respect to energy price risk.

Similarly, $E(r_e) - r_f$ is the risk premium associated with exposure to energy price uncertainty.

The rate of return of the portfolio that best hedges energy price uncertainty is r_e.

This equation, therefore, is a two-factor CAPM. More generally, we will have a beta and a risk premium for every significant source of risk that consumers try to hedge.

Notice that this expanded version of the CAPM provides a prediction for security returns identical to that of the multifactor APT. Therefore, there is no contradiction between these two theories of the risk premium. The CAPM approach does offer one notable advantage, however. In contrast to the APT, which is silent on the relevant systematic factors, the CAPM provides guidance as to where to look for those factors. The important factors will be those sources of risk that large groups of investors try to offset by establishing extra-market hedge portfolios. By specifying the likely sources of risk against which dominant groups of investors attempt to hedge, we identify the dimensions along which the CAPM needs to be generalized.

When a source of risk has an effect on expected returns, we say that this risk “is priced”. While the single-factor CAPM predicts that only market risk will be priced, the ICAPM predicts that other sources of risk also may be priced. Metron suggested a list of possible common sources of uncertainty that might affect expected security returns. Among these are uncertainties in labor income, prices of important consumption goods (e.g., energy prices), or changes in future investment opportunities (e.g., changes in the riskiness of various asset classes). However, it is difficult to predict whether there exists sufficient demand for hedging these sources of uncertainty to affect security returns. ***(Bodie & et. al, 2006:369-370)***

2.5.3.1. Gold as Store of Value and Hedge against Inflation:

Gold has been in demand since the dawn of civilization. It is valued for its beauty and brilliance. It is universally used in ornaments and jewellery. It is also used to make religious objects. In recent years, it has been used in quality goods such as watches and pens.

The demand for gold may be explained by its unique properties which few other metals possess. Gold is the most malleable and ductile among the metals. An ounce of gold can be beaten to cover an area of about 16 square meters. The same quantity may be drawn into a thin thread stretching for 80 kilometers. It conducts heat and electricity very well. Its perfect conductivity makes it indispensable in electronic circuits. Its high resistance to heat has further enhanced its industrial value. Because of its reflectivity, it has been used to reflect ultra-violet rays in space programmes.

The demand for gold is further enhanced by its scarcity. The supply of gold is limited. Though it has been mined for thousands of years, it has remained a rare metal. ***(Huat, 1999:295)***

It may seem ironical that gold is taken out of the mines only to be locked up in vaults. But this practice has contributed to the great demand for the metal. Nations store gold in their strongest vaults as reserves. Individuals keep their jewellery and ornaments under lock and key. Hoarding is understandable when the price of gold is increasing steadily over the decades. It serves as a good hedge against inflation as well as good investment. ***(Huat, 1999:297)***

2.6. Efficient Market Hypothesis:

Market efficiency implies that all known information is immediately discounted by all investors and reflected in share prices in the stock market. As such, no one has an information edge. In the ideal efficient market, every one knows all possible-to-know information simultaneously, interprets it similarly, and behaves rationally. But, human beings what they are, this of course rarely happens.

In such a world, the only price changes that would occur are those which results from new information. Since there is no reason to expect that information would be non-random in its appearance, the period-to-period price changes of a stock should be random movements, statistically independent of one another. The level of stock prices will, under these conditions, describe what statisticians call a ‘random walk’ and physicists call Brownian motion. In the normal course of events, the level of prices, i.e., the summation of these random movements will show movements that look like cycle but in fact are not. ***(Bhalla, 2005:505)***

In an efficient market, all the relevant information is reflected in the current stock price. Information cannot be used to obtain excess return:

the information has already been taken into account and absorbed in the prices. In other words, all prices are correctly stated and there are no "bargains" in the stock market. ***(Bhalla, 2005:505)***

Lorie[12] explained what is meant by efficient security market in these words: "Efficiency in this context means the ability of the capital markets to function so that prices of securities react rapidly to new information. Such efficiency will produce prices that are 'appropriate' in terms of current knowledge, and investors will be less likely to make unwise investments. A corollary is that investors will also be less likely to discover great bargains and thereby earn extraordinary high rates of return."

The requirements for a securities market to be efficient market are: (1) Prices must be efficient so that new investments and better products will cause a firm's securities prices to rise and motivate investors to supply capital to the firm (i.e., buy its stock); (2) Information must be discussed freely and quickly across the nations so all investors can react to new information; (3) Transactions costs such as sales commissions on securities are ignored; (4) Taxes are assumed to have no noticeable effect on investment policy; (5) Every investor is allowed to borrow or lend at the same rate; and, finally, (6) Investors must be rational and able to recognize efficient assets and that they will want to invest money where it is needed most (i.e., in the assets with relatively high returns). ***(Bhalla, 2005:506)***

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[12] Lorie, James A. "Public Policy for American Capital Markets", Department of the Treasury, 1974, p.3

It is advantageous to view the random-walk model or hypothesis as a special case of the more general efficient-market model or hypothesis. In fact, one might more readily understand the distinctions and variations of the various forms of the more general efficient-market hypothesis by viewing this hypothesis and its variations as lying on a continuum, with the so-called random-walk model at one end. ***(Fischer and Jordan, 2001:540)***

2.6.1. Weak Form:

This is the oldest statement of the hypothesis. It holds that present stock market prices reflect all known information with respect to past stock prices, trends, and volume. Thus, it is asserted, such past data cannot be used to predict future stock prices. ***(Bhalla, 2005:506)***

The weak form says that the current prices of stocks already fully reflect all the information that is contained in the historical sequence of prices. Therefore, there is no benefit-as far as forecasting the future is concerned-in examining the historical sequence of prices. This weak form of the efficient market hypothesis is popularly known as the random-walk theory. Clearly, if this weak form of the efficient market hypothesis is true, it is a direct repudiation of technical analysis. If there is no value in studying in studying past prices and past price changes, there is no value in technical analysis. ***(Fischer and Jordan, 2001:540)***

2.6.1.1. Runs Test:

There is a potential problem, however, when one uses a correlation coefficient to evaluate the possibility of independence in a particular series. This problem arises because correlation coefficients can be dominated by extreme values. That is, an extremely large or extremely low value or two in the series can unduly influence the results of the calculation used to determine the correlation coefficient. To overcome this possible shortcoming, some researchers have employed the runs test.

Runs tests ignore the absolute values of the numbers in the series and observe only their sign. The researchers then merely count the number of runs-consecutive sequences of signs-in the same direction. For example, the sequence - - - + 0 + has four runs. Next, the actual number of runs observed is compared with the numbers that are to be expressed from a series of randomly generated price changes. It has been found that when this is done, no significant differences are observed. These results further strengthen the random-walk hypothesis. ***(Fischer and Jordan, 2001:546-548)***

2.6.2. Semi-strong Form:

The semi-strong form of the EMH says that current prices of stocks not only reflect all informational content of historical prices but also reflect all publicly available knowledge about the corporations being studied. Furthermore, the semi-strong form says that efforts by analysts and investors to acquire and analyze public information will not yield consistently superior returns to the analysts. Examples of the type of public information that will not be of value on a consistent basis to the analyst are corporate reports, corporate announcements, and information relating to corporate dividend policy, forthcoming stock splits, and so forth.

In effect, the semi-strong form of the efficient market hypothesis maintains that as soon as information becomes publicly available, it is absorbed and reflected in stock prices. Even if this adjustment is not the correct one immediately, it will in a very short time be properly analyzed by the market. Thus, the analyst would have great difficulty trying to profit using fundamental analysis. Furthermore, even while the correct adjustment is taking place, the analyst cannot obtain consistent superior returns. Why? Because the incorrect adjustments will not take place consistently; that is. Sometimes the adjustments will be over-adjustments and sometimes they will be under- adjustments. Therefore, an analyst will not be able to develop a trading strategy based on those quick adjustments to new publicly available information.

Tests of the semi-strong form of the efficient-market hypothesis have tended (but not unanimously) to provide support for the hypothesis. ***(Fischer and Jordan, 2001:540-541)***

The semi-strong form of the efficient market hypothesis centers on how rapidly and efficiently market prices adjust to new publically available information, including:

(1) Expectations regarding contents of future financial reports from individual corporations, for example, future changes in earnings, dividends, capital structure, sales, etc. Current prices, according to the theory, should reflect rational expectation regarding these future realizations.

(2) Incompatibilities between many competing published data series and revision of data series previously published, for example, by governmental departments and agencies, particularly corporate profits and related data series. Efficiency implies, among other things, that the markets correctly expect and act now upon

planned or possible future revisions of either published data or accounting method.

(3) Increasing politicization of economic data, particularly price inflation rate or cost of living data and unemployment rates.

The shift from the weak, i.e. random walk form, to the semi-strong form of the efficient market hypothesis represents a quantum jump. In other words, semi-strong form suggests the fruitlessness of efforts to earn superior rates of return. This very stronger assertion of the semi-strong form represents a direct challenge to traditional financial analysis based on the evaluation of publicly available data. ***(Bhalla, 2005:510)***

2.6.2.1. Market Anomalies:

Researchers have uncovered certain empirical regularities in common stocks. That is, certain cross-sectional differences among stock returns have been found to occur with regularity. Some regularity should occur according to certain asset pricing models. For example, the CAPM asserts that different stocks should have different returns because different stocks have different betas. What makes the regularities that are about to be discussed of special interest is that they are not predicted by any of the traditional asset pricing models. Accordingly, they are sometimes also referred to as anomalies. ***(Sharpe & et. al, 2006:496)***

In recent years, several so-called anomalies have been identified. Anomalies are situations that appear to violate the traditional view of market efficiency, suggesting that it may be possible for careful investors to earn abnormal returns.

Most of these anomalies appear to revolve around four themes:

- Markets tend to overreact to news, both good and bad.

- Value investing is contrarian in nature and is beneficial because markets overreact.
- The market consistently ignores certain stocks, especially small stocks.
- All things being equal, there are times when it is more advantageous to buy stocks whereas there are other times when it is better to avoid stocks.***(Bhalla, 2005:516)***

2.6.2.1.1. January Effect:

There is no obvious reason to expect stock returns to be higher in certain months than in others. However, in a study that looked at average monthly returns on NYSE-listed common stocks, significant seasonalities were found. In particular, the average return in January was higher than the average return in any other month. The average return in January and other 11 months varied, Although the difference in returns was minor in the early part of the century, more recently it appears that the average return in January has been approximately 3% higher than the average monthly returns in February through December.***(Sharpe & et. al, 2006:497)***

2.6.2.1.2. Day-of-the-Week Effect:

It is often assumed that the expected daily returns on stocks are the same for all days of the week. That is, the expected return on a given stock is the same for Monday as it is for Tuesday as it is for Wednesday as it is for Thursday as it is for Friday. However, a number of studies have uncovered evidence that refutes this belief. Two early studies looked at the average daily return on NYSE-listed securities & found that the return on Monday was quite different from returns on other days. In particular, the average return on Monday was found to be much lower than the average return on any other day of the week. Furthermore, the average return on Monday was negative, whereas the other days of the week had positive average returns. ***(Sharpe & et. al, 2006:497)***

2.6.3. Strong Form:

The strong form is concerned with whether or not certain individuals or groups of individuals possess inside information which can be used to make above average profits. If the strong form of the efficient capital market hypothesis holds, then any day is as good as any other day to buy any stock. ***(Bhalla, 2005:511)***

The rationale for the strong tests lies in a combination of the semi-strong tests (information assimilated in a rapid and unbiased fashion) and the fact that a great many supposedly knowledgeable and trained people and so much information insiders and specialists on the floor of the exchanges (because their "book" contains unfiled orders) may have superior information and thus higher expected returns. Other investors, however, have not been shown to produce consistently higher returns. ***(Bhalla, 2005:511)***

Finally, the strong form of the efficient-market hypothesis maintains that not only is publicly available information useless to the investor or analyst but all information is useless. Specifically, no information that is available is it public or "inside", can be used to earn consistently superior investment returns. ***(Fischer and Jordan, 2001: 541)***

2.7. Review of the Past Studies:

Gurung and Duwadi (*2047*) in their article, *Nepalma Dhitopatra Karobar Ra Security Kharid Bikri Kendra:Aak Aadhyan* presented the historical background of overall stock market development in world. Similarly, they have presented the reasons for Black Monday i.e. 1987 Oct.19, Monday when, the huge collapse took place globally in the stock market for the first time. They have also portrait the historical development of security market in Nepal. They have defined in brief about the various investment instruments used in the capital market. They have also discussed about the underwriting practice in Nepal. They have also quoted that John Singsbee, ex-chief of Security Stock Exchange Commission of America & Leon J. Weil, Ex-Ambassador of America for Nepal expressed the bright future of Nepal's security market.

They found lack of flexibility and activities, low speed of capital appreciation & lack of opportunity income of capital in Nepalese market. They have recommended for the proper privatization policy, facility for investor's bank, proper rules & regulations & good information facilities, well-knowledge brokers should be increased & investment diversification in agro-sector.

Bajracharya (*2048*) in his article, *Whither Stock Market* discussed on the issue of the dramatic fall in the share price of Nepal Bank Limited on December, 1990. He pointed out the disturbance and distortion it has brought in the minds of the investing public which calls for serious attention. He pointed out the various causes of fall in market mainly at that time also the practice of insider trading, information flow, undue advantages from prevailing rules by investors as well as the listed companies & effectiveness of regulations of the regulatory bodies, As, the Nepalese stock market was a relatively recent development at that time, thus, he had shown, the growth prospects in the coming days.

Siwakoti (*1995*) in his article, *Nepalma Pujiko Dosorow Bazaar* has studied on the procedures, organization & management of Nepse. He has elaborated that time criteria for the listing of shares, debentures & government bonds. He also studied on the trading practice at Nepse, brokerage commission & the early development of the Nepalese stock market. As the stock market was at primitive stage, the financial indicators, audit reports, etc about the listed companies were not timely available. The activities of the brokers were not seen as per expectations, the transfer of shares was seen delayed & other more problems were prevailing at the stock market.

Siwakoti (*1999*) in his article, *Mudra Bazaar, Puji Bazaar Tatha Dhitopatra Bazaar: Nepalma Yinko Aawasta Ra Chunuti* has studied on the structure of money market, capital market & security market of Nepal. He studied on the prevailing organization & management of the Nepalese stock market. He also studied on the listing of companies & activities of the stock market. He found the lack of awareness among the investors about the stock market at that time. Similarly, he saw a lack of co-ordination between the various government institutions. He also didn't found uniformity in the prevailing company act & security exchange act which brought problems in trading. He also found poor information mechanism of the Nepalese stock market.

Adhikari (*1999*) in his article, *Nepalma Dhitopatra Bazaarko Sithiti* presented about the development of Nepal's secondary market. He has studied the stock market movements & its major indicators from

2050 Magh to 2055 Poush, He has pointed out the major challenges regarding the stock market of Nepal. He saw the less involvement of small investors in the stock market due to low level of awareness. He found the malpractice by the listed companies only for capitalization purpose & delisted after fraudulent. The size of the market has not seen increased due to the less involvement & development of the manufacturing & processing sector. The related rules, regulations & acts have also been affecting in the stock market. He also found that the majority of the listed companies have not called the Annual General Meeting regularly, have not distributed dividend timely, unfair transfer of shares, etc. He also disclosed that no one has not questioned on the proper utilization of the collected capital.

Khatiwada (*2000*) in his article, *Emerging Financial Markets in the Context of Nepal* have viewed that the development of share market helps expand direct finance to industries & business concerns. In the same vein, the healthy growth of stock market reflects the corresponding growth of industries. He found, the stock market problems are more related with regulatory aspects. He found SEBON has not been able to implement the disclosure norms for listed industries and business concerns. Since information of listed industries and business concerns are not made transparent, market can not make prudent decision. Insider trading and manipulation of market are the result of non-enforcement of existing laws by the regulatory body. He added that the economic slowdown during the period has been another factor. The slow down of industrial activities is prompted by the flux of imported goods and depressed domestic demand following stagnant level of per capita income for three years. Subsequent low profitability of listed companies & non-distribution of dividends has also played a role in slow down of stock market. There were even charges that over tightening of liquidity by the central bank in mid 1990s made the stock market dull. But he found empirical relationship between growth in money stock and change in share prices does not substantiate it.

He found initially, the market was euphoric just because export of carpets and garments were at their height and foreign capital was following in large amount. As a result, the financial market had abundant liquidity and this was reflected in the rise of the NEPSE index. He saw from 1995 onwards, as exports dwindled down, as capital flow started taking the reverse course, and as the market itself went for correcting the overpriced shares of the companies which were not performing well, the share price index came to a nadir.

Khatri (*2000*) in his article, *Nepalma Puji Bazaar* has found that the stock market of Nepal was not performing well. He found that the market price of the shares were very low as compare to the paid-up value of the company. This problem was mainly found on the manufacturing & processing sector. The market price of shares of finance companies & insurance companies were seen slightly higher as compare to the paid-up value of the company. This was due to their practice of distributing dividends. The market price of shares of commercial banks were very high than the paid-up value as they were distributing bonus shares & dividend to the public shareholders. He found the lack of supervision & inspection on stock market by governing bodies, lack of proper information flow & problem of transfer of shares. He also found sufficient evidence of practice of price manipulation in Nepalese stock market.

Paudel (*2058*) in his article, *The Stock Market Behaviour: Risk-Return Characteristics* studied on the stock market of Nepal. He reviewed on the expected rate of return on an investment. He has also reviewed on the various risk factors associated with the stock markets. As well as he tested the Nepalese stock market in regard to the Capital Assets Pricing Model from F/Y 2050/51 to F/Y 2057/58. He found that the negativity of the return on market & the market risk premium can have several impacts on stock market analysis. He extracted two major points regarding the stock market behavior. The first one was the assets with negative beta coefficients would have generated higher rates of return. The market risk premium for assets with negative beta coefficients remained positive or the return on average assets was negative. The product of negative market risk premium (R_{PM}) and negative beta coefficient (β) is positive, offering higher required rate of return than the risk free rate of return. This relationship of producing positive risk premium for individual assets was drawn as: Market risk premium for the individual asset= R_{PM} β. The second point was that investors were risk takers who would like to accept lower levels of expected returns for higher levels of risk.

Regmi (*2058*) in her article, *Nepalko Puji Bazaar: Bidhyaman Aawastha* presented about the historical development of the Nepalese stock market & its existing structure. She has stated about the starting the provisions of trading debenture, mutual fund units & group saving units at the Nepse. She pointed out for the development & improvement in the rules, regulation, laws, plans & policies for the upgrading of the Nepalese stock market. She also added that there is a need of injection of more & more investment tools in the market. She has found that there was a delay in the initial public offering by most of the companies in Nepal. She also found that there was an urgent need of proper practice of initial public offering, brokerage services, secondary market management, etc.

Timilisina (*2001*) in his paper on *Capital market Development and Stock Price Behavior in Nepal* mainly focuses in tracing out the historical events contributing to the development process of capital market in Nepal. Implications of macro-economic fundamentals such as monetary policy, fiscal policy, major financial and economic incidents and/or announcements affecting the market prices of shares are examined in brief. The objective of the study is to find out the fair market prices of equities and test whether the present behavior (i.e. from 1993/94* to 1999/2000) of equity prices will remain stable. Coefficients of correlation between the Earning per share and corresponding Market price on the one hand and Dividend per share and corresponding Market price on the other are also computes to know which one EPS or degree of explanatory power of the two in influencing the market price of share. Regression equations of Market Price(Y) on EPS as well as on DPS are drawn. Regression results are statistically tested to derive the conclusion.

Sherpa (*2001)* in his study on *Corporate Information Disclosure and Its Effect on Share Price* collected 59 informational items, classified according to their importance & calculated mean value after the collection of primary data. He selected 33 listed companies, used their annual reports & calculated disclosure scores, which was followed by use of various statistical tools to attain his objectives. From the analysis, he found that most of companies do not disclose adequate & qualitative information on their annual reports & most of disclosed information consisted of only relationship between disclosure scores & variables like earning margins, assets size, etc. The important finding of his research is that there is positive relationship between market price of share & disclosure score. In other words, the company having greater disclosure score had the higher prices of stock.

Timilisina (*2059*) in his article *Sunischit Dhitopatra Bazaarka Nimiti Aawasake Tatwoaharu* pointed out for the proper development of agriculture sector, industrialization & growth of professionalism in Nepal. He also recommended for the transparency & confidence information & statistic database as well as regular flow of information to the public investors. He added the need of public awareness & alertness among investors. There is a need of stable & dependable investment policies. He also presented the conditions of stable government, good governance, peace & stability, & proper supervision & inspection at secondary market timely for the growth & development & development of Nepalese stock market.

Timilisina (*2002*) in his article *Mudra Tatha Pujibazaar* has defined about the money market & capital market. Similarly, he defined about the primary & secondary market. He pointed out the weakness of security market as well as recommended to the security market. He recommended for the proper co-ordination among the regulatory bodies for inspection & supervision. The rules & by-laws should be updated as per the necessity. He emphasized on the improvement of transparency & confidence level of the companies, the participation of manufacturing & processing sectors increment. He recommended for the international standard accounting practice by listed companies, computerization of the secondary market & investors' awareness program should be implemented as soon as possible.

Paudel (*2002*) in his paper on *Investing in Shares of Commercial Banks in Nepal: An Assessment of Returns and Risk Elements* tried to determine whether the shares of commercial banks in Nepal are correctly priced and to trace future price movements when striving towards equilibrium. For this, some theoretical models have been discussed to analyze return and risk characteristics of those shares. The correlation coefficients between the returns on individual shares and the return on market portfolio have been analyzed with the objective of decomposing the total risk into systematic and unsystematic components. The analysis of the individual stock's beta coefficient helps determine the minimum rate of return required by the investor to compensate for systematic risk. Statistical results suggested that the analyzed shares here are <u>not</u> in equilibrium with most of the shares being less risky than the market. While all the shares examined appear to be attractive to the potential investors since they produce higher rates of return that that of the average stock, the various shares have different degrees of risk with some shares being unable to generate the minimum rate of return (i.e. the sum of risk free rate plus a premium for additional risk bearing).

Santos and Haimes (*2002*) in their study on *Applying the Partitioned Multi-objectives Risk Method (PMRM) to Portfolio Selection* where they took case study of 10- stock and demonstrated the PMRM-based alternative formulation to the classic Markowitz mean-variance optimization. Results indicate that optimizing the conditional expected value or f_4 at the lower tail of the portfolio distribution of returns is compatible with optimizing the variance. Nevertheless, the article has shown via a filtering algorithm that it is possible to place more emphasis on extreme losses by adjusting the choice of lower-tail probability.

The article tests the performance of the mean-f_4 portfolios against the mean-variance portfolios via the actual stock prices for the week post-September 11, 2001 terrorist attacks. The choice of that week (September 11-21, 2001) is made on the basis of the "aberrant" drop in market performance attributed to the four-day suspension of NYSE trading. Although the Markowitz (i.e., mean-variance) portfolios performed best on the NYSE reopening day (September 17), this is only transient. Referring analysis, we can see that the mean-f_4 portfolios with partitioning with partitioning of 0.01 exhibited the best overall performance for the whole week.

Although the analysis of the mean-f_4 and mean-variance portfolios is specific to the market crash following the September 11, 2001 terrorist attacks, we have provided concrete evidence that our proposed PMRM-based portfolio optimization model can better respond to extreme events. Thus, it is worthy to further explore and test its potential for wide-scale use by individual investors and financial institutions alike. Enhance to our current model underway. These include:

(i) Improving the formulation to embrace the dynamics of the portfolio selection, similar to the dynamics Markowitz portfolio selection.

(ii) Extending the use of the portfolio selection model to encompass other financial instruments such as currencies, derivatives etc.

(iii) Integrating time-series analysis methods in the quantification of f_4, analogous to the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) used to estimate volatility; and

(iv) Exploring the possible linkage between portfolio diversification strategies and information on industry interdependencies reflected in the economic input-output tables.

Guragai (*2002*) in his master discretion, *Price Formation & Brokering Services in Nepse* found that the growth rate of the market price of the share in banking sector was the highest during the period. The growth rate of trading sector was seen negative. Similarly, trading, hotel & other sectors were seen in weak position at Nepse in comparison to the growth of the Nepse Index. From primary data analysis, he found that the management & dividend payment were major indicators to be seen by investors before making investment decision. Nepalese investors were found to be more speculative in nature. He found that Nepse & SEBON authorities were getting the reliable information whereas; investors were not getting sufficient level of information. He found from respondents that demand & supply is the major factor on price formation in Nepse.

Timilisina (*2003*) in his article *Share ma Lagani Garnay?* interpreted that the Nepalese investors are attracted on cash dividend & bonus shares distributed by the commercial banks. These phenomena had created the environment on increasing the Nepse Index. He added, the events that affects on share markets are the national & international events, overall economic growth of the country, and development of the country's security market, the confidence of investors' on stock market & competitive business environment of the country. Similarly, he added that the future return from financial institutions, earning per share, financial position, cost of investment & book-value & net worth of the listed companies affects on share market movements.

Shrestha (*2003*) in her study *Behaviour of Stock Market Prices* has took the sample of 6 listed companies 2 each from commercial banks, finance companies and insurance companies respectively. She found there is a high degree of positive correlation between EPS & net worth per share. Similarly, she found the result very significant also. She also found a significant difference between the market price of stock of banking sector, finance sector & insurance sector. From the run test, she found, the market price movement of sample companies were random. She recommended for the increment of the competitive power of manufacturing & processing companies in the coming days. Nepse should keep the updated data of all the listed companies.

Joshi (*2003*) in her study *Role of Nepal Stock Exchange (NEPSE) in the Securities Market* took the sample of 3 companies from banking sector, 3 from financial, 1 each from insurance, mfg. & processing, hotel, trading & others. She has analyzed the position of these sample companies by using the SML equation. She found the expected returns on commercial banks in stock market were high whereas trading companies & others were not doing well. She found more of the investors have lack of opportunities for investment in other fields. No investment analysis was being done by investors. She recommended for proper way of privatization process, existing laws & regulations relating to stock market should be revised timely; tax system should be improved & to enhance the larger participation of the public in share market.

Koirala and Bajracharya (*2004*) in their paper on *Nepalese Capital Market: Issues and Challenges* examined that capital market remains important for all types of investors to participate in economic development. Nepal lags behind to develop a healthy capital market with a sound financial infrastructure though the Nepal Stock Exchange was formulated eighteen years ago (from the research year) in 1985 and Nepse established only in 1994. Regulatory measures aware slowly updating incorporating the contemporary issues but that has not been found effective because of governance problem in the corporate sector. Corporate sector were generally not transparent. The culture of keeping books of account secret was still alive. Minority shareholders had no access to the books of accounts kept as secret documents. Capital market in Nepal was confined to equity market only. Debt transaction is negligible in Nepal Stock Exchange. Turnover as well as market capitalization are very small relative to its GNP. Besides, Nepse is not integrated into the world market. Capital market, at the present position. The beneficial that can be gained by the investors, is who can overlook the rules of game at the stock market. They also recommended to improve accounting and auditing standards, disclosure and corporate governance upgrading and on the other the monitoring and policy response of SEBON enhancement.

Joshi and K.C. (*2005*) in their paper on *The Nepalese Stock Market: Efficiency and Calendar Anomalies* examine this phenomenon empirically in the Nepalese stock market for daily data of Nepal Stock Exchange Index from February 1, 1995 to December 31, 2004 covering approximately ten years. Using regression model with dummies, they found persistent evidence of day-of-the-week anomaly but disappearing holiday effect, turn-of-the-month effect and time-of-the-month effect. They also document no evidence of month-of-the-year anomaly and half-month effect. Their result for the month-of-the-year anomaly is consistent to the finding observed for the Jordanian stock market and that for the day-of-the-week anomaly to the Greek stock market. In addition, their finding regarding half-month effect is consistent with the US market. For the rest, they found inconsistent results with that in the international markets. Their results indicate that the Nepalese stock market is not efficient in weak form with regard to the day-of-the-week anomaly but weakly efficient with respect to the other anomalies. Their results show no evidence of month-of-the year anomaly in stock returns. However, they found higher and positive (not significant) returns for October in contrast to that observed for January (significant) in international markets. They found higher and positive (not significant) returns for October for Nepalese stock market in contrast to that observed for January (significant) in international markets. They have given two explanations for this increment, the first is based on the presence of Dashain and Tihar (Great Festivals of Hindu) mostly occurring during October. Similar results were also obtained for Sri Lanka, insignificant positive return for April, and the month during which Sinhala and Tamil new-year falls. The second explanation is based on the information hypothesis, i.e. release of more information as a result of compulsion of disclosure norms.

In regard to the day-of-the-week, negative returns on Thursday is consistent but with no specific explanation. They found that the Sunday is the first trading day for pre-1999 period. Data record of SEBON does not provide Nepse index for Friday proceeding August 31, 1999, although odd lot trading occurs for that date. They also found that Monday, the first trading day of the week was significantly positive but when it was second day of trading sessions it was significantly negative.

G.C. and Neupane (*2005*) in their article on *Stock Market and Economic Development: a Causality Test* has examine the existence of causality relationship between stock market and economic growth based on the time series data for the year 1988 to 2005 using Granger causality test, The study finds the empirical evidence of long-run integration and causality of macroeconomic variables and stock market indicators even in a small capital market of Nepal, The causality has been observed only in real terms but not in nominal variables. In econometric sense, it depicts that the stock market plays significant role in determining economic growth and vice versa. Interestingly, the causation is evident with a lag of 3 to 4 years. Also, the paper reveals the importance of stock market development for fostering economic development.

Paudel and Koirala *(2006)* in their article on *Application of Markowitz and Sharpe Models in Nepalese Stock Market* have test whether or not Markowitz and Sharpe Models of portfolio selection offer better investment alternatives to Nepalese investors. It has been done by applying those models in a sample of 30 stocks traded in Nepalese stock market. The study finds that the application of these elementary models developed about a half century ago offer better options for making decision in the choice of optimal portfolios in Nepalese stock market.

Bhattarai and Joshi (*2007*) in their paper on *Stock Returns and Economically Neutral Behavioral Variables: Evidence from the Nepalese Stock Market* investigates whether or not the Nepalese stock market is efficient in weak form with respect to economically neutral behavioral variables, Simple OLS technique with White’s heteroskedasticity-corrected standard errors is used to test the relationship between stock returns and economically neutral behavioral variables represented by weather (cloud cover and temperature) and biorhythms (seasonal affective disorder). The findings indicate the existence of weak-form efficiency in the Nepalese market for "temperature" and "seasonal affective disorder" but not for the "cloud cover". These findings were not consistent to those of results documented for developed and emerging stock markets.

Ghimire (*2064*) in his article *Sharemulayaama Bhayako Pariwartanbata Darauna Pardaina* stated that the Nepalese stock market have passed through all the four phases namely: maximum, minimum, downward and upward. According to him, various factors have affected on the movement of the Nepalese stock market. The issue on Hrithik Roshan, Maoist Insurgency, power takeover by King Gyanendra, death of 13 Nepalese at Iraqi, reinstatement of House of Representative-Parliament, Government-Maoist Peace Accord, etc indirectly affected on the Nepalese stock market. Similarly, the three major decisions regarding the financial institutions structure under BAFIA also affected on Nepse. He had recommended for the automation of the stock market for a fair trading and more and more use of technology in the process of trading at Nepse.

Acharya (*2064*) in his article *Sensitive Index: Is it Good time to use?* focused on concept of free-float market capitalization. He has also analyzed the uses of the sensitive indices used at the major stock markets of the world. He has defined the term free-float[13] as:

- Holdings by founders/directors/acquires which has control element

[13] David Luenuer, (2006) "Index determination for Stock Market: Practice and Performance in Developed Countries", ***Journal of Economic and Financial Review*** 92:2 pp.327-58. Op.cit. Acharya.Dec.07/0Jan.08:131

- Holdings by persons/bodies with “Controlling Interest”
- Government holdings as promoter/acquirer
- Holding through the FDI Route
- Strategic stakes by private corporate bodies/individuals
- Equity held by associate/group companies (cross-holdings)
- Equity held by Employee Welfare Trusts
- Locked-in shares and shares which would not be sold in the open market in normal course.

He expressed that a free-float reflects the market trends more rationally as it takes into consideration only those shares that are available for trading in the market. The free-float methodology makes the index more broad-based by reducing the concentration of top few companies in Index. It aids both active and passive investing styles. It aids active managers by enabling them to benchmark their fund returns. Free-float methodology improves index flexibility in terms of including any sock from the universe of listed stocks. This improves market coverage and sector coverage of the index. He added this method of Index construction is considered to b an industry bets practice. He also discussed on the various methods of calculating and constructing the major indices. He concluded that all types of indices must be the indicator of the national economy. He found that the Nepse has been taking into consideration all the listed equity to calculate index but the new initiation of using Sensitive Index is absolutely fatigue. He found that the basis of the calculation, selection of the company and the attitude for Sensitive Index in Nepalese context isn’t so appropriate. He added methodological considerations also are not improper for that as in the base of international practice.

Acharya *(2007)* in his discretion *The Impact of Information on share Price* took the sample of five joint venture commercial banks of Nepal for his study. He found that there is a significant difference in the mean share price immediately after the dividend declaration by the respective banks. He found, since there is no specific pattern or trend of share prices of the sampled companies, share price may either increase or decrease immediately after dividend declaration. Similarly, he found that volatility in share price was also caused by the macro-economic variable like NRB directives. He found there is no significant effect of EPS, DPS & ROE on MPS of the sample joint venture commercial banks from correlation and regression analysis. He recommended that the directives from NRB should not be available from the concerned corporate bodies but should be published publicly. Proper analysis of financial indicators should be done before investment. He recommended for set-up of the separate body of financial experts for proper suggestions.

Sharma *(2007)* in her discretion *A Study on the Factors Affecting Share Price in Nepalese Share Market* have found that the Nepalese investors do not have adequate education regarding the capital market & they do not analyze the scenario to forecast the share price. So, in her conclusion she found these reason for the stock prices in Nepse behaving irrationally. She found in Nepse, DPS, book value per share & EPS individually do not have consistent relationship with the MPS among the listed companies. She found that they have the jointly effect as well as other major factors also. From the beta analysis, she found the mixed result; some of the companies are sensitive to the market whereas other is not. She concluded that the overall Nepalese share market is very sensitive, which proved that the market affected by any external change in the economy. Similar, was the situation to the expected return of the listed companies. Therefore, she concluded that the overall return of individual companies is affected by any changes in market return and vice-versa. She found that there is a deficiency of proper laws & policies regarding the capital market. She found that shareholders are unsecured to invest in security market due to poor regulations mechanisms to protect them. Thus, she recommended for the proper regulations regarding the security market.

Ghimire *(2007*) in his article *Share Bazaarma Hastachhap* has stated the anger from the some brokers and investors against the directives from the NRB regarding the margin lending in context to share collateral was the prevention from the dirty game of price manipulation of the share price for the sake of increasing the value of share collateral for taking huge amount of loan of margin lending from the financial institutions. He pointed out that the increasing market value of the share is not a good indicator but the dividend provided by the share is the real return. But he added that the increasing trend of distributing of bonus shares and right shares by the companies have decreased the capacity of paying dividend. He found the inefficiency and incapability of the NRB, SEBON and Nepse on handling the issues regarding the margin lending.

Ghimire *(2007*) in his discretion *A Study of the Impact of Stock Price Movement in Nepalese Securities Market* has studied on an impact of signaling factors on stock price formation, volume of stock traded in Nepalese securities market. The major signaling factors under his study were Second Jana Aandolan, Peace Accord with Maoist Rebels & Madheshi Jana Aadhikara Forum Aandolan. He found that the signaling factors play a vital role in determining the Nepse Index &

moved the price of the shares. The analysis regarding the correlation coefficient & regression analysis show that the Nepse index & different events have a positive relation between Nepse indexes & stock traded, market capitalization, annual turnover & number of listed companies or independent variables, it explains the dependent variable (Nepse Index). He recommended for the diversification of investment in other sectors then banking & activities from Nepal Stock Exchange Limited should be of the productive nature. Similarly, signaling factors should be carefully analyzed by general investors before investing.

Bhattarai*(2007)*[14] in his article *Day of the Week Effects in the Nepali Capital Market* found that the average Nepse index changed the highest (1.117 points) on Sunday and the lowest (0.094 points) on Wednesday . Similarly, daily return also reached the highest on Sunday and the lowest on Wednesday. The volatility in index return is the highest on Sunday and lowest on Tuesday. A similar result has been found in the volatility of the daily change in the Nepse index. This was the highest on Sunday and the lowest on Tuesday.

Corrective factor *(The Himalayan Times-The Editorial, 2008)* has stated that the certain big share speculators are in arms against the Nepal Rastra Bank (NRB), which had issued a directive on December 28 halting lending against the security of company shares, as well as renewal of past such loans, for one month. The editorial pointed out that the directive, which applies major financial institutions, has obviously been aimed at curbing speculative investment on the

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[14] Op.cit. New Business Age, July, 2007

Nepalese stock exchange and the dangerously rising stock of certain financial institutions far beyond what their financial performance would justify. It has stated that the low interest rate in the lending from the financial institutions have protected enough from the inflation. It had pointed that the historically recognized norm of 15 as the price-earnings (P/E) ratio reflective of realistic values of shares was exceeded to dangerous levels, as the companies had P/E values soaring roughly in the 40-70 range. This overvaluation of stock called for emergency measures to curb market manipulation and let the forces of supply and demand freely to decide transactions and share price. The article pointed that the soaring of the share price in the Nepalese stock market the tendency to distribute bonus shares and right shares in an effort to make the listed companies paid-up capital equal to the amounts as required by the central bank, as well as the low bank interest on deposits.

Chalise and et.al *(2008) in their article Stock market NRB intervention is spoiling the game* has stated that the stock market is the barometer of any economy and the enthusiasm of Nepali investors hints at a positive outlook. They added that the stock market is the platform for future value creation and wealth maximization. The fallacy being propagated on linkage of net worth and scrip value is shortsighted. They pointed out that a unique characteristic of Nepali stock market is its demand and supply chain. With more than a million investors, the investment per investor was going down and more and more retail investors were venturing into wealth creation. They argued that NEPSE was no longer controlled by a group of gamblers but by strong retail investors. They argued for structural reforms in capital market in stock market as well s the need for a smart and aggressive custodian.

Dangol (*2008*) in his paper on *Unanticipated Political Events and Stock Returns: An Event Study* focuses on market reaction to announcements of new unanticipated political events using the event analysis methodology. The findings of the study provided a consistent conclusion regarding the existence of information content hypothesis in the Nepalese stock market. The study reveals that good-news (bad-news) political announcements generate positive (negative) abnormal returns in the post-event period. The data present important evidence on the speed of adjustment of stock prices to new political information, i.e., in as many as 2 to 3 days from the announcement date. Thus, this paper finds that the Nepalese stock market is inefficient at a semi-strong level, but there is a strong linkage between political uncertainty and common stock returns. He has focused his paper on the 8 major political events that took place from June 1, 2001 to Nov. 16, 2006. Similarly, he analyzed total 81 political events observations under 8 major political events between the F/Y 2000/01 to F/Y 2006/07.

Nepal (*2007/08*) in his article *Nepal Stock Exchange Ra Margin Lending* has analyzed the speedy growth of Nepse during the F/Y 2063/64 was due to political stability in country, the supply & demand of shares & the criteria to increase the paid-up capital up to F/Y 2069/70 by distributing bonus shares & right shares by banks & financial institutions. He found that the commercial banks which have the deficit capital adequacy & banks which were categorized as in risk by central bank also were doing well at the stock market. He elaborated the practice of margin lending by the financial institutions in Nepal was seen increasing. The directives on margin lending by NRB brought fluctuation in the stock market. He found unfair practice of lending of fund by pledging share certificate at financial institutions heavily affected on stock market of Nepal.

Joshi (*2008*) in her discretion has focused her study *Seasonality in the Nepalese Stock* mainly on one of the semi-strong EMH, month-of-the-year effect. She found October effect at Nepalese stock market in contrary to January effect in international stock market. The tax loss selling hypothesis proposed dose not seem to be convincing attribute for the October Effect, since Nepalese tax year ends in Mid-July as opposed to December for international market. She found investors in Nepal need not consider the month-of-the-year effects when constructing their portfolio, She found high fluctuation in Nepse Index of Magh & Chaitra was observed & Baishakha, Nepse index price have less fluctuation in sample from the randomness test of share prices. She recommended for proper timing investment to improve the investor’s return. Portfolio diversification can be done by both Nepalese & foreign investors by studying seasonal effects difference in Nepalese & foreign stock market.

Dhungana (*2008*) in her discretion *Problem & Prospects of Secondary Market in Nepal* has studied on the monthly Nepse Index movement from F/Y 2003 to F/Y 2007. She also studied on the Nepse movement affect due to the Peoples’ Movement-II (Jana Aandolan-II). Similarly, she also studied on the affect on the other sector-wise indexes affect by the unanticipated political event that took place during the fall of the monarchy in Nepal. She found that these events have highly affected on the Nepse movement. Likewise, she found there was a positive relation between numbers of listed companies, number of transacted companies higher the number of this variable the Nepse Index moves in bullish trend in normal condition. From primary data, she found, dividend announcement, companies profit and market rumors were the major factors to influence market. International markets have no influence on Nepalese Stock Market. She recommended for proper rules, regulations to develop the capital market of Nepal, attract foreign investor, remove malpractices by the market player, & to update channels of information related to investment & companies.

Thapa(2008) in his article *Nepalko Share Bazzarprati Baadoo Aakarshan, Kati Satya kati Mithyaa?* has focused on the importance of NRB, SEBON & Nepse coordination in the coming days for the proper functioning of the Nepalese stock market. He pointed out that more than 90% in the past & current about 80% of the total transactions of Nepse is covered by the shares of banks & financial institutions. Thus, the bullish trend of the Nepalese stock market in the recent years i.e. during F/Y 2062/63 to F/Y 2064/65 was due to the new capital adequacy directives of NRB for banks & financial institutions. He recommended for the proper policy formulations for minimizing risk by creating the boundary of volume of share flow & transactions. Proper inspection on capital rising keeping base of limit of per client credit flow & supply & demand of shares should be timely.

Baidya (*2008*) in her discretion has done her study based on both secondary and primary data. She found that all the major variables or indicators regarding the stock market have seen tremendously increased but the Nepse index was seen highly fluctuating. From primary data using questionnaire, she found out that the Nepal Stock Exchange Limited was not providing information accurately and timely concerning future risk and return of securities to the general investors, She found that the main purpose of the owing of the share of a particular company was for income, She found from survey that the existing laws were not sufficient for the growth of stock market and secured of the investment by general investors. She recommended for tax system reform. She added that manipulative practices like wash sale and churning should be strictly controlled. Similarly, investors' awareness programs should be conducted time-to-time.

Qureshi *(2008)* in his article, *Do Insiders Earn More in Stock Markets? An Experiment* has tried to resolve the long debate regarding the insider information in stock market by academicians as well as practitioners. He has used a controlled laboratory experiment to estimate possible gains of an insider vis-à-vis a common investor given certain level of market efficiency. His paper is the result of experiment using System Dynamics method; carried out to see effects of insider information on the profitability of the insiders verses that of the un-informed common investors. His study confirmed that in a market, which has the ability to reflect the company inside information in market prices in one day, insiders cannot outperform the un-informed investors. However, another study with participant having investment knowledge or the practitioners from the stock markets may be carried out to know whether such a knowledge or expertise makes a difference. Another study could be carried out for those markets that could reflect inside information with a larger time lag.

Paudel *(2009)* in his article, *Sharema Laganiko Aadhar-Aak Tulanatmak Bislashan* took the two sample companies: Standard Chartered Bank (Nepal Limited & Chilime Hydropower Company Limited as their shares can be considered as the blue-chip shares in context to Nepal's stock market. He pointed out for the proper analysis of Return on Assets (ROA), Price-Earning Ratio (P/E Ratio), dividend & bonus per share, net worth, company's future plan, organizational structure, ownership structure, and risk management of company, price stability of shares at market & liquidity of shares before investing on the specific share. He concluded the stock market of Nepal is not based on market analysis & facts but on hearsay and speculation.

Aawasti (*2009*)[15] in his article, *Share: Rajnitik Prabhab ki Chalkhel* analyzed the effect of major political events at various time periods on the Nepalese Stock Market. The bearish Nepalese stock market during 2058 (2001) turned bullish from Magh 19, 2061 (February 1, 2005) after took over of power by King Gyanendra on Wednesday by removing elected government of Mr. Sher Bahadur Deuba. Then again the market pictured more bullish after the reinstatement of the democracy on Baishak 11, 2063 (April 24, 2006). After this, another major political event i.e. peace agreement between the Maoist Rebels and the GON on Mangsir 5, 2063 (November 21, 2006) brought brighter side to the share market of Nepal. He found at the same time the Terai Strike for 15 days from Magh 1, 2063 (January 15, 2007) brought the market toward bearish. But the address from Prime Minister regarding Terai tension slightly improved the market. He stated that after the 10 years conflict, the Maoist joined the government, the Nepse increased record breaking on Chaitra 18, 2063 (April 1, 2007). Then, the formation of Moaist government on Shrawan 31, 2065 (August 15, 2008), the Nepse increased hoping of political stability, then within 15 days, on Bhadra 15, 2065 (August 31, 2008), the Nepse measured the record breaking point at 1075.87. But the comment from that time Finance Minister Dr. Baburam Bhattarai regarding stock market as a gambling house, turned it to bearish. He

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[15] Also see Shrestha, Mahendra Prasad (Dr.) and et.al.(April 2009) "Political Development And Stock Market Volatility.-Stock Market in Nepal" Putalisadak, Kathmandu, Nepal: Securities Research Center and Services (SRCS) Pvt. Ltd.pp.1-3 op.cit. ***Management Dynamics***, Putalisadak: Shanker Dev Campus.

found that the stock market then showed the bearish trend afterward. But, the formation of new government under the Mr. Madhav Kumar Nepal after the resignation from Puspa Kamal Dahal (Prachanda), the market has shown slightly improvement from Jestha 13, 2066 (27 May, 2009). The rumor of Madhav Kumar Nepal prime ministry also had improved the market from Jestha 3, 2063 (17 May, 2009). He stated in his article that he didn’t found any economic reasons behind the movement in Nepse in the past or at present.

Chapter III

Research Methodology

3.1. Research Design:

Research design is necessary to fulfill the objectives of well-set research. Research design may be defined as framework, plan and structure far collecting, analyzing and evaluating data. It is a procedure and techniques, which provide ways for research viability.

This research is belongs to market indices analysis & portfolio risk and return analysis so the research is based on recent historical data of last ten years. Similarly, due to the time limitation, certain analyses of the stock market have been done for the last five fiscal years only.

Since the given time to finish the research is very limited, more part of the research is analytical rather than descriptive.

3.2. Population and Sample of Data:

The populations of the study are the all the indices of the listed companies in the secondary market of the Nepal. The study has covered all the sectors of the Nepse, which are as follow:

- Banking
- Manufacture & Processing
- Hotel
- Insurance
- Finance
- Development Banks

- Hydro-power
- Business
- Others

Similarly, the structured interview schedules have been followed in the primary data collection through the interviewer-administrated questionnaire. The sampling for this purpose has been picked from the Kathmandu Valley & its surrounding districts. The total sample of 100 respondents has been taken for the research purpose.

3.3. Sources of Data:

The data required for the preparation of this report are collected both from the primary & secondary sources. For the collection of the secondary data, the official website of Nepal Stock Exchange Limited & Securities Board of Nepal's www.nepalstock.com, www.sebonp.com, www.sedon.gov.np & www.sedfar.gov.np .have been visited. For the primary data collection, the questionnaire has been used.

3.4. Data Collection Procedures:

The collected data have been collected from the respective official websites of the NEPSE & SEBON. Similarly, a questionnaire has been used to collect the required information for the report preparation. The detail of the questionnaire is presented in ***Annex-I***.

3.5. Tools Used:

The tools used in the analysis of the secondary as well as the primary data are mainly financial & statistical. The major tools used in the study are as follow:

3.5.1. The CAPM Model:

CAPM is a model that describes the relationship between risk and expected return. It explains the behavior of security price. It also describes how the price and interest rate on risky financial assets are determined in the capital market. In this model, a security's expected return is the risk free rate plus a premium based on the systematic risk of the security, where risk is measured by the beta coefficient.

The model is,

$$E\,(r_j) = r_f + [E(r_m) - r_f]\,\beta_j$$

where,

$E(r_j)$ = Expected return on security j.

r_f = Risk free rate.

$E(r_m)$ = The expected market return.

β_j = Assets beta

3.5.2. The Market Model:

The market model assumes that each security return is related to the market indexes. If the value of market indexes has increased, the value of stock also increased and vice versa. Following formulas have been used under market model for analyses of market indices:

$$r_i = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$$

Where:

r_i = return on security i for some given period

r_I = return on market index I for the same period

α_{iI} = intercept term

β_{iI} = slope term

ε_{iI} = random error term

3.5.3. The Multifactor CAPM (ICAPM):

Merton's model would imply that the expected return-beta relationship of the single-factor CAPM would be generalized to the following two-factor relationship:

$$E(r_i) = r_f + \beta_{iM} \left[E(r_M) - r_f\right] + \beta_{ie} \left[E(r_e) - r_f\right]$$

Where, β_{iM} is the beta of security i with respect to the market portfolio, and β_{ie} is the beta with respect to energy price risk.

Similarly, $E(r_e) - r_f$ is the risk premium associated with exposure to energy price uncertainty.

The rate of return of the portfolio that best hedges energy price uncertainty is r_e.

This equation, therefore, is a two-factor CAPM. More generally, we will have a beta and a risk premium for every significant source of risk that consumers try to hedge. But in the study the energy return has been replaced by the return in the hallmark gold in Nepalese market and equation has been rewritten as:

$$E(r_i) = r_f + \beta_{iM}\left[E(r_M) - r_f\right] + \beta_{ig}\left[E(r_g) - r_f\right]$$

Where, β_{iM} is the beta of security i with respect to the market portfolio, and β_{ig} is the beta with respect to hallmark gold price risk.

Similarly, $E(r_g) - r_f$ is the risk premium associated with exposure to hallmark gold price uncertainty.

The rate of return of the portfolio that best hedges hallmark gold price uncertainty is r_g .

3.5.4. The One-Sample Runs test (r-statistics) :

The question of whether a sequence of observed number (e.g., the stock price indexes) is a random sequence can be studied by the number of runs observed in the series. A run is defined as "a succession of identical symbols which are followed or proceed by different symbols or by no symbols to all." The number of runs is compared as a sequence of the price changes of the same sign. The actual number of runs is compared with the expected runs, irrespective of sign. ***(Gupta, 1989:117)***

To allow us to test samples for the randomness of their order, statisticians have developed the theory of runs. A run is a sequence of identical occurrences preceded and followed by different occurrence or by none at all.

A test of runs would use the following symbols if it contained just two kinds of occurrences:

n_1= number of occurrences of type 1

n_2= number of occurrences of type 2

r= number of runs

The number of run, or r, is a statistic with its own special sampling distribution and its own test. Obviously, runs may be of different lengths, and various numbers of runs can occur in one sample. A one-sample runs test, then, is based on the idea that too few or too many runs show that the items were not chosen randomly.

To derive the mean of the sampling distribution of the r-statistic, use the following formula:

$$\mu_r = \frac{2n_1n_2}{n_1+n_2} + 1$$

The standard error of the r statistic can be calculated with this formidable-looking formula:

$$\sigma_r = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1+n_2)^2(n_1+n_2-1)}}$$

In the one-sample runs test, the sampling distribution of r can be closely approximately by the normal distribution if either n_1 or n_2 is larger than 20. The r-statistic is done by using following formulae:

$$z = \frac{r - \mu_r}{\sigma_r}$$

3.5.5. F-statistics:

F-test was prepared by Prof. R.A. Fisher in 1925. The statistic given by G.W. Snedecor (1934-38) & named F-statistics by him in honor of Prof. Fisher. The analysis of variance frequently referred to by the contraction, ANOVA is a statistical technique especially designed to test whether the means of more than two quantitative populations are equal. It is applied to find out whether the two samples may be regarded as drawn from the normal populations having the same variance. The value of "F" is calculated as:

$$\therefore F = \frac{Larger\ estimate\ of\ variance}{Smaller\ estimate\ of\ variance}$$

The calculated value of "F" is compared with the table value for V_1 & V_2 at 5% or 1% level of significance.

3.5.6. Chi-square Test (χ^2):

The chi-square test is designed to work with nominal data. It provides the researcher with a mathematical way of examining a classification table to see whether the arrangement of values within that table is unusual in some way. In performing this test, the mathematical process will be looking for a significant difference between the observed & expected frequencies. The chi-square test involves a comparison of frequencies of two or more responding groups.

The chi-square, denoted by Greek letter χ^2, is one of the simplest and most widely used non-parametric tests in statistical work. The test was given by Karl Pearson in 1990. The quantity of χ^2 describes the magnitude of the discrepancy between theory and observations. It is defined as,

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where O refers to the observed frequencies and E refers to the expected frequency.

Similarly,

$$\chi^2 = \frac{N(ad-bc)^2}{(a+b)(c+d)(a+c)(b+d)}$$

Where 2×2 contingency table given as

	B_1	**B_2**	**Total**
A_2	a	b	a+b
A_2	c	d	c+d
Total	a+c	b+d	N=a+b+c+d

The chi-square test can be used to test the hypothesis that items classified according to two different characteristics exhibits independence in those characteristics. The table showing the classifications of the items by two characteristics is known as contingency table. The conditions for the validity of chi-square are:

i. Each of the observations making up the sample for this test should be independent of each other.

ii. The expected frequency of any item or cell should not be less than 5. If it is less than 5, then frequencies taking from the adjacent items or cells must be pooled together in order to make it 5 or more than 5 & adjust the degree of freedom accordingly.

iii. The total number of observations used in this test must be large i.e. $n \geq 50$.

iv. This test is used only for drawing inferences by testing hypothesis. It cannot be used for estimation of parameter or any other value.

v. The frequencies used in χ^2 test should be absolute & not relative in terms.

vi. The observations collected for χ^2 test should be on random basis of sampling.

3.5.7. Spearman's Rank Correlation:

Sometimes we come across statistical series in which the variables under consideration are not capable of quantitative measurement but can be arranged in serial order. This happens when we are dealing with qualitative characteristics (attributes) such as honesty, beauty, character, morality, etc., which cannot be measured quantitatively but can be arranged serially. In such situations Karl Pearson's coefficient of correlation cannot be used as such. Charles Edward Spearman, a British psychologist, developed a formula in 1904 which consists in obtaining the correlation coefficient between the ranks of *n* individuals in the two attributes under study.

Spearman's rank correlation coefficient, usually denoted by

$$r_s = 1 - \frac{6\sum d^2}{n(n^2-1)}$$

Where *d* is the difference between the pair of ranks of the same individuals in the two characteristics and *n* is the number of pairs.

Spearman's rank correlation coefficient for repeated ranks gives:

$$r_s = 1 - \frac{6}{n(n^2-1)}\left[\sum d^2 + \sum \frac{m(m^2-1)}{12}\right]$$

Where, m is the number of times that an item repeated.

Similarly, z-test can be tested as follow:

$$z = \frac{r_s - 0}{\sigma_{r_s}} \qquad where, \sigma_{r_s} = \frac{1}{\sqrt{n-1}}$$

3.5.8. T-statistics:

T-statistics known as Student's 't" was published in 1908 by Irish Brewery worker, W.S. Gosset under his pen name Student. The correct definition of 't' & its following distribution were rigorously established by Prof. R.A. Fisher in 1926. However, Fisher maintained to call it Student's 't' only & termed as t-statistic.

To test the validity of our assumption, if the sample size is less than 30, t-test is used. For applying t-test in context of small sample the t-value is calculated first & compared with the t-value on table at certain level of significance for given degree of freedom. If calculated value of "t" exceeds the table value (say 0.05) we can say that the difference is significant at 5% level, but if calculated value is less than the concerning values the difference is not treated as significant. The value is calculated by using following formula:

$$\therefore t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2} \quad , \; \therefore t = \frac{\overline{X} - \mu}{\frac{S}{\sqrt{n}}} \quad \& \; \therefore t_{cal} = \frac{\overline{d}}{S_d / \sqrt{n}}$$

3.6. Pretesting:

The pretesting of the interview schedule (questionnaire) was done on a sample of 10 respondents. Depending on the difficulties encountered by them in responding (answering) the questions, its initial format was suitably modified.

3.7. Research Gap:

There have been a large number of researches on stock market of Nepal by many researchers at various levels. But this study is different from the previous studies on the following ground:

i. The study tries to go in-depth in the technical and fundamental analysis of the Nepalese stock market.
ii. The study has tried to cover the larger area of EMH in context to Nepalese stock market through both the secondary as well as primary data.
iii. The research has tried to study the Nepalese stock market through the market model as well as ICAPM.

Chapter IV

Presentation and Analysis of Data

4.1. Secondary Data Analysis:

4.1.1. Nepse Index Movements:

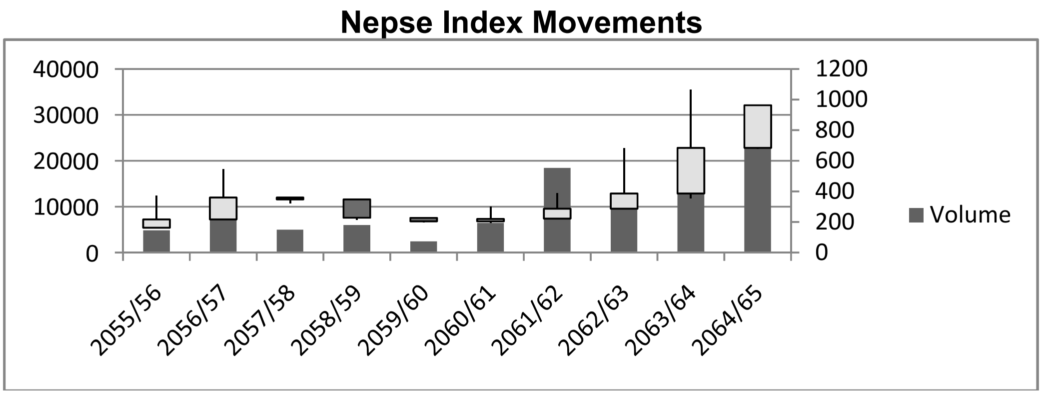
Table No.4.1

Nepse Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	288.84	160.14	216.92	163.35	4857
2056/57	373.46	218.32	360.70	216.92	7674
2057/58	545.82	322.74	348.43	360.70	4989
2058/59	352.25	216.21	227.65	348.43	6005
2059/60	230.01	198.44	204.82	227.65	2428
2060/61	227.83	195.14	222.04	204.82	6468
2061/62	298.78	222.65	286.67	222.04	18434
2062/63	388.49	288.67	386.83	286.67	12222
2063/64	683.65	355.60	683.95	386.83	18147
2064/65	1064.99	677.98	963.36	683.95	28600

Source: NEPSE Trading Reports

Figure No. 4.1



The traded volume at the Nepse has highly increased in the past few F/Y. Similarly, the Nepse index has also increased heavily. The market has appeared to be bullish from the past bearish trend. The closing Nepse index was at 216.92 points in the F/Y 2055/56 and after ten years the closing index reached to 963.36 in the F/Y 2064/65.

As the Nepse index is calculated based on the market capitalization, we can say that the market capitalization of the Nepalese stock market has also been highly increased in the recent years. The index reached up to 1064.99 points during the F/Y 2064/65 which is the record high point of the Nepse.

The lowest point of Nepse index during these 10 F/Y was at 160.14 points in the F/Y 2055/56.

4.1.2. Sector-wise Indices Movement Analysis:

4.1.2. 1. Banking Sub-Index Movements:

Table No.4.2

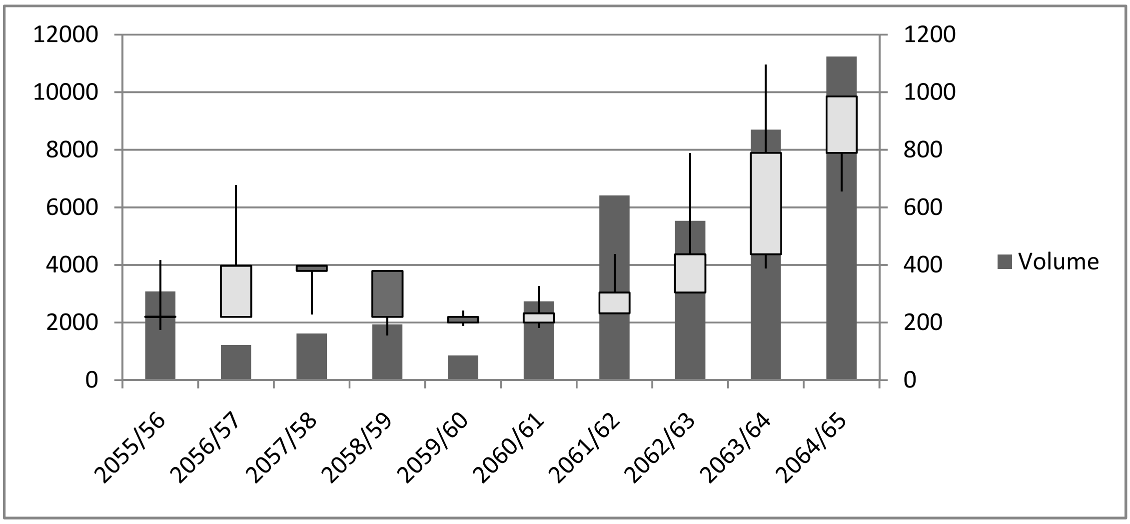
Banking Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	248.89	173.92	219.04	220.79	3081.92
2056/57	416.08	230.83	397.12	219.01	1219.59
2057/58	677.22	228.89	379.38	397.12	1623.73
2058/59	349.10	155.16	219.35	379.38	1935.55
2059/60	225.43	188.60	199.90	219.35	858.98
2060/61	241.48	181.75	231.97	199.90	2737.52
2061/62	326.06	232.87	304.64	231.97	6416.57
2062/63	437.49	419.00	437.49	304.64	5534.72
2063/64	789.21	387.37	789.21	437.49	8700.20
2064/65	1094.50	656.00	985.65	789.21	11241.40

Source: NEPSE Trading Reports

Figure No. 4.2

Banking Sub-Index Movements



The banking sector in the Nepse has been a lucrative sector for the Nepalese investors. The large volume of the trading at the Nepse is always covered by the banking sector shares. This sector is also highly correlated with the Nepse index movement. The movement on banking sub-index directly affects on the movement of the Nepse Index.

Although, the number of listed companies under CBs are seen comparatively lesser than that of finance companies, but the performance of these sectors companies is seen better. The sector has been seen bullish in every F/Y.

The sub-index has increased highest up to 1094.50 points during the F/Y 2064/65. The traded volume was also at the highest level of 11241.40 thousands in the F/Y 2064/65. Due to the regual publication of the financial report of the CBs also, the investors are seen attracted to this sector to invest.

4.1.2.2. Mfg. & P Sub-Index Movements:

Table No.4.3

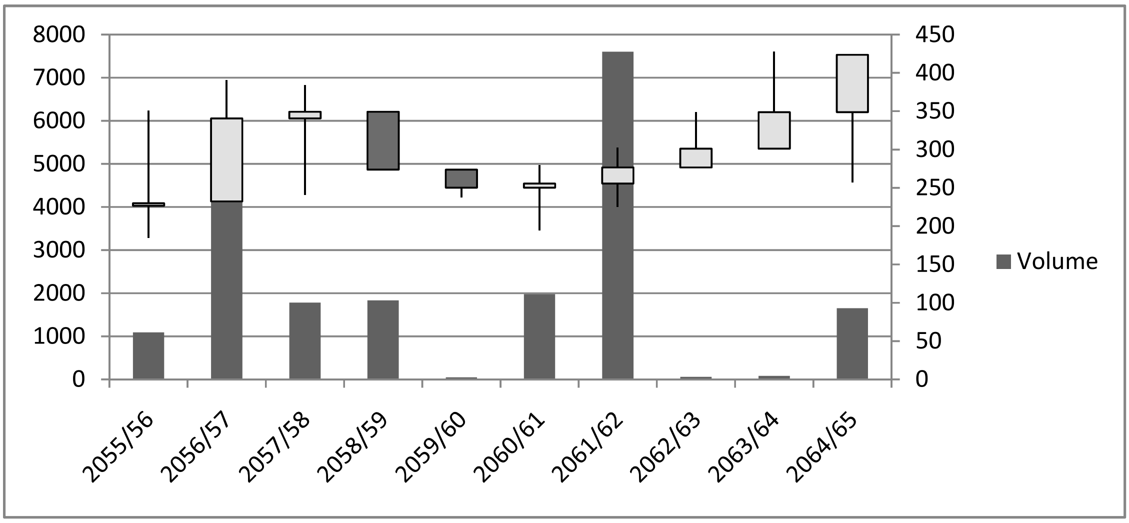
Mfg. & P Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	230.27	184.44	229.83	226.65	1091.43
2056/57	350.71	232.38	340.59	229.83	5282.16
2057/58	390.66	240.82	349.31	340.59	1781.72
2058/59	384.08	273.67	273.67	349.31	1833.09
2059/60	273.67	237.84	250.13	273.67	48.00
2060/61	268.38	194.76	255.58	250.13	1977.82
2061/62	279.80	225.58	276.50	255.58	7602.89
2062/63	302.48	297.41	301.11	276.50	59.80
2063/64	348.63	301.62	348.63	301.11	82.92
2064/65	427.70	257.30	423.66	348.63	1655.1

Source: NEPSE Trading Reports

Figure No. 4.3

Mfg. & P.Sub- Index Movements



The industrialization of the Nepal is at a primitive stage. Similarly, due to a decade long conflict in the country has also push back the development and the performance of the mfg. & p. sector. It has been the soft target and became the major victim of the conflict time. Similarly, the high-level of unionization in this sector has been the hard-hit sector for the development. The other reason for poor performance of the mfg. & p. sector is also due to the untimely financial performance disclosure of the company. This has reduced the faith on the investors as well as the shareholders of the company also to invest in this sector.

The sub-index reached highest at 427.70 points in F/Y 2064/65. The lowest point was at 184.44 points in the F/Y 2055/56. The traded volume was seen highest in the F/Y 2061/62 with 7602.89 thousands of shares

4.1.2.3. Hotel Sub-Index Movements:

Table No.4.4

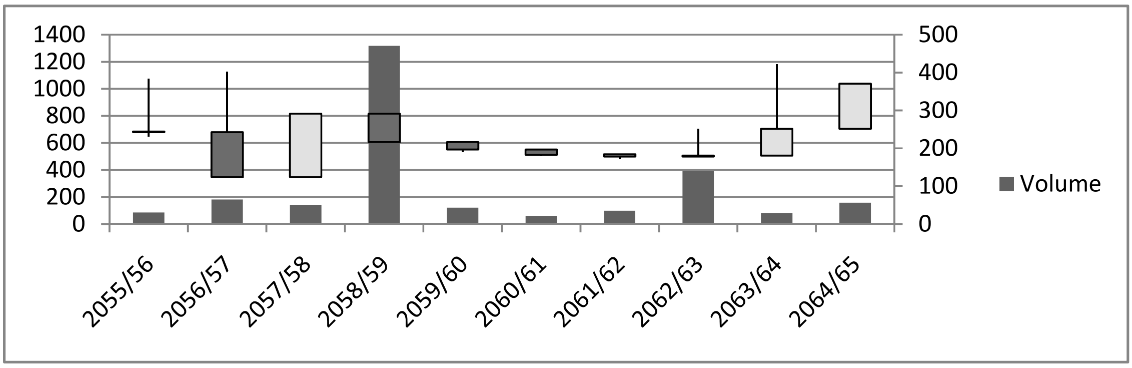
Hotel Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	245.26	231.11	242.52	244.49	85.59
2056/57	384.38	240.46	123.74	242.52	181.25
2057/58	402.46	278.21	291.34	123.74	142.27
2058/59	291.34	214.50	216.51	291.34	1316.95
2059/60	216.51	190.65	196.68	216.51	121.29
2060/61	196.68	178.85	184.41	196.68	61.04
2061/62	194.98	172.25	178.00	182.68	98.17
2062/63	180.77	178.84	180.77	178.00	392.18
2063/64	251.47	179.03	251.47	180.77	81.70
2064/65	421.50	251.47	370.88	251.47	158.07

Source: NEPSE Trading Reports

Figure No. 4.4

Hotel Sub-Index Movements



Though the country economy has a scope of the tourism industry, but the shares of the hotel sectors are not seen doing well at the stock market. Due to the collapse of the tourism industry from the decade long government & the Maoist Rebel conflict made the hotel sector paralyzed. The sub-index was seen bearish from the F/Y 2060/61 to F/Y 2062/63.

4.1.2.4. Business (Trading) Sub-Index Movements:

Table No.4.5

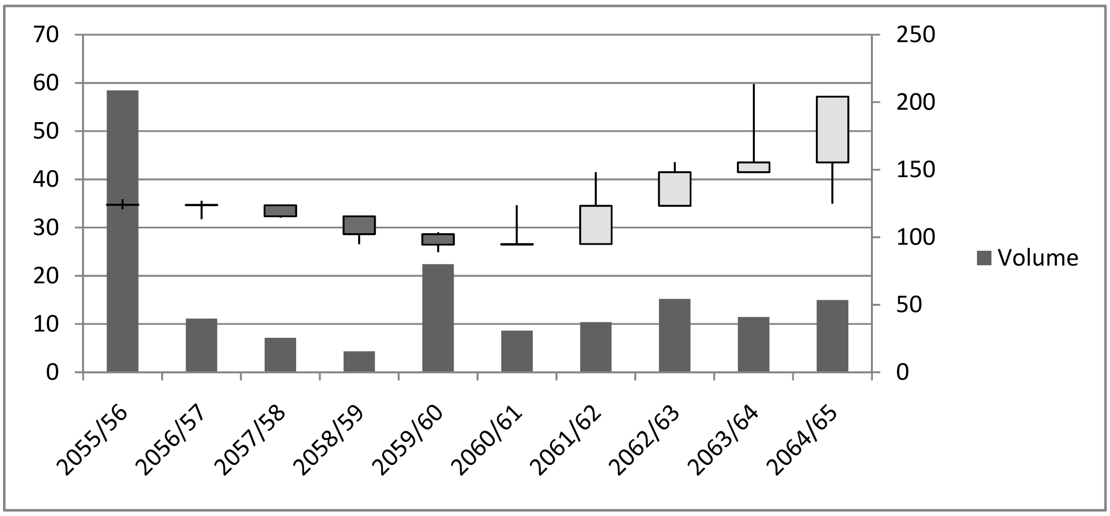
Business (Trading) Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	124.82	120.98	123.99	123.23	58.48
2056/57	127.98	113.67	123.74	123.99	11.12
2057/58	127.09	114.63	115.55	123.74	7.15
2058/59	118.11	95.03	102.20	115.55	4.35
2059/60	95.49	89.00	94.56	102.20	22.42
2060/61	103.55	94.29	95.01	94.56	8.64
2061/62	123.84	95.01	123.20	95.01	10.41
2062/63	148.11	123.20	148.11	123.20	15.22
2063/64	155.37	148.11	155.37	148.11	11.47
2064/65	213.40	125.00	204.08	155.37	15.00

Source: NEPSE Trading Reports

Figure No. 4.5

Business Sub-Index Movements



The shares of the business (trading) sectors are seen highly ignored sector of the Nepalese stock market. Only limited numbers of companies are listed under the trading sector. The shares of Salt Trading Corporation and Bishal Bazaar Company Limited were performing well in the market; the trading sub-index was seen bullish in the past. As little number of companies is under the trading sector, the number of shares traded is also seen in minimal.

The trading sub-index was seen heavily bearish during the F/Y 2058/59 to F/Y 2060/61. The sub-index touched the lowest level at 89.00 points in the F/Y 2059/60. The traded volume of the shares of these sectors also has not been covering too much in the market. The large volume of shares of the trading sector was traded during the F/Y 2055/56.

4.1.2.5. Insurance Sub-Index Movements:

Table No.4.6

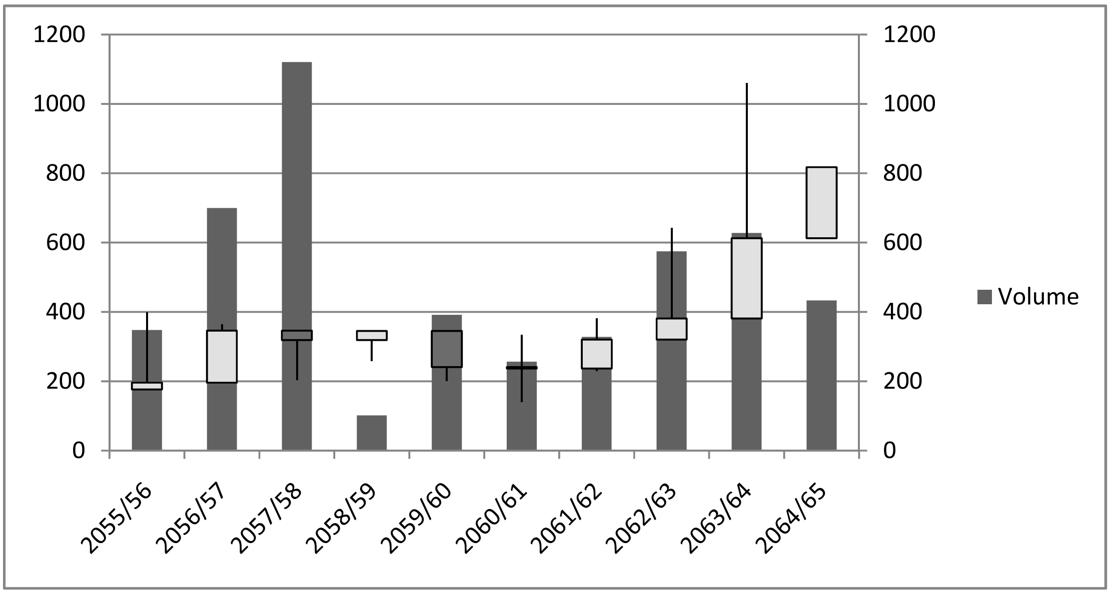
Insurance Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	202.15	180.92	195.96	176.32	348.00
2056/57	398.87	195.96	346.15	195.96	699.69
2057/58	364.02	203.77	318.67	346.15	1120.49
2058/59	327.28	258.27	345.22	318.67	101.72
2059/60	315.14	200.00	240.64	345.22	391.63
2060/61	244.52	139.52	236.56	240.64	256.37
2061/62	333.09	230.21	320.24	236.56	328.18
2062/63	381.79	365.32	381.25	320.24	574.93
2063/64	641.74	381.46	612.46	381.25	627.61
2064/65	1060.50	616.30	817.25	612.46	433.30

Source: NEPSE Trading Reports

Figure No. 4.6

Insurance Sub-Index Movements



The insurance sub-index turned to bullish from the bearish during the past few F/Y. The sub-index reached to 1060.50 points in the F/Y 2064/65. Though the sub-index has increased heavily but the traded volume of shares seems to declining. That means the market capitalization of the insurance sectors has increased only.

Similarly, the Nepalese investors are also not so attracted by the shares of insurance companies due to the poor inspection activities of the Insurance Board. The corporate disclosure of the insurance companies though number of listed companies trading at the Nepse has not boosted the sub-index.

Similarly, the proper facilities of the reinsurance companies within the country for the operating insurance companies of Nepal has also reduce faith towards the business of the insurance companies. Till the F/Y 2057/58, the sub-index for the finance & insurance sector was calculated combined.

4.1.2.6. Finance Sub-Index Movements:

Table No.4.7

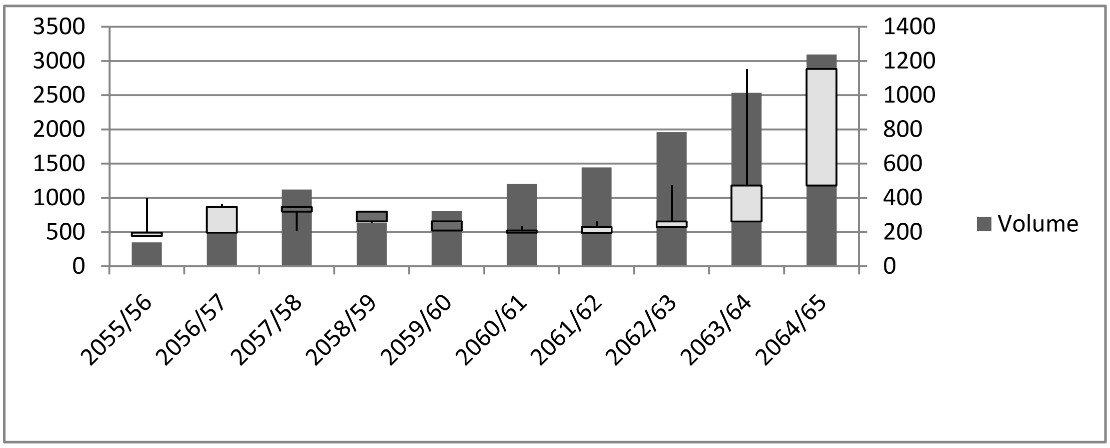
Finance Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	202.15	180.92	195.68	176.32	348.00
2056/57	398.87	195.96	346.15	195.68	699.69
2057/58	364.02	203.77	318.67	346.15	1120.49
2058/59	327.28	255.87	262.29	318.67	637.39
2059/60	263.65	205.18	208.14	262.29	804.34
2060/61	207.93	192.03	195.99	208.14	1202.27
2061/62	231.34	196.19	228.39	195.99	1443.34
2062/63	261.37	257.91	261.37	228.39	1957.46
2063/64	471.82	261.46	471.82	261.37	2534.19
2064/65	1152.74	471.82	1152.74	471.82	3094.30

Source: NEPSE Trading Repots

Figure No. 4.7

Finance Sub-Index Movements



Another sector with the large numbers of companies listed for the trading at the Nepse is finance sector. Due to the attractive interest rate competitive business in this sector, the investors are also attracted on the investment on the finance sector. Similarly, the mushrooming of the finance companies & its business as well as the concept of up-grading to the commercial banks through the capital increment has also highly attracted the Nepalese investors to investment their money in the finance sectors shares.

The sub-index movement shows that it has pictured the bullish trend in the past few F/Y. The sub-index touched the highest at 1152.74 points in the F/Y 2064/65. Similarly, the traded shares volume has also see n increased heavily in the recent F/Y. In the past also, the finance sector was doing well in the market. The traded volume as well as the index movement for this sector was sector was seen stable. The lowest point reached for this sector was in the F/Y.

The sub-index for the movement for both the finance & insurance sectors were not separated till the F/Y 2057/58.

4.1.2.7. Development Bank Sub-Index Movements:

Table No.4.8

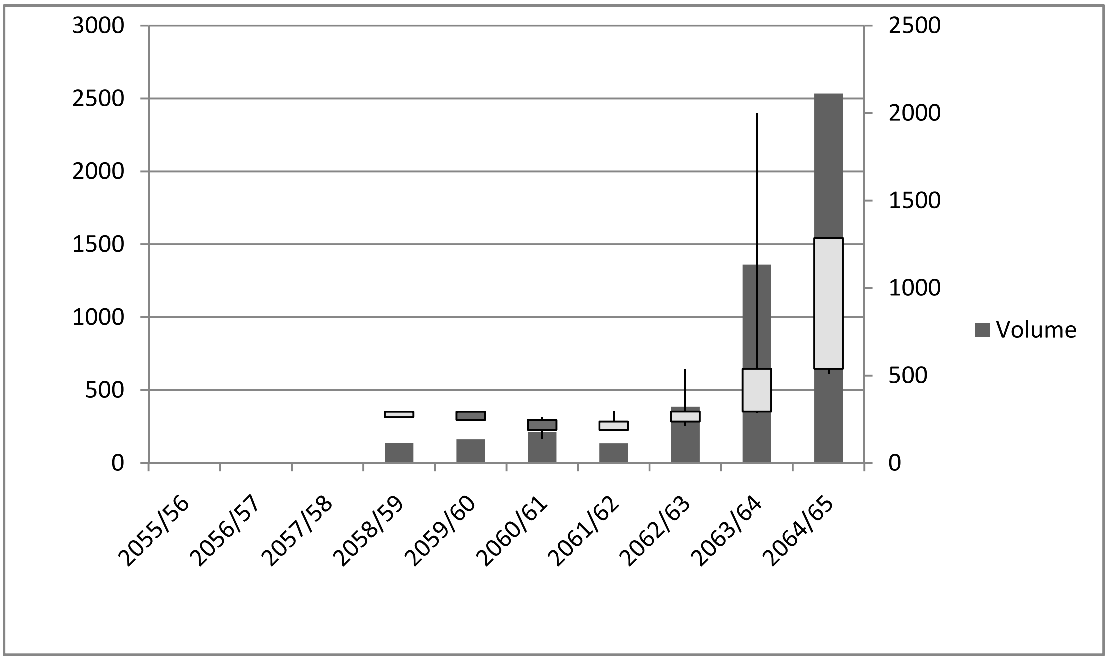
Development Bank Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	-	-	-	-	-
2056/57	-	-	-	-	-
2057/58	-	-	-	-	-
2058/59	295.53	262.94	293.96	262.94	139.08
2059/60	273.08	241.67	246.72	293.96	163.64
2060/61	247.49	138.83	190.03	246.72	212.80
2061/62	259.72	186.04	237.86	190.03	135.62
2062/63	298.05	215.94	297.40	237.86	386.44
2063/64	539.66	287.08	539.66	297.40	1360.53
2064/65	2001.40	507.20	1285.89	539.66	2534.88

Source: NEPSE Trading Reports

Figure No. 4.8

Development Banks Sub-Index Movements



Till the F/Y 2057/58, the Nepse does not used to calculate & publish a separate sub-index for the development banks sector. The Nepse started publishing Development Bank Sub-index from 22 Jan. 2002 (10 Magh, 2058) only. The development sector can be considered as the growing sector in the Nepalese stock market. The number of listed company, number of shares traded as well as the amount of the market capitalization of this sector is seen increasing every year.

Due to the expectation of the up-grading in the CBs in the future by the common investors also, they are attracted for the good return from this sector. Thus, the sub-index is seen bullish in the recent years. The highest point was seen 2001.40 points in the F/Y 2064/65. And the lowest was seen in the F/Y 2060/61 at 138.83 points.

4.1.2.8. Hydro-power Sub-Index Movements:

Table No.4.9

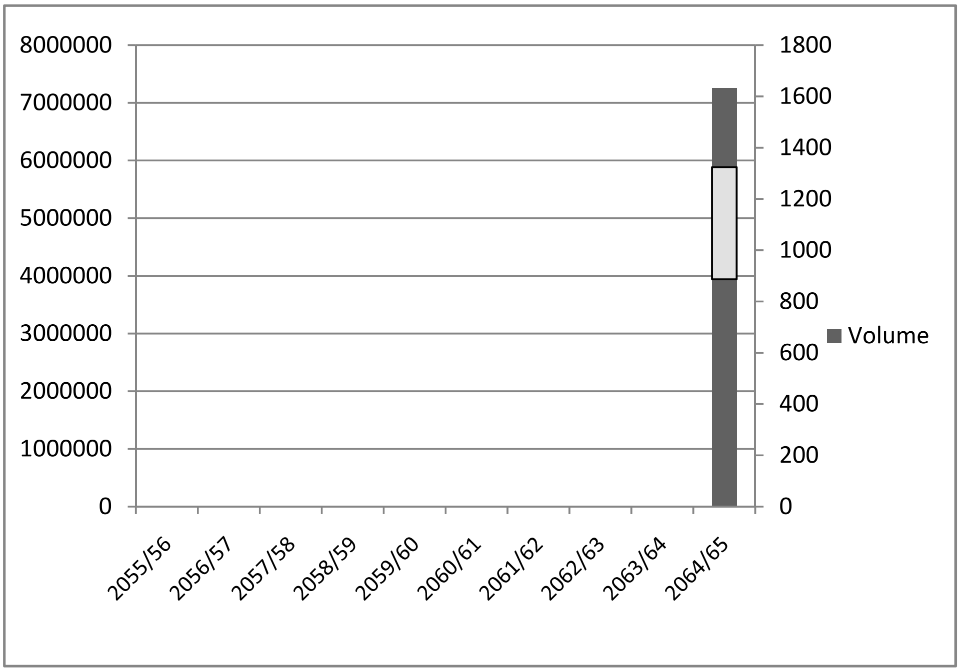
Hydro-power Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	-	-	-	-	-
2056/57	-	-	-	-	-
2057/58	-	-	-	-	-
2058/59	-	-	-	-	-
2059/60	-	-	-	-	-
2060/61	-	-	-	-	-
2061/62	-	-	-	-	-
2062/63	-	-	-	-	-
2063/64	-	-	-	-	-
2064/65	1704.20	886.80	1324.00	886.80	7251.20

Source: NEPSE Trading Reports

Figure No. 4.9

Hydro-power Sub-Index Movements



Till the F/Y 2063/64, the NEPSE has not seggregated a separate index for the hydro-power sector. After the higher attraction from the investor side as well as the preferrence given by the government side to the development of the hydro-power companies from the private sector investment, the Nepse stated to trade the stocks of the hydropower companies as a separate important investment sector. Before the F/Y 2064/65, the capitalization of the hydro-power sector used to be included in other sectors.

From a short span of the trend analysis of this sector, we see the bullish behavoiur and seen the investors are attracted towards this sector.

4.1.2.9. Other Sectors Sub-Index Movements:

Table No.4.10

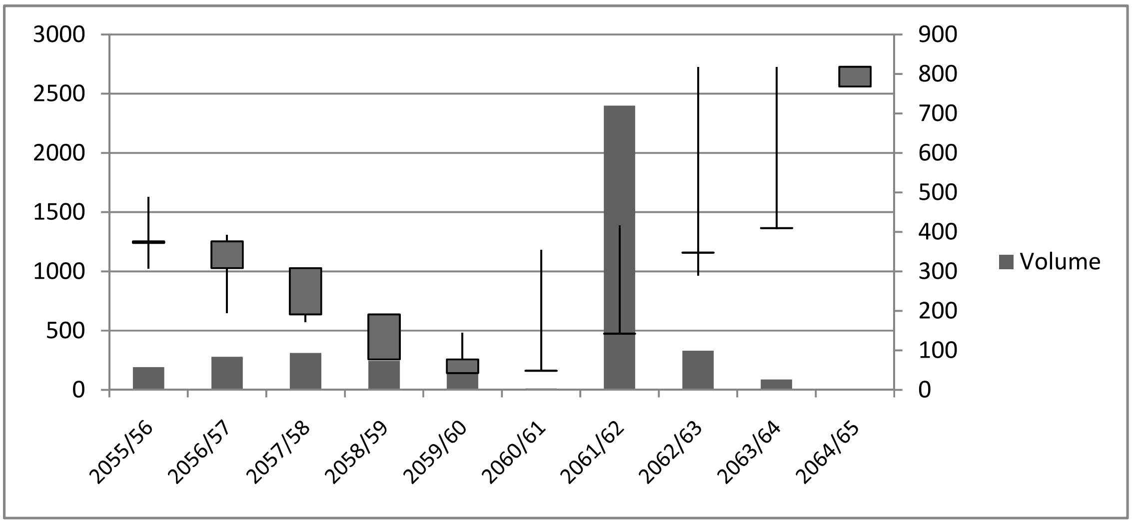
Other Sectors Sub-Index Movements

F/Y	High	Low	Closing	Opening	Traded Volume
2055/56	392.94	306.65	376.10	372.09	191.58
2056/57	488.34	195.29	308.46	376.10	279.93
2057/58	392.74	172.08	190.90	308.46	310.51
2058/59	192.90	77.34	77.34	190.90	246.00
2059/60	90.60	42.75	48.56	77.34	17.59
2060/61	143.94	48.56	142.65	48.56	11.72
2061/62	354.67	142.13	347.65	142.65	2398.42
2062/63	417.17	290.01	410.00	347.65	330.15
2063/64	818.12	407.03	818.12	410.00	87.34
2064/65	818.12	768.30	768.30	818.12	7.70

Source: NEPSE Trading Reports

Figure No. 4.10

Other Sectors Sub-Index Movements



The other sector index was seen increased heavily in the past few F/Y was due to the float of the large number of the shares of Nepal Telecom. The trading of the shares of Nepal Telecom has also directly affected on the overall Nepse Index also.

On 14 August 2008, the shares of Nepal Telecom were listed worth Rs. 15 billion in the market. It is a largest ever listing on NEPSE, country's sole secondary market. This also helped on increasing the index of the other sector as well.

The sub-index was seen bullish in the earlier F/Y as the trading of the shares of hydro-power was also capitalized under other sector. Similarly, the shares of Necon Air were also performing well in the market. Thus, the index was increasing.

The sub-index turned bullish and the index touched 818.12 points in the F/Y 2063/64 as well as in the F/Y 2064/65.

4.1.3. Month-of-the-Year Effect:

Table No.4.11

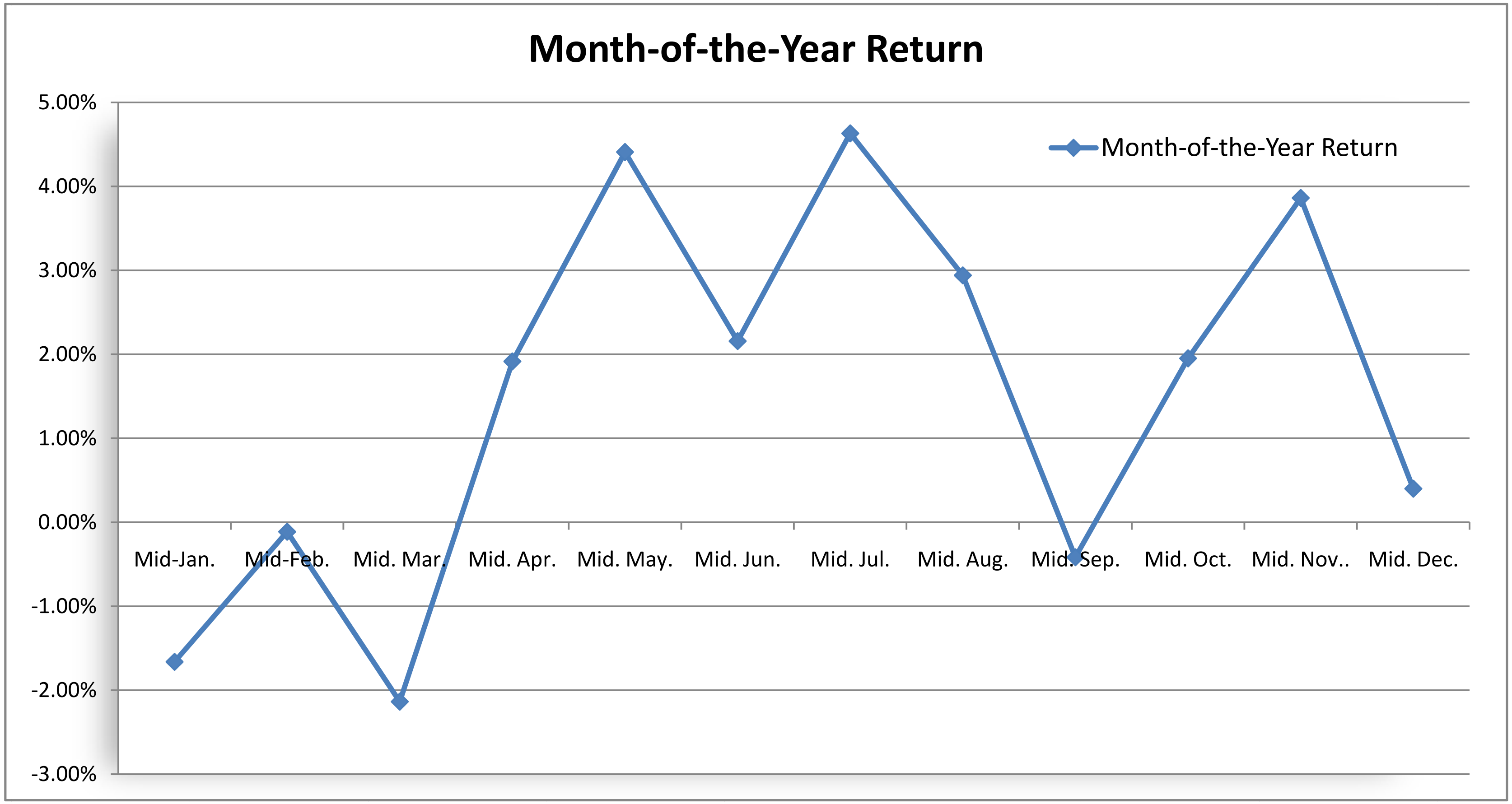
Month-of-the-Year Effect on Nepse

Year/ Month	Mid Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Average
1999	-2.94	-1.76	0.95	4.55	4.56	7.77	2.17	5.03	0.18	7.54	3.75	-0.12	**2.64**
2000	6.13	5.71	15.39	0.79	9.76	-6.97	6.46	0.97	15.65	3.02	19.68	-3.39	**5.85**
2001	-4.55	-2.04	-13.05	-6.77	-3.66	-6.30	4.56	-7.55	-17.67	6.03	6.76	-5.26	**-4.1225**
2002	-10.05	-7.78	-20.38	15.06	10.59	-5.48	0.66	-0.40	-1.55	-1.66	0.64	-2.76	**-1.93**
2003	-6.43	6.23	-1.69	2.10	-3.08	0.10	-1.35	1.46	0.29	-0.48	-0.63	-2.09	**-0.46**
2004	0.00	4.66	-1.66	-3.18	1.54	4.31	4.18	8.78	-2.86	-1.41	1.64	0.55	**1.38**
2005	1.35	7.39	9.09	4.49	-2.69	-2.66	3.20	4.67	-2.23	1.33	1.72	0.23	**2.1575**
2006	0.79	3.99	6.96	-1.47	15.26	3.39	3.98	0.62	-1.70	4.13	12.30	13.68	**5.16**
2007	5.60	-2.46	-4.75	-0.88	3.82	11.98	18.94	3.22	15.75	5.42	6.27	12.07	**6.25**
2008	-6.53	-15.07	-12.23	4.46	7.98	15.43	3.51	12.60	-10.03	-4.41	-13.52	-8.92	**-2.2275**
Average	**-1.663**	**-0.113**	**-2.137**	**1.915**	**4.408**	**2.157**	**4.631**	**2.94**	**-0.417**	**1.951**	**3.861**	**0.399**	

Source: Annex-VI

Figure No. 4.11

Month-of-the-Year Return



Empirically, the foreign stock markets have shown the calendar affects. From the study, the experts have found that the return on the month of January was slightly higher than the other months-of-the-year. The return from the stock market was seen higher than the other month than in the month of January.

In context to the Nepalese stock market, we found that the return on the month of Mid-July as per the corresponding month according to the Gregorian calendar for the moth of end-Ashad, the closing month of every F/Y of the Nepalese economy was higher than that of the other remaining months. Hence, we can find as January effect as in foreign stock market, the Nepalese version as Mid-July affect in the Nepalese stock market.

From above analysis, we could not also ignore the return during the month of Mid-May & Mid-Nov. as well in context to the Nepalese stock market as these periods of the Gregorian calendar is equivalent to the Nepalese calendar's New Year Eve & two big festival seasons Dashain & Tihar of the Nepalese. These two festivals extends & celebrated from the month of Mid-Oct. to the month of Mid- Nov.

But during the Mid-Jan. & Mid-Feb., the Nepalese stock market faces the bearish rampage as contradict to the international stock market where there can be found the bullish trend as it has also be termed as January-effect.

4.1.4. Quarterly Effect on Nepse:

Table No.4.12

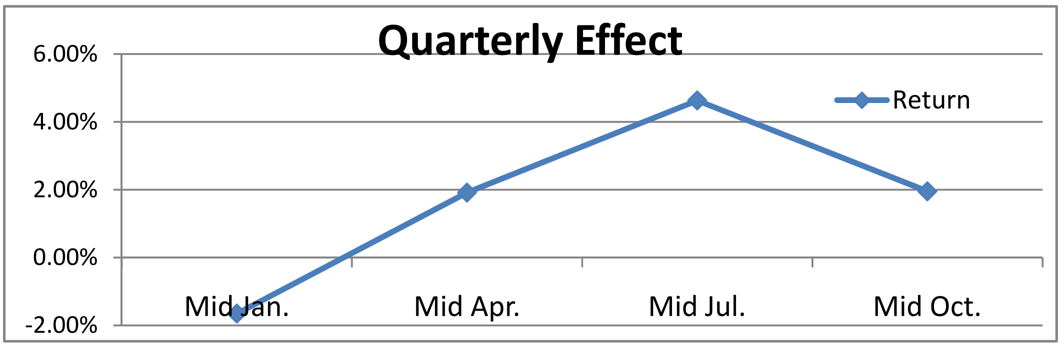
Quarterly Effect on Nepse

F/Y	Quarters			
	Mid Jan.	**Mid Apr.**	**Mid Jul.**	**Mid Oct.**
1999	-2.94	4.55	2.17	7.54
2000	6.13	0.79	6.46	3.02
2001	-4.55	-6.77	4.56	6.03
2002	-10.05	15.06	0.66	-1.66
2003	-6.43	2.10	-1.35	-0.48
2004	0.00	-3.18	4.18	-1.41
2005	1.35	4.49	3.20	1.33
2006	0.79	-1.47	3.98	4.13
2007	5.60	-0.88	18.94	5.42
2008	-6.53	4.46	3.51	-4.41
Average	**-1.653**	**1.915**	**4.631**	**1.951**

Source: Annex-VI

Figure No. 4.12

Quarterly Effect



The closing month of the Nepalese fiscal year is in the month of end-Ashad which is corresponding to the Gregorian calendar of the month of Mid-July. By-law also, every companies operating within Nepal have to publish & submit their financial report to the concerned government authorities at the end of each F/Y. But for the financial institutions, they have to submit their financial report to the central bank quarterly to the NRB as well as they have to publish these reports in the national daily also. So, the overall performance of any listed companies at Nepse for a particular F/Y can be analyzed at the end of the Mid-July i.e. is the fourth quarter as per the Nepalese calendar.[16] So, this directly affects on the movements of stock market of the country. The return on the stock market in the month of Mid-July is higher than the other month. This is what the effect of disclosure norms to be followed by mainly the banks and financial institutions as prescribed by the central bank of the country, NRB.

4.1.5. Day-of-the-week Effect on Nepse:

Table No.4.13

Day-of-the-week Effect on Nepse

F/Y	Days					
	Sun.	**Mon.**	**Tue.**	**Wed.**	**Thurs.**	**Fri.**
2004	-	0.1224	0.1171	0.0852	0.0877	0.1105
2005 till Mid-April	-	0.1064	0.2508	0.2875	0.3193	0.7133
Average	**-**	**0.1774**	**0.0908**	**0.2889**	**0.3155**	**0.6386**
2005 for 8.5 months	0.0756	0.0088	-0.0053	0.5343	-0.0031	-
2006	0.4013	0.2472	0.2630	0.1260	0.1907	-
2007	0.3037	0.6652	0.1093	0.1600	0.7198	-
2008	0.0489	-0.5827	-0.1968	0.0237	0.1807	-
Average	**0.2236**	**0.0912**	**0.0459**	**0.2275**	**0.2933**	**-**

Source: Annex-VII

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[16] Ibid, pp.121.

Figure No. 4.13.1

Day-of-the-Week Effect-I

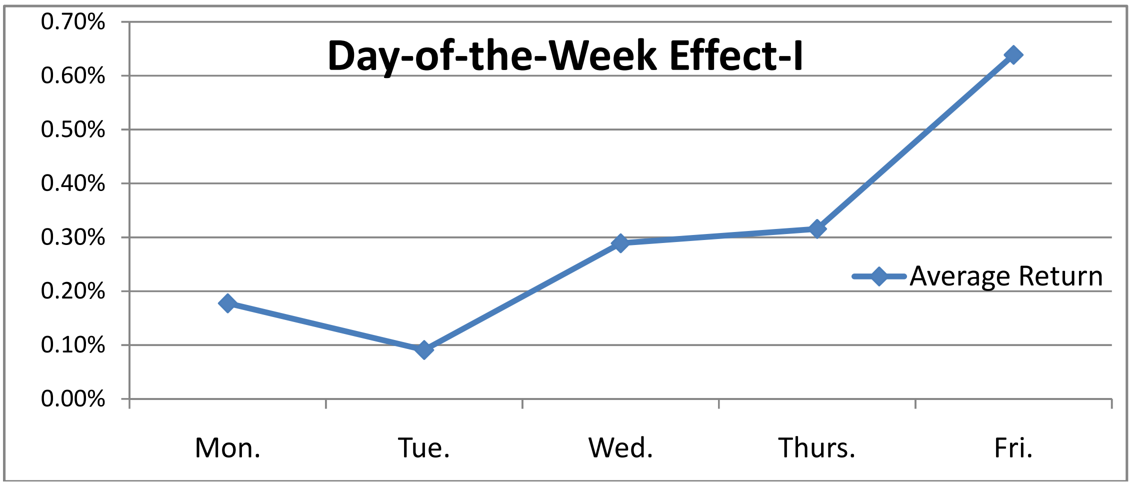
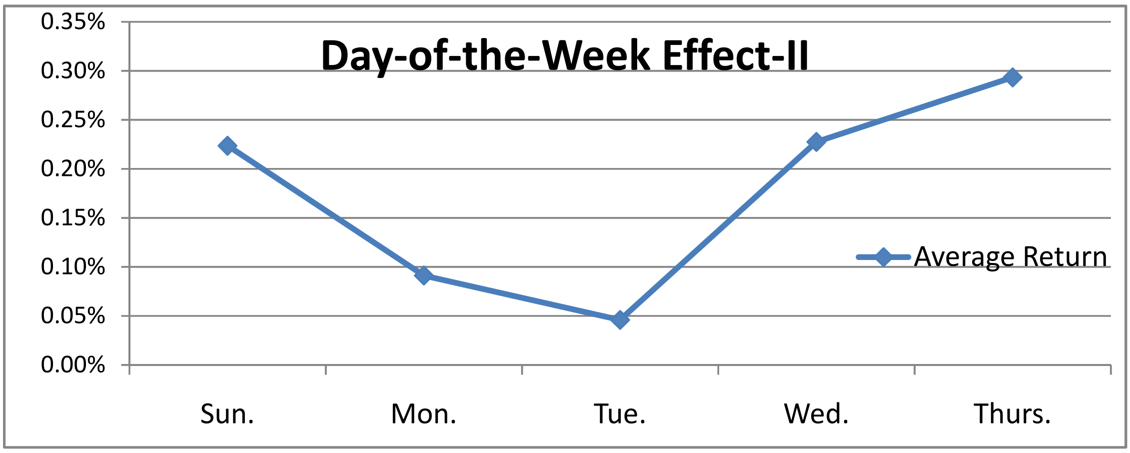


Figure No. 4.13.2

Day-of-the-Week Effect-II



From the above analysis, we found that the trading days at the Nepse floor has been changed during the past five F/Y. Till the Mid-April of 2005, the trading at the Nepse used to be from Monday to Friday, whereas, after that the trading started to took place from Sunday to Thursday. The staring and the ending days varied during the past five F/Y but the number of trading days had remained same for five days. The average return on the last day of the week have highest or can be termed market as bullish either it was from Monday to Friday or from Sunday to Thursday. But in the trading days of from Sunday to Thursday, the first day of the week, Sunday have also slightly greater return than the remaining day-of-the-week. Tuesday has been the unlucky day for the Nepalese investors. In both the patterns of the trading days either from Monday to Friday or Sunday to Thursday, the average return on Tuesday has been the bearish day-of-the-week for the Nepalese stock market.

4.1.6. Market Model Analysis:

Table No.4.14.1

Market Model Analysis

Sectors	Beta (β)	Alpha (α)	Resi. Std. Dev.	R. Sqr.	r	P.E.	Std. Err. of β	Std. Err. of α	Return	Coefficient of Non-Determination
Banking	1.06	-3.4306	14.92	0.8836	0.94	0.02	0.14	5.87	22.126%	0.1164
Mfg. & P	0.45	-3.0025	10.87	0.6889	0.83	0.07	0.11	4.28	7.847%	0.3111
Hotel	-0.09	15.0949	53.84	0.0036	-0.06	0.21	0.52	21.20	12.925	0.9964
Trading	0.21	1.0759	40.98	0.2209	0.47	0.17	0.40	16.13	6.139	0.7791
Insurance	0.69	2.7141	13.35	0.7921	0.89	0.04	0.13	5.26	19.35	0.2079
Finance	1.04	3.2316	39.24	0.4761	0.69	0.11	0.38	15.45	28.306%	0.5239
Dev. Bank	0.68	7.9332	46.50	0.229	0.47	0.17	0.45	18.31	24.328%	0.7791
Hydro-power	0.08	3.0012	16.28	0.0289	0.17	0.21	0.16	5.87	4.93%	0.9711
Others	0.76	11.3904	86.74	0.09	0.30	0.19	0.76	34.15	29.714%	0.91

Source: Annex-VIII

From the market model analysis, regarding the beta interpretation, the stocks of commercial banks & finance companies are seen highly volatile than a market index, i.e. they are seen as an aggressive stocks, whereas the remaining sectors stocks are seen less volatile than market index or termed as a defensive stocks in context to the Nepalese stock market.

The beta measures the sensitivity of a stock's return to changes in the return on the market portfolio or slopes of the market model whereas the alpha measures the difference between a security's expected return and its benchmark return or intercept for the specific stock. The result shows, the huge difference for the hotel sector & the least difference for the mfg. & p. sector between the Nepse.

The return from the other sectors of the Nepse is seen highest with 29.714% and the least return was seen from hydro-power with return of 4.93%.

The S.E. of β & α indicates the extent of estimation error & an indication of the magnitude of the possible sampling error respectively. Thus, both were seen high degree of estimation error & sampling error among the various sectors returns calculation was seen for others sector of the Nepse.

4.1.6.1. Interpretation of Correlation Coefficient from Market Model:

Table No.4.14.2

Interpretation of Correlation-coefficient from Market Model

Sectors	r	Remark	P.E.	Significance (*r<P.E. insignificant*)	Coefficient of Non-Determination
Banking	0.94	Very high	0.02	Significant	0.1164
Mfg. & P	0.83	Very high	0.07	Significant	0.3111
Hotel	-0.06	Very low	0.21	Insignificant	0.9964
Trading	0.47	Low	0.17	Significant	0.7791
Insurance	0.89	Very high	0.04	Significant	0.2079
Finance	0.69	High	0.11	Significant	0.5239
Dev. Bank	0.47	Low	0.17	Significant	0.7791
Hydro-power	0.17	Very low	0.21	Insignificant	0.9711
Others	0.30	Low	0.19	Significant	0.91

Degree of Correlation	Direction	
	Positive	Negative
Perfect	+1	-1
Significant(very high)	+0.75 to +1	-0.75 to -1
High	+0.50 to +0.75	-0.50 to -0.75
Low	+0.25 to +0.50	-0.25 to -0.50
Insignificant (very low)	0 to +0.25	0 to -0.25
Absent	0	0

Source: Annex-VIII

The trading of the banking and finance sectors has a high degree of positive correlation with Nepse movement. The insurance has a very high degree of positive correlation with Nepse & the result has significance also. Dev. Bank and other sector have a low degree of correlation with the Nepse. Mfg. & P, hotel, trading and hydro-power are very low correlated with Nepse. Similarly, the relation is seen insignificant for hotel & hydro-power.

The coefficient of non-determination states as in context to banking sector, 11.64% of the movement in the return on banking sector is not due to the movement in the return on the market index. Similarly for hotel sector, 99.64% of the movements in this sector cannot be attributed to movements in the market index, which is also the highest in the value.

4.1.7. Merton Model Analysis:

Table No.4.15

Merton Model Analysis

Sectors	β_{im}	β_{ig}	r_f	**Average Return ($K_{avg.}$)**	**$E(r_i)$ (RRR)**	**Price**
Banking	1.06	0.11	3.501	22.126%	26.45736%	OP
Mfg. & P	0.45	0.11	3.501	7.484%	13.90387%	OP
Hotel	1.04	-0.25	3.501	12.925%	-0.91931%	UP
Trading	0.21	0.15	3.501	6.139%	9.36819%	OP
Insurance	0.69	0.004	3.501	19.35%	17.762258%	UP
Finance	1.04	0.65	3.501	28.306%	31.60466%	OP
Dev. Bank	1.18	0.75	3.501	24.328%	35.51612%	OP
Hydro-power	0.08	0.34	3.501	4.93%	8.6388%	OP
Others	0.76	-0.48	3.501	29.714%	14.28808%	UP

Source: Annex-X ***UP=Under-priced⇒If $E(r_i) < K_{avg.}$ OP=Over-priced⇒If $E(r_i) > K_{avg.}$***

Merton Model is also known as a multifactor CAPM or ICAPM. The concept of hedging is adopted to diversify the risk for investing purpose. It is also the way of protecting the investment from the up-coming inflation in the economy. The hedger seeks to buy equity shares, but also to place well defined limits on investor's investment risk. One popular hedging technique involves simultaneously purchasing a stock & a put option or hallmark gold on that stock. For this purpose the beta of the gold investment has been used & the hedging is done with the market portfolio and the gold to protect from the rising inflation in the economy.

The expected return from the development bank sector is seen the highest with 35.52% while hedging this sector's shares with the hallmark gold at the same time. The hedging between the hotel sector investment & hallmark gold are seen very unproductive as the expected return is seen negative of -0.91%. The hedging between the shares of banking sector, finance companies & development banks with hall mark gold in the Nepalese market can also be productive for the investors.

The Merton Model resulted, the under-priced for insurance, hotel and other sectors whereas over-priced for remaining sectors.

4.2. Primary Data Analysis:

4.2.1. Awareness about the Criteria to be Fulfilled by the Companies to be Listed at Nepse:

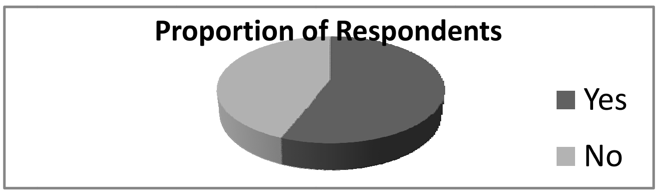
Table No. 4.16

Opinion on Awareness about the Criteria to be Fulfilled

S. No.	Response	No. of Respondents	Proportion
1.	Yes	56	56%
2.	No	44	44%
	Total	**100**	**100%**

Figure No. 4.14

Awareness Level on Criteria to be Fulfilled by Companies to be Listed



56% of the total sample respondents said that they were aware about the criteria to be fulfilled by companies to be listed on Nepse but similarly 44% of the respondents said that they were not aware about the criteria to be fulfilled by companies to be listed on Nepse. Thus, there is a lack of proper knowledge regarding what are the criteria to be fulfilled by companies by the general public.

4.2.2. Opinion on Daily to Regulatory Activities of SEBON & Nepse:

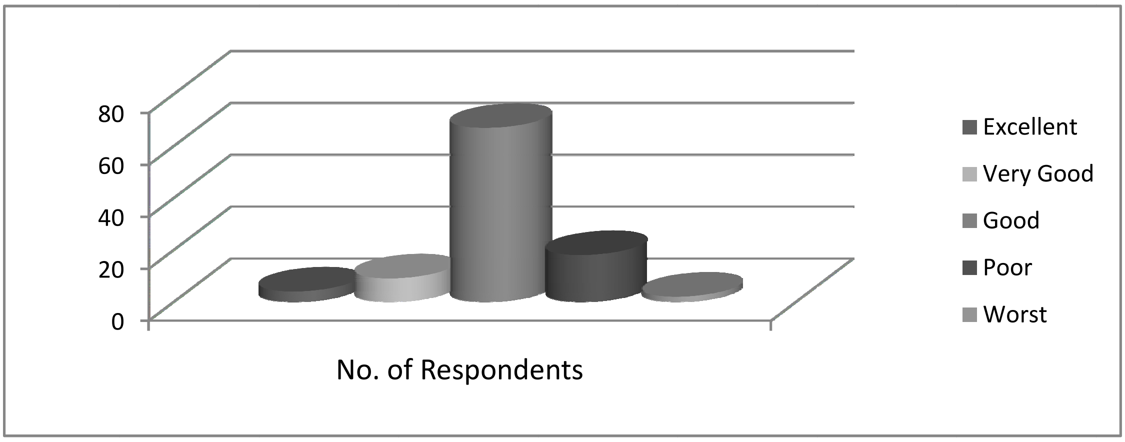
Table No. 4.17

Opinion on Daily to Regulatory Activities of SEBON & Nepse

S. No.	Level	No. of Respondents	Proportion
1.	Excellent	4	4%
2.	Very Good	9	9%
3.	Good	67	67%
4.	Poor	18	18%
5.	Worst	2	2%
	Total	**100**	**100%**

Figure No. 4.15

Opinion on Daily to Regulatory Activities of SEBON and Nepse



Majority of the respondents are optimistic about the daily to regulatory activities of both the Nepse and SEBON to be at the good position. 67% of the total sample respondents that the activities of both the Nepse and SEBON are good. But they even didn't regarded at the extreme level either excellent or in poor situation.

4.2.3. Opinion on Share Prices of the Listed Companies:

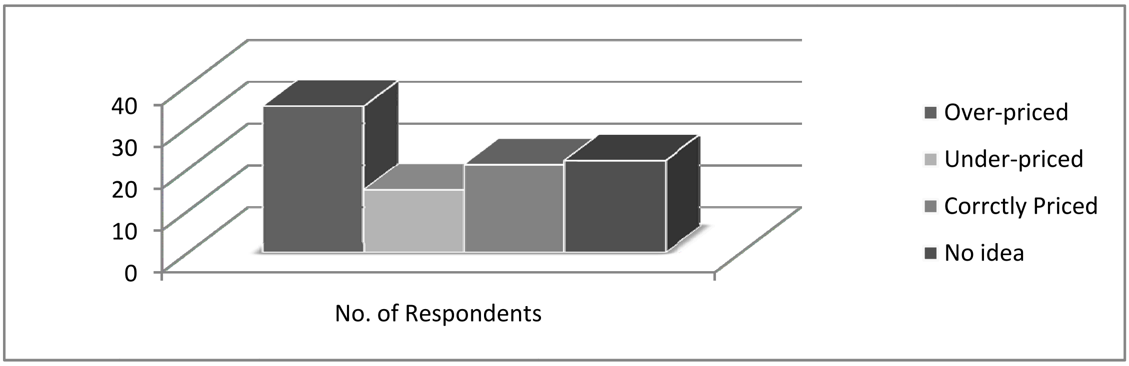
Table No. 4.18

Opinion on Share Prices of the Listed Companies

S. No.	Share Price	No. of Respondents
1.	Over-priced	35
2.	Under-priced	15
3.	Correctly priced	21
4.	No idea	29
	Total	**100**

Figure No. 4.16

Opinion on Share Prices of the Listed Companies



Regarding the share prices of the listed companies at the Nepse, majority stated that the shares are being traded at over-priced. Being an investors or general stock market enquirer the respondents stated that they have also no idea how the share price are being stated at the market. Thus, 29% of the total respondents said they have no idea regarding the share prices. Only 15% of the total respondents stated that the share traded at Nepse are under-priced than actual.

4.2.4. Nepse Index as a Convenient Unit & a Good Representativeness of Secondary Market of Nepal:

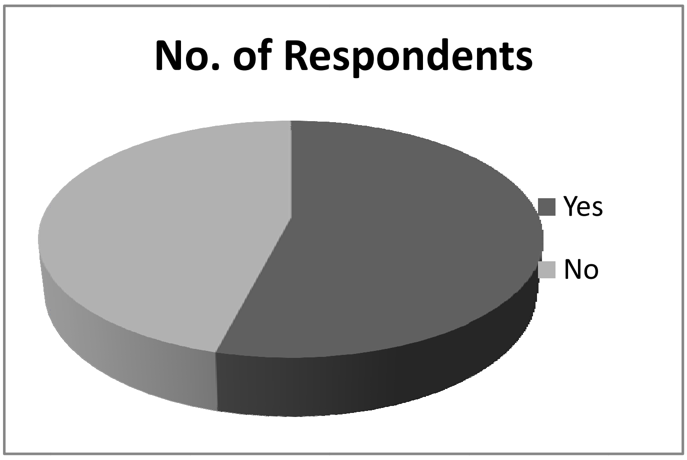
Table No. 4.19

Responses on Nepse as a Convenient Unit & a Good Representativeness

S. No.	Response	No. of Respondents	Proportion
1.	Yes	54	54%
2.	No	46	46%
	Total	**100**	**100%**

Figure No. 4.17

Responses on Nepse as a Convenient Unit & a Good Representativeness



54% of the total respondents said that the Nepse index can be considered as a convenient unit & a good representativeness of one and only secondary market of the country. At the same time, 46% of the respondents stated that it has not been a convenient unit & a good representativeness.

4.2.5. Major Risk Associated with the Nepalese Stock Market:

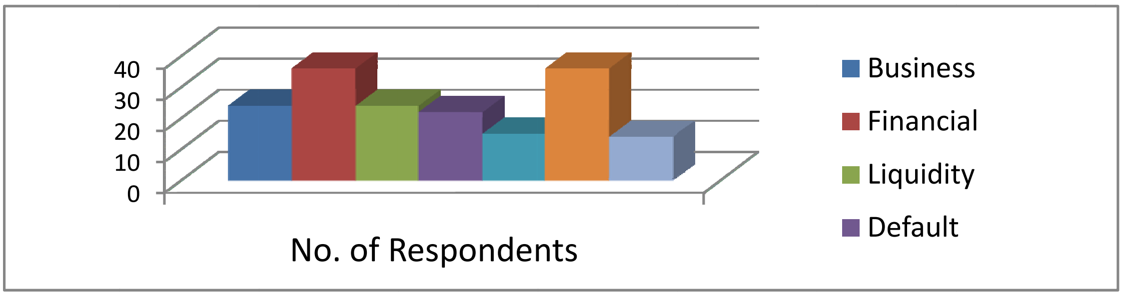
Table No. 4.20

Major Risk Associated with the Nepalese Stock Market

S. No.	Major Risks	Frequency of Chosen Risks
a)	Business	24
b)	Financial	36
c)	Liquidity	24
d)	Default	22
e)	Interest Rate	15
f)	Management	36
g)	Purchasing Power	14

Figure No. 4.18

Major Risk Associated with the Nepalese Stock Market



The major risk associated with a Nepalese stock market was seen highly on financial and management. Due to the manipulation in the financial reports by the companies listed at Nepse other than the

made the investors feeling more risky in the financial position. The Nepalese investors are also scared of companies being default also in which they have invested their many. This shows the investment on Nepalese stock market can not be considered as a secured investment.

The least risk seen by the respondents on the Nepalese stock market was on the purchasing power changes or the price-level changes in the market.

4.2.6. Causes Mainly Affecting Nepse Index Movement:

Table No .4.21

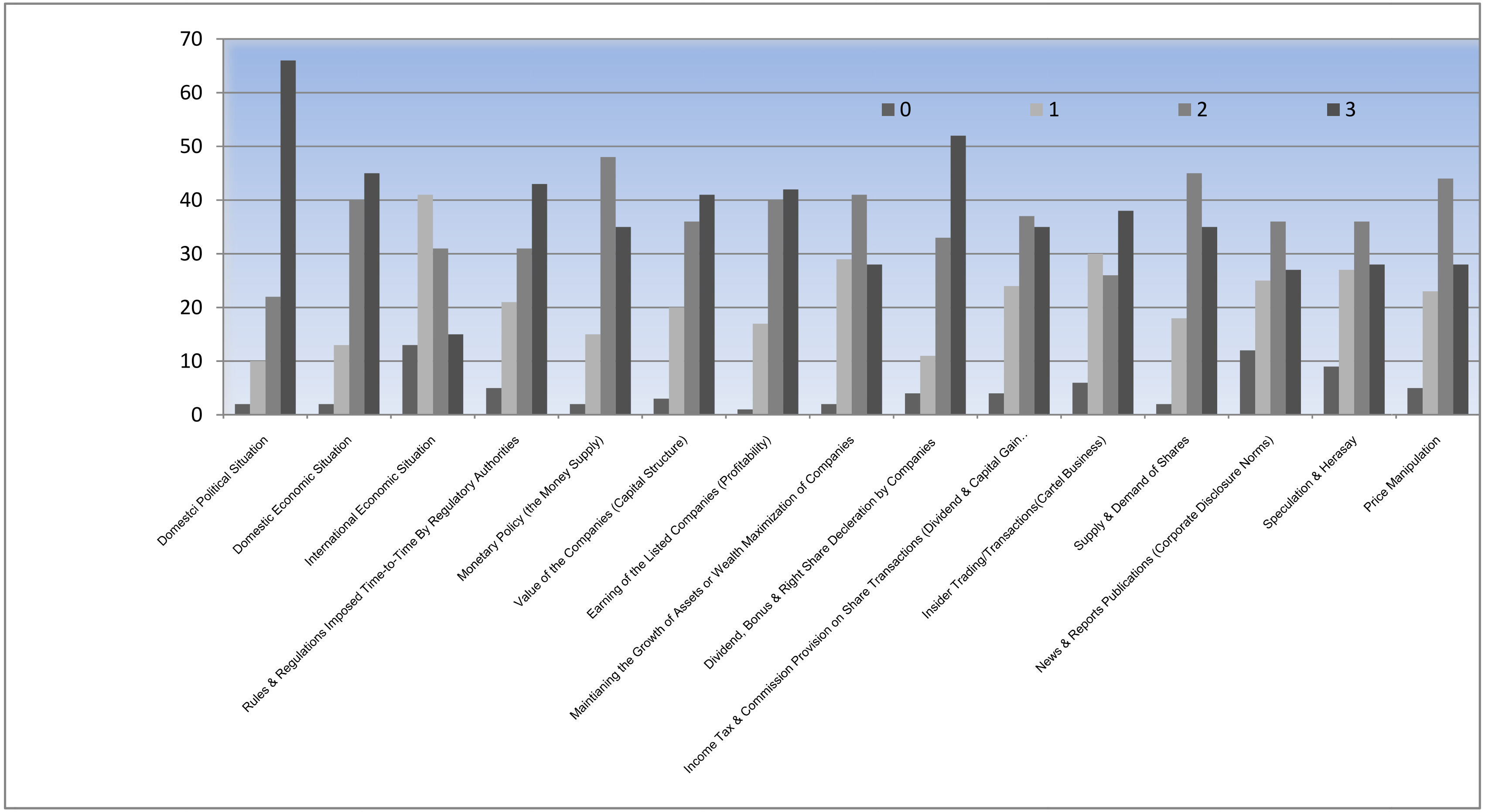
Causes Mainly Affecting Nepse Index Movement

0	1	2	3
None	Low	Moderate	High

S. No.	Causes	Level of Importance 0	1	2	3	Total
1.	Domestic Political Situation (Unanticipated Political Events)	2	10	22	66	**100**
2.	Domestic Economic Situation	2	13	40	45	**100**
3.	International Economic Situation	13	41	31	15	**100**
4.	Rules & Regulations Imposed Time-to-Time by Regulatory Authorities	5	21	31	43	**100**
5.	Monetary Policy (The Money Supply)	2	15	48	35	**100**
6.	Value of the Companies(Capital Structure)	3	20	36	41	**100**
7.	Earning of the Listed Companies (Profitability)	1	17	40	42	**100**
8.	Maintaining the Growth of Assets or Wealth Maximization of Companies	2	29	41	28	**100**
9.	Dividend, Bonus & Right Share Declaration by Companies	4	11	33	52	**100**
10.	Income Tax & Commission Provision on Share Transactions(Dividend & Capital Gain Tax)	4	24	37	35	**100**
11.	Insider Trading/Transactions(Cartel Business)	6	30	26	38	**100**
12.	Supply & Demand of Shares	2	18	45	35	**100**
13.	News & Reports Publications(Corporate Disclosure Norms)	12	25	36	27	**100**
14.	Speculation & Hearsay	9	27	36	28	**100**
15.	Price Manipulation	5	23	44	28	**100**

Figure No. 4.19

Causes Mainly Affecting Nepse Index Movements



The highest level of importance given by the respondents was to the domestic political situation or unanticipated political events that directly affect on the Nepse movements. The large number of research have also disclosed that the domestic political situation have directly affected in the Nepse index movement. The large no. of respondents stated that none importance on the movements on Nepse was an international economic situation. Profitability, dividend, bonus & right share declaration by listed companies in Nepal as have high importance in the Nepse Index movement. Investors are showing dividend behind the Nepse movement, but the amount of dividend is too small vis-à-vis the market price of shares.

The stock market of Nepal not linked with the international stock market & none of the foreign investors are allowed to invest in the Nepalese stock market by existing laws also. So, the Nepse is isolated from the international stock market movements. Domestic economic situation somewhat directly affects in the Nepse. But from survey, insiders trading at Nepse, value of the companies, etc also have great influence at Nepse. The provision on the increment in the capital of the financial institutions by law and directives from central bank also affects on the Nepse movement. This is somewhat related to the rules & regulations imposed time-to-time by the regulatory bodies also. The regulator bodies regarding the stock market from SEBON and Nepse also have been affecting on the movement in index.

Speculation and hearsay also plays an important role in the movement of Nepse. The investors yet had to focus on hard facts-like a company's past earnings and the value of it's assets-rather than guessing what the future would bring them. Yet, somehow, this idea on how to analyze stock prices has been entirely forgotten in Nepse.

The market is driven on a whim. Similarly the money supply or the monetary policy of the country also affects on the Nepse movement.

The supply of shares of any good listed company in the market is very low. The shares are already held by few big houses. Close on the heels of low availability of shares, people are easily able to manipulate price.

4.2.7. Anomalies Affecting Nepse Index Movement:

4.2.7.1. Opinion on Anomalies Affecting Nepse Index Movement:

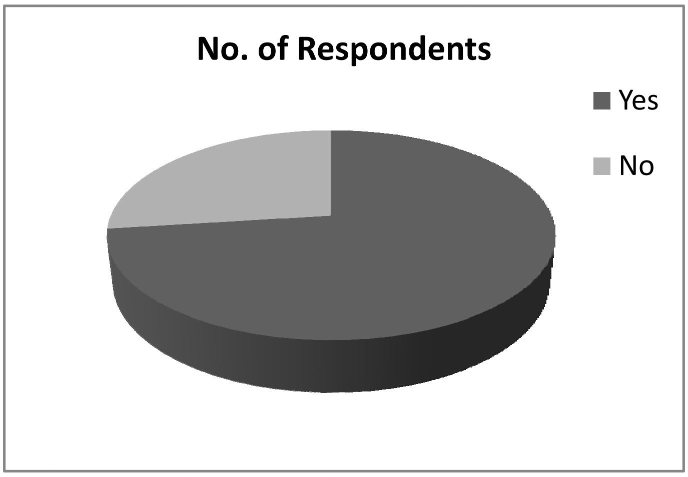
Table No. 4.22

Opinion on Anomalies Affecting Nepse Index Movement

S. No.	Response	No. of Respondents
1.	Yes	73
2.	No	27
	Total	**100**

Figure No. 4.20

Opinion on Anomalies



For the stock market of the country like Nepal, anomalies for the investors are really a new thing. Mainly, the political situation, somewhat domestic political situation and the dividend, right shares & bonus shares declaration from the listed companies plays major roles in the movement in the Nepalese stock market.

Majority of the respondents said that the anomalies affects on the Nepse index movement. 73% of the total sample stated that the anomalies affect on the Nepse movements. That means the anomalies are also the major factors on affecting the movements of the Nepalese stock market on various forms.

4.2.7.2. Opinion on Major Anomalies Affecting Nepse Index Movement:

Table No. 4.23

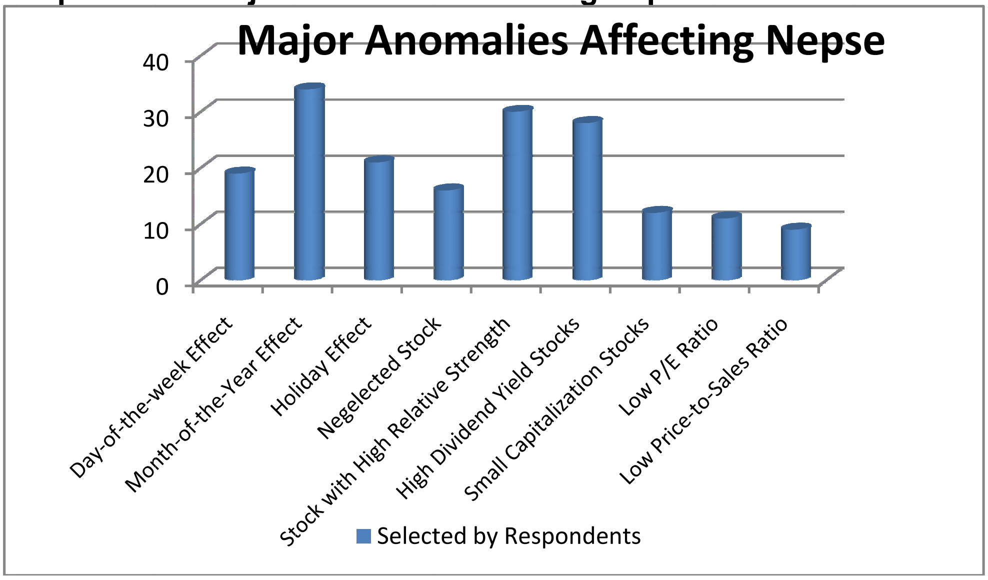
Opinion on Major Anomalies Affecting Nepse Index Movement

S. No.	Anomalies	Selected by Respondents
a)	Day-of-the-Week Effect	19
b)	Month-of-the-Year Effect/Mid-July Effect(as January Effect)	34
c)	Holiday Effect/National, Festival & Unscheduled Holidays	21
d)	Neglected Stock	16
e)	Stock with High Relative Strength	30
f)	High Dividend Yield Stocks	28
g)	Small Capitalization Stocks	12
h)	Low P/E Stocks	11
i)	Low Price-Sales Ratio	9
j)	Low Price-to-Book Value Ratio	7
k)	Abnormally High Returns for Stock Rates “1” in the Value Line Timeliness Rank	30
l)	Weather (Cloud-cover, Sunshine & Temperature)	0
m)	Biorhythms* (Seasonal Affective Disorder & Lunar Cycle)	7

**Any recurring biological cycle thought to affect one’s physical or mental state.*

Figure No. 4.21

Opinion on Major Anomalies Affecting Nepse Movement



Nepalese investors seems highly secured from the investment in the banking The respondents who stated that the anomalies existed on the Nepalese stock market viewed that the month-of-the-year highly affects but the weather does not affects on the stock market. Anomalies like stock with high relative strength, high dividend yield stocks and abnormally high returns for stock rates “1” in the value line timeliness rank were also the major anomalies that affects on the Nepalese stock market as per the respondents.

Similarly, the greed or attraction to the stock or cash dividend declared by the listed companies has also affected in the Nepse movement. The trading of the high dividend yield stock at Nepse on a specific day increases the overall market index for that day.

The festival seasons & their respective holidays also have affected the Nepalese stock market. These anomalies can be termed as holiday effect for Nepalese stock market.

4.2.8. Suitable Sector(s) Chosen for Investment In Nepalese Stock Market:

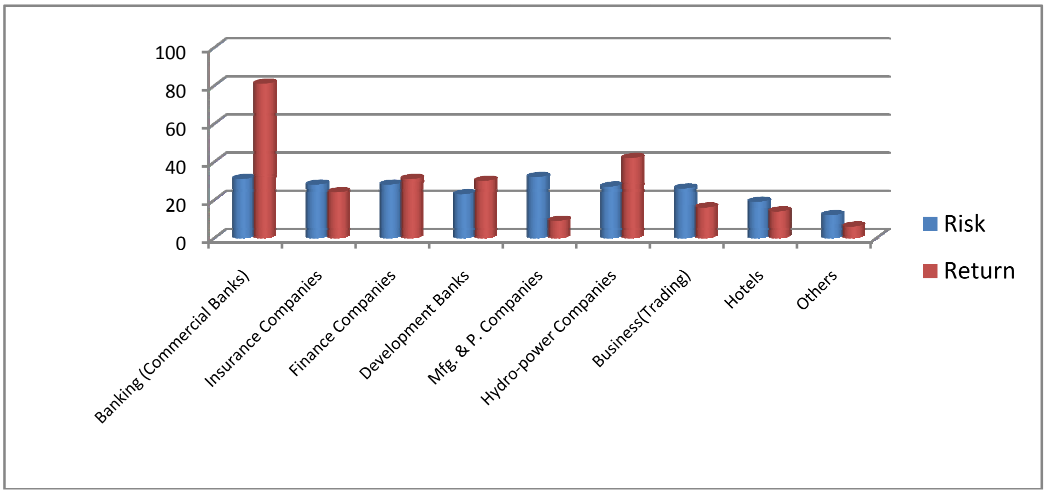
Table No. 4.24

Suitable Sector(s) Chosen for Investment in Nepalese Stock Market

S.No.	Sectors	Selected According to:	
		Risk	Return
i.	Banking (Commercial Banks)	31	81
ii.	Insurance Companies	28	24
iii.	Finance Companies	28	31
iv.	Development Banks	23	30
v.	Mfg. & P. Companies	32	9
vi.	Hydro-power Companies	27	42
vii.	Business(Trading)	26	16
viii.	Hotels	29	14
ix.	Others	12	6

Figure No. 4.22

Suitable Sector(s) Chosen for Investment in Nepalese Stock Market



Nepalese investors seems highly secured from the investment in the banking sector of the stock market. The regularity on the dividend, bonus & right shares distribution from the banking sectors to their shareholders also made it highly returned sector in the Nepalese stock market.

Similarly, they feel really unsecured investing the amount in the Mfg. & P. Companies. The poor records in the share market in the stock market by this sector have made the investors unsecured to invest on Mfg. & P. Companies. As, there is a strong regulatory bodies for financial institutions & insurance companies to inspect & regulate, the investors feels secured to invest in these sectors.

Similarly, Nepal is one of the richest countries in the water resources. So, there is the prospect in the development of hydro-power sector in the coming days. The foreign investors are also attracted towards this sector from the past also. Thus, the investors are expecting the good return from the hydro-power sector also.

Due to the down-fall of the tourism industry in the recent years & the un-transparency of the financial position of the hotel industry of Nepal, the Nepalese industry felt risky on investing on the hotel sector as well.

4.3. Test of Hypotheses:

As per Webster Dictionary, “A hypothesis is a tentative theory or supposition provisionally adopted to explain certain facts and to guide in the investigation of others.” The theory of testing hypothesis was initiated by J. Neyman & E.S. Pearson.

4.3.1. Test on Nepse Index is highly affected mainly by Nepse Banking Sub-index Movement:

Null Hypothesis (H_o): Nepse index is not highly affected mainly by Nepse Banking Sub-Index.

Alternative Hypothesis (H_A): Nepse index is highly affected mainly by Nepse Banking Sub-Index.

Decision: Since the calculated value χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, Nepse index is not highly affected mainly by Nepse Banking Sub-Index. ***Source: Annex-XI***

4.3.2. Test on a bilateral causality between the Nepalese Stock Market capitalization & nominal GDP:

Null Hypothesis (H_o): There is no bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Alternative Hypothesis (H_A): There is a bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Decision for the primary data: Since the calculated value of χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, there is no bilateral causality between the stock market capitalization & nominal GDP of Nepal. ***Source: Annex-XII***

Decision for the secondary data: Since the calculated value of "t" is greater than the tabulated value of "t", the alternative hypothesis, H_1 is accepted. Hence, there is a bilateral causality between the stock market capitalization & nominal GDP of Nepal. ***Source: Annex-XII***

4.3.3. Test on Statement that "Nepse index measures the change in the overall behavior of the market or sector over a period of time.":

Null Hypothesis (H_o): Nepse index does not measures the change in the overall behavior of the market or sector over a period of time.

Alternative Hypothesis (H_A): Nepse index measures the change in the overall behavior of the market or sector over a period of time.

Decision: Since the calculated value of χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, Nepse index does not measure the change in the overall behavior of the market or sector over a period of time. ***Source: Annex-XIII***

4.3.4. Test on a Randomness on Monthly Return in Nepse:

Null Hypothesis (H_o): The monthly returns on Nepse are random.

Alternative Hypothesis (H_A): The monthly returns on Nepse are not random.

Decision: Since the calculated value of "z" is less than the tabulated value of "z", the null hypothesis, H_0 is accepted. Hence, the monthly returns on Nepse are random. ***Source: Annex-XIV***

4.3.5. Test on a Rank Correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed:

Null Hypothesis (H_o): ρ_s=0: There is no rank correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed.

Alternative Hypothesis (H_A): $\rho_s>0$: The rank correlation is positive in the population; i.e. Nepalese investors choose sector thinking of high return.

Decision: Since the calculated value of "z" is less than the tabulated value of "z", the null hypothesis, H_0 is accepted. Hence, there is no rank correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed. ***Source: Annex-XV***

4.3.6. Test on Homogeneity on Returns on the Various Sectors of the Nepalese Stock Market:

Null Hypothesis (H_0):$\mu_1= \mu_2= \mu_3= \mu_4= \mu_5= \mu_6= \mu_7= \mu_8= \mu_9$, i.e. there is no significant difference among the returns of the various sectors Nepse or there is homogeneity in returns.

Alternative Hypothesis (H_1): $\mu_1\neq\mu_2\neq\mu_3\neq\mu_4\neq\mu_5\neq\mu_6\neq\mu_7\neq\mu_8\neq\mu_9$, i.e. there is significant difference among the returns of the various sectors Nepse or there is homogeneity in returns.

Table No.4.25

One-way ANOVA Table

Source of Variation	Sum of Squares	d.f.	Mean sum of squares	F-Ratio
Between samples	7963.8903	k-1=9-1=8	7963.8903/8 = 995.4863	F= $\frac{995.4863}{1338.2830}$
Within samples	92341.5249	N-K=78-9=69	92341.5249/69 = 1338.2830	=0.7439
Total	100305.4150	N-1=78-1=77		

Critical Value: The calculated d.f. is customary larger than the level of significance (α=0.10, 0.05, 0.01 & so on), so, there is no tabulated value.

Decision: Since the calculated value of "d.f." is customary larger than the level of d.f., the null hypothesis, H_0 cannot be rejected.[17] Hence, there is no significant difference among the returns of the various sectors of Nepse or there is homogeneity in returns. ***Source: Annex-XVI***

4.4. Major Findings of the Study:

i. The traded volume at the Nepse has highly increased in the past few F/Y. Similarly, the Nepse index has also increased heavily. The market has appeared to be bullish from the past bearish trend.
ii. The banking sub-index movement shows the bullish trend from the F/Y 2061/62. The index reached up to 1094.50 pints in the F/Y 2064/65.
iii. The mfg. & P sub-index turned bullish but the traded volume of the shares has been fluctuating.
iv. The hotel sub-index turned heavily bearish from the F/Y 2059/60 to F/Y 2062/63. Similarly, the volume of share traded also seen declined. But improvement was seen during F/Y 2064/65.
v. The trading index is seen heavily bearish from F/Y 2058/59 to F/Y 2060/61. Although not so improvement was seen in context to the traded volume of the index.

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[17] Levin & Rubin (2008) ***Statistics for Management,*** India: Pearson Prentice Hall. Op.cit. pp.603

vi. The insurance sub-index turned heavily bullish in the F/Y 2064/65 & the sub-index touched 1060.50 points. The traded volume was heavily increased in F/Y 2057/58. This was due to the combined calculation of finance & insurance sector index till the F/Y 2057/58.

vii. The finance sector has shown the consistency movement during the past 10 F/Y. Slight bearish trend was seen in the F/Y 2061/62. But afterward it turned heavily bullish & sub-index touched 1152.74 points in the F/Y 2064/65.

viii. The development bank sub-index was started to calculate by Nepse from 22 Jan. 2002. The sector has been seen bullish since the starting except the F/Y 2060/61 & F/Y 2061/62.

ix. Till the F/Y 2063/64, the Nepse has not seggregated a separate index for the hydro-power sector. It has been seen as an emerging sector of investmment in the Nepalese stock market.

x. The other sectors sub-index was bullish due to the good perfomance of the airlines shares but it turn to bullish and reached to the lowest of 42.75 points in the F/Y 2059/60. The Traded volume of the sahres declined in the F/Y 2064/65 to 7.7 thousands but the index was turned to bullish due to including of shares trded of Nepal Telecom.

xi. The Mid-Jan. & Mid-Feb., the Nepalese stock market faces the bearish rampage as contradict to the international stock market where there can be found the bullish trend as it has also be termed as January-effect. But the market shows the bullish trend on Mid-July.

xii. The trading days at the Nepse floor has been changed during the past five F/Y. Till the Mid-April of 2005, the trading at the Nepse used to be from Monday to Friday, whereas, after that the trading started to took place from Sunday to Thursday. Tuesday has been the bearish day for the Nepalese stock market every time.

xiii. The market model analysis found that the expected return from the other sector was seen highest with 29.714&% and the least return from the hydro-power sector of Nepse with 4.93%. The shares of CBs & finance companies were seen highly volatile than a market index & remaining sectors less volatile.

xiv. Under market model, the indices of hotel & hydro-power were very low correlated with Nepse, trading & dev. bank low correlated & remaining sub-indices very highly correlated.

xv. Merton assumed of hedging of stock with the petroleum product but in context to Nepalese investors the hedging is being practiced on gold ornaments from the ancient times. As per Merton Model, the hedging of shares of dev. bank sector with hallmark gold in Nepalese market gives the highest return of 35.52% whereas, the hedging the hotel sector shares was seen unproductive with negative expected return of -0.91%.

xvi. 56% of the total sample respondents said that they were aware about the criteria to be fulfilled by companies to be listed on Nepse.

xvii. 67% of the total sample respondents stated that the activities of both the Nepse and SEBON are good.

xviii. Regarding the share prices of the listed companies at the Nepse, majority stated that the shares are being traded at over-priced.

xix. 54% of the total respondents said that the Nepse index can be considered as a convenient unit & a good representativeness of one and only secondary market of the country.

xx. The major risk associated with a Nepalese stock market was seen highly on financial and management & the least was seen for purchasing power.

xxi. The highest level of importance given by the respondents was to the domestic political situation or unanticipated political events that directly affect on the Nepse movements & the least for the international economic situation.

xxii. 73% of the total respondents stated that anomalies affects on the Nepse movement. Of them majority pointed out that the month-of-the-year & stock with high relative strength & abnormally high returns for stock rates “1” in the value line timeliness rank works for the abnormal rise & fall in the stock market.

xxiii. Nepalese investors seem highly secured from the investment in the banking sector of the stock market and highly unsecured on mfg. & P. sector. The risk and return on various sectors of Nepse are randomly mixed as per Nepalese investors.

xxiv. Under, hypothesis test for primary data collected, it was found that Nepse index is not highly affected mainly by Nepse Banking Sub-Index.

xxv. As per primary data, there is no bilateral causality between the stock market capitalization & nominal GDP of Nepal but the result was vice-versa for secondary data.

xxvi. Under hypothesis test for primary data collected, it was found that Nepse index does not measure the change in the overall behavior of the market or sector over a period of time.

xxvii. From run test, the result was the monthly returns on Nepse are random.

xxviii. There is no significant difference among the returns of the various sectors of Nepse or there is homogeneity in returns.

Chapter V

Summary and Conclusion

5.1. Summary:

The Nepalese capital market development is a recent event. After the Securities Exchange Centre Ltd (SEC) was established by the Securities Market Act, 1983, and in April 1984 it replaced the former Securities Marketing Centre (SMC), which had operated since 1976. Trading under the new law did not started until November 1984. Like the SMC, the SEC is wholly owned by the government and government entities (NRB & NIDC).

Over the past decade, the investment in any business is become very risky due to highly volatile in Nepalese economy, inflation, government instability, and the major factor affecting to this is Maoist insurgency & political instability. Nepalese stock market shows a high level of fluctuation when we look as at the overall picture of the stock market. People think twice before they invest in any stock market. This makes the investors more vulnerable towards possible risk, and encourages them to divert their investments to other safer alternatives such as gold, saving deposits, etc, or to spend on current consumption. In Nepalese context, handful of people knows and has interest in investing in stocks. It is very new concept to Nepalese context to invest money in stocks. But the stock market is highly linked with the national economy of the country as well. There is a bilateral causality between the nominal GDP & the stock market capitalization.

The Nepalese stock market passed through both the bullish and the bearish trend from its establishment to at present. It has been found that nearly all the bull markets had a number of well-defined characteristics in common, such as (1) a historically high price level, (2) high price/earnings ratios, (3) low dividend yields as against bond yields, (4) much speculation on margin, and (5) many offerings of new common stocks issues of poor quality and vice-versa characteristics for the bear markets. For the long time due to the primitive stage of the development of the Nepalese stock market & mainly the instability in the political situation as well as the poor economic situation of the nation, the stock market reflected the bearish trend.

The most realistic distinction between the investors and the speculator is found in their attitude toward stock-market movements. The speculator's primary interest lies in anticipating and profiting from market fluctuations. The investor's primary interest lies in acquiring and holding suitable securities at suitable prices. Market movements are important to him in a practical sense, because they alternately create low price levels at which he would be wise to buy and high price levels at which he certainly should refrain from buying and probably would be wise to sell.

It is far from certain that the typical investor should regularly hold off buying until low market levels appear, because this may involve a long wait, very likely the loss of income, and the possible missing of investment opportunities. On the whole it may be better for the investor to do his stock buying whenever he has money to put in stocks, except when the general market level is much higher than can be justified by well-established standards of value. If he wants to be shrewd he can look for the ever-present bargain opportunities in individual securities. Evaluating the responses from the primary data & interpreting it, the

Nepalese investors can be considered more speculators than pure investors on stock market.

5.2. Conclusions:

The Stock Exchange is a market place, primarily for the purchase and sale of the securities that are quoted in the Daily Official list. Because securities price often seem to rise or fall concertedly in response to “general conditions”, investors & speculators have developed great interest in index number or “averages” which measure these general market-price movements. These indexes are valuable, & their use is essential to any study of securities market behavior.

Stock market is considered a barometer of national economy. But in Nepal’s context, it does not reflect the real economic growth. Manipulation exits due to lack of diversification of instrument. General tendency of Nepalese investors is to invest in the security on hearsay basis. This study has given the basic ground for investment. Finally, if you merely try to bring just a little extra knowledge and cleverness to bear upon your investment program, instead of realizing a little better than normal results, you may well find that you have done worse. So, think twice before investing on stocks.

The Nepalese stock market is seen bullish in the past few F/Y. The slow development of the stock market has seen that the market capitalization as well as the traded volume of the stock market made the market bearish. But the increment in the sector as well as the transactions of the shares in the market made the market bullish. The Nepalese stock market reflected the bullish rampage.

As per sector-wise performance of the Nepse other than CBs, the finance companies were seen doing well in the market. The high amount of market capitalization was from the CBs side. The bullish pattern or the bearish pattern of the stock market is highly depended on the trading of the shares of mainly CBs. Similarly, due to the NRB directive dated 26 March 2007 to bank and financial institutions to double their paid-up capital till 2010 also made the only stock market of the country whooping increment. Various new directives issued by the central bank introducing more stringent provision forcing banks, finance companies and even the co-operatives to greater provisioning for loan loss thereby resulting in downsizing of net profits have put caused the investors' confidence to wane. Since financial institutions, especially the CBs, occupy a lion's share of the stock trading, any fluctuation in their price is directly reflected in the index.

Similarly, the large number of the listed companies at the Nepse was from the finance sector. In context to the number of shares traded at the market also, the finance and CBs sectors covered the most. The growing sector at the Nespe can be considered for the development banks. Day-by-day, the sub-index & the traded volume are seen increasing. In the recent year, the hydro-power sector can be taken as an emerging sector for the Nepalese investors at the stock market. The shares of profit-recorded public enterprises can also perform well in the market as; it was seen from the listing of shares of Nepal Telecom. But, ultimately, the investors are getting highest expected return from the CBs. Due to the good regulator and timely corporate performance disclosure norms for the CBs also, the investors feels secured in this sector.

Market efficiency implies that all known information is immediately discounted by all investors and reflected in share prices in the stock market. But in real world, the ideal efficient market can not be imagined. The EMH can be of weak form, semi-strong form or, strong form. These can be tested by price information, other public information and inside information respectively. The Nepalese stock market is on developing stage. It is reflecting as an insufficient capital market. Considering the EMH tests on the Nepalese stock market, then the strong-form of EMH has seen the highest influence in the movement of the market.

The month-of-the-year result for the Nepalese stock market, the highest return during the closing month of the Nepalese fiscal year is in the month of end-Ashad which is corresponding to the Gregorian calendar of the month of Mid-July. This can be termed as quarterly effect as the whole F/Y is divided into four quarters. From the run test, the result was the monthly returns on Nepse are random.

The trading days at the Nepse floor has been changed during the past five F/Y. Till the Mid-April of 2005, the trading at the Nepse used to be from Monday to Friday, whereas, after that the trading started to took place from Sunday to Thursday. The average return on the last day of the week have highest or can be termed market as bullish either it was from Monday to Friday or from Sunday to Thursday. But in the trading days of from Sunday to Thursday, the first day of the week, Sunday have also slightly greater return than the remaining day-of-the-week. Tuesday has been the unlucky day for the Nepalese investors.

The market model analysis found that the expected return from the other sector was seen highest with 29.714&% and the least return from the hydro-power sector of Nepse with 4.93%. From the beta analysis, it was found that the stocks of the development bank and finance companies were seen highly volatile than the market index. They can be termed as aggressive stocks on the Nepse and other remaining sectors as defensive stocks.

The insurance and mfg. & P sector indices movements are very highly correlated with the Nepse movement whereas, the movement of the HP, trading and hotel sector indices are very low correlated with the Nepse movement. The indices of the finance companies and the development banks were seen highly correlated. The coefficient of non-determination states as in context to hotel sector, 99.64% of the movement in the return on banking sector is not due to the movement in the return on Nepse which was highest whereas as 20.79% the movement in the return on insurance sector is not due to the movement in the return on Nepse which was the lowest. The primary data as well as secondary data interpreted that the Nepse index is not so highly correlated with the movements of the banking sub-index.

Hedging is a tool used to offset the market (systematic) risk of stock portfolios. Plan to buy assets side-by-side that its price may raise in coming days will create a long hedge & vice versa. When a source of risk has an effect on expected return, it is a “priced” risk. The single-factor CAPM predicts only market risk will be priced but the ICAPM predicts that other sources of risks also may be priced. Hence, Merton’s multifactor CAPM (ICAPM) suggested a list of possible common sources of uncertainty that might affect expected security return. It predicts of affecting the security return through the demand for hedging. Hence, there is a position for investors to equally distribute different types of securities & assets so that derivation of portfolio weights from those of the market portfolio are offsetting. The hedging of shares of finance sector with hallmark gold in Nepalese market gives the highest return whereas, the hedging the hotel sector shares was seen unproductive with negative expected return. The hedging of shares of dev. banks & CBs were also seen in good position.

56% of the total sample respondents said that they were aware about the criteria to be fulfilled by companies to be listed on Nepse. Majority of the respondents of total 100 stated that they were aware about the criteria to be fulfilled by companies to be listed on Nepse & also stated that the activities of both the Nepse and SEBON are good.

Regarding the share prices of the listed companies at the Nepse, majority stated that the shares are being traded at over-priced. The governing bodies are also saying that there is the manipulation in the share price of the listed companies. There is no proper relation in the market value of the share and the performance of the listed companies.

54% of the total respondents said that the Nepse index can be considered as a convenient unit & a good representativeness of one and only secondary market of the country.

The major risk associated with a Nepalese stock market was seen highly on financial and management & the least was seen for purchasing power. The interest rate was also was chosen least factor of risk but it is also one of the most important factor in the small financial market like Nepal.

As per primary data, there is no bilateral causality between the stock market capitalization & nominal GDP but the result was vice-versa for secondary data. Similarly, it was found that Nepse index does not measure the change in the overall behavior of the market over a period of time. So, the opinion toward the trading at Nepse is not seen clear for the general investors whether it affects the national economy as well.

The highest level of importance given by the respondents was to the domestic political situation or unanticipated political events that directly affect on the Nepse movements & the least for the international economic situation. As the Nepalese stock market is not linked with the foreign stock markets as well as the foreign investors are also not allowed to invest at the Nepse.

73% of the total respondents stated that anomalies affects on the Nepse movement. Of them majority pointed out that the month-of-the-year & stock with high relative strength & abnormally high returns for stock rates “1” in the value line timeliness rank works for the abnormal rise & fall in the stock market. From, the secondary data analysis also, it was found that the month-of-the-year effect exist in Nepalese stock market but different from the international stock market as January effect.

Nepalese investors seem highly secured from the investment in the banking sector of the stock market and highly unsecured on mfg. & P. sector. From the trading volume of the shares of the banking sectors & respective to the trading volume of shares of mfg. & P. sector at Nepse, it can be concluded that the Nepalese investors at stock market are highly attracted towards the shares of CBs. But from the public responses on the risk and return on various sectors of Nepse, they are found randomly mixed.

Thus, the growth & increment of the Nepalese stock market can be termed as the water-bubble. The increment of the market capitalization of the Nepalese stock market has just added the number of the share certificates distribution among the general public without the productive return to the person or economy of the country.

The stock market of Nepal reflects to mass psychology with little if any connection to the underlying economic values. Nepse index fails to represent itself as a barometer to Nepalese investors' confidence level as an indicator to the Nepalese economy as a whole. The Nepalese investors at stock market has not followed the fundamental & technical analysis during investment but followed as gambling with the market trend. The market lies on a speculative bubble, in that nothing justifies by the underlying economic fundamentals in the rise in price except the hope that it will go higher still. Then, suddenly, the bubble pops & the price as well as market collapse. Thus, the behavior of Nepalese investors towards the stock market can be termed as an irrational exuberance.

5.3. Recommendations:

1. The establishment of another two or three stock exchanges and separate OTC markets on different regions of the country is urgently needed.
2. More share brokers should be added as the stock market of Nepal is expanding day-by-day.
3. Central Depository System (CDS) with utilization of IT should be established and operated as soon as possible.
4. Narrower allotment of shares & dealings in smaller lots should be introduced to enable the smaller investors participate in economic development of the country.

4. Narrower allotment of shares & dealings in smaller lots should be introduced to enable the smaller investors participate in economic development of the country.
5. Fair & effective tax policy regarding share transactions & capital gain should be implemented.
6. Diversification of investment instruments & sectors in Nepal is essential for effective growth of stock market.
7. There is a need of legal and regulatory provisions for derivative trading like index futures, index option, stock option & stock future to assist & manage various types of risks.
8. There is a need of co-ordination among the Nepse, SEBON, NRB, Insurance Board & GON for the enhancement &development of the security market in Nepal.
9. Margin lending, margin call & capital gain should be strictly observed & follow-up for fair market movement by the governing bodies.
10. Delay on clearing and settlement of the securities & practices of blank transfer should be eradicated as far as possible.
11. Matching & cheating the market order in the stock market should be tracked carefully & made punishable.
12. Portfolio diversification by the Nepalese investors is needed considering risk & return.
13. Fundamental & technical analysis (security analysis) of stock market before investment is very essential for all the investors.
14. Establishment of the efficient, specialized & worthy separate rating agency is necessary for proper information flow to the investors & analysts.

17. Awareness programs regarding the stock market, investment strategy & participation level to small investors as well as general public should be increased.
18. Be an intelligent investors by proper timing i.e. endeavor to anticipate the action of the stock market-to buy or hold when the future course is deemed to be upward, to sell or refrain from buying when the course is deemed to be upward, to sell or refrain from buying when the course is downward and pricing i.e. endeavor to buy stocks when they are quoted below their fair value & to sell the when they rise above such value.

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Stock Market in Nepal: Movements and Behaviors

Annex-I

Questionnaire

Name: _ **Gender:** M/F

1. Are you aware about the criteria to be fulfilled by the companies to be listed at Nepse? Yes/No

2. Daily(day-to-day) to regulatory activities of the SEBON and Nepse are:
(i) Excellent (ii) Very Good (iii) Good (iv) Poor (v) Worst

3. The share prices of the listed Nepalese companies are:
(i) Over-priced (ii) Under-priced (iii) Correctly-priced (iv) No idea

4. Can Nepse Index be considered a convenient unit & a good representativeness of secondary market of Nepal? Yes/No

5. "Nepse Index is highly affected mainly by Nepse Banking Sub-index movement." Do you: (i) Agree the statement
(ii) Disagree the statement

6. Major risk associated with the Nepalese Capital Market is:
[Note: Check mark (√) on respective chosen risks]
   a) Business
   b) Financial
   c) Liquidity
   d) Default
   e) Interest Rate
   f) Management
   g) Purchasing Power

7. Is there a bilateral causality between the Nepalese Stock market capitalization & nominal GDP? Yes/No

8. Nepse Index Movement is highly affected mainly by:

Level of Importance

0	1	2	3
None	Low	Moderate	High

[Note: Circle the number corresponding to the level of importance]

S.No.	Causes	Level of Importance			
1.	Domestic Political Situation(Unanticipated Political Events)	0	1	2	3
2.	Domestic Economic Situation	0	1	2	3
3.	International Economic Situation	0	1	2	3
4.	Rules & Regulations Imposed time-to-time by Regulatory Authorities	0	1	2	3
5.	Monetary Policy (The Money Supply)	0	1	2	3
6.	Value of the Companies(Capital Structure)	0	1	2	3
7.	Earning of the Listed Companies(Profitability)	0	1	2	3
8.	Maintaining the Growth of Assets or Wealth Maximization of Company	0	1	2	3
9.	Dividend, Bonus & Right Share Declaration by Companies	0	1	2	3
10.	Income Tax Provision & Commission Provision on Share Transactions(Dividend & Capital Gain)	0	1	2	3
11.	Insider Trading/Transactions (Cartel Business)	0	1	2	3
12.	Supply & Demand of Shares	0	1	2	3
13.	News & Reports Publications(Corporate Disclosure Norms)	0	1	2	3
14.	Speculation & Hearsay	0	1	2	3
15.	Price Manipulation	0	1	2	3

9. Does anomalies affects on Nepse Index movement? Yes/No
   If yes, then what?
   [Note: Check mark (√) on suitable anomalies affects]

   a) Day-of-the-Week Effect
   b) Month-of-the-Year Effect/Mid-July Effect (as January Effect)
   c) National, Festival & Unscheduled Holidays
   d) Neglected Stock
   e) Stock with high relative strength
   f) High-dividend Paying Stocks
   g) Small Capitalization Stocks
   h) Low P/E Stocks
   i) Low Price-to-Book-value Ratio
   j) Abnormally high returns for stock rated "1" in the value line timeliness rank
   k) Weather(Cloud-cover, sunshine & temperature)
   l) Biorhythms(Seasonal Affective Disorder & Lunar Cycle)

10. "Nepse index measures the change in the overall behavior of the market or sector over a period of time." Do you:

(i) Agree the statement
(ii) Disagree the statement

11. As an investor choose the suitable sector(s) for investment in Nepalese Securities Market:
[Note: Check mark(√)on respective chosen sector(s)]

S.No.	Sectors	According to:	
		Risk	Return
i.	Banking		
ii.	Insurance		
iii.	Finance		
iv.	Development Banks		
v.	Manufacturing & Processing		
vi.	Hydro-power		
vii.	Business(Trading)		
viii.	Hotel		
ix.	Other		

12. What do you consider before buying/investing (on) securities of any company? List them: ***(Top 5 Only)***
    i. ………………………………………
    ii. ………………………………………
    iii. ………………………………………
    iv. ………………………………………
    v. ………………………………………..

Thank You!

Annex-II
Nepalese Stock Market Indicators

In million Rupees

F/Y	No. of listed Companies	Paid-up Values of Listed Companies	Market Capitalization in Rupees	Annual Trading Turnover in Rupees	No. of Share Traded (000)	No. of Transactions	Market Days	Nepse Index* (Closing)	Nespe Sensitive Index#
1986 Mid-July	16	341.0	548.0	10.1	-	-	-	-	-
1987 Mid-July	23	419.0	988.0	8.1	-	-	-	-	-
1988 Mid-July	27	524.0	1089.0	7.7	-	-	-	-	-
1989 Mid-July	36	684.0	1509.0	30.0	-	-	-	-	-
1990 Mid-July	41	789.0	1775.0	25.3	-	-	-	-	-
1991 Mid-July	46	1049.0	2516.0	27.3	-	-	-	-	-
1992 Mid-July	55	1272.7	2120.1	36.9	-	-	-	-	-
1993 Mid-July	62	1482.8	3805.7	79.8	-	-	-	-	-
1994 Mid-July*	66	2182.2	13872.0	441.6	993.1	9357	121	226.03	-
1995 Mid-July	79	2961.8	12963.0	1054.3	3900.7	21472	242	195.48	-
1996 Mid-July	89	3358.5	12295.0	209.9	2953.5	17943	240	185.61	-
1997 Mid-July	95	4476.5	12698.0	416.2	9443.3	12428	239	176.31	-
1998 Mid-July	101	4959.8	14289.0	202.6	1195.1	15483	237	163.35	-
1999 Mid-July	107	6487.4	23508.0	73.8	4857.0	15814	231	216.92	-
2000 Mid-July	110	7347.4	43123.3	283.7	7673.7	29136	240	360.70	-
2001 Mid-July	115	7339.0	46349.4	128.0	4989.2	46095	231	348.40	-
2002 Mid-July	96	8680.2	34703.8	80.9	6005	42028	246	227.65	-
2003 Mid-July	108	11898.0	35240.4	64.7	2428	69163	238	204.86	-
2004 Mid-July	114	12016.0	41424.8	255.5	6468	85533	243	222.04	-
2005 Mid-July	125	16776.0	61365.9	198.0	18434	106246	236	286.67	-
2006 Mid-July	134	19958.0	96813.7	327.9	12222	97374	228	386.83	-
2007 Mid-July	135	21798.8	186301.3	1432.1	18147.3	120510	232	683.95	175.10
2008 Mid-July	142	29465.0	366248.0	2648.2	28599.8	150800	235	963.36	253.72

*Base Year: 12th February, 1994(30 Magh 2050)-Six Months Data/Revised on 13th August, 2006

Base Year: 15th July, 2006(31 Ashad 2063)

Annex-III
Contribution of Secondary Market on GDP of Country

F/Y	GDP*	Paid-up value/GDP*	Market Capitalization/GDP*
1986 Mid-July	55734	0.61%	0.98%
1987 Mid-July	63864	0.66%	1.55%
1988 Mid-July	76906	0.68%	1.42%
1989 Mid-July	89270	0.77%	1.69%
1990 Mid-July	103416	0.76%	1.72%
1991 Mid-July	120370	0.87%	2.09%
1992 Mid-July	149487	0.85%	2.55%
1993 Mid-July	171474	0.86%	2.22%
1994 Mid-July+	199272	1.10%	6.96%
1995 Mid-July	219175	1.35%	5.91%
1996 Mid-July	248913	1.35%	4.94%
1997 Mid-July	280513	1.60%	4.53%
1998 Mid-July	300845	1.65%	4.75%
1999 Mid-July	342036	1.90%	6.87%
2000 Mid-July	379488	1.94%	11.36%
2001 Mid-July	441519	1.85%	10.50%
2002 Mid-July	459443	2.11%	7.55%
2003 Mid-July	492231	2.55%	7.16%
2004 Mid-July	536749	2.49%	7.72%
2005 Mid-July	589412	2.85%	10.41%
2006 Mid-July	654055	3.06%	14.80%
2007 Mid-July	727089	2.99%	25.62%
2008 Mid-July	820814	3.59%	44.62%

*Nominal Gross Domestic Product at Producer's Price in million Rs.

Annex-IV
Risk and Return on Stock Market

F/Y	NEPSE Index (Closing)	Return on Market Portfolio(K_M)	Risk-free Rate of Return*(K_{RF})	Market Risk Premium (K_M- K_{RF})
1986 Mid-July	15.63	0.00%	3.00%	-3.00%
1987 Mid-July	19.20	+22.84%	3.00%	19.84%
1988 Mid-July	28.70	+49.48%	5.00%	+44.48%
1989 Mid-July	39.65	+38.15%	5.24%	+32.91%
1990 Mid-July	46.64	+17.63%	6.20%	+11.43%
1991 Mid-July	66.11	+0.42%	8.18%	-7.76%
1992 Mid-July	55.71	-15.73%	9.24%	-24.97%
1993 Mid-July	100.00	+79.50%	11.34%	+68.16%
1994 Mid-July+	226.03	+126.03%	6.50%	+119.53%
1995 Mid-July	195.50	-13.52%	7.35%	-20.87%
1996 Mid-July	185.60	-5.06%	10.93%	-15.99%
1997 Mid-July	176.30	-5.01%	10.22%	-15.94%
1998 Mid-July	163.35	-7.35%	3.52%	-10.87%
1999 Mid-July	216.92	+32.79%	2.33%	+30.46%
2000 Mid-July	360.70	+66.28%	4.66%	+61.62%
2001 Mid-July	348.43	-3.40%	4.96%	-8.36%
2002 Mid-July	227.65	-34.66%	4.71%	-39.37%
2003 Mid-July	204.86	-10.01%	3.48%	-13.49%
2004 Mid-July	222.04	+8.39%	2.93%	+5.46%
2005 Mid-July	286.67	+29.11%	2.46%	+26.65%
2006 Mid-July	386.83	+34.94%	2.84%	+32.10%
2007 Mid- July	683.95	+76.81%	2.42%	+74.39%
2008 Mid-July	963.36	+40.85%	4.22%	+36.63%

Source: NRB Quarterly Economic Bulletin, Mid-July 2008, Vol.42. No.4

*Weighted Average 91-days T-bills' Annualized Percent

+ Base Year

$$\therefore K_M = \frac{NEPSE_{t+1} - NEPSE_t}{NEPSE_t} \times 100$$

Annex-V

Karl Pearson's Correlation Coefficient Matrix among Sub-Indices

Indices	Nepse	Banking	Insurance	Finance	Development Banks	Manufacturing & Processing	Hydro-power	Business (Trading)	Hotel	Others
Nepse	+1.00	+0.94	+0.89	+0.69	+0.47	+0.84	+0.17	+0.47	-0.06	+0.30
Banking		+1.00	+0.86	+0.57	+0.33	+0.86	+0.02	+0.40	-0.12	+0.37
Insurance			+1.00	+0.71	+0.56	+0.79	+0.18	+0.47	-0.05	+0.24
Finance				+1.00	+0.90	+0.66	+0.79	+0.60	+0.20	+0.02
Development Banks					+1.00	+0.32	+0.80	+0.64	+0.29	-0.008
Manufacturing & Processing						+1.00	+0.26	+0.38	-0.09	+0.11
Hydro-power							+1.00	+0.57	+0.24	-0.15
Business(Trading)								+1.00	+0.04	+0.37
Hotel									+1.00	-0.11
Others										+1.00

Annex-VI
Month-of-the-Year Return

Year/Month	Closing Nepse Index	Return
1998 Mid-Dec.	187.2	1.63% (Ignore)
1999 Mid-Jan.	181.7	-2.94%
1999 Mid-Feb.	178.5	-1.76%
1999 Mid-Mar.	180.2	0.95%
1999 Mid-Apr.	188.4	4.55%
1999 Mid-May	197.0	4.56%
1999 Mid-June	212.3	7.77%
1999 Mid-July	216.9	2.17%
1999 Mid-Aug.	227.8	5.03%
1999 Mid-Sept.	228.2	0.18%
1999 Mid- Oct.	245.4	7.54%
1999 Mid-Nov.	254.6	3.75%
1999 Mid-Dec.	254.3	-0.12%
2000 Mid-Jan.	269.9	6.13%
2000 Mid-Feb.	285.3	5.71%
2000 Mid-Mar.	329.2	15.39%
2000 Mid-Apr.	331.8	0.79%
2000 Mid-May	364.2	9.76%
2000 Mid-June	338.8	-6.97%
2000 Mid-July	360.7	6.46%
2000 Mid-Aug.	364.2	0.97%
2000 Mid-Sept.	421.2	15.65%
2000 Mid-Oct.	433.9	3.02%
2000 Mid- Nov.	519.3	19.68%
2000 Mid-Dec.	486.1	-6.39%
2001 Mid-Jan.	464.8	-4.55%
2001 Mid-Feb.	455.3	-2.04%
2001 Mid-Mar.	395.9	-13.05%
2001 Mid-Apr.	369.1	-6.77%
2001 Mid-May	355.6	-3.66%
2001 Mid-June	333.2	-6.30%
2001 Mid-July	348.4	4.56%
2001 Mid-Aug.	322.1	-7.55%
2001 Mid-Sept.	265.2	-17.67%
2001 Mid-Oct.	281.2	6.03%
2001 Mid-Nov.	300.2	6.76%
2001 Mid-Dec.	284.5	-5.23%
2002 Mid-Jan.	255.9	-10.05%
2002 Mid-Feb.	236.0	-7.78%
2002 Mid-Mar.	187.9	-20.38%
2002 Mid-Apr.	216.2	15.06%

		Contd…
Year/Month	**Closing Nepse Index**	**Return**
2002 Mid-May	239.1	10.59%
2002 Mid-June	226.0	-5.48%
2002 Mid-July	227.5	0.66%
2002 Mid-Aug.	226.5	-0.40%
2002 Mid-Sept.	223.0	-1.55%
2002 Mid-Oct.	219.3	-1.66%
2002 Mid-Nov.	220.7	0.64%
2002 Mid-Dec.	214.6	-2.76%
2003 Mid-Jan.	200.8	-6.43%
2003 Mid-Feb.	213.3	6.23%
2003 Mid-Mar.	209.7	-1.69%
2003 Mid-Apr.	214.1	2.10%
2003 Mid-May	207.5	-3.08%
2003 Mid-June	207.7	0.10%
2003 Mid-July	204.9	-1.35%
2003 Mid-Aug.	207.9	1.46%
2003 Mid-Sept.	208.5	0.29%
2003 Mid-Oct.	207.5	-0.48%
2003 Mid-Nov.	206.2	-0.63%
2003 Mid-Dec.	201.9	-2.09%
2004 Mid-Jan.	201.9	0.00%
2004 Mid-Feb.	211.3	4.66%
2004 Mid-Mar.	207.8	-1.66%
2004 Mid- Apr.	201.2	-3.18%
2004 Mid-May	204.3	1.54%
2004 Mid-June	213.1	4.31%
2004 Mid-July	222.0	4.18%
2004 Mid-Aug.	241.5	8.78%
2004 Mid-Sept.	234.6	-2.86%
2004 Mid-Oct.	231.3	-1.41%
2004 Mid-Nov.	235.1	1.64%
2004 Mid-Dec.	236.4	0.55%
2005 Mid-Jan.	239.6	1.35%
2005 Mid-Feb.	257.3	7.39%
2005 Mid-Mar.	280.7	9.09%
2005 Mid-Apr.	293.3	4.49%
2005 Mid-May	285.4	-2.69%
2005 Mid-June	277.8	-2.66%
2005 Mid-July	286.7	3.20%
2005 Mid-Aug.	300.1	4.67%
2005 Mid-Sept.	293.3	-2.23%
2005 Mid-Oct.	297.3	1.33%
2005 Mid-Nov.	302.4	1.72%

		Contd….
Year/Month	**Closing Nepse Index**	**Return**
2005 Mid-Dec.	303.1	0.23%
2006 Mid-Jan.	305.5	0.79%
2006 Mid-Feb.	317.7	3.99%
2006 Mid-Mar.	339.8	6.96%
2006 Mid-Apr.	334.8	-1.47%
2006 Mid-May	385.9	15.26%
2006 Mid-June	372.0	3.39%
2006 Mid-July	386.8	3.98%
2006 Mid-Aug.	389.2	0.62%
2006 Mid-Sept.	382.6	-1.70%
2006 Mid-Oct.	398.4	4.13%
2006 Mid-Nov.	447.4	12.30%
2006 Mid-Dec.	508.6	13.68%
2007 Mid-Jan.	537.1	5.60%
2007 Mid-Feb.	523.9	-2.46%
2007 Mid-Mar.	499.0	-4.75%
2007 Mid-Apr.	494.6	-0.88%
2007 Mid-May	513.5	3.82%
2007 Mid-June	575.0	11.98%
2007 Mid-July	683.9	18.94%
2007 Mid-Aug.	705.9	3.22%
2007 Mid-Sept.	817.1	15.75%
2007 Mid-Oct.	861.4	5.42%
2007 Mid-Nov.	915.4	6.27%
2007 Mid- Dec.	1025.9	12.07%
2008 Mid- Jan.	958.9	-6.53%
2008 Mid-Feb.	814.4	-15.07%
2008 Mid-Mar.	714.8	-12.23%
2008 Mid-Apr.	806.3	4.46%
2008 Mid-May	930.7	7.98%
2008 Mid-June	963.4	15.43%
2008 Mid-July	963.4	3.51%
2008 Mid-Aug.	1084.8	12.60%
2008 Mid-Sept.	976.0	-10.03%
2008 Mid-Oct.	933.0	-4.41%
2008 Mid-Nov.	806.9	-13.52%
2008 Mid-Dec.	734.9	-8.92%

Annex-VII

Day-of-the-week Return

2004			2005			2006			2007			2008		
Jan.			Jan.			Jan.			Jan.			Jan.		
Day	Nepse	% Chg.	Day	Nepse	% Chg.	Day	Nepse	% Chg.	Day	Nepse	% Chg.	Day	Nepse	% Chg.
TH 1	201.88	0.15	S 2			S 1	303.26	0.16	M 1	512.72	-0.33	T 1	-	-
F 2	201.52	-0.18	M 3	238.32	0.01	M 2	304.16	0.30	T 2	508.96	-0.73	W 2	-	-
S 4	-	-	T 4	235.68	-1.11	T 3	305.42	0.41	W 3	505.25	-0.73	TH 3	-	-
M 5	201.51	-0.01	W 5	234.93	-0.32	W 4	305.85	0.14	TH 4	512.32	1.40	F 4	-	-
T 6	201.82	0.15	TH 6	235.16	0.09	TH 5	305.62	-0.08	F 5	-	-	S 6	988.64	0.42
W 7	201.51	-0.15	F7	235.61	0.19	F 6	-	-	S 7	521.37	1.77	M 7	971.00	-1.78
TH 8	201.46	-0.02	S 9	-	-	S 8	-	-	M 8	525.27	0.75	T 8	956.80	-1.46
F 9	200.84	-0.31	M 10	236.04	0.18	M 9	305.44	-0.06	T 9	530.45	0.99	W 9	963.83	-0.73
S 11	-	-	T 11	-	-	T 10	305.55	0.04	W10	532.28	0.34	TH10	981.40	1.82
M 12	201.34	0.25	W12	237.68	0.69	W11	-	-	TH11	532.33	0.01	F 11	-	-
T 13	202.19	0.42	TH13	239.61	0.81	TH12	305.50	-0.02	F 12	-	-	S 13	976.10	-0.54
W 14	201.95	-0.12	F 14	239.94	0.14	F 13	-	-	S 14	537.09	0.89	M 14	958.90	-1.76
TH15	202.65	0.35	S 16	-	-	S 15	305.66	0.05	M 15	538.36	0.24	T 15	-	-
F 16	204.41	0.87	M 17	23989	-0.02	M 16	305.85	0.06	T 16	-	-	W 16	931.40	-2.86
S 18	-	-	T 18	240.01	0.05	T 17	305.93	0.03	W 17	538.53	0.03	TH17	905.40	-2.79
M 19	206.02	0.79	W 19	240.34	0.14	W 18	306.17	0.08	TH18	535.94	-0.48	F 18	-	-
T 20	207.89	0.86	TH20	240.72	0.16	TH19	305.27	-0.29	F 19	-	-	S 20	879.70	-2.84
W 21	207.89	0.04	F 21	242.11	0.58	F 20	-	-	S 21	529.81	-1.14	M 21	867.50	-1.39
TH22	210.12	1.08	S 23	-	-	S 22	305.30	0.01	M 22	527.05	-0.52	T 22	890.30	2.63
F 23	212.23	0.99	M 24	243.76	0.68	M 23	305.72	0.14	T 23	-	-	W 23	877.50	-1.44
S 25	-	-	T 25	245.25	0.61	T 24	305.51	-0.07	W 24	526.33	-0.14	TH24	878.10	0.07
M 26	212.96	0.34	W 26	246.84	0.65	W 25	306.13	0.20	TH 25	523.63	-0.51	F 25	-	-
T 27	211.77	-0.56	TH27	247.17	0.13	TH26	306.28	0.05	F 26	-	-	S 27	869.60	-0.97
W 28	211.47	-0.14	F 28	246.98	-0.08	F 27	-	-	S 28	519.92	-0.71	M 28	842.60	-3.10
TH29	211.39	-0.04	S 30	-	-	S 29	-	-	M 29	512.70	-1.39	T 29	817.60	-2.97
F 30	-	-	M 31	247.41	0.17	M 30	306.90	0.20	T 30	-	-	W 30	-	-
						T 31	309.04	0.70	W 31	513.34	0.12	TH31	803.69	-1.70
Feb.			Feb.			Feb.			Feb.			Feb.		

S 1	-	-	T 1	247.35	-0.02	W 1	308.25	-0.26	TH 1	519.05	1.11	S 3	778.13	-3.18
M 2	211.11	-0.13	W 2	246.94	-0.17	TH 2	308.92	0.22	F 2	-	-	M 4	752.30	-3.32
T 3	211.24	0.06	TH 3	248.03	0.44	F 3	-	-	S 4	519.77	0.14	T 5	708.70	-5.80
W 4	211.43	0.09	F 4	250.76	1.10	S 5	309.09	0.06	M 5	520.20	0.08	W 6	723.50	2.09
TH 5	211.28	-0.07	S 6	-	-	M 6	309.09	0.00	T 6	520.65	0.09	TH 7	750.90	3.79
F 6	211.48	0.09	M 7	251.02	0.10	T 7	310.32	0.40	W 7	519.69	-0.18	F 8	-	-
S 8	-	-	T 8	251.68	0.26	W 8	-	-	TH 8	523.11	0.66	S 10	776.70	3.44
M 9	211.18	-0.14	W 9	251.68	0.26	TH 9	312.63	0.74	F 9	-	-	M 11	802.00	3.26
T 10	211.07	-0.05	TH10	253.94	0.82	F 10	-	-	S 11	524.79	0.32	T 12	814.40	1.55
W11	-	-	F 11	257.29	1.32	S 12	317.69	1.62	M 12	523.94	-0.16	W13	809.90	-0.55
TH12	211.31	0.11	S 13	-	-	M 13	325.96	2.60	T 13	525.08	0.22	TH14	795.90	-1.73
F 13	210.54	-0.36	M 14	259.05	0.68	T 14	329.39	1.05	W 14	525.86	0.15	F 15	-	-
S 15	-	-	T 15	264.73	2.19	W 15	325.90	-1.06	TH15	526.97	0.21	S 17	769.90	-3.27
M 16	210.69	0.07	W 16	267.14	0.91	TH16	324.86	-0.32	F 16	-	-	M 18	757.08	-1.67
T 17	210.60	-0.04	TH17	265.74	-0.52	F 17	-	-	S 18	525.69	-0.24	T 19	-	-
W 18	-	-	F 18	-	-	S 19	-	-	M 19	-	-	W 20	756.40	-0.09
TH19	-	-	S 20	-	-	M 20	325.35	0.15	T 20	523.20	-0.47	TH21	758.50	0.28
F 20	210.56	-0.02	M 21	263.72	-0.76	T 21	327.48	0.65	W 21	520.46	-0.52	F 22	-	-
S 22	-	-	T 22	263.41	-0.12	W 22	329.82	0.71	TH22	519.07	-0.27	S 24	755.90	-0.34
M 23	210.45	-0.05	W 23	264.39	0.37	TH23	333.03	0.97	F 23	-	-	M 25	761.20	0.70
T 24	210.04	-0.19	TH24	264.98	0.22	F 24	-	-	S 25	517.79	-0.25	T 26	759.50	-0.22
W 25	-	-	F 25	265.53	0.21	S 26	-	-	M 26	514.66	-0.60	W 27	751.81	-1.01
TH26	209.15	-0.42	S 27	-	-	M 27	337.58	1.37	T 27	511.85	-0.55	TH28	756.76	0.66
F 27	208.87	-0.13	M 28	265.97	0.17	T 28	341.05	1.03	W 28	511.81	0.01			
	Mar.			**Mar.**			**Mar.**			**Mar.**			**Mar.**	
M 1	208.68	-0.09	T 1	268.42	0.92	W 1	343.28	0.65	TH 1	508.89	-0.57	S 2	772.88	0.66
T 2	208.75	0.03	W 2	271.41	1.11	TH 2	339.58	-1.08	F 2	-	-	M 3	771.20	-0.22
W 3	208.82	0.03	TH 3	273.57	0.80	F 3	-	-	S 4	505.37	-0.69	T 4	767.00	-0.54
TH 4	208.76	-0.03	F 4	277.62	1.48	S 5	339.58	0.00	M 5	498.26	-1.41	W 5	758.70	-1.08
F 5	208.41	-0.17	S 6	-	-	M 6	334.42	-1.52	T 6	485.98	-2.46	TH 6	-	-
S 7	-	-	M 7	279.49	0.67	T 7	332.28	-0.64	W 7	476.07	-2.04	F 7	-	-
M 8	208.09	-0.15	T 8	-	-	W 8	335.37	0.93	TH 8	486.81	2.26	S 9	756.70	-0.26
T 9	208.26	0.08	W 9	281.80	0.83	TH 9	337.87	0.75	F 9	-	-	M 10	749.10	-1.00
W 10	208.07	-0.09	TH10	283.43	0.58	F 10	-	-	S 11	496.64	2.02	T 11	741.13	-1.06
TH11	207.73	-0.16	F 11	280.65	-0.98	S 12	337.32	-0.16	M 12	500.72	0.82	W 12	723.30	-2.41

F 12	207.80	0.03	S 13	-	-	M 13	339.79	0.73	T 13	500.12	-0.12	TH13	714.80	-1.18
S 14	-	-	M 14	278.50	-0.77	T 14	-	-	W 14	494.06	-1.21	F 14	-	-
M 15	207.85	0.02	T 15	276.45	-0.74	W 15	339.68	-0.03	TH15	493.88	-0.04	S 16	713.00	-0.25
T 16	207.88	0.01	W 16	274.67	-0.64	TH16	339.34	-0.10	F 16	-	-	M 17	720.90	1.11
W 17	208.16	0.13	TH17	273.35	-0.48	F 17	-	-	S 18	-	-	T 18	718.90	-0.28
TH18	207.85	-0.15	F 18	274.35	0.37	S 19	339.60	0.08	M 19	-	-	W 19	716.00	-0.40
F 19	207.07	-0.38	S 20	-	-	M 20	339.98	0.11	T 20	-	-	TH20	716.70	0.09
S 21	-	-	M 21	275.57	-0.44	T 21	339.03	-0.28	W 21	492.32	-0.32	F 21	-	-
M 22	208.00	0.45	T 22	277.10	0.56	W 22	338.86	-0.05	TH 22	491.47	-0.17	S 23	710.80	-0.82
T 23	208.38	0.18	W 23	278.86	0.14	TH 23	338.70	-0.05	F 23	-	-	M 24	704.50	-0.89
W 24	203.93	-2.14	TH24	278.86	0.14	F 24	-	-	S 25	488.52	-0.60	T 25	721.20	2.37
TH25	195.61	-4.08	F25	-	-	S 26	337.99	-0.21	M 26	-	-	W 26	720.70	-0.07
F 26	196.25	0.33	S 27	-	-	M 27	337.45	-0.16	T 27	-	-	TH27	716.40	-0.60
S 28	-	-	M 28	279.86	0.36	T 28	337.57	0.04	W 28	482.52	-1.23	F 28	-	-
M 29	195.88	-0.19	T 29	281.08	0.44	W 29	-	-	TH 29	480.99	-0.32	S 30	703.00	-1.87
T 30	-	-	W 30	283.72	0.94	TH 30	-	-				M 31	709.40	0.91
W 31	196.34	0.23	TH31	284.34	0.22									
Apr.			**Apr.**			**Apr.**			**Apr.**			**Apr.**		
TH 1	195.14	-0.61	F 1	284.21	-0.05	S 2	336.71	-0.25	S 1	502.15	4.40	T 1	725.52	2.27
F 2	195.17	0.02	S 3	-	-	M 3	334.88	-0.54	M 2	507.46	1.06	W 2	716.56	-1.23
S 4	-	-	M 4	285.51	0.46	T 4	334.15	-0.22	T 3	501.67	-1.14	TH3	730.14	1.90
M 5	196.14	0.50	T 5	285.43	-0.03	W 5	334.77	0.19	W 4	491.61	-2.01	F 4	-	-
T 6	197.32	0.60	W 6	286.51	0.38	TH 6	-	-	TH 5	488.93	-0.55	S 6	746.69	2.27
W 7	198.87	0.79	TH 7	289.56	1.06	F 7	-	-	F 6	-	-	M 7	-	-
TH 8	199.41	0.27	F 8	-	-	S 9	-	-	S 8	488.22	-0.15	T 8	-	-
F 9	199.53	0.06	S 10	291.09	0.53	M 10	-	-	M 9	487.43	-0.16	W 9	-	-
S 11	-	-	M 11	290.65	-0.15	T 11	-	-	T 10	487.01	-0.09	TH10	-	-
M 12	201.22	0.85	T 12	291.83	0.41	W 12	-	-	W 11	489.03	0.41	F 11	-	-
T 13	-	-	W 13	293.26	0.49	TH 13	-	-	TH12	494.59	1.14	S 13	-	-
W 14	202.94	0.85	TH14	-	-	F 14	-	-	F 13	-	-	M 14	-	-
TH15	202.10	-0.41	S 17	-	-	S 16	334.27	-0.15	S 15	497.73	0.63	T 15	720.24	-3.54
F 16	202.45	0.17	M 18	293.71	0.15	M 17	331.88	-0.71	M 16	498.02	0.06	W 16	708.81	-1.59
S 18	-	-	T 19	293.71	0.00	T 18	-	-	T 17	498.91	0.18	TH 17	734.83	3.67
M 19	202.72	0.13	W 20	292.59	-0.38	W 19	-	-	W 18	501.27	0.47	F 18	-	-
T 20	203.05	0.16	TH 21	293.58	0.34	TH 20	-	-	TH 19	503.29	0.40	S 20	744.04	1.25

W 21	203.16	0.05	F 22	-	-	F 21	-	-	F 20	-	-	M 21	739.43	-0.62
TH22	203.76	0.30	S 24	294.03	0.15	S 23	-	-	S 22	502.72	-0.11	T 22	734.66	-0.65
F 23	204.06	0.15	M 25	294.98	0.32	M 24	-	-	M 23	501.53	-0.24	W 23	-	-
S 25	-	-	T 26	294.44	-0.18	T 25	338.54	2.01-	T 24	-	-	TH24	734.87	0.03
M 26	204.38	0.16	W 27	295.33	0.30	W 26	343.28	1.40	W 25	506.60	0.21	F 25	-	-
T 27	204.60	0.11	TH 28	294.29	-0.35	TH 27	-	-	TH 26	506.62	0.80	S 27	729.01	0.80
W 28	204.55	-0.02	F 29	-	-	F 28	-	-	F 27	-	-	M 28	730.28	0.17
TH29	205.26	0.35				S 30	361.58	5.33	S 29	509.62	0.59	T 29	728.72	-0.21
F 30	205.22	-0.02							M 30	513.69	0.80	W 30	736.46	1.06
May			**May**			**May**			**May**			**May**		
Day	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**
S 2	-	-	S 1	294.79	0.17	M 1	374.87	3.67	T 1	-	-	TH1	-	-
M 3	205.07	-0.07	M 2	296.11	0.45	T 2	372.45	-0.65	W 2	-	-	F 2	-	-
T 4	-	-	T 3	297.81	0.57	W 3	367.99	-1.20	TH 3	514.65	0.19	S 4	740.18	0.51
W 5	201.00	-1.98	W 4	298.78	0.33	TH 4	366.94	-0.29	F 4	-	-	M 5	748.90	1.18
TH 6	201.12	0.06	TH 5	288.89	-3.31	F 5	-	-	S 6	514.99	0.07	T 6	767.83	2.53
F 7	201.27	0.06	F 6	-	-	S 7	368.68	0.47	M 7	516.14	0.22	W 7	776.97	1.19
S 9	-	-	S 8	-	-	M 8	370.95	0.62	T 8	517.42	0.25	TH 8	771.33	-0.73
M 10	201.49	0.11	M 9	288.79	-0.03	T 9	375.15	1.13	W 9	518.62	0.23	F 9	-	-
T 11	201.54	0.02	T 10	288.34	-0.16	W 10	377.47	0.62	TH 10	518.28	-0.07	S 11	773.33	0.26
W 12	-	-	W 11	285.33	-1.04	TH 11	381.70	1.12	F 11	-	-	M 12	785.26	1.54
TH13	204.35	1.39	TH12	285.42	0.03	F 12	-	-	S 13	516.80	-0.29	T 13	806.26	2.67
S 16	-	-	S 15	285.52	0.04	M 15	388.49	0.67	M 14	513.45	-0.65	W 14	825.61	2.40
M 17	204.80	0.19	M 16	284.52	-0.35	T 16	387.86	-0.16	T 15	512.38	-0.21	TH15	812.70	-1.56
T 18	205.10	0.15	T 17	283.12	-0.49	W 17	384.58	-0.85	W 16	515.20	0.55	F 16	-	-
												S 18	798.90	-1.69
W 19	205.02	-0.04	W 18	281.39	-0.61	TH 18	384.11	-0.12	TH 17	518.55	0.65	M 19	-	-
TH20	205.29	0.13	TH19	280.39	-0.36	F 19	-	-	F 18	-	-	T 20	-	-
F 21	205.13	-0.08	F 20	-	-	S 21	382.65	-0.38	S 20	525.64	1.37	W 21	801.50	0.33
S 23	-	-	S 22	279.73	-0.24	M 22	378.23	-1.16	M 21	525.15	-0.09	TH22	817.60	2.01
M 24	205.58	0.22	M 23	-	-	T 23	372.48	-1.52	T 22	522.23	-0.56	F 23	-	-
T 25	206.12	0.26	T 24	276.85	-1.03	W 24	370.89	-0.43	W 23	523.46	0.24	S 25	832.70	1.85
W 26	206.25	0.06	W 25	275.46	-0.50	TH 25	368.89	-0.54	TH 24	525.05	0.30	M 26	823.70	-1.08
TH27	206.90	0.32	TH26	276.35	0.32	F 26	-	-	F 25	-	-	T 27	833.20	1.15
F 28	207.04	0.07	F 27	-	-	S 28	375.64	1.83	S 27	524.92	-0.02	W 28	-	-

S 30	-	-	S 29	278.43	0.75	M 29	380.20	1.21	M 28	525.94	0.19	TH29	-	-
M 31	207.41	0.18	M 30	279.09	0.24	T 30	372.64	-1.99	T 29	531.96	1.14			
			T 31	279.90	0.29	W 31	371.74	-0.24	W 30	540.67	1.64			
									TH 31	541.38	0.13			
2004			**2005**			**2006**			**2007**			**2008**		
June			**June**			**June**			**June**			**June**		
Day	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**
T 1	207.25	-0.08	W 1	280.15	0.09	TH 1	371.97	0.06	S 3	537.74	-0.67	S 1	860.62	3.29
W 2	208.53	0.62	TH 2	280.97	0.29	F 2	-	-	M 4	542.14	0.82	M 2	873.77	1.53
TH 3	209.14	0.29	F 3	-	-	S 4	372.06	0.02	T 5	544.14	0.37	T 3	858.66	-1.73
F 4	209.49	0.17	S 5	281.61	0.23	M 5	371.47	-0.16	W 6	549.96	1.07	W 4	867.93	1.08
S 6	-	-	M 6	281.40	-0.07	T 6	370.47	-0.27	TH 7	552.06	0.38	TH 5	885.81	-1.05
M 7	210.46	0.46	T 7	-	-	W 7	369.62	-0.23	F 8	-	-	F 6	-	-
T 8	211.75	0.61	W 8	280.39	-0.36	TH 8	370.84	0.33	S 10	559.15	1.28	S 8	910.82	2.82
W 9	214.27	1.19	TH 9	280.08	-0.11	F 9	-	-	M 11	564.51	0.96	M 9	924.65	1.52
TH10	214.27	1.16	F 10	-	-	S 11	371.62	0.21	T 12	572.72	1.45	T 10	915.03	-1.04
F 11	216.42	-0.15	S 12	279.72	-0.13	M 12	371.72	0.03	W 13	583.55	1.89	W 11	923.17	0.89
S 13	-	-	M 13	278.75	-0.35	T 13	370.79	-0.25	TH 14	575.04	-1.46	TH12	930.65	0.81
M 14	213.12	-1.52	T 14	277.79	-0.34	W 14	372.01	0.33	F 15	-	-	F 13	-	-
T 15	211.31	-0.85	W 15	277.83	0.01	TH 15	372.21	0.05	S 17	569.45	-0.97	S 15	941.07	1.12
S 20	-	-	TH16	277.88	0.02	F 16	-	-	M 18	563.49	-1.05	M 16	957.87	1.79
M 21	211.51	0.03	F 17	-	-	S 18	374.05	0.49	T 19	567.28	0.67	T 17	953.84	-0.42
T 22	213.25	0.82	S 19	277.87	-0.004	M 19	375.49	0.38	W 20	578.81	2.03	W 18	959.82	0.63
W 23	215.10	0.87	M 20	278.88	0.36	T 20	377.04	0.41	TH 21	583.44	0.80	TH 19	960.33	0.05
TH24	216.51	-0.02	T 21	280.84	0.70	W 21	378.68	0.43	F 22	-	-	F 20	-	-
F 25	217.46	0.44	W 22	281.15	0.11	TH 22	378.87	0.05	S 24	581.01	-0.42	S 22	947.12	-1.38
S 27	-	-	TH23	-	-	F 23	-	-	M 25	588.21	1.24	M 23	942.09	-0.53
M 28	217.41	-0.02	F 24	-	-	S 25	378.45	-0.11	T 26	590.29	0.35	T 24	940.92	-0.12
T 29	217.72	0.14	S 26	280.82	-0.12	M 26	377.55	-0.24	W 27	591.65	0.23	W 25	948.56	0.81
W 30	218.65	0.43	M 27	280.39	-0.15	T 27	374.47	-0.55	TH 28	-	-	TH 26	951.62	0.32
			T 28	281.06	0.24	W 28	374.74	-0.19				F 27	-	-
			W 29	281.54	0.17	TH 29	375.14	0.11				S 29	948.87	-0.29
			TH30	281.15	-0.14							M 30	937.46	-1.20
July			**July**			**July**			**July**			**July**		
TH 1	219.41	0.35	S 3	281.28	0.05	S 2	376.77	0.43	S 1	593.65	0.34	T 1	931.30	-0.66

F 2	220.75	0.61	M 4	281.26	-0.007	M 3	378.66	0.50	M 2	598.52	0.82	W 2	906.24	-2.69
S 4	-	-	T 5	282.51	0.44	T 4	380.43	0.47	T 3	602.87	0.73	TH 3	928.39	2.44
M 5	225.15	1.19	W 6	284.29	0.63	W 5	382.04	0.42	W 4	611.08	1.36	F 4	-	-
T 6	227.83	1.19	TH 7	-	-	TH 6	383.85	0.47	TH 5	613.47	0.39	S 6	926.96	-0.15
W 7	-	-	F 8	-	-	F 7	-	-	F 6	-	-	M 7	929.75	0.30
TH 8	226.88	-0.42	S 10	285.07	0.27	S 9	384.60	0.20	S 8	-	-	T 8	926.96	0.72
F 9	226.30	-0.26	M 11	285.04	-0.01	M 10	385.31	0.18	M 9	615.43	0.32	W 9	944.89	0.90
S 11	-	-	T 12	286.21	0.41	T 11	-	-	T 10	620.61	0.84	TH 10	949.55	0.49
M 12	226.16	-0.06	W 13	286.35	0.05	W 12	386.63	0.34	W 11	633.02	1.99	F 11	-	-
T 13	226.42	0.11	TH14	286.67	0.11	TH 13	386.45	-0.05	TH12	643.15	1.60	S 13	953.48	0.41
W 14	226.61	0.08	F 15	-	-	F 14	-	-	F 13	-	-	M 14	959.26	0.61
TH15	222.04	-2.02	S 17	287.90	0.43	S 16	386.83	-0.10	S 15	657.47	2.23	T 15	963.36	0.43
F 16	222.65	0.27	M 18	288.03	0.05	M 17	388.16	0.34	M 16	683.95	4.03	W 16	982.12	1.95
S 18	-	-	T 19	289.33	0.66	T 18	389.74	0.93	T 17	696.68	1.86	TH 17	991.91	0.99
M 19	223.45	0.36	W 20	290.88	0.33	W 19	393.68	1.01	W 18	677.98	-2.68	F 18	-	-
T 20	224.41	0.43	TH21	-	-	TH 20	395.89	0.56	TH 19	679.99	0.30	S 20	985.24	-0.67
W 21	224.42	0.004	S 24	291.97	0.37	F 21	-	-	F 20	-	-	M 21	973.30	-1.21
TH22	223.42	-0.45	M 25	292.47	-0.17	S 23	397.95	0.52	S 22	687.65	1.13	T 22	962.80	-1.08
F 23	224.09	0.30	T 26	294.30	0.63	M 24	398.21	0.07	M 23	695.68	1.17	W 23	972.47	1.00
S 25	-	-	W 27	294.62	0.11	T 25	397.35	-0.22	T 24	695.38	-0.04	TH 24	-	-
M 26	-	-	TH28	295.89	0.43	W 26	394.86	-0.63	W 25	689.80	-0.80	F 25	-	-
T 27	224.63	0.24	F 29	-	-	TH 27	387.34	-1.90	TH 26	687.83	-0.29	S 27	980.81	0.86
W 28	224.91	0.12	S 31	296.79	0.30	F 28	-	-	F 27	-	-	M 28	983.07	0.33
TH29	225.52	0.27				S 30	386.50	-0.22	S 29	685.36	-0.36	T 29	1001.99	1.92
F 30	226.72	0.53				M 31	378.76	-2.00	M 30	680.55	-0.70	W 30	1020.06	1.88
									T 31	678.97	-0.23	TH 31	1034.03	1.37
2004			**2005**			**2006**			**2007**			**2008**		
Aug.			**Aug.**			**Aug.**			**Aug.**			**Aug.**		
Day	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**
S 1	-	-	M 1	299.61	0.95	T 1	366.73	-3.18	W 1	683.36	0.65	F 1	-	-
M 2	227.30	0.26	T 2	300.88	0.42	W 2	358.69	-2.19	TH 2	693.23	1.44	S 3	1047.67	1.32
T 3	228.77	0.65	W 3	305.20	1.44	TH 3	355.60	-0.86	F 3	-	-	M 4	1075.34	2.64
W 4	230.20	0.63	TH 4	305.87	0.22	F 4	-	-	S 5	702.73	1.37	T 5	1102.10	2.49
TH 5	231.13	0.40	F 5	-	-	S 6	363.56	2.24	M 6	706.11	0.48	W 6	1128.13	2.36
F 6	232.29	0.50	S 7	305.20	-0.22	M 7	383.14	5.39	T 7	719.69	1.92	TH 7	1101.36	-2.37

S 8	-	-	M 8	300.55	-1.52	T 8	390.86	2.01	W 8	725.31	0.78	F 8	-	-
M 9	232.53	0.10	T 9	297.71	-0.94	W 9	-	-	TH 9	723.32	-0.27	S 10	1075.50	-2.35
T 10	233.46	0.40	W 10	297.83	0.04	TH10	-	-	F 10	-	-	M 11	1088.91	1.25
W 11	235.70	0.96	TH11	300.82	1.00	F 11	-	-	S 12	-	-	T 12	1085.03	-0.36
TH12	236.76	0.45	F 12	-	-	S 13	391.73	0.22	M 13	718.09	-0.72	W 13	1079.58	-0.50
F 13	239.55	1.18	S 14	300.94	0.04	M 14	390.29	-0.37	T 14	712.67	-0.75	TH14	1084.76	0.48
S 15	-	-	M 15	300.58	-0.12	T 15	389.23	-0.27	W 15	705.05	-1.07	F 15	-	-
M 16	241.51	0.82	T 16	300.05	-0.18	W 16	-	-	TH 16	705.69	0.09	S 17	-	-
T 17	241.63	0.05	W 17	298.85	-0.04	TH 17	387.94	-0.33	F 17	-	-	M 18	1075.87	-0.82
W 18	241.22	-0.17	TH18	296.06	-0.93	F 18	-	-	S 19	710.64	0.70	T 19	1057.53	-1.70
TH19	239.10	-0.88	F 19	-	-	S 20	384.79	-0.81	M 20	714.06	0.48	W 20	1064.28	0.64
F 20	237.43	-0.70	S 21	295.45	-0.25	M 21	382.91	-0.49	T 21	721.75	1.08	TH21	1062.24	-0.19
S 22	-	-	M 22	293.65	-0.61	T 22	380.83	-0.54	W 22	722.54	0.11	F 22	-	-
M 23	236.27	-0.49	T 23	289.57	-1.39	W 23	-	-	TH 23	725.86	0.46	S 24	1057.36	-0.46
T 24	234.02	-0.95	W 24	292.08	0.87	TH 24	379.93	-0.24	F 24	-	-	M 25	1068.17	1.02
W 25	235.81	0.76	TH25	293.85	0.51	F 25	-	-	S 26	723.71	-0.30	T 26	1087.80	1.84
TH26	237.01	0.51	F 26	-	-	S 27	378.81	-0.29	M 27	723.04	-0.09	W 27	1086.19	-0.16
F 27	237.81	0.34	S 28	293.85	0.09	M 28	378.24	-0.15	T 28	-	-	TH28	1119.65	3.08
S 29	-	-	M 29	293.29	-0.19	T 29	379.27	0.27	W 29	-	-	F 29	-	-
M 30	-	-	T 30	292.61	-0.57	W 30	380.73	0.38	TH 30	739.53	2.28	S 31	1147.38	4.98
T 31	237.43	-0.16	W 31	290.56	-0.36	TH 31	382.24	0.40						
Sept.			**Sept.**			**Sept.**			**Sept.**			**Sept.**		
W 1	-	-	TH 1	289.40	-0.40	S 3	382.63	0.10	S 2	756.05	2.24	M 1	1134.39	-3.49
TH 2	-	-	F 2	-	-	M 4	382.50	-0.03	M 3	769.07	1.72	T 2	1102.39	-2.82
F 3	-	-	S 4	293.42	1.39	T 5	380.92	-0.41	T 4	-	-	W 3	1064.01	-3.48
S 5	-	-	M 5	296.76	1.14	W 6	-	-	W 5	785.43	2.13	TH 4	1067.20	0.30
M 6	-	-	T 6	298.33	0.53	TH 7	381.47	0.14	TH 6	796.34	1.39	F 5	-	-
T 7	235.61	-0.77	W 7	298.83	0.00	F 8	-	-	F 7	-	-	S 7	1071.08	0.36
W 8	234.07	-0.68	TH 8	296.22	-0.71	S 10	381.42	-0.01	S 9	811.98	1.96	M 8	1058.64	-1.16
TH 9	231.78	-0.98	F 9	-	-	M 11	381.37	-0.01	M 10	828.78	2.07	T 9	1051.20	-0.70
F 10	231.29	-0.21	S 11	294.95	-0.43	T 12	383.60	0.58	T 11	833.56	0.58	W 10	1029.85	-2.03
S 12	-	-	M 12	293.75	-0.41	W 13	383.17	-0.11	W 12	821.44	-1.45	TH 11	1028.50	-0.13
M 13	230.90	-0.17	T 13	293.81	0.02	TH 14	382.56	-0.16	TH 13	813.77	-0.93	F 12	-	-
T 14	229.99	-0.39	W 14	293.92	0.04	F 15	-	-	F 14	-	-	S 14	-	-
W 15	230.72	1.11	TH15	293.35	-0.19	S 17	-	-	S 16	818.16	0.54	M 15	996.09	-3.15

TH16	234.58	1.67	F 16	-	-	M 18	387.59	1.31	M 17	817.08	-0.13	T 16	976.01	-2.02
F 17	237.22	1.11	S 18	292.67	-0.23	T 19	393.02	1.40	T 18	827.74	1.30	W 17	985.16	0.94
S 19	-	-	M 19	293.11	0.15	W 20	393.39	0.09	W 19	837.92	1.23	TH 18	1004.28	1.94
M 20	236.83	-0.16	T 20	292.85	-0.09	TH 21	392.41	-0.33	TH 20	879.96	5.02	F 19	-	-
T 21	235.45	-0.58	W 21	293.69	0.29	F 22	-	-	F 21	-	-	S 21	976.81	-2.74
W 22	234.12	-0.56	TH22	294.12	0.15	S 24	391.62	-0.12	S 23	847.86	-3.65	M 22	952.64	-2.48
TH23	233.46	-0.28	F 23	-	-	M 25	392.41	0.20	M 24	848.20	-0.08	T 23	951.28	-0.14
F 24	233.42	-0.02	S 25	294.89	0.26	T 26	392.73	0.08	T 25	-	-	W 24	945.07	-0.65
S 26	-	-	M 26	294.67	-0.07	W 27	-	-	W 26	855.13	0.82	TH 25	941.12	-0.42
M 27	-	-	T 27	296.20	0.52	TH 28	394.25	0.39	TH 27	878.35	2.72	F 26	-	-
T 28	233.05	-0.16	W 28	297.17	0.33				F 28	-	-	S 28	954.60	1.43
W 29	233.64	0.25	TH29	296.98	-0.06				S 30	885.50	0.81	M 29	962.55	0.83
TH30	234.11	0.20										T 30	-	-
Oct.			**Oct.**			**Oct.**			**Oct.**			**Oct.**		
F 1	233.99	-0.05	S 2	296.37	-0.21	S 1	-	-	M 1	887.45	0.22	W 1	970.23	0.80
S 3	-	-	M 3	-	-	M 2	-	-	T 2	886.12	-0.15	TH 2	-	-
M 4	234.09	0.04	T 4	-	-	T 3	-	-	W 3	890.56	0.50	F 3	-	-
T 5	234.00	-0.04	W 5	296.55	0.06	W 4	-	-	TH 4	899.42	0.99	S 5	973.65	0.35
W 6	234.14	0.06	TH 6	296.98	0.15	TH 5	-	-	F 5	-	-	M 6	-	-
TH 7	233.92	-0.09	F 7	-	-	F 6	-	-	S 7	899.38	-0.004	T 7	-	-
F 8	233.81	-0.05	S 9	297.34	0.12	S 8	397.46	0.81	M 8	873.92	-2.83	W 8	-	-
S 10	-	-	M 10	-	-	M 9	399.10	0.41	T 9	848.10	-2.95	TH 9	-	-
M 11	233.73	-0.03	T 11	-	-	T 10	399.45	0.09	W 10	837.70	-1.23	F 10	-	-
T 12	232.37	-0.58	W 12	-	-	W 11	397.98	-0.37	TH 11	866.10	3.39	S 12	969.56	-0.42
W 13	232.29	-0.03	TH13	-	-	TH 12	398.88	0.23	F 12	-	-	M 13	957.33	-1.26
TH14	231.31	-0.42	F 14	-	-	F 13	-	-	S 14	883.40	1.99	T 14	-	-
F 15	-	-	S 16	-	-	S 15	399.22	0.09	M 15	869.30	-1.60	W 15	938.31	-1.99
S 17	-	-	M 17	-	-	M 16	388.20	-2.76	T 16	863.10	-0.71	TH 16	933.97	-0.46
M 18	231.81	0.22	T 18	297.66	0.14	T 17	398.44	2.64	W 17	861.37	-0.20	F 17	-	-
T 19	232.36	0.24	W 19	298.11	0.15	W 18	398.14	-0.08	TH 18	-	-	S 19	918.97	-1.61
W 20	-	-	TH20	298.35	0.08	TH 19	399.65	0.38	F 19	-	-	M 20	899.99	-2.07
TH21	-	-	F 21	-	-	F 20	-	-	S 21	-	-	T 21	907.73	0.86
F 22	-	-	S 23	302.83	1.50	S 22	-	-	M 22	-	-	W 22	914.00	0.69
S 24	-	-	M 24	306.63	1.25	M 23	-	-	T 23	-	-	TH 23	919.33	0.58
M 25	-	-	T 25	305.32	-0.43	T 24	-	-	W 24	-	-	F 24	-	-

T 26	232.00	-0.15	W 26	304.99	-0.11	W 25	-	-	TH 25	-	-	S 26	918.12	-0.13
W 27	232.13	0.03	TH27	305.73	0.24	TH 26	401.07	0.36	F 26	-	-	M 27	881.86	-3.95
TH28	232.13	0.03	F 28	-	-	F 27	-	-	S 28	858.06	-0.38	T 28	-	-
F 29	232.88	0.32	S 30	307.57	0.24	S 29	403.02	0.49	M 29	859.49	0.17	W 29	-	-
			M 31	307.22	-0.11	M 30	405.13	0.52	T 30	864.90	0.63	TH 30	-	-
						T 31	408.38	0.80	W 31	878.90	1.62			
Nov.			**Nov.**			**Nov.**			**Nov.**			**Nov.**		
Nepse	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	-0.54
M 1	233.54	-0.28	T 1	-	-	W 1	402.11	-1.54	TH 1	887.59	0.99	S 2	853.16	-3.25
T 2	232.52	-0.44	W 2	-	-	TH 2	413.10	2.73	F 2	-	-	M 3	849.44	-0.44
W 3	233.60	0.46	TH 3	-	-	F 3	-	-	S 4	876.60	-1.24	T 4	-	-
TH 4	232.76	-0.36	F 4	-	-	S 5	415.14	0.49	M 5	874.54	-0.23	W 5	848.18	-0.15
F 5	232.41	-0.15	S 6	307.42	-0.05	M 6	419.56	1.06	T 6	877.44	0.33	TH 6	832.59	-1.84
S 7	-	-	M 7	303.94	-1.13	T 7	424.21	1.11	W 7	880.06	0.30	F 7	-	-
M 8	-	-	T 8	306.15	0.73	W 8	435.88	2.75	TH 8	882.45	0.27	S 9	810.81	-2.62
T 9	232.35	-0.03	W 9	-	-	TH 9	445.01	2.09	F 9	-	-	M 10	779.78	-3.83
W 10	233.83	0.64	TH 10	307.98	0.60	F 10	-	-	S 11	-	-	T 11	802.11	2.86
TH11	234.77	0.40	F 11	-	-	S 12	448.69	0.83	M 12	889.12	0.76	W 12	815.63	1.69
F 12	-	-	S 13	306.15	-0.59	M 13	441.00	-1.71	T 13	892.28	0.36	TH 13	806.90	-1.07
S 14	-	-	M 14	305.01	-0.37	T 14	445.03	0.91	W 14	902.45	1.14	F 14	-	-
M 15	235.08	0.13	T 15	302.39	-0.86	W 15	448.12	0.69	TH 15	915.38	1.43	S 16	793.86	-1.62
T 16	235.37	0.12	W 16	300.58	-0.60	TH 16	447.43	-0.15	F 16	-	-	M 17	774.10	-2.49
W 17	236.13	0.32	TH 17	300.64	0.02	F 17	-	-	S 18	851.60	-6.97	T 18	775.99	0.24
TH18	237.24	0.47	F 18	-	-	S 19	447.79	0.08	M 19	855.00	0.40	W 19	776.58	0.08
F 19	238.01	0.32	S 20	300.57	-0.02	M 20	445.58	-0.49	T 20	852.68	-0.27	TH 20	770.40	-0.80
S 21	-	-	M 21	302.23	0.48	T 21	446.48	0.20	W 21	855.56	0.34	F 21	-	-
M 22	239.20	0.50	T 22	302.23	0.07	W 22	-	-	TH 22	856.20	0.07	S 23	750.51	2.58
T 23	240.40	0.50	W 23	300.78	-0.48	TH 23	453.03	1.47	F 23	-	-	M 24	726.47	-3.20
W 24	241.27	0.36	TH 24	301.20	0.14	F 24	-	-	S 25	861.30	0.60	T 25	698.81	-3.81
TH25	241.57	0.12	F 25	-	-	S 26	463.74	2.36	M 26	867.60	0.73	W 26	728.60	4.26
F 26	241.60	0.01	S 27	301.13	-0.02	M 27	469.51	1.24	T 27	869.38	0.21	TH 27	732.18	0.49
S 28	-	-	M 28	301.67	0.18	T 28	478.01	1.81	W 28	879.58	1.17	F 28	-	-
M 29	241.04	-0.23	T 29	300.96	-0.24	W 29	492.46	3.02	TH 29	897.29	2.01	S 30	750.71	2.53
T 30	238.92	-0.88	W 30	300.54	-0.14	TH 30	486.19	-1.27	F 30	-	-			
Dec.			**Dec.**			**Dec.**			**Dec.**			**Dec.**		

W 1	237.41	-0.63	TH 1	301.76	0.41	S 3	479.83	-1.31	S 2	922.40	2.79	M 1	765.80	2.01
2004			**2005**			**2006**			**2007**			**2008**		
Dec.			**Dec.**			**Dec.**			**Dec.**			**Dec.**		
Nepse	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	**Day**	**Nepse**	**% Chg.**	-0.54
F 3	237.62	-0.15	S 4	301.65	-0.04	T 5	475.01	-0.40	T 4	963.80	2.25	W 3	758.08	-0.47
S 5	-	-	M 5	301.97	0.11	W 6	473.31	-0.36	W 5	974.40	1.09	TH 4	754.91	-0.42
M 6	237.68	0.03	T 6	298.00	-1.31	TH 7	476.80	0.74	TH 6	992.80	1.89	F 5	-	-
T 7	238.10	0.18	W 7	297.49	-0.17	F 8	-	-	F 7	-	-	S 7	754.30	-0.08
W 8	235.63	-1.04	TH 8	299.10	0.54	S 10	480.95	0.87	S 9	1000.50	0.78	M 8	747.70	-0.87
TH 9	236.52	0.38	F 9	-	-	M 11	485.71	0.99	M 10	992.20	-0.08	T 9	-	-
F 10	236.71	0.08	S 11	299.84	0.25	T 12	494.18	1.74	T 11	996.30	0.41	W 10	742.40	-0.71
S 12	-	-	M 12	299.71	-0.04	W 13	503.02	1.79	W 12	1000.30	0.40	TH 11	743.30	0.12
M 13	236.75	0.02	T 13	300.71	0.33	TH 14	508.58	1.11	TH 13	1025.91	2.56	F 12	-	-
T 14	-	-	W 14	302.24	0.51	F 15	-	-	F 14	-	-	S 14	742.04	2.66
W 15	236.38	-0.16	TH 15	303.12	0.29	S 17	514.36	1.14	S 16	1052.92	2.63	M 15	734.85	-0.97
TH16	237.03	0.27	F 16	-	-	M 18	517.00	0.51	M 17	1064.10	1.06	T 16	729.24	-0.76
F 17	237.53	0.21	S 18	303.98	0.28	T 19	517.45	0.09	T 18	1061.40	-0.25	W 17	728.88	-0.05
S 19	-	-	M 19	304.97	0.33	W 20	511.22	-1.20	W 19	1061.30	-0.01	TH 18	720.52	-1.15
M 20	237.99	0.19	T 20	306.59	0.53	TH 21	515.39	0.82	TH 20	1055.73	-0.52	F 19	-	-
T 21	238.47	0.20	W 21	308.13	0.50	F 22	-	-	F 21	-	-	S 21	708.12	-1.72
W 22	238.20	-0.11	TH 22	308.67	0.18	S 24	518.64	0.63	S 23	1045.65	-0.95	M 22	701.64	-0.92
TH23	238.17	-0.01	F 23	-	-	M 25	520.96	0.45	M 24	1018.16	-2.63	T 23	701.85	0.03
F 24	238.81	0.27	S 25	300.49	-2.65	T 26	520.78	-0.03	T 25	992.92	-2.48	W 24	705.21	0.48
S 26	-	-	M 26	299.93	-0.19	W 27	520.02	-0.15	W 26	967.74	-2.54	TH 25	-	-
M 27	239.24	0.18	T 27	301.09	0.39	TH 28	517.46	-0.49	TH 27	984.53	1.73	F 26	-	-
T 28	239.41	0.07	W 28	301.60	0.17	F 29	-	-	F 28	-	-	S 28	699.20	-0.85
W 29	238.30	-0.46	TH 29	302.78	0.39	S 31	514.42	-0.59	S 30	-	-	M 29	700.57	0.20
TH30	238.32	0.01										T 30	-	-
F 31	238.29	-0.01										W 31	695.50	-0.72

Annex-VIII
Calculation for Market Model

1. Nepse-Banking:

F/Y	X (Nepse)	Y (Banking)	X^2	Y^2	XY
2055/56	32.79	-0.79	1075.1841	0.6241	-25.9041
2056/57	66.28	81.32	4393.0384	6612.9424	5389.8896
2057/58	-3.40	-4.48	11.56	20.0704	15.232
2058/59	-34.66	-42.18	1201.3156	1779.1524	1461.9588
2059/60	-10.01	-8.87	100.2001	78.6769	88.7887
2060/61	8.39	16.04	70.3921	257.2816	134.5756
2061/62	29.11	31.33	847.3921	981.5689	9120.0163
2062/63	34.94	43.61	1220.8036	1901.8321	1523.7334
2063/64	76.81	80.39	5899.7761	6462.5521	6174.7559
2064/65	40.85	24.89	1668.7225	619.5121	1016.7565
T=10	$\sum X$= 241.10	$\sum Y$= 221.26	$\sum X^2$= 16488.3846	$\sum Y^2$= 18714.213	$\sum XY$= 16691.8027

$$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{221.26}{10} = 22.126\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}$=$\frac{(10\times16691.8027)-(221.26\times241.10)}{(10\times16488.3846)-(241.10)^2}$
=$\frac{166918.027-53345.786}{164883.846-58129.21} = \frac{113572.241}{106754.636} = 1.06$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[221.26/10]-[1.06×(241.10/10)]
=22.126-25.5566=-3.4306

c. Std. dev. of Random Error Term={[∑Y^2-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[18714.213-(-3.4306×221.26)-(1.06×16691.8027)]/(10-2)}$^{1/2}$
={[18714.213+759.054556-17693.310862/8]}$^{1/2}$
={222.49458675}$^{1/2}$=14.92

d. Std. error of beta=No. c./{∑X^2-[(∑X)^2/T]}$^{1/2}$
= 14.92/{16488.3846-[(241.10)^2/10]}$^{1/2}$
=14.92/103.32=0.14

e. Std. error of alpha=No. c./{T-[(∑X)^2/∑X^2]}$^{1/2}$
= 14.92/{10-[(241.10)^2/16488.3846]}$^{1/2}$
=14.92/2.54=5.87

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$
=$\frac{(10\times16691.807)-(221.26\times241.10)}{\{[(10\times18714.213)-(221.26)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$
=$\frac{166918.07-53345.786}{\{[187142.12-48955.9876]\times[164883.846-58129.21]\}^{1/2}}$=$\frac{113572.284}{121440.786725} = 0.94$

g. Coefficient of determination=(r)^2=(0.94)^2=0.8836

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.8836=0.1164

i. $r_{i(Banking)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =-3.4306+1.06×24.11+0 (Assumed by Model)
=-3.4306+25.5566
=22.126%

2. Nepse-Mfg. &P.:

F/Y	X (Nepse)	Y(Mfg. & P.)	X^2	Y^2	XY
2055/56	32.79	1.40	1075.1841	1.96	45.906
2056/57	66.28	48.19	4393.0384	2322.2761	3194.0332
2057/58	-3.40	2.56	11.56	6.5536	-8.704
2058/59	-34.66	-21.65	1201.3156	468.7225	750.389
2059/60	-10.01	-8.60	100.2001	73.96	86.258
2060/61	8.39	2.18	70.3921	4.7524	18.3338
2061/62	29.11	8.19	847.3921	67.0761	238.4109
2062/63	34.94	8.90	1220.8036	79.21	310.966
2063/64	76.81	15.78	5899.7761	249.0084	1212.0618
2064/65	40.85	21.52	1668.7225	463.1104	879.092
T=10	∑X= 241.10	∑Y= 78.47	$\sum X^2$= 16488.3846	$\sum Y^2$= 3736.6295	∑XY= 6726.5311

$$r_{I/r_x}=\frac{\sum X}{T}=\frac{241.10}{10}=24.11\% \quad r_Y=\frac{\sum Y}{T}=\frac{78.47}{10}=7.487\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times 6726.5311)-(78.47\times 241.10)}{(10\times 16488.3846)-(241.10)^2}$

$=\frac{67265.311-18919.117}{164883.846-58129.21}=\frac{48346.194}{106754.636}=0.45$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[78.47/10]-[0.45×(241.10/10)]
=7.847-10.8495=-3.0025

c. Std. dev. of Random Error Term={[$\sum Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[3736.6295-(-3.0025×78.47)-(0.45×6726.5311)]/(10-2)}$^{1/2}$
={[3736.8295+235.606175-3026.938995/8]}$^{1/2}$
={118.187085}$^{1/2}$=10.87

d. Std. error of beta=No. c./{$\sum X^2$-[$(\sum X)^2$/T]}$^{1/2}$
= 10.87/{16488.3846-[$(241.10)^2$/10]}$^{1/2}$
=10.87/103.32=0.11

e. Std. error of alpha=No. c/{T-[$(\sum X)^2/\sum X^2$]}$^{1/2}$
= 10.87/{10-[$(241.10)^2$/16488.3846]}$^{1/2}$
=10.87/2.54=4.28

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times 6726.5311)-(78.47\times 241.10)}{\{[(10\times 3736.62953)-(78.47)^2]\times[(10\times 16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{67265.311-18919.117}{\{[37766.295-6157.5409]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{48346.194}{58081.2601079}=0.83$

g. Coefficient of determination=$(r)^2=(0.83)^2$=0.6889

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.6889=0.3111

i. $r_{i(Mfg.\&P.)}=\alpha_{iI}+\beta_{iI}r_I+\varepsilon_{iI}$ =-3.0025+0.45×24.11+0 (Assumed by Model)
=-3.0025+10.8495=7.847%

3. Nepse-Hydro-power:

F/Y	X (Nepse)	Y(HP)	X^2	Y^2	XY
2055/56	32.79	0.00	1075.1841	0.00	0.00
2056/57	66.28	0.00	4393.0384	0.00	0.00
2057/58	-3.40	0.00	11.56	0.00	0.00
2058/59	-34.66	0.00	1201.3156	0.00	0.00
2059/60	-10.01	0.00	100.2001	0.00	0.00
2060/61	8.39	0.00	70.3921	0.00	0.00
2061/62	29.11	0.00	847.3921	0.00	0.00
2062/63	34.94	0.00	1220.8036	0.00	0.00
2063/64	76.81	0.00	5899.7761	0.00	0.00
2064/65	40.85	49.30	1668.7225	2430.49	2013.905
T=10	∑X= 241.10	∑Y= 49.30	$\sum X^2$= 16488.3846	$\sum Y^2$= 2430.49	∑XY= 2013.905

$$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{49.30}{10} = 4.93\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times2013.905)-(49.30\times241.10)}{(10\times16488.3846)-(241.10)^2}$

$=\frac{20139.05-11886.23}{164883.846-58129.21}=\frac{8252.82}{106754.636}=0.08$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[49.30/10]-[0.08×(241.10/10)]

=4.93-1.9288=3.0012

c. Std. dev. of Random Error Term={[$\sum Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$

={[2430.49-(3.0012×49.30)-(0.08×2013.905)]/(10-2)}$^{1/2}$

={[2430.49-147.95916-161.1124/8]}$^{1/2}$

={265.177305}$^{1/2}$=16.28

d. Std. error of beta=No. c./{$\sum X^2$-[$(\sum X)^2$/T]}$^{1/2}$

= 16.28/{16488.3846-[$(241.10)^2$/10]}$^{1/2}$

=16.28/103.32=0.16

e. Std. error of alpha=No. c/{T-[$(\sum X)^2$/$\sum X^2$]}$^{1/2}$

= 16.28/{10-[$(241.10)^2$/16488.3846]}$^{1/2}$

=16.28/2.54=5.87

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times2013.905)-(49.30\times241.10)}{\{[(10\times2430.49)-(49.30)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{20139.05-11886.23}{\{[24304.9-2430.49]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{8252.82}{48317.0616341}=0.17$

g. Coefficient of determination=$(r)^2$=$(0.17)^2$=0.0289

h. Coefficient of non-determination=1- Coefficient of determination

=1-0.0289=0.9711

i. $r_{i(Hydro-power)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =3.0012+0.08×24.11+0 (Assumed by Model)

=-3.0012+1.9255

=4.93%

4. Nepse-Business(Trading):

F/Y	X (Nepse)	Y(Trading)	X^2	Y^2	XY
2055/56	32.79	0.62	1075.1841	0.3844	20.3298
2056/57	66.28	-0.20	4393.0384	0.04	-13.256
2057/58	-3.40	-6.62	11.56	43.8244	22.508
2058/59	-34.66	-11.55	1201.3156	133.4025	400.323
2059/60	-10.01	-7.48	100.2001	55.9504	74.8748
2060/61	8.39	0.48	70.3921	0.2304	4.0272
2061/62	29.11	29.67	847.3921	880.3089	863.6937
2062/63	34.94	20.22	1220.8036	408.8484	706.4868
2063/64	76.81	4.90	5899.7761	24.01	376.369
2064/65	40.85	31.35	1668.7225	982.8225	1280.6475
T=10	∑X= 241.10	∑Y= 61.39	$∑X^2$= 16488.3846	$∑Y^2$= 2529.8219	∑XY= 3736.0038

$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\%$ $\quad r_Y = \frac{\sum Y}{T} = \frac{61.39}{10} = 6.139\%$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times3736.0038)-(61.39\times241.10)}{(10\times16488.3846)-(241.10)^2}$
$=\frac{37360.038-14801.129}{164883.846-58129.21}=\frac{22558.909}{106754.636}=0.21$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[61.39/10]-[(0.21)×(241.10/10)]
=6.139-5.0631=1.0759

c. Std. dev. of Random Error Term={[$∑Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[2529.8219-(1.0759×61.39)-(0.21×3736.0038)]/(10-2)}$^{1/2}$
={[2529.8219-66.049501-784.560798/8]}$^{1/2}$
={1679.211601}$^{1/2}$=40.98

d. Std. error of beta=No. c./{$∑X^2$-[$(∑X)^2$/T]}$^{1/2}$
= 40.98/{16488.3846-[$(241.10)^2$/10]}$^{1/2}$
=40.98/103.33=040

e. Std. error of alpha=No. c/{T-[$(∑X)^2$/$∑X^2$]}$^{1/2}$
= 40.98/{10-[$(241.10)^2$/16488.3846]}$^{1/2}$
=4098/2.54=16.13

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$
$=\frac{(10\times3736.0038)-(61.39\times241.10)}{\{[(10\times2529.8219)-(61.39)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$
$=\frac{36938.89-48244.11}{\{[25298.219-3768.732]\times[164883.846-58129.21]\}^{1/2}}$
$=\frac{22558.909}{47934.6080891}=0.47$

g. Coefficient of determination=$(r)^2$=$(0.47)^2$=0.2209

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.2209
=0.7791

i. $r_{i(Trading)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =1.0759+0.21×24.11+0 (Assumed by Model)
=1.0759+5.0631
=6.139%

5. Nepse-Development Bank:

F/Y	X (Nepse)	Y(Dev. Bank)	X^2	Y^2	XY
2055/56	32.79	0.00	1075.1841	0	0
2056/57	66.28	0.00	4393.0384	0	0
2057/58	-3.40	0.00	11.56	0	0
2058/59	-34.66	11.80	1201.3156	139.24	-408.988
2059/60	-10.01	-16.07	100.2001	258.2449	161.8607
2060/61	8.39	-22.98	70.3921	528.0804	-192.8022
2061/62	29.11	25.17	847.3921	633.5289	732.6987
2062/63	34.94	23.77	1220.8036	565.0129	830.5238
2063/64	76.81	83.31	5899.7761	6940.5561	6399.0411
2064/65	40.85	138.28	1668.7225	19121.3581	5648.738
T=10	$\sum X$= 241.10	$\sum Y$= 243.28	$\sum X^2$= 16488.3846	$\sum Y^2$= 28186.0216	$\sum XY$= 13170.0721

$$r_{\frac{I}{r_x}} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\%$$

$$r_Y = \frac{\sum Y}{T} = \frac{243.28}{10} = 24.328\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times13170.0721)-(243.28\times241.10)}{(10\times16488.3846)-(241.10)^2}$

$=\frac{131700.721-58654.808}{164883.846-58129.21} = \frac{73045.913}{106754.636} = 0.68$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[243.28/10]-[0.68×(241.10/10)]
=24.328-16.3948=7.9332

c. Std. dev. of Random Error Term={[$\sum Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[28186.0216-(7.9332×243.28)-(0.68×13170.0721)]/(10-2)}$^{1/2}$
={2162.5479595}$^{1/2}$=46.50

d. Std. error of beta=No. c./{$\sum X^2$-[$(\sum X)^2$/T]}$^{1/2}$
= 46.50/{16488.3846-[$(241.10)^2$/10]}$^{1/2}$
=46.50/103.32=0.45

e. Std. error of alpha=No. c/{T-[$(\sum X)^2/\sum X^2$]}$^{1/2}$
= 46.50/{10-[$(241.10)^2$/16488.3846]}$^{1/2}$
=46.50/2.54=18.31

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times13170.0721)-(243.28\times241.10)}{\{[(10\times28186.0216)-(243.28)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{131700.721-58654.808}{\{[281860.216-59185.1584]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{73045.913}{154158.731405} = 0.47$

g. Coefficient of determination=$(r)^2=(0.47)^2$=0.2209

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.2209
=0.7791

i. $r_{i(Dev.\,Bank)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =-7.9332+0.68×24.11+0 (Assumed by Model)
=7.9332+16.3948
=24.328%

6. Nepse-Hotel:

F/Y	X (Nepse)	Y(Hotel)	X^2	Y^2	XY
2055/56	32.79	-0.81	1075.1841	0.6561	-26.5599
2056/57	66.28	-48.98	4393.0384	2399.0404	-3246.3944
2057/58	-3.40	135.45	11.56	18346.7025	-460.53
2058/59	-34.66	-25.68	1201.3156	659.4624	890.0688
2059/60	-10.01	-9.16	100.2001	83.9056	91.6916
2060/61	8.39	-6.24	70.3921	38.9376	-52.3536
2061/62	29.11	-3.48	847.3921	12.1104	-101.3028
2062/63	34.94	1.56	1220.8036	2.4336	54.5064
2063/64	76.81	39.11	5899.7761	1529.5921	3004.0391
2064/65	40.85	47.48	1668.7225	2254.3504	1939.558
T=10	∑X= 241.10	∑Y= 129.25	$\sum X^2$= 16488.3846	$\sum Y^2$= 25327.1911	∑XY= 2092.7232

$$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{129.25}{10} = 12.925\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times2092.7232)-(129.25\times241.10)}{(10\times16488.3846)-(241.10)^2}$

$=\frac{20927.232-31162.175}{1648983.846-58129.21} = \frac{-10234.943}{106762.004} = -0.09$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[129.25/10]-[-0.09×(241.10/10)]
=12.925+2.1699=15.0949

c. Std. dev. of Random Error Term={[$\sum Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[16488.3846-(15.0949×129.25)-(-0.09×2092.7232)]/(10-2)}$^{1/2}$
={2898.47877337}$^{1/2}$=53.84

d. Std. error of beta=No. c./{$\sum X^2$-[$(\sum X)^2$/T]}$^{1/2}$
= 53.84/{16488.3846-[$(241.10)^2$/10]}$^{1/2}$
=53.84/103.32=0.52

e. Std. error of alpha=No. c/{T-[$(\sum X)^2$/$\sum X^2$]}$^{1/2}$
= 53.84/{10-[$(241.10)^2$/16488.3846]}$^{1/2}$
=53.84/2.54=21.20

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times2092.7232)-(129.25\times241.10)}{\{[(10\times25327.1911)-(129.25)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{20927.232-31162.175}{\{[253334.224-16718.49]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{-10234.943}{158894.48522} = -0.06$

g. Coefficient of determination=$(r)^2$=$(-0.06)^2$=0.0036

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.0036=0.9964

i. $r_{i(Hotel)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =15.0949-0.09×24.11+0 (Assumed by Model)
=12.925%

7. Nepse-Insurance:

F/Y	X (Nepse)	Y(Insurance)	X^2	Y^2	XY
2055/56	32.79	11.14	1075.1841	124.0996	365.2806
2056/57	66.28	56.14	4393.0384	3151.6996	3720.9592
2057/58	-3.40	4.15	11.56	17.2225	-14.11
2058/59	-34.66	-1.08	1201.3156	1.1664	37.4328
2059/60	-10.01	-23.66	100.2001	559.7956	237.3098
2060/61	8.39	-1.70	70.3921	2.89	-14.297
2061/62	29.11	35.37	847.3921	1251.0369	1029.6207
2062/63	34.94	19.05	1220.8036	362.9025	665.607
2063/64	76.81	60.65	5899.7761	3678.4225	4658.5265
2064/65	40.85	33.44	1668.7225	1118.2336	1366.024
T=10	∑X= 241.10	∑Y= 193.5	∑X^2= 16488.3846	∑Y^2= 10267.4692	∑XY= 12052.3536

$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{193.5}{10} = 19.35\%$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times12052.3536)-(193.5\times241.10)}{(10\times16488.3846)-(241.10)^2}$
$=\frac{120523.536-46652.85}{106754.636} = \frac{73866.294}{106754.636} = 0.69$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[193.5/10]-[0.69×(241.10/10)]
=19.35-16.6359=2.7141

c. Std. dev. of Random Error Term={[∑Y^2-(α×∑Y)-(β×∑XY)]/(T-2)}$^{1/2}$
={[10267.4692-(2.7141×193.5)-(0.69×12052.3536)]/(10-2)}$^{1/2}$
={178.27085825}$^{1/2}$=13.35

d. Std. error of beta=No. c./{∑X^2-[(∑X)^2/T]}$^{1/2}$
= 13.35/{16488.3846-[(241.10)^2/10]}$^{1/2}$
=13.35/103.33=0.13

e. Std. error of alpha=No. c/{T-[(∑X)^2/∑X^2]}$^{1/2}$
= 13.35/{10-[(241.10)^2/16488.3846]}$^{1/2}$
=13.35/2.54=5.26

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$
$=\frac{(10\times12052.3536)-(193.5\times241.10)}{\{[(10\times10267.4692)-(193.5)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$
$=\frac{120523.536-46652.85}{\{[102674.692-37442.25]\times[164883.846-58129.21]\}^{1/2}}$
$=\frac{73870.686}{83452.6586378} = 0.89$

g. Coefficient of determination=(r)^2=(0.89)^2=0.7921

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.7921=0.2079

i. $r_{i(Insurance)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =-2.7141+0.69×24.11+0 (Assumed by Model)
=19.35%

8. Nepse-Finance:

F/Y	X (Nepse)	Y(Finance)	X^2	Y^2	XY
2055/56	32.79	11.14	1075.1841	124.0996	365.2806
2056/57	66.28	56.14	4393.0384	3151.6996	3720.9592
2057/58	-3.40	4.15	11.56	17.2225	-14.11
2058/59	-34.66	-17.69	1201.3156	312.9361	613.1354
2059/60	-10.01	-20.65	100.2001	426.4225	206.7065
2060/61	8.39	-5.84	70.3921	34.1056	-48.9976
2061/62	29.11	16.53	847.3921	273.2409	481.1883
2062/63	34.94	14.44	1220.8036	208.5136	504.5336
2063/64	76.81	80.52	5899.7761	6483.4704	6184.7412
2064/65	40.85	144.32	1668.7225	20828.2624	5895.472
T=10	$\sum X=$ 241.10	$\sum Y=$ 283.06	$\sum X^2=$ 16488.3846	$\sum Y^2=$ 31859.9732	$\sum XY=$ 17908.9092

$$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{283.06}{10} = 28.306\%$$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times17908.9092)-(283.06\times241.10)}{(10\times16488.3846)-(241.10)^2}$

$=\frac{179201.894-68245.766}{106754.636}=\frac{110843.321}{106754.636}=1.04$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[283.06/10]-[1.04×(241.10/10)]
=28.306-25.0744=3.2316

c. Std. dev. of Random Error Term=$\{[\sum Y^2-(\alpha\times\sum Y)-(\beta\times\sum XY)]/(T-2)\}^{1/2}$
$=\{[31859.9732-(3.2316\times283.06)-(1.04\times17908.9092)]/(10-2)\}^{1/2}$
$=\{1539.996367\}^{1/2}=39.24$

d. Std. error of beta=No. c./$\{\sum X^2-[(\sum X)^2/T]\}^{1/2}$
$= 39.24/\{16488.3846-[(241.10)^2/10]\}^{1/2}$
=39.24/103.33=0.38

e. Std. error of alpha=No. c/$\{T-[(\sum X)^2/\sum X^2]\}^{1/2}$
$= 39.24/\{10-[(241.10)^2/16488.3846]\}^{1/2}$
=39.24/2.54=15.45

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times17908.9092)-(283.06\times241.10)}{\{[(10\times31859.9732)-(283.06)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{179089.092-68245.766}{\{[318599.732-80122.9636]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{110843.326}{159534.780853}=0.69$

g. Coefficient of determination=$(r)^2=(0.69)^2=0.4761$

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.4761=0.5239

i. $r_{i(Finance)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =3.2316+1.04×24.11+0 (Assumed by Model)
=28.306%

9. Nepse-Others:

F/Y	X (Nepse)	Y(Others)	X^2	Y^2	XY
2055/56	32.79	1.08	1075.1841	1.1664	35.4132
2056/57	66.28	-17.98	4393.0384	323.2804	-1191.7144
2057/58	-3.40	-38.11	11.56	1452.3721	129.574
2058/59	-34.66	-59.49	1201.3156	3539.0601	2061.9234
2059/60	-10.01	-37.21	100.2001	1384.5841	372.4721
2060/61	8.39	193.76	70.3921	37542.9376	1625.6464
2061/62	29.11	143.71	847.3921	20652.5641	4183.3981
2062/63	34.94	17.93	1220.8036	321.4849	626.4742
2063/64	76.81	99.54	5899.7761	9908.2116	7645.6674
2064/65	40.85	-6.09	1668.7225	37.0881	-248.7765
T=10	∑X= 241.10	∑Y= 297.14	$\sum X^2$= 16488.3846	$\sum Y^2$= 75162.7494	∑XY= 15240.0779

$r_{I/r_x} = \frac{\sum X}{T} = \frac{241.10}{10} = 24.11\% \quad r_Y = \frac{\sum Y}{T} = \frac{297.14}{10} = 29.714\%$

a. Beta (β)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times15240.0779)-(297.14\times241.10)}{(10\times16489.1214)-(241.10)^2}$

$=\frac{152400.779-71640.454}{106754.636} = \frac{80760.325}{106754.636} = 0.76$

b. Alpha(α)=[∑Y/T]-[Beta×(∑X/T)] =[297.14/10]-[0.76×(241.10/10)]
=29.714-18.3236=11.3904

c. Std. dev. of Random Error Term=$\{[\sum Y^2$-(α×∑Y)-(β×∑XY)]/(T-2)$\}^{1/2}$
=$\{$[75162.7494-(11.3904×297.14)-(0.76×15240.0779)]/(10-2)$\}^{1/2}$
=$\{7524.4683425\}^{1/2}$=86.74

d. Std. error of beta=No. c./$\{\sum X^2-[(\sum X)^2/T]\}^{1/2}$
= 86.74/$\{16488.3846-[(241.10)^2/10]\}^{1/2}$
=86.74/103.33=0.84

e. Std. error of alpha=No. c/$\{T-[(\sum X)^2/\sum X^2]\}^{1/2}$
= 86.74/$\{10-[(241.10)^2/16488.3846]\}^{1/2}$
=86.74/2.54=34.15

f. Correlation Coefficient=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{\{[(T\times\sum Y^2)-(\Sigma Y)^2]\times[(T\times\sum X^2)-(\Sigma X)^2]\}^{1/2}}$

$=\frac{(10\times15240.0779)-(297.14\times241.10)}{\{[(10\times75162.7494)-(297.14)^2]\times[(10\times16488.3846)-(241.10)^2]\}^{1/2}}$

$=\frac{152400.779-71640.454}{\{[751627.494-88292.1796]\times[164883.846-58129.21]\}^{1/2}}$

$=\frac{80760.325}{266071.832359} = 0.30$

g. Coefficient of determination=$(r)^2=(0.30)^2$=0.09

h. Coefficient of non-determination=1- Coefficient of determination
=1-0.09=0.91

i. $r_{i(Finance)} = \alpha_{iI} + \beta_{iI} r_I + \varepsilon_{iI}$ =11.3904+0.76×24.11+0 (Assumed by Model)
=29.714%

Annex-IX
Expected Return on the Hallmark Gold at Nepalese Market

F/Y	Price per 10 gm. Hallmark Gold^	Price Index	$E(r_g)$
1985 Mid-July	2,185	25.97	-
1986 Mid-July	2,562	30.45	17.25%
1987 Mid-July	3,447	40.96	34.52%
1988 Mid-July	3,637	43.22	5.52%
1989 Mid-July	4,973	59.10	36.74%
1990 Mid-July	5,316	63.17	6.89%
1991 Mid-July	6,396	75.97	20.26%
1992 Mid-July	7,720	91.74	20.76%
1993 Mid-July	8,275	98.34	7.19%
1994 Mid-July^{+}	8,415	100.00	1.69%
1995 Mid-July	8,870	105.41	5.41%
1996 Mid-July	7,734	91.91	-12.81%
1997 Mid-July	7,004	83.23	-9.44%
1998 Mid-July	7,047	83.74	0.61%
1999 Mid-July	6,285	74.69	-10.81%
2000 Mid-July	7,110	84.49	13.12%
2001 Mid-July	6,955	82.65	-2.18%
2002 Mid-July	8,230	97.80	18.33%
2003 Mid-July	8,510	101.13	3.40%
2004 Mid-July	9,860	117.17	15.86%
2005 Mid-July	9,950	118.24	0.91%
2006 Mid-July	15,950	189.54	60.30%
2007 Mid- July	14,360	170.65	-9.97%
2008 Mid-July	21,350	253.71	48.67%

Source: Gorkhapatra National Daily

^Price at Nepalese Bullion Market

For Price Index Base Year: 1994 Mid-July^{+}

Annex-X

Calculation for Merton Model

1. Hallmark Gold-Banking:

F/Y	X (Gold)	Y (Banking)	X^2	Y^2	XY
2055/56	-10.81	-0.79	116.8561	0.6241	8.5399
2056/57	13.12	81.32	172.1344	6612.9424	1066.9184
2057/58	-2.18	-4.48	4.7524	20.0704	9.7664
2058/59	18.33	-42.18	335.9889	1779.1524	-773.1594
2059/60	3.40	-8.87	11.58	78.6769	-30.158
2060/61	15.86	16.04	251.5396	257.2816	254.3944
2061/62	0.91	31.33	0.8281	981.5689	28.5103
2062/63	60.30	43.61	3636.09	1901.8321	2629.683
2063/64	-9.97	80.39	99.4009	6462.5521	-801.4883
2064/65	48.67	24.89	2368.7689	619.5121	1211.3963
T=10	ΣX=137.63	ΣY=221.26	ΣX^2=6997.9193	ΣY^2=18714.213	ΣXY=3604.403

a. $E(r_g)=\frac{\Sigma X}{T}=\frac{137.63}{10}=13.736\%$

b. Average Annualized Risk-free return of T-bills(Treasury bills)
=(2033+4.66+4.96+4.71+3.48+2.93+2.46+2.84+2.42+4.22/10)%
=3.501%

c. Beta(β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma X^2)-(\Sigma X)^2}=\frac{(10\times3604.403)-(221.26\times137.63)}{(10\times6997.9193)-(137.63)^2}$
$=\frac{36044.06-30452.0138}{51037.1761}=\frac{5592.04662}{51037.1761}$=0.11

d. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_{mg})-r_f]$

=$3.501\%+1.06[24.11\%-3.501\%]+0.11[13.763\%-3.501\%]$
=(3.501+21.84554+1.12882)%=26.47536%

2. Hallmark Gold-Mfg. &P.:

F/Y	X(Gold)	Y (Mfg. & P.)	X^2	Y^2	XY
2055/56	-10.81	**1.40**	116.8561	1.96	-15.134
2056/57	13.12	48.19	172.1344	2322.1761	610.9984
2057/58	-2.18	2.56	4.7524	6.5536	-5.5808
2058/59	18.33	-21.65	335.9889	468.7225	-396.8445
2059/60	3.40	-8.60	11.58	73.96	-29.24
2060/61	15.86	2.18	251.5396	4.7524	34.5748
2061/62	0.91	8.19	0.8281	67.0761	7.4529
2062/63	60.30	8.90	3636.09	79.21	536.67
2063/64	-9.97	15.78	99.4009	249.0084	-157.3266
2064/65	48.67	21.52	2368.7689	463.1104	1047.3784
T=10	ΣX=137.63	ΣY=78.47	ΣX^2=6997.9193	ΣY^2=3736.6295	ΣXY=1654.202

a. Beta(β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma X^2)-(\Sigma X)^2}=\frac{(10\times1654.202)-(78.47\times137.63)}{(10\times6997.9193)-(137.63)^2}$
$=\frac{16542.02-10799.8261}{51037.1761}=\frac{5442.1939}{51037.1761}$=0.11

b. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_{mg})-r_f]$

=$3.501\%+0.45[24.11\%-3.501\%]+0.11[13.763\%-3.501\%]$
=(3.501+9.27405+1.12882)%=13.90387%

3. Hallmark Gold-Hydro-power:

F/Y	X(Gold)	Y (HP)	X^2	Y^2	XY
2055/56	-10.81	**0.00**	116.8561	0.00	0.00
2056/57	13.12	0.00	172.1344	0.00	0.00
2057/58	-2.18	0.00	4.7524	0.00	0.00
2058/59	18.33	0.00	335.9889	0.00	0.00
2059/60	3.40	0.00	11.58	0.00	0.00
2060/61	15.86	0.00	251.5396	0.00	0.00
2061/62	0.91	0.00	0.8281	0.00	0.00
2062/63	60.30	0.00	3636.09	0.00	0.00
2063/64	-9.97	0.00	99.4009	0.00	0.00
2064/65	48.67	49.30	2368.7689	2430.49	2399.431
T=10	ΣX=137.63	ΣY=49.30	ΣX^2=6997.9193	ΣY^2=2430.49	ΣXY=2399.431

c. Beta(β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma X^2)-(\Sigma X)^2} = \frac{(10\times2399.431)-(49.30\times137.63)}{(10\times6997.9193)-(137.63)^2}$=$\frac{23994.31-6785.159}{51037.1761}$ =$\frac{17209.151}{51037.1761}$=0.34

d. $E(r_{gi}) = r_f + \beta_{im}[E(r_m) - r_f] + \beta_{ig}[E(r_{mg}) - r_f]$

=$3.501\% + 0.0/[24.11\% - 3.501\%] + 0.34[13.763\% - 3.501\%]$
=(3.501+1.64872+3.48908)%=8.6388%

4. Hallmark Gold-Business(Trading):

F/Y	X(Gold)	Y (Trading)	X^2	Y^2	XY
2055/56	-10.81	**0.62**	116.8561	0.3844	-6.7022
2056/57	13.12	-0.20	172.1344	0.04	-2.624
2057/58	-2.18	-6.62	4.7524	43.8244	14.4316
2058/59	18.33	-11.55	335.9889	133.4025	-211.7115
2059/60	3.40	-7.48	11.58	55.9504	-25.432
2060/61	15.86	0.48	251.5396	0.2304	7.6128
2061/62	0.91	29.67	0.8281	880.3089	26.9997
2062/63	60.30	20.22	3636.09	408.8484	219.266
2063/64	-9.97	4.90	99.4009	24.01	48.853
2064/65	48.67	31.35	2368.7689	982.8225	1525.8045
T=10	ΣX=137.63	ΣY=61.39	ΣX^2=6997.9193	ΣY^2=2529.8219	ΣXY=1596.4979

a. Beta(β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma X^2)-(\Sigma X)^2} = \frac{(10\times1596.4979)-(61.39\times137.63)}{(10\times6997.9193)-(137.63)^2}$=$\frac{15964.979-8449.1057}{51037.1761}$=$\frac{7515.8733}{51037.1761}$=0.15

b. $E(r_{gi}) = r_f + \beta_{im}[E(r_m)-r_f] + \beta_{ig}[E(r_{mg})-r_f]$
=$3.501\% + 0.21[24.11\% - 3.501\%] + 0.15[13.763\% - 3.501\%]$
=(3.501+4.32789+1.5393)%=9.36819%

5. Hallmark Gold-Development Bank:

F/Y	X(Gold)	Y (Dev. Bank)	X^2	Y^2	XY
2055/56	-10.81	**0.00**	116.8561	0	0
2056/57	13.12	0.00	172.1344	0	0
2057/58	-2.18	0.00	4.7524	0	0
2058/59	18.33	11.80	335.9889	139.22	216.294
2059/60	3.40	-16.07	11.58	258.2449	-54.638
2060/61	15.86	-22.98	251.5396	528.0804	-364.4628
2061/62	0.91	25.17	0.8281	633.5289	22.9047
2062/63	60.30	23.77	3636.09	565.0129	1433.331
2063/64	-9.97	83.31	99.4009	6940.5561	-830.6007
2064/65	48.67	138.28	2368.7689	19121.3581	6730.0876
T=10	ΣX=137.63	ΣY=243.28	ΣX^2=6997.9193	ΣY^2=28186.0216	ΣXY=7152.9158

a. Beta(β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma X^2)-(\Sigma X)^2} = \frac{(10\times7152.9158)-(243.28\times137.63)}{(10\times6997.9193)-(137.63)^2}$=$\frac{71529.158-33482.6264}{51037.1761}$=$\frac{38046.5316}{51037.1761}$=0.75

b. $E(r_{gi}) = r_f + \beta_{im}[E(r_m)-r_f] + \beta_{ig}[E(r_{mg})-r_f]$
=3.501%+1.18[24.11%-3.501%]+0.75[13.763%-3.501%]

= (3.501+24.31862+7.6965) %=35.51612%

6. Hallmark Gold-Hotel:

F/Y	X (Gold)	Y(Hotel)	X^2	Y^2	XY
2055/56	-10.81	-0.81	116.8561	0.6561	8.7561
2056/57	13.12	-48.98	172.1344	2399.0404	-642.6176
2057/58	-2.18	135.45	4.7524	18346.7025	-294.281
2058/59	18.33	-25.68	335.9889	659.4624	-470.7144
2059/60	3.40	-9.16	11.56	83.9056	-31.144
2060/61	15.86	-6.24	251.5396	38.9376	-98.9664
2061/62	0.91	-3.48	0.8281	6.5536	-3.1668
2062/63	60.30	1.56	3636.09	2.4649	94.068
2063/64	-9.97	39.11	99.4009	1529.5921	-389.9267
2064/65	48.67	47.48	2368.7689	2254.3504	2310.8516
T=10	∑X=137.63	∑Y=129.25	$\sum X^2$=6997.9193	$\sum Y^2$=25333.4224	∑XY=482.8588

a. Beta (β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times482.8588)-(129.25\times137.63)}{(10\times6997.9193)-(137.63)^2}=\frac{4828.588-17792.8064}{51037.1761}=\frac{-12964.2184}{51037.1761}=-0.25$

b. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_g)-r_f]$

=3.501%-0.09[24.11%- 3.501%]-0.25[13.763%-3.501%]

= (3.501-1.85481-2.5655) %=-0.91931%

7. Hallmark Gold-Insurance:

F/Y	X (Gold)	Y(Insurance)	X^2	Y^2	XY
2055/56	-10.81	11.14	116.8561	124.0996	-120.4234
2056/57	13.12	56.14	172.1344	3151.6996	736.5568
2057/58	-2.18	4.15	4.7524	17.2225	-9.047
2058/59	18.33	-1.08	335.9889	1.1664	-19.7964
2059/60	3.40	-23.66	11.56	559.7956	-80.444
2060/61	15.86	-1.70	251.5396	2.89	-26.962
2061/62	0.91	35.37	0.8281	1251.0369	32.1867
2062/63	60.30	19.05	3636.09	362.9025	1148.715
2063/64	-9.97	60.65	99.4009	3678.4225	-604.6805
2064/65	48.67	33.44	2368.7689	1118.2336	1627.5248
T=10	∑X=137.63	∑Y=193.5	$\sum X^2$=6997.9193	$\sum Y^2$=10267.4692	∑XY=2683.63

a. Beta (β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times2683.63)-(193.5\times137.63)}{(10\times6997.9193)-(137.63)^2}=\frac{26836.3-26631.405}{51037.1761}=\frac{204.895}{51037.1761}=0.004$

b. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_g)-r_f]$

=3.501%+0.69[24.11%- 3.501%] +0.004 [13.763%-3.501%]

= (3.501+14.22021+0.041048) %=17.762258%

8. Hallmark Gold -Finance:

F/Y	X (Gold)	Y(Finance)	X^2	Y^2	XY
2055/56	-10.81	11.14	116.8561	124.0996	-120.4234
2056/57	13.12	56.14	172.1344	3151.6996	736.5568
2057/58	-2.18	4.15	4.7524	17.2225	-9.047
2058/59	18.33	-17.69	335.9889	312.9361	-324.2577
2059/60	3.40	-20.65	11.56	426.4225	-70.21
2060/61	15.86	-5.84	251.5396	34.1056	-92.6224
2061/62	0.91	16.53	0.8281	273.2409	15.0423
2062/63	60.30	14.44	3636.09	208.5136	870.732
2063/64	-9.97	80.52	99.4009	6483.4704	-802.7844
2064/65	48.67	144.32	2368.7689	20828.2624	7024.0544
T=10	∑X=137.63	∑Y=283.06	$\sum X^2$=6997.9193	$\sum Y^2$=21859.9732	∑XY=7227.0406

a. Beta (β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}=\frac{(10\times7227.0406)-(283.06\times137.63)}{(10\times6997.9193)-(137.63)^2}=\frac{72270.406-38957.5478}{51037.1761}=\frac{33312.8582}{51037.1761}=0.65$

b. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_g)-r_f]$

=3.501%+1.04[24.11%- 3.501%] +0.65 [13.763%-3.501%]

= (3.501+21.43336+6.6703) %=31.60466%

9. **Hallmark Gold-Others:**

F/Y	X (Gold)	Y(Others)	X^2	Y^2	XY
2055/56	-10.81	1.08	116.8561	1.1664	-11.6748
2056/57	13.12	-17.98	172.1344	323.2804	-235.8976
2057/58	-2.18	-38.11	4.7524	1452.3721	83.0798
2058/59	18.33	-59.49	335.9889	3539.0601	-1090.4517
2059/60	3.40	-37.21	11.56	1384.5841	-126.514
2060/61	15.86	193.76	251.5396	37542.9376	3073.0336
2061/62	0.91	143.71	0.8281	20652.5641	130.7761
2062/63	60.30	17.93	3636.09	321.4849	1081.179
2063/64	-9.97	99.54	99.4009	9908.2116	-992.4138
2064/65	48.67	-6.09	2368.7689	37.0881	-296.4003
T=10	∑X=137.63	∑Y=297.14	$\sum X^2$=6997.9193	$\sum Y^2$=75162.7494	∑XY=1614.7163

a. Beta (β_g)=$\frac{(T\times\Sigma XY)-(\Sigma Y\times\Sigma X)}{(T\times\Sigma x^2)-(\Sigma X)^2}$=$\frac{(10\times1614.7163)-(297.14\times137.63)}{(10\times6997.9193)-(137.63)^2}$

=$\frac{16147.163-40895.3782}{51037.1761}=\frac{-24748.2152}{51037.1761}=-0.48$

b. $E(r_{gi})=r_f+\beta_{im}[E(r_m)-r_f]+\beta_{ig}[E(r_g)-r_f]$

=3.501%+0.76[24.11%- 3.501%] -0.48 [13.763%-3.501%]

= (3.501+15.66284-4.92576) %=14.28808%

Annex-XI
Test on Nepse Index is highly affected mainly by Nepse Banking Sub-index movement

Null Hypothesis (H_o): Nepse index is not highly affected mainly by Nepse Banking Sub-Index.

Alternative Hypothesis (H_A): Nepse index is highly affected mainly by Nepse Banking Sub-Index.

For 2×2 contingency table, the value of χ^2 can also be calculated by using following formula:

$$\chi^2 = \frac{N(ad-bc)^2}{(a+b)(C+d)(a+c)(b+d)}$$

Where,

Responses	Gender		Total
	Male	**Female**	
Agree	a=60	b=23	a+b=83
Disagree	c=10	d=7	c+d=17
Total	a+c=70	b+d=30	N=100

$$\therefore \chi^2 = \frac{100(60\times70-23\times10)^2}{83\times17\times70\times30} = 1.22$$

Degree of freedom (d.f.): (r-1)(c-1)=(2-1)(2-1)=1

Tabulated value of χ^2 at 0.05 for 1 d.f. is 3.84 i.e. $\chi^2_{0.05,1}$=3.84

Decision: Since the calculated value χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, Nepse index is not highly affected mainly by Nepse Banking Sub-Index.

Annex-XII

Test on a bilateral causality between the Nepalese Stock Market capitalization & nominal GDP

i) **For Primary Data:**

Null Hypothesis (H_o): There is no bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Alternative Hypothesis (H_A): There is a bilateral causality between the stock market capitalization & nominal GDP of Nepal.

For 2×2 contingency table, the value of χ^2 can also be calculated by using following formula:

$$\chi^2 = \frac{N(ad-bc)^2}{(a+b)(C+d)(a+c)(b+d)}$$

Where,

Responses	Gender		Total
	Male	Female	
Yes	a=41	b=21	a+b=62
No	c=29	d=9	c+d=38
Total	a+c=70	b+d=30	N=100

$$\therefore \chi^2 = \frac{100(41\times9-21\times29)^2}{62\times38\times70\times30} = 1.16$$

Degree of freedom (d.f.): (r-1)(c-1)=(2-1)(2-1)=1

Tabulated value of χ^2 at 0.05 for 1 d.f. is 3.84 i.e. $\chi^2_{0.05,1}$=3.84

Decision: Since the calculated value of χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, there is no bilateral causality between the stock market capitalization & nominal GDP of Nepal.

ii) **<u>For Secondary Data</u>:**

Null Hypothesis (H_o): There is no bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Alternative Hypothesis (H_A): There is a bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Calculation of Karl Pearson's Correlation Coefficient

X	Y	x	y	x^2	y^2	xy
557.34	5.48	-2713.13	-436.08	7361074.40	190165.77	1183141.7
638.64	9.88	-2631.83	-431.68	6926529.15	186347.62	1136108.4
769.06	10.89	-2501.41	-430.67	6257051.99	185476.65	1077282.2
892.70	15.09	-2377.77	-426.47	5653790.17	181876.66	1044047.6
1034.16	17.75	-2236.31	-423.81	5001082.42	179614.92	947770.5
1203.70	25.16	-2066.77	-416.4	4271538.23	173388.96	860603.03
1494.87	21.20	-1775.6	-420.36	3152755.36	176702.53	746391.22
1714.74	38.06	-1555.73	-403.5	2420295.83	162812.25	627737.06
1992.72	138.72	-1277.75	-302.84	1632645.06	91712.07	386953.81
2191.75	129.63	-1078.72	-311.93	1163636.83	97300.32	336485.13
2489.13	122.95	-781.34	-318.61	610492.196	101512.33	248942.74
2805.13	126.98	-465.34	-314.58	216541.316	98960.58	146386.66
3008.45	142.89	-262.02	-298.67	68654.4804	89203.77	78257.513
3420.36	235.08	149.89	-206.48	22467.0121	42633.99	-30949.29
3794.88	431.23	525.41	-10.33	875005.848	106.7089	-5416.155
4415.19	463.49	1144.72	21.93	1310383.88	480.9249	25103.709
4594.43	347.04	1323.96	-94.52	1782870.08	8934.0304	-125140.7
4922.31	352.40	1651.84	-89.16	2728575.39	7949.5056	-147278.1
5367.49	414.25	2097.02	-27.31	4397492.88	745.8361	-57269.62
5894.12	613.66	2623.65	172.1	6883539.32	29618.41	451530.17
6540.55	968.14	3270.08	526.58	10693423.2	277286.496	1721958.7
7270.89	1863.01	4000.42	1421.45	16003360.1	2020520.10	5686397.0
8208.14	3662.80	4937.67	3221.24	24380585.0	10376387.1	15905420.1
$\sum x =$ 75220.75	$\sum y =$ 10155.78			$\sum x^2 =$ 113183790.26	$\sum y^2 =$ 14679737.57	$\sum xy =$ 32214462.52

Where, X= Nominal GDP in 100000000

Y= Market Capitalization in 100000000

$$\overline{X} = \frac{\sum x}{n} = \frac{75220.75}{23} = 3270.47$$

$$\overline{Y} = \frac{\sum y}{n} = \frac{10155.78}{23} = 441.568$$

$$\therefore r = \frac{\sum xy}{\sqrt{\sum x^2}\sqrt{\sum y^2}}$$

$$= \frac{32214462.52}{\sqrt{113183790.26}\sqrt{14679737.57}}$$

$$= \frac{32214462.52}{10638.7870671 \times 3831.41456449}$$

$$= +0.79$$

$\therefore$ **Test statistic; under**, H_0

$$\therefore t = \frac{r}{\sqrt{1-r^2}} \times \sqrt{n-2}$$

$$= \frac{0.79}{\sqrt{1-0.79^2}} \times \sqrt{23-2} = 5.90$$

Degree of Freedom (d.f.)= n-2=23-2=21

Critical Value: The tabulated value of ‘t’ at 5% level of significance for 21 d.f is 2.080.

Decision: Since the calculated value of “t” is greater than the tabulated value of “t”, the alternative hypothesis, H_1 is accepted. Hence, there is a bilateral causality between the stock market capitalization & nominal GDP of Nepal.

Annex-XIII
Test on Statement that “Nepse index measures the change in the overall behavior of the market or sector over a period of time.”

Null Hypothesis (H_o): Nepse index does not measures the change in the overall behavior of the market or sector over a period of time.

Alternative Hypothesis (H_A): Nepse index measures the change in the overall behavior of the market or sector over a period of time.

For 2×2 contingency table, the value of χ^2 can also be calculated by using following formula:

$$\chi^2 = \frac{N(ad-bc)^2}{(a+b)(C+d)(a+c)(b+d)}$$

Where,

Responses	Gender		Total
	Male	**Female**	
Yes	a=46	b=20	a+b=66
No	c=24	d=10	c+d=34
Total	a+c=70	b+d=30	N=100

$$\therefore \chi^2 = \frac{100(46\times10-20\times24)^2}{70\times34\times70\times30} = 0.008$$

Degree of freedom (d.f.): (r-1)(c-1)=(2-1)(2-1)=1

Tabulated value of χ^2 at 0.05 for 1 d.f. is 3.84 i.e. $\chi^2_{0.05,1}$=3.84

Decision: Since the calculated value of χ^2 is less than the tabulated value of χ^2, the null hypothesis, H_0 is accepted. Hence, Nepse index does not measures the change in the overall behavior of the market or sector over a period of time.

Annex-XIV

Test on a randomness on monthly return in Nepse

Null Hypothesis (H_o): The monthly returns on Nepse are random.

Alternative Hypothesis (H_A): The monthly returns on Nepse are not random.

Here,

n_1= number of occurrences of type 1 i.e. positive return=72

n_2= number of occurrences of type 2 i.e. negative return=48

r= number of runs=43***(Refer to Annex-V)***

For mean calculation for r-statistics,

$$\mu_r = \frac{2n_1n_2}{n_1 + n_2} + 1 = \frac{2 \times 72 \times 48}{72 + 48} + 1 = 58.6$$

For standard calculation for r-statistics,

$$\sigma_r = \sqrt{\frac{2n_1n_2(2n_1n_2 - n_1 - n_2)}{(n_1+n_2)^2(n_1+n_2-1)}} = \sqrt{\frac{2\times72\times48(2\times72\times48-72-48)}{(72+48)^2(72+48-1)}} = 16.56$$

Under r-statistic,

$$z_{cal} = \frac{r-\mu_r}{\sigma_r} = \frac{43-58.6}{16.56} = -0.94 \therefore |z_{cal}| = 0.94$$

$\therefore$ **Level of significance,** α =0.05

$\therefore$ **Critical Value:** We see the critical value at 5% level of significance for two- tailed test is ±1.960.

Table of Normal Distribution
[**Critical value (Zα) of Z**]

Nature of Alternative Hypothesis	**Level of significance(α)**				
	1%	2%	4%	5%	10%
Two tailed test	±2.576	±2.326	±2.054	±1.960	±1.645
Right tailed test	+2.326	+2.054	+1.751	+1.645	+1.282
Left tailed test	-2.326	-2.654	-1.751	-1.645	-1.282

Decision: Since the calculated value of “z” is less than the tabulated value of “z”, the null hypothesis, H_0 is accepted. Hence, the monthly returns on Nepse are random.

Annex-XV
Test on a Rank Correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed.

Null Hypothesis (H_o): ρ_s=0: There is no rank correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed.

Alternative Hypothesis (H_A): ρ_s>0: The rank correlation is positive in the population; i.e. Nepalese investors choose sector thinking of high return.

Calculation of r_s

S.No.	Risk	Rank(R_1)	Return	Rank(R_2)	d=R_1-R_2	d^2
1.	31	2	81	1	1	1
2.	28	3.5	24	5	-1.5	2.25
3.	28	3.5	31	3	0.5	0.25
4.	23	8	30	4	4	16
5.	32	1	9	8	-7	49
6.	27	6	42	2	6	36
7.	26	7	16	6	1	1
8.	29	5	14	7	-2	4
9.	12	9	6	9	0	0
n=9					$\sum$d=2	$\sum d^2$=111.5

Spearman's rank correlation coefficient for repeated ranks gives:

$$r_s = 1 - \frac{6}{n(n^2-1)}\left[\sum d^2 + \sum \frac{m(m^2-1)}{12}\right]$$

Where, m is the number of times that an item repeated.

$$\therefore r_s = 1 - \frac{6}{9(9^2-1)}\left[111.5 + \sum \frac{2(2^2-1)}{12}\right] = 0.07$$

z-test can be tested as follow:

$$\therefore z_{cal} = \frac{\mathrm{r_s} - 0}{\sigma_{\mathrm{r_s}}}$$

$$= \frac{0.07 - 0}{0.35} = 0.20$$

$$\text{where}, \sigma_{\mathrm{r_s}} = \frac{1}{\sqrt{\mathrm{n} - 1}} = \frac{1}{\sqrt{9 - 1}} = 0.35$$

Critical Value: The tabulated value for n=9 at 0.05 level of significance is 0.6833.

Decision: Since the calculated value of "z" is less than the tabulated value of "z", the null hypothesis, H_0 is accepted. Hence, there is no rank correlation in the population; i.e. risk and return on various sectors of Nepse are randomly mixed.

Annex-XVI

Test on Homogeneity on Returns in the Various Sectors of the Nepalese Stock Market

Null Hypothesis (H_o): $\mu_1 = \mu_2 = \mu_3 = \mu_4 = \mu_5 = \mu_6 = \mu_7 = \mu_8 = \mu_9$, i.e. there is no significant difference among the returns of the various sectors of Nepse or there is homogeneity in returns.

Alternative Hypothesis (H_A): $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq \mu_5 \neq \mu_6 \neq \mu_7 \neq \mu_8 \neq \mu_9$ i.e. there is significant difference among the returns of the various sectors of Nepse or there is no homogeneity in returns.

Here,

$\sum X_1$=221.26, $\sum X_2$=78.47, $\sum X_3$=49.30, $\sum X_4$=193.5, $\sum X_5$=61.39, $\sum X_6$=283.06, $\sum X_7$=129.25, $\sum X_8$=243.28, $\sum X_9$=297.14

$\sum X_1^2$=18714.213, $\sum X_2^2$=3736.6295, $\sum X_3^2$=2430.49, $\sum X_4^2$=10267.4692, $\sum X_5^2$=2529.8219, $\sum X_6^2$=31859.9732, $\sum X_7^2$=25327.1911, $\sum X_8^2$=28186.0216, $\sum X_9^2$=25162.7494

Grand Total (T) =$\sum X_1+\sum X_2+\sum X_3+\sum X_4+\sum X_5+\sum X_6+\sum X_7+\sum X_8+\sum X_9$
=221.26+78.47+49.30+193.5+61.39+283.06+129.25+243.28+297.14
=1556.65

N= 70+7+1=78(7 F/Y for dev. bank+1 F/Y for hydro-power+7×10 F/Y for remaining sectors)

Correction Factor (C.F.) =$T^2/N=(1556.65)^2/78$=31066.1439

Total Sum of Squares (TSS) =$\Sigma X_1^2+\Sigma X_2^2+\Sigma X_3^2+\Sigma X_4^2+\Sigma X_5^2+\Sigma X_6^2+\Sigma X_7^2+\Sigma X_8^2+\Sigma X_9^2$-C.F.
=18714.213+3736.6295+2430.49+10267.4692+2529.8219+31859.9732+25327.1911+28186.0216 +25162.7494-31066.1439
=100305.4150

Sum of Square between sectors (SSC)

$$=\frac{(\Sigma X_1)^2}{n_1}+\frac{(\Sigma X_2)^2}{n_2}+\frac{(\Sigma X_3)^2}{n_3}+\frac{(\Sigma X_4)^2}{n_4}+\frac{(\Sigma X_5)^2}{n_5}+\frac{(\Sigma X_6)^2}{n_6}+\frac{(\Sigma X_7)^2}{n_7}+\frac{(\Sigma X_8)^2}{n_8}+\frac{(\Sigma X_9)^2}{n_9}-C.F.$$

$$=\frac{(221.26)^2}{10}+\frac{(78.47)^2}{10}+\frac{(49.30)^2}{1}+\frac{(193.5)^2}{10}+\frac{(61.39)^2}{10}+\frac{(283.06)^2}{10}+\frac{(129.25)^2}{10}+\frac{(243.28)^2}{7}+\frac{(297.14)^2}{10}-31066.1439$$

=39030.034209-31066.1439
=7963.8903

Sum of Square within sectors (SSW)
=TSS-SSC
=100305.4150-7963.8903
=92341.5249

Annex-XVII
"A" Class Companies & Sensitive Index

Requirement for "A" Class Company as per Stock Exchange By-Laws, 2053:

1. Paid-up capital of a company should be more than Rs.200 million.
2. The number of shareholders should be at least 1000.
3. The shares of company should be floated to general public.
4. A company should have a record of profit for at least <u>three</u> consecutive years.
5. The book value of share should be greater than its paid-up value.
6. A company should have submitted its financial statement in NEPSE within 6 months after expiry of fiscal year. ***(Dixit, 2065:61)***

[Op.cit. ***The Kantipur National Daily****, Year 14 Vol.312, Jan. 2, 2007 (18 Poush, 2063)]*

The sensitive index is calculated for the "A" Class Company or Blue Chip Shares in context to Nepalese Stock Market by Nepse. It started calculating from 1 January, 2007. The base year for Sensitive index is 32 Ashad, 2063.

Annex-XVIII
Float Index

After the publication of the Sensitive Index in January 2007, NEPSE has started two new indices—the NEPSE. Float Index and the Sensitive Float Index—in order to give a more realistic picture of shares trading from 15September 2008.The new indices are based on the transactions of shares issued to the general public only. The Float Index reflects transactions of public-held shares of all listed companies, while the Sensitive Float Index reflects transactions of public-held shares of companies under Category 'A'. Out of 147 listed companies, 71 companies are listed under category 'A'. For calculation of these indices 24 August 2008 has been chosen as a base period.

NEPSE all equity share price Index, or NEPSE Index, includes promoters' shares while calculating market capitalization, even though they are not traded in the market. The Float Index categorically excludes such non-tradable shares. It is calculated by taking into account the number of shares issued through IPO and their closing prices.

Likewise, the Sensitive Float Index is calculated by taking into account the number of IPO-issued shares of Category 'A' companies and their closing prices at the end of the day.

A Free-float index reflects the market trends more rationally as it takes into consideration only those shares that are available for trading in the market. Free-fl oat market capitalization is defined as the proportion of total shares issued by the company that is readily available for trading in the market. It is essentially the total outstanding shares, less the promoters' holding and other shares with a lock-in period. The Float Index is supposed to boost investors' confidence as it reflects the real market.

The Float-index excludes promoters' holding, government holding, strategic holding and other locked-in shares that will not come to the market for trading in the normal course. The base year for the Float Index calculation is Bhadra 9, 2065.

(Source: Nepse News Monthly Market Statistics and Review, Nov/Dec., 2008, pp.4)