CHAPTER –1
INTRODUCTION

1.1 General Background

Capital market has become a global phenomenon. But in the context of Nepal, the concept of capital market is neither very old nor very complex. It is still in creeping stage where various efforts have been made for the development of capital market. The history of securities market began with the flotation of shares by Biratnagar Jute Mills and Nepal bank Ltd. in 1937 and the establishment of Securities Exchange Center Ltd. in 1976 which was converted into NEPSE in 1993. NEPSE had adopted as 'Open-out-Cry' system but recently it has adopted as electronic system. NEPSE is the only one stock Exchange and NEPSE Index is the only index in Nepalese capital market. NEPSE opened its trading floor on 13th February, 1994.

Capital formation is the ultimate function of a capital market. It transfers funds from those who have surplus funds to invest to those who need funds to invest in tangible assets (Fabozzi and Modigliani, 1992). Since capital market mobilize unproductive saving to productive investment, it plays vital role in the advancement of growing economy. If the investors are confident in their investment in capital market, the task of capital formation becomes much easier. Unless the market is efficient, the investor's confidence can't be gained. Efficient market is that where the securities are traded on their true intrinsic value and liquidity among the Securities is very high. In other words, the efficiency of capital market denotes how well the market functions.

A market in which prices always "Fully reflect" available information is called "Efficiency" (Fama, 1970). According to Fama, three forms of the

model were investigated to three different subsets: (a) the weak form; (b) the semi-strong form and (c) the strong form.

If a market is efficient, a native (common) investor with passive investment strategy can earn a normal rate of return in his investment. Moreover, if the market is efficient, a well-diversified portfolio can't be out performed by any actively managed fund. A native investor is the general individual who doesn't possesses skill to manage investment efficiency as does a professional manager. General savers are native investors as they fund to invest but they may not have skill to manage investment. Since, the passive investments strategy is relatively easier which does not require frequently analysis and change in holding position, a native investor generally takes this strategy. If the market is efficient, the passive investment strategy works well to earn maximum possible return in the market. But the passive investment strategy, which is relatively easier, does not work in an inefficient market. In an inefficient market, frequent change in stock prices creates opportunities for whose, who actively participate in the market. Moreover, inefficient market is much similar to speculative market where the chances of abnormal gain and loss are very high. In an inefficient market, a professional investor with active investment strategy can easily earn far better return than a native investor. Since one's gain is the loss of another, active investors gain is the loss of passive investors. Therefore, a native investor can't be confident in the investment in inefficient market. If investors weren't confident that they could shift from one financial asset to another, as they may deem necessary, they would naturally be reluctant to buy any financial assets. But the vital source of fund is the saving of the general public i.e. native investors. Thus, efficient market is quite important to develop capital market for this competitive age.

As the efficient market helps to increase investor's confidence in their investment, the efficient and rational behavior of investing public increases the level of market efficiency. In simple term, efficient market is that where the investors behave rationally. Market is nothing but the dealings of investors. So, if investors are efficient enough to recognize the potentials for excess return and put into effect schemes to beat the market in time, the chances for abnormal gains/loss will be vanished, which is one of the most important conditions for market efficiency.

There are many empirical studies on share price behavior or market efficiency in developed stock markets. But relatively few empirical studies have been addressed in this issue in developing nations when capital markets are still at very infant stage. So the study of market efficiency and the investor's behavior provides some idea about the level of advancement of security market. The Nepalese stock market is just coming of age. It is, therefore, possible for a few individuals to manipulate the prices of securities and engage in undesirable practices. To counter the deficiencies, the government has established securities board, Nepal () as an apex regulatory body to facilitate the orderly development of a dynamic and competitive stock market and maintains its creditability, fairness, efficiency, transparency, and responsiveness. NEPSE as organized stock exchange market for exchanging securities formulated new policies and rules and regulations for the smooth operation of the market. Despite this, the Nepalese stock market still looks '**underdeveloped**' and stock market efficiency may be a priori suspect for various causes. Although, the overall economy and it capital market is still young, the growth of new stock listing and volumes of share in NEPSE has attracted considerable interest from the investors. It, in this context, will be interesting to investigate the efficiency of market and investors rationality, which may provide an empirical

explanation whether the Nepalese stock market is efficient enough to gain investors' confidence. Moreover, this study will explain empirically whether there is any effect of investors' behavior on the level of efficiency of the NEPSE.

1.2 Statement of the Problem

Past decade has witnessed several new practices in Nepalese capital market. During this period, a number of initial public offerings (IPOs) were made. Many new stocks have been listed in NEPSE. But banking industry has emerged as the largest partner in stock market. This industry holds more than 80% of total market capitalization (Shrestha, 2001). So, whenever Nepalese stock market is taken into consideration, the deliberation of banking industry can't be ignored. Market efficiency results from the correct valuation of individual stocks trading in the market. As one of the largest industry in term of market capitalization, proper valuation of the stock of banking sector is quite necessary to get NEPSE more efficient. But in recent years, in response to the reporting of high profitability by the banking sector, the stocks of industry have shown unbelievable performance. Some stocks have got appreciation in their price more than three fold within a year. However, the appreciations in the market price of these stocks don't seem to be justified by the financial performance of the concerned companies. Market prices of stock seem to be fluctuating cyclically. Stock prices are increasing several times without any financial reasons. Thus, the market is apparently inefficiency in pricing of securities.

As market efficiency results from the efficient behavior of the investors, the apparent inefficiency of Nepalese stock market implies that there is highly likelihood of Nepalese investors being irrational.

This research work is undertaken to find out whether the apparent inefficiency of Nepalese security market is real or not. If the market is found to be inefficient, the study will further focus on the investors' rationality, the major responsible factor for the efficiency of a stock market. Since a number of empirical study that have conducted on the capital market of less developed countries found the evidence of market being inefficient even under weak form hypothesis. I would also like to explore the level of efficiency of Nepalese stock market. Thus the study is exclusively concentrated on the weak form efficiency test of the NEPSE. Moreover, this research work will be an empirical study on the relationship between the market efficiency and the investors' rationality. So, this study has tried to give the answer of the following questions:

1) Is the Nepalese stock market efficient in pricing share?
2) Does the RWH exist in Nepalese stock market?
3) Do Nepalese investors behave rationally in the stock market?
4) Can historical trends predict future price?
5) What measure should be adopted by regulating authorities to ensure consistent performance of market?

1.3 Objectives of the Study

The basic objective of the study is to find-out the level of market efficiency and the investor's rationality. The Specific objective of the study is to fulfill the above basic objective are as follows:

- To find out the level of efficiency of NEPSE through examining the market return whether it follows a random walk or not and to find out

whether the market efficiency had any relationship with investors rationality or not.

- To find out the existence of RWH in Nepalese Stock Market.
- To find out the rationality of Nepalese investors through examining the investors' behavior whether they use available information correctly to maximize their wealth or not.
- To find out some facts about the Nepalese investors and their behavior.
- To make relevant suggestions, practical ideas and materialize recommendations to make Nepalese security market more efficient.

1.4 Significance of the Study

Most of the financial theories have been developed on the assumption of market efficiency. Moreover, an efficient market has implication for the investment strategy that investor may wish to pursue. Hence, the knowledge of level of market efficiency helps investors to use theoretical models correctly and to choose appropriate investment strategy for the investment decisions. Therefore, the study has significance to the Nepalese investors as it will make them aware of the level of efficiency of NEPSE to make better investment decision. The study's efforts to detect the causes of inefficiency by analyzing investors' behavior may help initiate necessary steps to the policymaker as well. Furthermore, this research work is one of the important studies on NEPSE, which obviously help future research activities by providing with base for the further studies.

1.5 Limitations of the Study

Due to the various reasons this research work is not able to study the whole Nepalese capital market in detail. For the sake of ease, this tries to

study its subject matter by concentrating on some important variables and ignoring others. That's why this research work is also not free from the limitations. The major limitation of the study is presented below in nutshell.

i. The study will mainly focus on the stock of banking sector.
ii. The core of the study is based on the secondary sources of information. Hence any incorrectness in the key information like NEPSE index gathered from the secondary sources may affect the accuracy of the outcome of the study.
iii. Due to the small sample size, it may not fully represent as a whole.
iv. In this research work, five year observation covering from Jan. 1, 2005 to Dec. 31, 2009 is analyzed.
v. The study doesn't give any consideration to the current market slowdowns due to the various national and international environments.
vi. The study is to fulfill the requirement of the master degree in business studies (MBS).

1.6 Organization of the Study

This study is divided into five different chapters. They are as follows:

Chapter I: Introduction

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

Chapter II: 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.

Chapter-III: Research Methodology

This chapter present research methodology used in the study which includes various tools and techniques of data. It includes research design, population and sample, nature and sources of data, procedure of data collecting and processing and method of data analysis.

Chapter -IV: Data presentation and Analysis

This chapter presents the analysis and presentation of data by using various methods of statistical and financial tools. Tables, graphs etc. will be used accordingly. At the end of the chapter, it covers the major findings of the study.

Chapter -V: Summary, Conclusion and Recommendation

This chapter includes summary of the study, conclusion drawn from the findings and recommendations to the concerned authorities, companies, investors and forth coming researchers.

Similarly, proper arrangement is made for bibliography and appendices at the end of this thesis.

CHAPTER – II
REVIEW OF LITERATURE

Review of literature is actually a process of consulting published books, journals and unpublished (dissertation, field work) literatures related and relevant to one's selected topics. Since this study is mainly related to the study of market efficiency and the rationality of the investors in Nepalese capital market. Therefore, the research starts with an attempt to exploring the efficiency of NEPSE. This chapter reviews some books, journal, some of Master's degree thesis and other related studies undertaken by individual.

Over half-a-century debate in the financial community regarding the pricing of securities has intensified over the last decade. As early as the 1970s, the theory of market efficiency became the accepted model within most academic circles. The theory suggested that security prices fully reflected all currently available information and the history of stock prices seemed to furnish little or no predicative power over future price fluctuations. Furthermore, Jensen (1968) demonstrated that the prices of securities appeared to absorb new information so quickly and efficiently that randomly selected portfolios showed returns comparable to, if not in excess of, the returns generated by portfolios managed by professional managers. Much of the earlier work by Kendall (1953), Osborne (1959), Alexander (1961) and Moore (1964) indicated that there was practically no correlation between stock returns over time.

Efficient market is one, where the market price is an unbiased estimate of true value of the investment. If markets are not efficient, the market price may deviate from the true value. However, efficient market does not imply that stock prices can’t deviate from true value; in fact, there can be large deviations from true value. The only requirement is that the deviation be

random. An efficient market has implications for the investment strategy that investors may wish to pursue. In an active strategy, investors seek to capitalize on what they perceive to be the mispricing of a security or securities. In a market that is price efficient, active strategies will not consistently generate a return after taking into consideration transaction cost and the risks associated with a strategy that is greater than simply buying and holding securities (Fabozzi, Frank J. and Modiglani, F., 1996: 155).

Markets do not become efficient automatically. It is the actions of investors, sensing bargains and putting into effect schemes to beat the market, that make markets efficient. The most necessary condition of efficient market is the presence of profit maximizing investors (rational investors), who recognize "the potential for excess return". Wherever any asset goes under or over valued it is the investor who correct the deviation by buying or selling that asset.

There are mainly two aspects of the efficiency of financial markets, namely the operational efficiency and allocational efficiency. The former requires that the participants supplying and demanding the funds are able to carry out transactions cheaply, while the latter requires that the prices of securities to be such that they equalize the risk-adjusted rates of return across all securities (i.e. securities with the same level for risk will offer the same expected return). In a market that is price efficient savings are allocated to productive investment in an optimal way and all participants in the market benefit. These two types of efficiency are strongly linked. Operational efficiency is something which can largely be directly measured fairly easily in the form of bid-ask spread and commission rates generally. We will therefore concentrate on the questions of measuring the extent of allocational efficiency. This notion of efficiency is often redefined in term of different theories by various academics.

In this chapter, we explore about the theories of efficient market first, and then review the efficient market hypotheses (EMH) of Eugune F. Fama. We will also review some techniques that have been used to test the weak form efficient of a capital market. Then, some empirical works that have been conducted on the context of the countries other than that India and Nepal are reviewed. Thereafter, some empirical results in the Indian context are reviewed. Finally, we proceed for previous empirical works that have been conducted in this topic in the Nepalese context.

2.1 Theoretical Review

2.1.1 Expected Return of Fair Game Model

This theory defines market efficiency with the help to equilibrium price. Equilibrium price is calculated by discounting the expected future cash flow. If there is not significant difference between equilibrium price and market price, the market is said to be efficient. The theory further assumes that the given set of information is fully utilized while calculating expected cash flow and then the equilibrium price. Most of the financial theories have assumed this notion of efficiency for their operation. The fair game model can be presented in equation form as follows: $E(P_{j,\,t+1}/\,\Phi_t) = [1 + E\ (r_{j,\,t+1}/\,\Phi_t)]\,P_{jt}$

Where,

E = Expected value operator

P_{jt} = Price of security j at time t

$\hat{P}_{t+1}$ = Price of security at t+1 (with compounding effect)

$\hat{r}_{j,t+1}$ = One period percentage Return $[(p_{j,\,t+1} - p_{jt})/\,P_{jt}]$

Φ = A general symbol for whatever set of information is assumed to be "fully Reflected" in the price at t

$\wedge$ = Indicates that the $P_{j,\,t+1}$ and $r_{j,t+1}$ are random variables.

This theory assumes that the value of the equilibrium expected return $E(r_{jt+1}/\Phi_t)$ projected on the basis of the information Φ_t would be determined from the particular expected return theory at hand. However, whatever expected return model is assumed to apply, the information in Φ_t is fully utilized in determining equilibrium expected returns. And this is the sense in which Φ_t is fully reflected in the formation of the price $P_{jt.}$

The assumption that the condition of market equilibrium can be stated in term of expected returns and that equilibrium expected returns are formed on the basis of information set Φ_t have a major empirical implication- they rule out the possibility of trading system based only on information in Φ_t that have expected profits on returns in excess of equilibrium expected profits on returns. Thus let,

$$X_{j,t+1} = P_{j,t+1} - E(P_{j,t+1}/\Phi_t)$$

Then

$$E(X_{j,\,t+1}/\Phi_t) = 0$$

Which by definitions, says that the sequence $(X_{j,\,t})$ is a "fair game", which respect to the information sequence (Φ_t).

2.1.2 The Random Walk Model

The chief corollary of the idea that markets are efficient, price fully reflect all information, is price movements do not follow any patterns or

trends. This means past price movements can't be used to predict future price movements. Rather, price follow what is known as a 'Random walk; an intrinsically unpredictable pattern. Therefore, the random walk is often compared to the path a sailor might follow out of a bar after a long, hard night drinking.

The random walk model is also taken as the extension of fair game model. Fair game model says price formation process in an efficient market uses all the information (Φ_t) that present in time period t. Fair game model has assumed expected return (r_{t+1}) as a random variable and this variable has direct link to set of available information. The emergence of new information in the market directly affects the expected rate of return (r_{t+1}) and then the price of security. Since, all the available informations are already incorporated into the share price, and every new information is independent with 50:50 chances to be favorable or unfavorable, the new price movement has equal chance to go up or down. Thus, price movement in an efficient market tends to follow a random walk.

2.1.3 Efficient Market Hypothesis

Formalized as the efficient market hypothesis (EMH) by Fama (1965), market efficiency has come to mean that the price of a share incorporates all public information both fundamental and technical about the shares. If market is efficient, then new information is reflected quickly into market prices. Conversely, if market is inefficient information is reflected slowly into market price, if at all.

Before turning to the various information structure hypothesized by Eugene F. Fama, it is important to state the market condition that is consistent with efficiency. The conditions are;

i. There are no transaction costs in trading securities
ii. All available information is costlessly available to all market participants
iii. All agree on the implications of current information for the current price and distributions of future prices of each security.

If these conditions are met, the current price of a security obviously fully reflects all available information.

In order to provide a more practical definition of market efficiency it is necessary to define the information structure.

There are three (3) forms of the EMH, which differ according to the type of information:

- Weak form (Predictability)
- Semi-strong form (Event studies)
- Strong form (Inside information)

[The terms in brackets are the revised definitions in Fama (1991)].

2.1.3.1 Weak Form Efficient Market Hypothesis (WFEMH)

The weak form of the EMH asserts that all past market prices and data are fully reflected in asset prices. In 1991, Fama has redefined the weak form efficiency and stated that if stock prices are weak form efficiency, past prices contain no information about future changes and price changes are random.

Kendall (1953) found that stock and commodity prices follow a random walk. A random walk implies zero (0), correlation between price change at t and price change at t+1, which is what we observe. Hence, the implication of this is that technical analysis can't be used to beat the market.

If price cycles were predictable competition between investors would eliminate them: Arbitrage/speculation will force prices to their efficiency values. If prices were predictable, then a simple trading rule would be BUY undervalued assets and SELL overvalued assets. Prices will only change on the basis of new information which by definition is random, hence price changes are random.

2.1.3.2 Semi-strong Form Efficient Market Hypothesis (SSFEMH)

The semi strong form of the EMH asserts that all publicly available information is fully reflects in assets prices. The implication of this is that neither technical nor fundamental analysis can be used to beat the market. The semi-strong market maintains that as soon as the information becomes public the stock prices changes and absorb the full information. Therefore, the stock prices adjust with the information that is received.

2.1.3.3 Strong Form Efficient Market Hypothesis (SFEMH)

The strong form states that current prices fully reflect all information, including ‘private’, insider information. So that, insider trading is not profitable. The fundamental market price of a share must, therefore, be the best approximation to its intrinsic or ‘true’ value based on anticipated cash flows. As a consequence, even the most privileged professional analyst is unlikely to achieve higher returns from a portfolio of securities in the longer term than the most native investors with and indiscriminate selection of shares. So, as the theory strengthens, speculative opportunities weaken. Competition among large no. of well-informed market participants drives financial asset prices to a consensus value which reflects the best possible forecast of their future payment stream.

The empirical evidence surveyed in Fama (1991) and Fama (1998) generally supports the idea that prices do seem to be weak and semi strong efficient but that the markets are not strong form efficient.

A central challenge to the EMH is the existence of stock market anomalies: reliable, widely known and inexplicable pattern in returns. Commonly, discussed anomalies include size effect, where small firms may offer higher stock returns than large ones; and calendar effects such as the 'January effect'-which seems to indicate that higher returns can be earned in the first month compared to the rest of the year and the 'weekend effect' or 'blue Monday'- which suggest that you should not buy stocks on Friday afternoon or Monday morning since they tend to be selling at slightly higher price. There are also the supposed indicators of undervalued stock used by value investors such as low price to earnings ratio and high dividend yields.

It is usually believe that the markets in developing and less developed countries are not efficient in semi strong form or strong form. Most of the research work revealed that the stock market in developing countries have not even met the condition for weak form hypothesis of market efficient. Therefore, we also first test the weak form efficiency of Nepalese stock market. It is very much convenient to test the weak form efficiency of the market rather than semi strong form and strong form efficiency. The test of semi strong form and strong form efficiency is very rare in less developed countries because of absence of sufficient data in a convenient form, structural profile, inadequate regulations, lack of supervisions and administrative loose in the implication of existing rules. In addition, companies' information are released and circulated before the annual report is officially available; the annual reports of some of the companies are mistrusted and are often result of rumors circulation in the market about the companies. The market moved dramatically over a period of time to become

a speculation market and then a gamble market. That means there is a trend of market movement and most of the investor in the market become speculators. Moreover, share price indices data are available and reliable to test the weak form efficiency of the market.

The empirical research on market efficiency can be divided into two broad categories; one is technical analysis, which is mainly concerned with testing for availability of exploitable information in past security prices, is widely used in examining the weak form efficient market hypothesis. The other is Fundamental Analysis, which rests on the assumption that factors other than past security prices are relevant in the determination of the future prices. The first category of WFEMH testing can be divided into two sub approaches; one is to determine the existence of predictability using past return series or price information. The another is to use technical trading ruses if they can be exploited as profit making strategy. The aim of the study is to test the weak form of the NEPSE.

2.2 Test of Market Efficiency

As discussed above, there is different level of market efficiency. Any market that is weak form efficient is not necessarily be efficient in semi-strong or strong form hypothesis. But to be efficient in strong form, a market must meet the conditions required by weak and semi-strong form hypothesis. Therefore, it will be much better to start the work of market efficiency test from weak form hypothesis. Moreover, the previously conducted empirical works have shown that most of emerging or developing stock markets are not efficient even in weak form. Therefore, we also conduct the weak form efficiency test for Nepalese stock exchange.

Test of weak form efficiency is just a function of finding out whether security prices follow a random walk, so that with the knowledge of past trend of stock movement can't continuously out perform a native investor who buys and holds his investment over a long period. A simple meaning of random walk of security price is that all price changes which have occurred today are completely independent of the prices prior to this day in all respects. There are so many methods to test randomness of stock price behavior. Here, in this research we use only two methods, serial correlation (Parametric) and rum test (non parametric).

2.2.1 Auto-correlation (Serial Correlation)

Many researchers have tried to test whether security prices follow a random walk through the use of serial correlation. In 1964, Moore took up a test called "Serial Correlation Test." He found out the serial correlation of weekly security prices. Serial correlation is said to measure the association of a series of number, which are separated by some constant time period. Moore has measured correlation of price change of one week with price change of the next week. His research showed average serial correlation of –0.06 which did not indicate any significant correlation between price changes in successive periods. This means that a price rise didn't show the tendency to follow the price fall or vice-versa. The evidence wasn't considered or interpreted to being different from an average correlation of zero because the evidence was extremely weak which indicates that there is no association. Moreover, a price reversal of a correlation co-efficient of –0.060 would not be able to returns to be able to compensate for the cost involved in transaction. Eugene F. Fama also tested the serial correlation of for 30 firms, which composed of the Dow Jones Industrial Average for five (5) years before 1962. His research showed an average correlation of –0.3. This correlation was also weak because it was not very far a way from zero

(0) and therefore, it indicated a very low tendency of security price to reverse dates.

2.2.2 Run Test

It was also the Fama who perform RUN TEST to find out if price changes were likely to be followed by further price changes of the same sign. He made the Run Test because correlation co-efficient were too often dominated by extreme values and they influence the results of calculation to determine the correlation coefficient. RUN TEST ignored the absolute values of number in the series and took into the research only the positive and negative signs. The run test is made by counting the number of consecutive signs or "Runs" in the same direction. The actual number of runs are observed and compared with the numbers that are expected from the price changes randomly generated. Hagerman and Richmond made a similar study for price changes observed on security, which were traded in Over The Counter market (OTC). They found that returns of OTC were not serially correlated. In 1972, Black and Scholes tested the efficiency to the options market. Their research work showed that the option contracts were significantly mispriced and their transaction cost was so high that those trading in the market couldn't make any abnormal return by taking advantage of the mispricing.

2.3 Market Efficiency and the Rationality of Investing Public

Like other commodity market, stock market also requires some condition to be an efficient market. The conditions are similar to the condition that assumed by other market. Large number of rational investor is the key condition that is required by efficient market hypothesis.

There should be large number of buying / selling investors so that the behavior of a single or small group of investor can't affect the market movement. The whole investors in the market must be able to participate in the market if there is any opportunity for risk adjusted excess return.

Similarly general public must be able to recognize the potential opportunities for excess return. Though there may be some irrational investors as well, the average investors must be rational so that inefficiencies caused by them are adjusted. Working of efficient market hypothesis is not possible without the rational behavior of investing public. Market efficiency is defined in term of time taken to adjust new information in stock prices. Similarly, the weak form efficiency is measured by observing whether the stock follow a random walk, that is stock prices are unpredictable. To have a random walk, a stock price must adjust new information very quickly as they broke into the market. The adjustment of new information in a market value of stock is not an automatic action. It is the investors who determine an optimal price in light of new available set of information by demanding or supplying stock in the market until the optimal price is achieved. The adjustment of optimal stock price in response to new information is done through altering the future expectation of cash flow (return) and altering the required rate of return (risk), more accurate the future expectation about risk and returns of the stock, the more efficient the market. But the accuracy of expectation is solely depended on the individual decision maker. Hence the market efficiency has a straight link to the appropriate analytical and decision- making ability of individuals.

So, it is evident that if there is small number of investor (or thin trading) and the average investors are irrational who can't recognize the opportunity for excess return, the market can't become efficient.

2.4 A Review of Major Studies in General (Review from Article)

This section is devoted to the review of some major pervious studies concerning share price behavior and market participants' attitudes and perceptions in the understanding and acceptance of efficient market hypothesis. The early studies on testing weak form efficiency started on the developed market generally agree with the support of weak-form efficiency of the market considering low degree of serial correlation and transaction cost (working; Kendall, 1953; Cootner, 1962; Fama; 1965).

In 1953, Kendall made important progress in the study of random walk model. He examined the behavior of weekly changes in 19 indices of British industrial share prices and spot price series of cotton (New York and wheat (Chicago). He extensively analyzed data by auto correlation and found that successive price changes are statistically independent or stock price movement follows random walk. To sum up, the review of literature suggests that share prices; really follow a random walk, prior to 1959.

In another study, Coother (1962) analyzed the weekly and 14- interval data on 45 stocks from New York Stock Exchange (NYSE) and tested for their randomness by means of a mean- square successive difference test (Van Neuman Ratio). He found that one-week interval stock price move as random walk. However, he found some trends in the same data at 14-week interval. The average serial correlation coefficient for the week was- 0.047 and for 14-weeks was 0.13. Essentially, he focused the importance of 'differencing interval' while testing for randomness in stock price behavior. He contended that there was no one random walk model, but one for every definition of 'post and future'.

In 1965, Fame's study on the random model is considered to be one of the most definitive studies. He analyzed the daily proportionate price changes of 30 blue chip stocks in the DJIA for the period of late 1957 to 26 September 1962. He followed standard statistical tools such as serial-correlation and runs tests to examine whether any dependency exists in lagged price changes. He found that the serial correlation coefficient for daily price changes were very small and average was 0.03, which is close to zero. But 11 correlation coefficients of stock out of 30 stocks were more than twice their computed standard errors. He calculated serial correlation coefficient for differencing intervals stronger evidence of dependence. This lead Fama to conclude that the evidence produce by the autocorrelation model seems to indicate that dependence in successive price changes is either extremely slight or non-existent.

Fama further examined by runs analysis to test whether any dependency exists in lagged price changes. In fact, he found that the actual and expected runs are not significantly different. The largest difference was not significant. However, the difference for the 4-day, 9-day, and 16 – day intervals is very small. In any case, the departure from randomness was negligible. On the basis of these tests Fama concludes: there is little evidence, either from the serial correlation or from the various runs tests, of any large degree of dependence in the daily, 4-day, 9-day and 16-day price changes.

All of the studies above support the proposition that price changes are random and post changes were not useful in forecasting future price change particularly after transaction costs were taken into account.

However, there are some studies, which found the predictability of share price changes (Fama and French, 1988; Poterba and Summers, 1988)

in developed markets but they didn't reached to a conclusion about profitable trading ruses.

Fama and French (1988) conclude that auto-correlation may reflect market inefficiency or time varying equilibrium expected returns generated by rational investor's behavior and neither view suggests, however, the patterns of auto-correlation should be stable for a long sample period.

Hudson, Dempsey and Keasey (1994) found that the technical trading rules have predictive power but not sufficient to enable excess return in UK market. Similarly, Nicolass, (1997) also concluded that past returns have predictive power in Australian market but the degree of predictability of return is in not so high.

Nourrendine Kababa (1998) has examined the behaviors of stock price in Saudi financial market seeking evidence that for weak form efficiency and found that the market is not following weak- form efficiency. He explained that the inefficiency might be due to delay in operation and high transaction cost, thinness of trading and lack of liquidity in the market.

Roux and Giberson (1978) and found the evidence of non-randomness stock price behavior and the market inefficiency (not weak form efficiency) on the Johannesburg stock exchange.

The review of above mentioned studies carried out in the counties other that of India and Nepal shows many interesting finding on price behavior and EMH. However, question arises as to what extent these findings are pertinent for Nepal. They all may not be applicable for Nepal where the stock market is small and underdeveloped. The more pertinent studies would be the studies conducted in India, since Nepalese and Indian

companies are operating under similar conditions. Hence, the following section attempts to analyze the studies conducted in the context of India.

2.5 A Review of Major Indian Studies (Review from Article)

There are some empirical studies conducted to test efficient market hypothesis (EMH) in India. In one of the earliest studies, Rao and Mukherjee (1971) applied spectral analysis to weekly prices of an almunium company's share and found no evidence contrary to random walk model. Sharma and Kennedy (1977) tested the random walk model indices of the Bombay (BVDISI), New York (S & P 425) and London (F.T.A 500) Stock Exchanges during 1963-73. They found that stocks on the Bombay Stock Exchange obey a random walk and are equivalent in this sense to the behavior of share prices in the markets of developed counties.

Gupta (1989) analyzed the equity share behavior in India during the period of Jan 1971 to March 1976 and extensively tested the RWH using daily and weekly prices of 39 individual shares and two indices. He employed the serial correlation analysis and runs test and found evidence in support of RWH. He also concluded that the random walk model appeared to be an appropriate model even for the less developed country like India to describe share price behavior.

Pandey & Bhat (1989) surveyed market participants' attitude and perceptions in the understanding and acceptance of EMH. They sent the questionnaire to 600 persons who were divided into four (4) groups:

i. The chief financial executives;
ii. Academicians;
iii. Chartered Accountants; and
iv. Cross section of investors and brokers

Only 160 questionnaires were returned duly filled by the respondent. Their analysis denied the existence of market efficiency in its three forms.

Mahapatra (1995) tested the WFEMH using rank correlation analysis based on relative strength. His sample consisted of month-end closing prices of 26 stocks from Bombay Stock Exchange during the period Jan, 1989 to Dec, 1992. He argued that the Indian Stock Market is less efficient in the short-run but more efficient in long run.

Nath (2002) made an attempt to confirm whether EMH is applicable to emerging market like India. The primary objective pursued in his study was to investigate if long memory models can characterize the price behavior in India stock market. The study use the daily closing values of the index for the period from 1990 to 2001. Returns have been calculated for various time lags like 1 day, 14, 30, 90, 180, 270, 360, 720 and 1800 day to understand to what extent, the long memory process exist, if it exist at all. Two important test variance ratio test and rescaled range analysis was used. The variance test clearly implies that there does not exist any short term or long memory. However, the rescales range analysis provided indication of long-term memory but with noise. In either case, analysis showed that the movement of stock prices does not follow a random movement.

Consistent with the result, the study of Pant and Bishnoi (2002) has also found that the Indian Stock market indices do not follow random walk. The study analyzed the behavior of daily and weekly returns of five Indian stock market indices for random walk during April –1996 to June –2001. The analysis included test autocorrelation using Q-statistic, Dickey-Fuller test and variance ratio test. The result showed the significant first order autocorrelation in daily returns, while not significant in weekly returns. The evident autocorrelation was significant at lag one and two and it tends to die

out for higher lags. Similarly, the variance ratio test rejected the null hypothesis of random walk at 5 percent level of significant. The results of variance ratio test and autocorrelation test showed similar result and reject random walk in Indian stock market indices. Whereas, the results from Dickey-Fuller test fill to reject the null hypothesis of random walk. Since variance ratio test is more powerful then the other tests performed in the study, the study concludes on the basis of the results of variance ratio test. The results confirm the mean reverting behavior of stock indices and overreaction of stock prices in unitary direction in India. Thus the study concluded that this provides an opportunity to the trades for predicting the future prices and earning abnormal profits.

Literature available depicts that comparatively few major studies have been undertaken for developing market than developed market. The unavailability of reliable data may be one of the important reasons for this. Since the applicability of the result of empirical studies conducted in developed country is questionable in contest of such market, there is need for more empirical research efforts that provide valid feedback to financial decision maker and regulators.

In short, review of previous studies stated that the developed markets are generally weak form efficient. But the dynamics of emerging market equities requires clarification, comparison and needed additional information on equity price dynamics in an important segment of the world's emerging capital markets. So, it is an interesting empirical question whether and to what extent, this is also the case with less developed market stock exchanges. And the review of previous empirical evidences addressed some research questions: Is the Nepalese stock exchange as an less developed emerging market, weak form efficient or not? How for it deviates form idealized EMH? What return generating process derives emerging equity

market series? These issues are empirically examined in the following section.

2.6 Review of Empirical Studies in Nepalese Context (Review from Article)

There are relatively very few empirical works has been addressed on the topic of market efficient and investors behavior in Nepal. However, as the market efficiency is quite and important matter while performing any research in capital market, most of the empirical works conducted in our capital market has been found to give a little attention toward market efficiency, if not they give little attention about the pricing of securities whether they match the calculated intrinsic value or not. Hence, while reviewing the empirical works in market efficiency and investors behavior, we go through the every research work that has given some attention to market efficiency and investors behavior.

Shrestha (1992 A.D) conducted a study on the role of securities marketing center (SMC) in the economic development of Nepal. The objective of the study was to examine the role played by SMC in promoting Nepalese security. This study covered the period of 4 years and had analyzed the trend of securities transaction in the capital market. He had concluded that securities marketing center (SMC) is playing a good role for securities by providing a market place; the primary market of SMC is very poor, SMC is facing a problem in demand and supply side, investors are influenced by the value of shares and dividend policy of the company while buying or selling the securities.

Pradhan, (1993) carried out a study on stock market behavior in a small capital market. The main purpose of the study was to address the stock

market behavior in a small capital market in the context of Nepal. It attempts to examine relationship of market equity, market value to book value, price earnings and dividends with liquidity, leverage, profitability, assets turnover and interest coverage. Different financial tools were used in the study. Seventeen listed companies were sample for the study. The result from the study was that the larger stocks have larger price earnings ratios, larger ratio of market value to book value of equity, lower liquidity, lower profitability and smaller dividend. Price earning ratios and dividend ratios are more variables for smaller stocks whereas market value to book value of equity is more variable for larger stock. Larger stock have also higher leverage lower assets turnover and interest coverage but these are more variable for smaller stocks than for larger stock. Stocks with larger market value to book value of equity have larger price earning ratios and lower dividend. These stocks also have lower liquidity, higher leverage, lowest earnings, lowers turnover and lower interest coverage. Stocks with higher price earning ratios have lower turnover and lower interest coverage. However, these are all more variable for stock with smaller price earning ratios than stocks with larger price earning ratios.

Shrestha (1996) carried out a study on the public response to primary issues of share in Nepal. The objectives of the study were to evaluate the primary market in Nepal. The study was based on the use of secondary source of information taking a sample of twelve (12) selected companies for the period of five (5) years. Different statistical tools were used in his study like the simple average, chi-square test and correlation coefficient. The study concluded that the response of the public towards the issue of shares of banks, finance and insurance companies were better than that of manufacturing and processing, trading, hotel and other groups of companies.

Timilsina (2001) conducted a study on “Capital Market Development and Stock Price Behavior in Nepal”. The main objective of the study was to find out the fair market price of equities and observe fair price to test whether the present behavior of prices will remain stable. The study covered a period of 8 months in the year 1999/2000. Thirty-four (34) listed companies were taken as a sample for the study. Different statistical, mathematical and financial tools including the formulation of hypothesis was done in the study. The main finding of the study was that the market price of share depends upon EPS as well DPS, but DPS is more price sensitive and it will have direct and immediate response in the market. However, the market values of share computed on the basis of EPS are near to the observed values.

Pradhan and Upadhyay (2004) conducted a study on the efficient market hypothesis and the behavior of share price in Nepal. The main objective of the study was to make a comprehensive investigation of “weak” and slightly other form of EMH. In other to be conclusive about the efficiency of the stock market, primary sources of information about the share price was conducted for the first time in order to find out more subjective facts on share price behavior which can’t be determined through the use of secondary sources of data. Different statistical tools were used in the study like serial correlation, the run tests, weighted mean, median, chi-square test and Spearman’s rank correlation. Twenty-three equity shares listed and actively treaded in the Nepal Stock Exchange Ltd. During Mid-July 1997 to mid-July 2000 constitute the sample for the study.

The main conclusion determined from the study was that the Nepalese Stock Market might not be termed as “weakly efficient” in pricing shares where market efficiency is defined as all historical information is reflected in security price. The main factors affecting share price perceived by the

respondents are dividends, retained earnings, bonus share and right issue. The share prices have been found more volatile than expected dividends. Similarly, publicly available information is useful in identifying over or under valued securities. Nepalese investors are not really indifferent towards making or non-makings of information public. The respondents slightly accepted the weak form of efficient market hypothesis. The study also found that the shareholders in high tax brackets didn't prefer retained earnings instead of dividend.

Overall, the previous studies in stock market support the idea that Nepalese stock market is not efficient even in the weak form hypothesis. Nepalese investors are not efficient enough to recognize potential for excess return. Hence, this empirical work will be a milestone in the field of literature of market efficiency.

2.7 Review from Thesis

Review of thesis is a section of review of literature where various thesis are reviewed which are related to its topic and which may be helpful for this study. In this section some previous thesis are reviewed which are some extent related to market efficiency.

Bhattarai (1990) on his research analyzed stock price, paying greater attention on dividend and dividend policy, generalized that many companies were paying less cash divided than the expected by investors. In average, most companies were under-rating the expectations of investors and there-by resulting the low marketability of shares on the trading floor of stock exchange. He has also stated that the calculated price could not reflect the quoted price of share. This also support that the market is not to be efficient in which stock reflects the true value of the investment or intrinsic value.

Aryal (1995) conducted a study on the general behavior of stock market prices revealed NEPSE to be an inefficient market. He performed a test of weak form efficiency by examine whether the stock price behavior follows a random walk or not. He concluded that the knowledge of past is useful in predicting the future movements of stock market prices. Therefore, investors on the floor of the exchanges for securities can make higher than expected profits in the future based solely on the historical prices series under the existing trading mechanisms than they would be under a native buy and hold strategy.

Shrestha (1999) analyzed 30 listed companies' stock price and found that the successive price changes are dependent. He finally concluded that the NEPSE is not efficient in pricing shares even in its weak form. Shrestha had used auto-correlation and run test to detect the dependence among the stock price series. The outcomes of both the model were found to be similar and rejecting the null hypothesis that the successive price changes is independent. Though his research was not based on the total market return movement, the result drawn from analyzing the movement of major stocks traded in the market can be generalized for efficiency level of overall NEPSE. Moreover, this research work with the analyses of total market return and banking sector stock return will be useful to verify his findings as well.

Gurung (1999) conducted a study on share price behavior of listed companies in Nepal. The main objectives of the study was to analyze the relationship between traded and listed companies to evaluate the trading turnover to analyze the behavior of NEPSE index, share price behavior of listed companies and to identify the market behaviour in Nepal. The sample for the study was 15 companies listed in NEPSE. Different statistical tools like average, correlation co-efficient and probable errors were used. He

concluded that the no. of listed companies has been increasing during the study period, that is to say there was an expansion of capital market and shares of the trading companies whose shares have been traded decreased in each year. The performance of commercial banks was better than that of trading companies, trading turnover in terms of amount, no. of transactions occurred etc. was higher in banking group as compared to other groups, there was uncertainty and instability in stock market and the market has totally changed into bearish situation in the latter years of study period.

Shrestha (2000 A.D.) concluded in her study that the NEPSE is efficient in its weak form hypothesis. But her study report itself is contradictory. At the same time she has also stated "It is possible to beat the market by using technical analysis in NEPSE". Since the weak form efficient market is defined in term of usefulness of technical tools to beat the market. If it is possible to beat the market by using technical tools of analyses, the market never could be ascertained as efficient even in weak form.

Mainali (2002) has studied the share price behavior of listed commercial banks. He has analyzed the daily closing price of ten (10) listed commercial banks. The study concludes that the successive daily price changes of commercial banks are dependent.

Poudel (2003) has carried out the study on the movement of stock prices in relation of Nepalese Joint Venture Commercial Banks. The prime objective of the study is to examine the movement of stock market price. This study concluded that the movement of stock price is dependent on the financial indicators or the historical data of the companies.

Bajracharya (2003) has conducted the study of stock price behavior of financial institutions in Nepal. The fundamental objective of the study is to

examine the efficiency of the stock market in Nepal. He has analyzed the secondary data by examining six (6) commercial banks and two (2) finance companies. The study concludes that the Nepalese market is inefficient.

Shrestha (2004) has conducted the study on EMH in the context of Nepal. It focuses on the relevance of EMH to the pricing of shares in the NEPSE. The main objective of her study is to study the relevance and validity of EMH in the context of Nepalese security market. The study is based on both primary and secondary source of information. 35 companies are selected as a sample and 115 questionnaires were distributed to the respondents as a sample for the study. It covers 7 years period from July 1997 to April 2004. For the analysis of secondary data analysis two test namely serial correlation and Run test is conducted to analyze the statistical properties of share price. The study concludes that the NEPSE market is inefficient with respect to any so-called level of efficiency.

Poudel (2005), conducted the research to test the random walk model in Nepalese context. The prime objective of his study is to examine the price behavior of stock market in Nepal. The study covers the period of one year starting from 17th July 2003 to 16th July 2004 for the analysis of serial correlation and run test. The sample for the study comprived of 21 companies representing from each sector listed in NEPSE. The serial correlation coefficients were found to have deviated significantly from the expected value zero. A part from this, the total expected and actual numbers of the daily price changes were computed the significant deviations between the actual and expected no. of runs were observed for most of the securities. This overall study shows that the random walk model doesn't seem to fit in Nepalese context. This also implies that the stock market is not efficient in pricing shares. The study also revealed that there was a dependence of successive price change.

Thapa (2006), has studied the behavior of Nepal Stock Exchange Index. The study endeavors to examine the efficiency of the behavior of NEPSE index. It covers the period of 5 years from the 16th July, 2000 to 16th July, 2005 by considering all the sectors. The conclusion of the study said that the growth of capital market is in slow process. Banks and financé companies are in better position. NEPSE index shows no sign of improvement and reflects the aggregate volatility of the share price of the listed companies.

Shrestha (2006) has conducted a study on daily stock price behavior of commercial banks in Nepal. The fundamental objectives of the research is to analyze the daily stock price, behavior of the commercial banks and to determine whether the Nepalese stock market is efficient in pricing share covering only 1 year period from 16th July, 2004 to 16th July 2006. Seven (7) commercial banks are selected as sample. It analyzes the secondary data by using few statistical tools like mean, standard deviation, co-efficient of variance, serial correlation and run test. Descriptive static tools- Mean, standard deviation and C.V. are used to measure the volatility of the daily stock prices. Whereas, inferential statistical tools- serial correlation and run test are employees to measure the independence and the randomness in daily successive stock price. The study revealed that the successive price changes are dependent i.e. the Nepalese stock market is inefficient in pricing the shares.

Tamang Samraj (2008) has conducted a study on Market efficiency and investor. The findings of the study is:

- The auto-correlation analysis of daily market return of NEPSE has detected significant first order correlation. It means the market return of today in NEPSE is affected by

the return of yesterday. The price movement is not independent rather it has some relationship with the past price sequences. Hence, today's price change of stock in NEPSE is not an unbiased and independent outcome of yesterday's price change. OR, the market is not following a random walk, the minimum requirement for weak form efficiency. Thus, the past information about the stock price movement is useful to earn risk adjusted excess return in the NEPSE.

- Run test for the daily market return has also revealed the similar result that the stock price formation process in NEPSE is not independent from the historical price series. The observed number of run is quite lower than the runs that could be expected if the movement were random. The lower number of runs indicates the overreaction to the information, which allows active investors to earn risk-adjusted excess return in the market. Hence, this also suggests rejecting null hypothesis that the market follows a random walk.

2.8 Review of Newspaper and Magazine

Some newspaper and magazine are studies for reviewing the literature to some extent which are presented below:

One of the daily national newspapers writes:

With the improvement in the performance of financial sector group, share transaction at the country's sole secondary market, Nepal stock exchange this week registered a marginal growth. The NEPSE rose by 64

point. According to information provided by Nepal Stock Exchange Ltd, the index went up to close at 224.09 points on Friday, from the opening 223.45 point on Monday weekly trading analysis revels that most so week days posted a steady growth, while Wednesday saw the largest transaction of the week. A total of 69,129 share units were traded at Rs, 13,579,654 through 117 transactions on Wednesday.

The NEPSE index, which opened at 223.45 points on Monday, steadily grew up Tuesday and Wednesday and it reached to 224.42 points on Wednesday. However, the index tells by one point on Thursday and settled at 223.42 points. But the transaction of Friday, the last day of weekly trading improved and the NEPSE index gained by 0.67 point to close at 224.09 points. Despite increment in the NEPSE index, total traded amount and the no. of shares traded declined compared to last week. A total of 117,423 share units valued at 27,989,278 were traded through 964 transactions against last week's trading of 137,832 share through 1198 transactions at 40,127,828.

Meanwhile, out of the listed 58 companies for five (5) days trading, 46 companies saw their transaction during the week. The NEPSE floor remained open on all five (5) working days, when share of Nabil bank Ltd, Nepal Investment Bank, Bank of Kathmandu, Everest Bank Ltd. and Laxmi Bank Ltd. were traded throughout the week.

The companies where share traded for four included Himalayan Bank Ltd; Nepal SBI Bank, Nepal Bangladesh Bank Ltd. Nepal industrial and Commercial Bank Ltd. Cosmic Merchant Banking and Finance Co., Development Credit Bank Ltd. and Machhapuchare Bank Ltd.

Standard Chartered Bank Nepal, oriental Hotels Ltd., Necon Air, Life insurance Company Ltd, Life Insurance Corporation Nepal, Nepal Shrilanka

Merchant Finance, United Finance Co., International Leasing Finance Co. International Leasing Finance Co. Ltd., Central Finance Co., Nepal Development Bank Ltd., Nepal Merchant Banking and Finance Co., Alpic Everest Finance and Taragaun Regency Hotels also saw their share traded at similar price at NEPSE floor this week.

(From Himalayan times, dated July 25, 2008)

One of the Nepalese Monthly Business Magazines writes in the head of:

Nepalese stock exchange's securities raised index during the month of June, remained fluctuating. It remained bullish till June 10 reaching 216.75 and than it turned bearish continuously reaching the level of 211.31 on government and the main leader was commercial bank group. The market dominating sector in the exchange understandably enough, the increase in the price was fueled by the expectation for early end of conflict between government and political parties, after the appointment of Deuba as a Prime Minister. But the publication of the third quarter financial result (which showed the operating profit increasing more than 50% over the previous quarter despite the political unrest and throat cut competition among the banks) was no way less important factor for such positive impact on commercial banks sector as been in June 2004. NEPSE index fell after reaching 216.75 points on June 10 and plummeted to 211.31 over a short span of three days. This fall was however caused by notices published by some companies inviting application for their new issue (Paschimanchal Development Bank and Kist Merchant Bank and Finance Ltd. both on June 10, call of NBL for application to purchase its holding on SCBNL, issuance of right share by the NB finance Ltd.) as well as the possible strike of the NEPSE employees and the wrangle among the political parties that delayed the formation of coalition of government. Since, June 16, the index turned

bullish again till the end of the month. Despite the strike of employees of NEPSE, the market increased on June 16, one day before the strike and continued to increase during and after the strike till the end of the month. There were no any major events to cause the price of share goes up. However, the expectation of fewer disturbances after the four (4) parties suspended the outgoing demonstration and the Maoist students' union call off the education strike, the country budget and positive development reported for the formation of coalition government etc. increased the expectation of investors.

The NEPSE index seems sensitive to political, economical and financial sector developments it has raised after the disclosure of financial situation by the companies and when there were positive signs of political stability and it decreased for some company share. It share that the investors are becoming aware about when to buy and sell the securities. (Business Age 2007, July, 53)

One of the Nepalese Monthly Business Magazine Writes in the head of:

"There are many loopholes in our stock-exchange Act. Investors feel insecure here. A few years back there was a company called Nimrod pharmaceutical company that floated in shares, but where are they now? Similarly it has been more than a year that Bansbari leather has allotted its shares, but why didn't the company list its shares in the market? It has been there year that Gorkhali Rubber Udhyog hasn't called for its AGM. Government remained silent in all these cases. This why the general public as well as the institutional buyers is not felling secure in investing in stock market" (Business age, Jan 2000:25).

One of the Nepalese Monthly Business Magazine Writes in the head of:

“Share trading scandal formed the headline of major dailies of Nepal a few days ago. The news was that some of the staffs of Nepal Merchant banking and finance Ltd. (NMB), the share registrar of Standard Chartered Bank Nepal Ltd., were involved in unauthorized sales of the shares of investors not present in the country. They were also alleged of cheating such shareholder of their dividend. As a share registrar, the company’s duties were to update the shareholders’ information, distribute the benefits provided by the client company to the latter’s shareholder and to verify the signature of the shareholder at the time of ownership transfer of shares. But the staff forged the signatures of the shareholder and so as to sell their shares without the knowledge of the shareholders and to claim them-selves the dividend allotted to such shareholders. When the media reported this scandal, NMB blamed on of its staffs and registered a forgery case in the District Police Office, Kathmandu. The accused is still learnt to be in the police custody. As scared in the news through some other staffs also were involved in this scandal, NBM has registered the case against only one of its staff. Another of the NMB staff accused in this scandal is reported to have escaped out of the country

In such types of scandals, whether they are reported by the media or not, are repeated frequently and no attempts are made to rectify the flows in the system and to punish the guilty, there is no doubt that sooner or later the capital market will lose the investors.

A close study of this case brings the deficiencies of our market to the forefront. The major deficiencies are obviously lack of professionalism among the market participants and lack of interest in compliance. The issuer company can’t escape from its responsibility simply blaming the registrar. It must satisfy those investors whose shares have been stolen. The share registrars are found to be coreless and a question can be raised on their

professionalism and honesty. The stockbroker has also made a mistake by executing the shares trading without identifying the client and thus violating the codes of conduct for stockbrokers issued by Securities Board (SEBO), the regulator of the capital market in Nepal. As the code clearly states that the brokers must identify their clients, such scandal could have been avoided the broker complied with the code. Also regulators are equally responsible as they aren't effectively monitoring the activities of securities businesspersons and taking legal action against their non- compliance under the prevailing rules and regulation.

As the capital market of Nepal is still in the infant stage, the regulatory system established to systematize and regularize the securities trading still has deficiencies. This leaves scope for anyone to time unfair benefit from the market at the cost of ordinary investors. Not only the investors are found to be irrational and concerned with short term gains, in this scenario, we can't expect perfect behaviors from all the market participants. The major problems seen in the system are duality and ambiguities in the regulation, inadequate legal provision to control the market, lack of adequate market infrastructure, lack of clear demarcation of duties of the regulators, poor corporate culture, lack of professionalism of the market participants, poor compliance and lack of clear legal provision for taking action to address the noncompliance uses.

In its Annual report for the fiscal year 2001/02 SEBO states that is has made some attempts to address the issues through issuance of guidelines directives and disclosure formats to the market participants, codes of conduct for the stockbrokers etc. It has also prepared a draft for the new securities exchange act, which was presented to the ministry of finance in 1998 to initiate the necessary legislative process. However, it is to be enacted by the parliament. Even though SEBO has made attempts to solve the problems,

they are still there. It can't escape of its duty to explain the present state of the market and deficiencies existing in the system. Taking necessary support from the government is should take the required step to better co-ordinate the market participants to develop a healthy capital market in the country. Moreover, it is important to discipline the market participants and educate them of their moral duty to comply and make others comply with the prevailing rules and regulation. Only this can create the atmosphere where scandals like this one are one repeated" (New Business Age, April 2003: 44)

One of the Nepalese daily Newspaper writes in the head of Insurance Companies regains their Market:

"Even though the economic activities are passing through a critical stage caused by various economics and non-economic factors, the index of Nepal Stock Exchange has been displaying a bullish trend for the last couple of months. A slight bearish trend prevailed last week. This index had gone down by almost two points. However, the NEPSE recovered slightly when the floor was closed on Friday. Initially the index was 337.32 at the opening hour on Monday, but climbed to 339.34 points.

According to NEPSE a total of 233309 units of shares were treaded at Rs. 791,35,907 through 1941 transactions this week against the trading 2,92,274 units of share which were trended at Rs, 10,11,12,058/- through 4045 transactions.

Out of 66 companies 57 of them registered for transaction. In group wise transaction, the index of commercial bank surged to 378.32 from 374.48. Similarly, the index of manufacturing companies, hotels remained at 289.73 and 183.55 points respectively. The index of trading sector also remained at 141.72 points. Likewise, the index of other sector also remained

at 280.38 points. The index of insurance sector slightly moved up to 344.43 from 344.14. And the index of financial sector surged to 250.51 from 250.45 points. However, the index of development bank declined to 275.17 points from 280.38.

Out of total transaction, commercial banks occupied 80.41% followed by insurance companies which covered 14.25% of the total transaction. Similarly, the index of manufacturing sector stood at 0.28% and hotel sector 0.13%. Finance companies covered only 2.58 points.

In average the NEPSE recorded 26 transactions in the purchase side, where as 15 transaction were recorded in the sales side. (The Rising Nepal, March 19, 2006).

2.9 Research Gap

Capital market plays a vital role in the advancement of growing economy. The concept of capital market is neither very old nor very complex. It is still in creeping stage where various efforts have been made for the development of capital market. In this regard the study of market efficiency and the investors is being conducted.

Various Studies have been done on the topic of level of Market efficiency and the investor's rationality but no one has given focus on market efficiency as an important factor which affects the investor and market significantly.

Though few studies have considered level of market efficiency and the investor's rationality in Nepalese capital market. They fail to focus on the level of efficiency of NEPSE and the rationality of Nepalese investors.

Thus, Research Gap and weakness are found in the previous studies, this research has been conducted to find daily market return and empirical analysis of primary data. This research will be equally beneficial to policy maker, planners, general investors, brokers, researchers and person interested in capital Market.

CHAPTER III
RESEARCH METHODOLOGY

3.1 Introduction

The research methodology is the submission of methods, techniques and the ways of study and the analysis of data for solving the research problem. This chapter refers to the overall research processes, which a researcher conducts during his/her study. This process of investigation involves a series of well thought out activities of gathering, recoding, analyzing and interpreting the data with the purpose of finding answer to the problem. It includes research design, analyzing and interpreting the data with the purpose of findings answer to the problems. It includes research design, sources of data, method of data collection, research variable analytical tools. This research is based on historical data by using both financial and statistical tools; detail analysis of different variables is performed.

Research methodology is the main body of the study. The main aim of this research work is to find out the efficiency of the Nepalese stock market and the effect of investors rationality on the level of efficiency. Therefore, the research starts with an attempt to exploring the efficiency of NEPSE.

After concluding the efficiency level of NEPSE, it will proceed to find out the rationality of the Nepalese investors and its impact on the level of market efficiency. In light of the objectives, the research work can be divided into two parts. First part is the test of market efficiency and the other is the exploration of investors' behavior, which obviously have strong role in the determination of level of market efficiency.

A failure of weak form efficiency implies a failure of semi-strong or strong form efficiency; we will confine ourselves to this most basic notion of efficiency i.e. weak form as it may be the case that the Nepalese market hasn't even met this condition yet. The test of weak form market efficiency is conducted through the assessment of market return whether they follow a random walk or not. This part of analysis mostly uses the statistical tools like Auto-Correlation, Run Test and other measures of dispersion. The next part of analyses, the exploration of rationality of Nepalese investors requires mostly the subjective analyses. For this we have conducted a survey on a small number of general investors and other market participants. Though the study of a small number of investors can’t be regarded as the representation of the whole Nepalese investors but this obviously gives some idea about the rationality of Nepalese investors. Moreover, we know doing something is much better than doing nothing.

3.2 Research Design

Though the research tried to concentrate on quite a specific subject area, it couldn’t ignore some other relevant area of study, which may give further support to the research. Moreover, some subject matters are so interested that ignoring one may halt the whole research. Thus, this study is

much diversified within the topic of market efficiency and Nepalese investor's behavior. Due to the versatility of the study, it couldn't be confined within one research design. That is why the study has followed move than one research methodology. It is historical research design in the sense that it uses mostly the historical data to develop a generalization. It is descriptive and analytical as well in the sense that it tries to find some fact about the Nepalese stock market and the Nepalese investors.

3.3 Sample Period

Test of the market efficiency used the sample of daily market return from January 1, 2005 to December 31, 2009. Hence the text of weak form market efficiency is performed through the analysis of market return for this five (5) years period. And to analyze the efficiency of banking sector stock, we use the daily market index for the same five (5) years sample period.

3.4 Sample Number

The efficiency tests aren't performed on the daily stock prices or market index itself but on the natural log of daily market return. The tests are conducted for different samples within the stated sample period. Number of sample is determined by the sub-period. Total market return is analyzed for the whole sample period and twelve (12) other sub-sample period. Thus, the total sample for the total market return is thirteen (13). The following table shows the samples with their period and number of observations.

Table No. 3.1

List of Samples of Total Market Return

Samples	Sample period	Observation	Remarks
1	1- Jan-2004 to 31-Dec-2009	1176	Whole sample period
2	1- Jan-2005 to 31-Dec-2005	236	Sub- sample period
3	1- Jan-2005 to 31-Dec-2007	717	Sub- sample period
4	1- Jan-2005 to 31-Dec-2008	953	Sub- sample period
5.	1- Jan-2006 to 31-Dec-2009	940	Sub- sample period
6	1- Jan-2007 to 31-Dec-2009	696	Sub- sample period
7.	1- Jan-2008 to 31-Dec-2009	459	Sub- sample period
8.	1- Jan-2005 to 31-Dec-2006	480	Sub- sample period
9.	1- Jan-2006 to 31-Dec-2006	244	Sub- sample period
10.	1- Jan-2007 to 31-Dec-2007	237	Sub- sample period
11.	1- Jan-2008 to 31-Dec-2008	236	Sub- sample period
12.	1- Jan-2009 to 31-Dec-2009	223	Sub- sample period
13	1- Jan-2006 to 31-Dec-2008	717	Sub- sample period

Source: Annual Report of (2004/05 to 2009/10)

Similarly, banking sector stock return is analysis for the whole sample period and twelve (12) sub sample period. Hence, total number of sample for banking sector index is thirteen (13). The following table describes it in detail

Table No. 3.2

List of Samples of Banking Stock Return

Samples	Sample period	Observations	Remarks
1	1- Jan-2004 to 31-Dec-2009	1176	Whole sample period
2	1- Jan-2005 to 31-Dec-2005	235	Sub- sample period
3	1- Jan-2005 to 31-Dec-2007	713	Sub- sample period
4	1- Jan-2005 to 31-Dec-2008	713	Sub- sample period
5.	1- Jan-2006 to 31-Dec-2009	943	Sub- sample period
6	1- Jan-2007 to 31-Dec-2009	690	Sub- sample period
7.	1- Jan-2008 to 31-Dec-2009	456	Sub- sample period
8.	1- Jan-2005 to 31-Dec-2006	479	Sub- sample period
9.	1- Jan-2006 to 31-Dec-2006	244	Sub- sample period
10.	1- Jan-2007 to 31-Dec-2007	234	Sub- sample period
11.	1- Jan-2008 to 31-Dec-2008	235	Sub- sample period
12.	1- Jan-2009 to 31-Dec-2009	221	Sub- sample period
13	1- Jan-2006 to 31-Dec-2008	713	Sub- sample period

Source: Annual Report of (2004/05 to 2009/10)

3.5 Sources of Data

The research uses both the primary and secondary data for the analysis. The test of market efficiency is much depended on the data that are to be collected from secondary sources and other part of analysis, investors' behavior is analyzed on the basis of primary data. The secondary sources of data are annual report and official record of NEPSE and , various books, journals, magazines and publications Apart from this the most sophisticate sources for secondary information is the internet websites. Regarding

primary data we have used different techniques to collect them, which are described in detail under following heading.

3.6 Methods of Data Collection

First part of the research is much depended on secondary data. These data are collected from the publication and official records of Nepal stock exchange (NEPSE) and and the later part of the research is analyzed mostly on the basis of the data that is to be collected from primary sources. This part of research is related to the investors of NEPSE. For the analysis of investor behavior, we need qualitative nature of data. But only one method of data collection is not seems to be sufficient. Therefore we used there (3) primary sources. The used methods are:

- Direct personal interview
- Indirect oral interview
- Questionnaire Method

In spite of expensiveness **direct personal interview** method has been the most effective to collect the data for this research work. Since the people are found to be reluctant to respond mail questionnaire, we could ignore this method of data collection.

To get the most accurate data from the primary sources, we have used **structured** (fixed alternative item interview) and **unstructured** (open-ended technique of interview).

Structured interview has been effective while collecting data from general investors where questions to all the respondents are uniform. Moreover, people are keep to use the suggested alternative of answer. This

facilitates our data collection activities not to left any questions and keep the interview within the subject matter.

Open-ended interview technique is used to collect data of more subjective nature from investors, stockbroker, market maker, investment manager of companies and other experts. It is felt much ease to collect information in depth from the expert with this method. It doesn't confine to give his/her view within the suggested alternative of answer.

Since the population size of general investors has no limit, the best sample size could not be formed. However, this research is based on the study of a certain no. of general investors to find out investment behavior of Nepalese investors. So, we needed further support on this matter. Therefore, we consult the view of stock-broker to get more accurate behavior of general investor, as they are familiar with the investing public. Though, this method is a type of open-ended interview technique, it is indirect oral interview as well. As indirect oral interview technique suggests we also take data about third party (investors) through interviewing brokers.

In order to fulfill the objectives of the study, 70 sample sizes from Kathmandu valley is selected. Persons included in the sample are senior officials of NEPSE and SEBON, share brokers, professors, lecturers, students, general public and jobholders of banking and financial sectors.

3.7 Research Variable

Daily market return of NEPSE for five (5) year period is the main research variable of this study. Market return for a day is calculated by using daily price index. NEPSE prepares daily price index from daily weighted average price of daily transaction of each stock. Daily market returns (Rmt) are calculated from the price indices such as follows:

R_{mt} = L_n (PI_t/PI_{t-1})

Where,

Rmt = Market Return on Period t

PI_t = Price index at day t

PI_{t-1} = Price index at period t-1, and

L_n = Natural log

The reason to take logarithm return is justified by both theoretically and empirically. Theoretically, logarithmic returns are analytically more tractable when linking together sub-period return to form returns over longer intervals. Empirically logarithmic returns are more likely to be normally distributed which is prior condition of standard statistical techniques (Strong, 1992).

Similarly, daily price index of banking sector is used to calculate daily return on banking sector stocks. Daily return on banking sector stock is calculated as follows:

$R_{bt} = L_n (PI_{bt} / PI_{bt-1})$

Where

R_{bt} = Return on Banking sector index

PI_{bt} = Banking sector price index at day t

PI_{bt-1} = The price index at period t-1

L_n = Natural log

The test of market efficiency (i.e. auto correlation and run test for market return) is mostly depended on the above mentioned variables. However, for the analysis of Investors' rationality, behavior of Nepalese

investing public is the basic variables. So, the later part of the research is more subjective in nature.

3.8 Research Tools

The study uses both parametric (serial correlation coefficient test) and non-parametric test (run test) to explore the randomness of stock return. If randomness in the movement of stock return is detected, we will conclude the NEPSE to be an efficient market in weak form hypothesis and otherwise it will be concluded as an inefficient market.

3.8.1 Auto Correlation (Serial correlation)

The autocorrelation (Serial correlation) function is widely used to detect non-randomness in series of data. The term autocorrelation may be defined as correlation between members of series of observations ordered in time or space.

Give measurement, Y_1, Y_2, ……., Y_N at time X_1, X_2 ……., X_N, the lag k autocorrelation function is defined as:

$$r_k = \frac{\sum_{i=1}^{n-k}\left(Y_i - \overline{Y}\right)\left(Y_{i+k} - \overline{Y}\right)}{\sum_{i=1}^{N}\left(Y_i - \overline{Y}\right)}$$

Although, the time variable X is not used in the formula for autocorrelation, the assumption is that the observations are equally spaced. Autocorrelation is a correlation coefficient. However, instead of correlation between two different variables, the correlation is between two values of the same variable at times X_i and $X_{i+k.}$

When the autocorrelation is used to detect non randomness, it is usually only the first (lag 1) autocorrelation that is of interest. When the autocorrelation is used to identify an appropriate time series model, the autocorrelations are usually plotted for many lags.

Autocorrelation for any series of data ranges always between +1 and –1. If the correlation coefficient is zero or near to zero, it indicates that the series of observation is purely random. Similarly, if it departs significantly from zero in either direction, it indicates that the observation is not independent or they have same kind of association.

Standard error of the distribution is used to test the significance of the auto correlation. The following formula is used for calculating the value of standard error.

$$\sigma_r = \left[\frac{1}{(N-1)}\right]^{\frac{1}{2}}$$

Where,

σ_r = Standard Error

N = No. of observation

If the auto-correlation coefficient is found to be greater than two (2) times of standard error, the relationship is ascertained to be significant.

Symbolically,

If $r_k > 2\sigma_{r,}$ then the relationship is significant

If $r_k < 2\sigma_r$, then the relationship is not significant

3.8.2 Run Test

Theory of run allows us to test samples for their randomness. A run is defined as a succession of identical symbols which are followed or preceded by different symbols or no symbol at all (Siegel, 1956: 52). The number of like events is the length of the run. Non-randomness can occur either with too many or too few runs. The total number of runs in a sample gives an indication of whether the sample is random. If there are few runs, a time trend or grouping of like events due to lack of independence could be occurring. Many runs might indicate some systematic short period cyclical fluctuations.

We use this statistical theory to test the movement of daily market return for their randomness. If positive and negative daily market returns are distributed as follows the sequence will contain four runs.

$$\underset{1^{st}}{+} \qquad \underset{2^{nd}}{-} \qquad \underset{3^{rd}}{+++} \qquad \underset{4^{th}}{--}$$

Similarly this sequence contains six runs

$$\underset{1^{st}}{+++} \quad \underset{2^{nd}}{--} \quad \underset{3^{rd}}{+} \quad \underset{4^{th}}{----} \quad \underset{5^{th}}{++++} \quad \underset{6^{th}}{-}$$

The following are the most popularly used symbols for a run test.

n_1 = Number of occurrence of type 1

n_2 = Number of occurrence of type 2

r = number of runs

With the use of above symbols we can describe different equations to perform a run test.

To derive the mean of the sampling distribution of the r statistics, we use the following formular.

Mean (μ_r) of the sampling distribution of the r statistic

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

The standard error of the r statistic is calculated with this formula.

Standard Error of the r statistic

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

For a sample where either of n_1 or n_2 is longer than 20, normal distribution probability is used to approximate the value of r. Then approximated value is compared with the critical value for a given level of confidence. If the calculated value lies within the acceptable range, the distribution is taken as to be random.

The following equation is used to standardize the sample r statistic into z value.

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

The standardized value that we get from the above model is compared with critical value of z $\pm$ 1.96 (5% level). If the standardized value of r lies within $\pm$ 1.96 then we conclude the distribution to be random.

In this research the SPSS software has been used to calculate most of the statistical variables. Management of a large number of observed data

would not be possible without the use of same statistical software. Since SPSS program is used widely while performing any behavioral research, we have also chose it for our purpose.

3.8.3 Statement of Hypothesis

The objective of finding the level of NEPSE efficiency requires assuming some hypothesis and testing it. Thus, we assume that the market meets the conditions required for weak form efficiency as null hypothesis and market doesn't meet the conditions required for the weak form efficiency as the alternative hypothesis. The research hypothesis can be stated more clearly as follows:

H_0: NEPSE is operating under weak form efficiency i.e. the market is efficient in pricing of its securities. So, the stock prices/return in the market follows the random walk.

H_1: NEPSE is not operating under weak form efficiency i.e. the market is inefficient in pricing of its securities. So the stock prices/return in the market follows a non- random (Predictable) walk.

In the subsequent chapter, Run Analysis and Autocorrelation Coefficient test of daily market return for different samples within the stated period has been performed to test the hypothesis.

CHAPTER – IV
PRESENTATION AND ANALYSIS OF DATA

This chapter of the research is divided into two parts. The first part is the test of market efficiency and the later part is analysis of investors' behavior.

The first part is devoted to the analysis and presentation of secondary data. The secondary data have been obtained from the trading report of NEPSE, and annual report of securities board, Nepal. The available data have been tabulated and presented into graphs, charts and analyzed to reach at some findings. Before breaking into the main topics, we give a glance at the performance of Nepal Stock Exchange.

4.1 A General Glance at the Performance of NEPSE

Going through the economic survey 2008/09, it states: “In the first 9 months of F/Y 2009/10, there was in increase of 161.49% in the share transaction amounting to Rs. 5534.2 million with the transaction of 11.08 million shares as compared to transaction held in the same period of the last fiscal year. In the first 9 months of F/Y 2008/09, the total transaction of 6593830 shares had fetched Rs. 2116.4 million”. This clearly shows that the performance of our capital market is going good but the national economy is not in line with this, which is reflected through the data presented below:

Table No. 4.1

Performance of NEPSE

Year / Head	2004/05	2005/06	2006/07	2007/08	2008/09
New issuance (Rs. in million)	1555.11	853.63	1547.79	1626.82	2443.28
No. of transactions	42028	69163	85533	106246	97374
No. of companies under transactions	69	81	92	102	110
Market capitalization (Rs. in million)	34703.9	35240.4	41424.77	61365.89	96813.74
Paid up capital (Rs. in million)	9685.04	12560.07	13404.90	16771.84	20008.55
NEPSE Index	227.54	204.86	222.04	286.67	386.83
GDP (Rs. in million)	413428.7	430396.6	460325.3	500699.1	548484.7

Source: Economic Survey, 2009/10

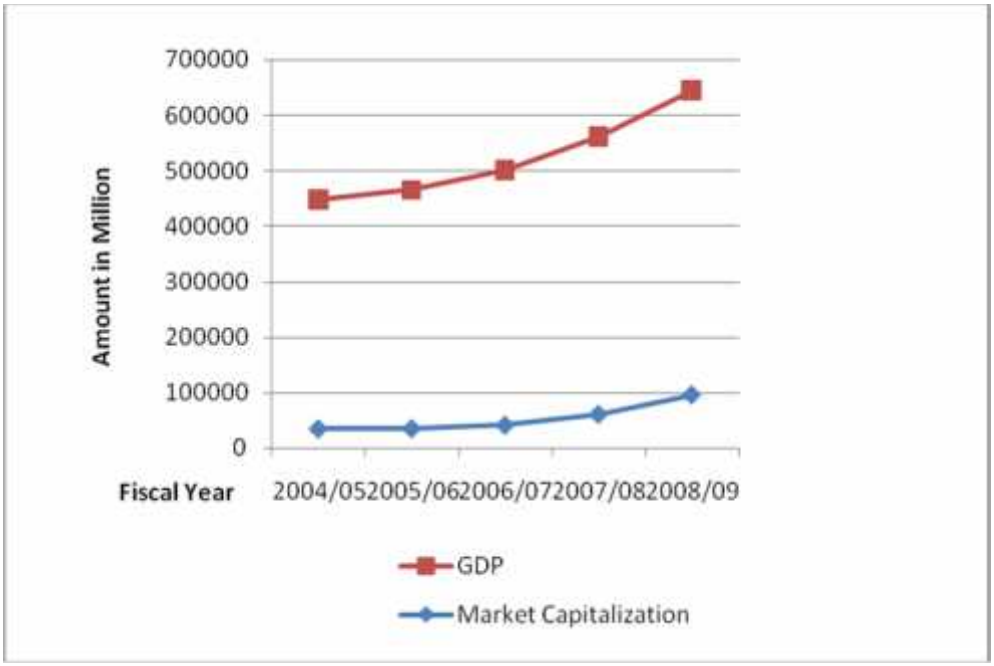
Value of any financial asset is derived from the respective real assets' value. Stocks traded in capital market are just the financial asset. Their values are directly related to the company's real assets. If a company increases the value of the real assets through the operation of business, its stock's value also increases in the market and vice versa.

While talking broadly, market capitalization (MC) is the total market value of listed securities at a point of time. Gross Domestic product (GDP) is the value of overall domestic production of a country, for a year, measured in a particular price level. Though, the market capitalization is not the market value of GDP, their movement is guided by the same national economic growth. In general, if the secondary market is efficient, MC moves together

with the national economy. But the data presented above shows that our capital market is not moving together with the National Economy. When we observe the last five (5) year's MC and GDP, it is revealed that the MC is increased in a higher rate but the growth rate of GDP is not much increased which is clearly shown by the graph no. 4.1. Thus, it indicates that the performance of Nepalese capital market is affected very less by the national economy which is also the indication of inefficiency.

Graph No. 4.1

Performance of NEPSE



4.2 NEPSE Index

Market index is an indicator or a barometer of a market which measures the changes of the movement in the market. It is also know as the indicator of the movements of the overall securities prices in the secondary market.

In other words, a stock market index is a number that indicates the relative level of price or value of securities in a market on a particular day compared with a base- day figure, which is usually 100 or 1000. In Nepal all the indices have a base figure of 100. Nepal Stock Exchange (NEPSE) is the only stock exchange in Nepalese capital market and NEPSE is the only index. The index that measures the movement of Nepalese stock market is called NEPSE index. The primary objective of the NEPSE Index is to measure the performance of the Nepalese stock market. By comparing values of NEPSE index over time, we can answer the question of what the Nepalese stock market is doing over that period of time.

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 has been taken as base value. 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. A total of 26 companies were included in the index at that time. As of today, the numbers of companies in the index are about 135 (Economic Survey, 2009/10). Thus, along the way new companies have been added and companies not traded were removed from the index. These days NEPSE presents various indices for different industries. NEPSE banking sector index is also used in this empirical work.

NEPSE index is one of the most important variable in this research work. The work has depended solely on daily stock price indices while calculating daily market return. Moreover, since the stock market index is regarded as one of the most important economic indicator, it will be much relevant to explore some detail about the NEPSE price index.

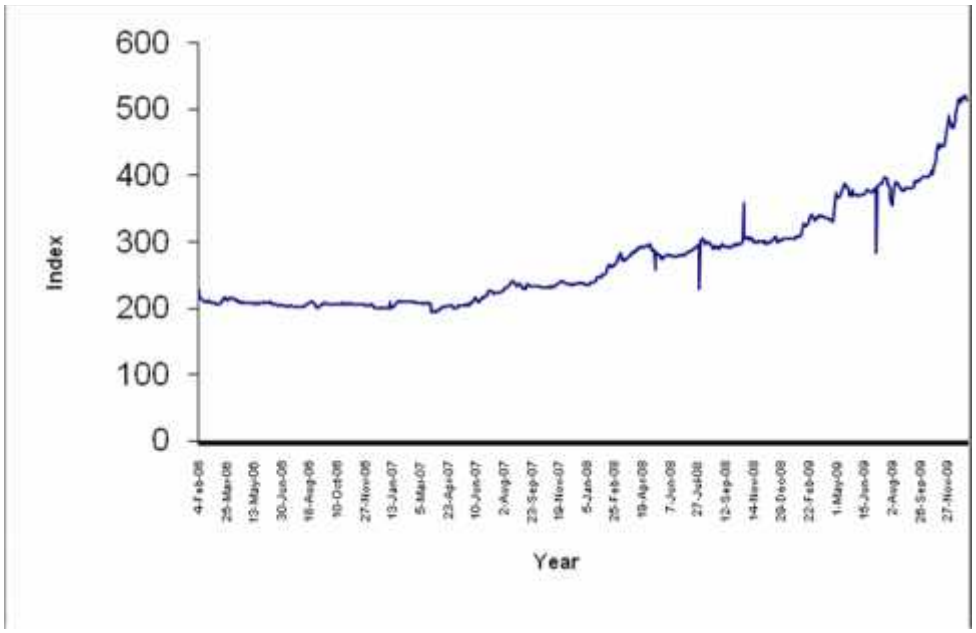
While going through the daily NEPSE index for last five (5) year, the index is found to be more fluctuating than normal. Within this period, the index has moved more than 2.5 or two and half fold. But this movement is not appeared to be justified by any economic events. The study revealed that the highest point of NEPSE index for total market composite, 520.96 points was on December 25, 2009. And the lowest point of index, 186.22 points was recorded on March 15, 2005. However, since the increment was not justified by financial performances, the index then has started to decrease rapidly. The largest positive movement of the total market index was by 19.58 point on August 7, 2009 and the largest negative index movement was by –12.03 on August 1, 2009.

Similarly, the largest sector in term of market capitalization, the banking sector has also got incredible increment in its index. In March 15, 2005 the index for the banking sector was 155.16 points which is the lowest points during our study period has increased to 593.92 points by December 18, 2009. Hence, the index has increased by 3.83 times within the period of four (4) year. The largest positive movement of the index was by 28.42 points on August 1, 2009 and the largest negative index movement was by –16.34 on May 5, 2008.

The index for both the total market and banking sector has cyclical movement. Sometimes they are continuously increasing and sometimes are continuously decreasing which is clearly shown by the graph 4.2 and 4.3. The indices for the study period have been listed in the appendices.

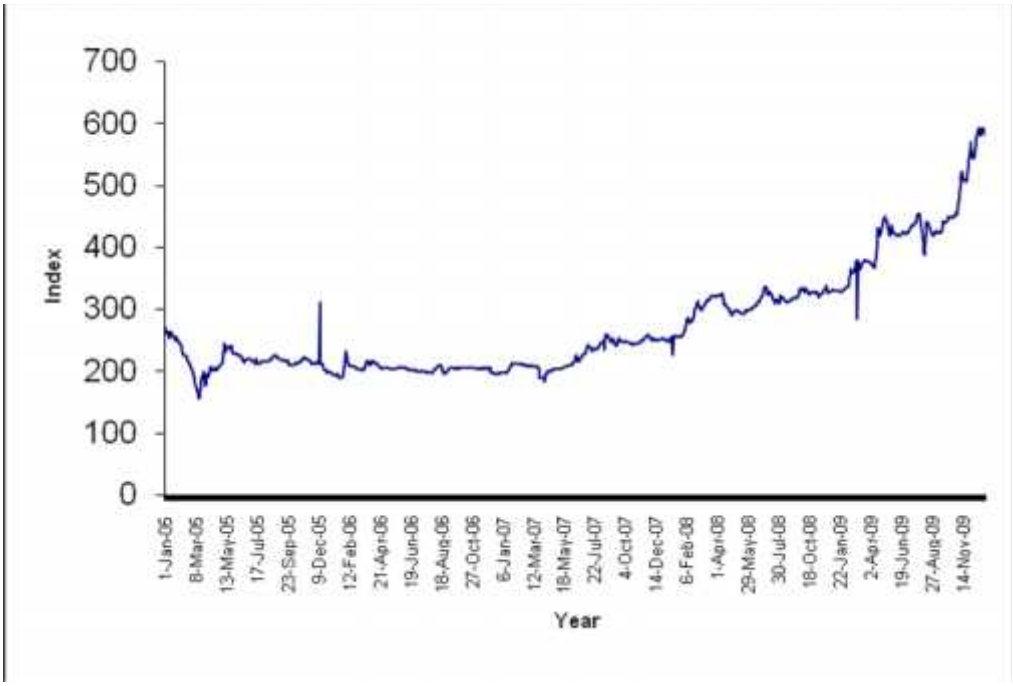
Graph No. 4.2

NEPSE Total Market Index



Graph No. 4.3

NEPSE Banking Sector Index



4.3 Test of Market Efficiency

This chapter concentrates on the test of weak form efficiency of NEPSE through the observation of daily market return over a five-year period. As discussed earlier the natural log return has been used for the analysis. Besides the total market return, banking sector stocks return is also observed for the five-year period. The objective of studying daily market returns is to find whether they follow a random walk. If market returns follow an unpredictable way (a random walk), we conclude that any active investment strategy based on historical price movement can not outperform the market i.e. market will be ascertained as efficient in weak form hypothesis. However, if market return movement revealed to be predictable, the market will be ascertained to be inefficient where an active investor who takes investment decisions based only on the historical price movement can easily outperform with simple buy and hold strategy.

The null hypothesis for this research is that the NEPSE is efficient in weak form or the NEPSE market return follows a random walk and the alternative hypothesis is that the NEPSE is not efficient in weak form or the market return is following a predictable (nonrandom) pattern.

As stated earlier, we use autocorrelation and run test to test the above-mentioned hypothesis.

4.3.1 Auto-correlation/ Serial Correlation

Auto-correlation test is a reliable measure for testing of either dependence or independence of random variable in a series. The autocorrelation measures the relationship between the values of a random variable at time t and its value in the previous period. In this analysis, the null hypothesis of the test is that observed series are random series and do not have significant first order autocorrelation. To be clearer, the test hypothesis can be stated as follows:

H_0: Market returns follow a random walk i.e. there is no significant autocorrelation in the series of daily market return. OR, The autocorrelation coefficient is not greater than twice of standard error ($r_k < 2\ \sigma_r$).

H_1: Market returns do not follow a random walk i.e. there is significant autocorrelation in the series of daily market return. OR, The autocorrelation coefficient is greater than twice of standard error ($r_k > 2\sigma_r$).

The autocorrelation coefficients of total market have been computed for the lag of market returns series at log one for the whole sample periods and various sub sample period. Table no. 4.2 explains the autocorrelation of market return (R_{mt}) in detail.

Table No. 4.2

Result of Autocorrelation (Log of the daily market return-R_{mt})

Sample period	Observations	Autocorrelation coefficient	Standard Error	Significance
1- Jan-2005 to 31-Dec-2009	1176	-0.263	0.02341	Yes
1- Jan-2005 to 31-Dec-2005	236	0.246	0.01105	Yes
1- Jan-2005 to	480	0.322	0.009125	Yes

31-Dec-2006				
1- Jan-2005 to 31-Dec-2007	717	0.250	0.00858	Yes
1- Jan-2005 to 31-Dec-2008	953	-0.205	0.02148	Yes
1- Jan-2006 to 31-Dec-2009	940	-0.288	0.02558	Yes
1- Jan-2006 to 31-Dec-2006	244	0.512	0.006744	Yes
1- Jan-2006 to 31-Dec-2008	717	-0.237	0.0239412	Yes
1- Jan-2007 to 31-Dec-2009	696	-0.304	0.0294621	Yes
1- Jan-2007 to 31-Dec-2007	237	0.008	0.007316	Yes
1- Jan-2008 to 31-Dec-2009	459	-0.310	0.0359087	Yes
1- Jan-2008 to 31-Dec-2008	236	-0.261	0.0404224	Yes
1- Jan-2009 to 31-Dec-2009	223	-0.395	0.0302781	Yes

Source: Appendix - III

From the above table the outcomes from the test show that all the samples have significant first order auto-correlation. However, the correlations are not uniform. It means, sometimes return series are positively auto-correlated and sometimes negatively. But their indeed have some kind of association with the pervious trend of return series.

Similarly, the auto-correlation coefficient of banking sector have been computed for the log of banking sector stock return series at lag one for the whole sample period and various sub-sample periods. Table no. 4.3 explains the auto-correlation of banking sector stock return (R_{bt}) in detail.

Table No. 4.3

Result of Autocorrelation (Log of the daily banking sector stock return- R_{bt})

Sample period	Observations	Autocorrelation coefficient	Standard Error	Significance
1- Jan-2005 to 31-Dec-2009	1169	-0.398	0.04793	Yes
1- Jan-2005 to 31-Dec-2005	235	-0.423	0.10063	Yes
1- Jan-2005 to 31-Dec-2006	479	-0.414	0.07078	Yes
1- Jan-2005 to 31-Dec-2007	713	-0.408	0.05838	Yes
1- Jan-2005 to 31-Dec-2008	713	0.024	0.01213	No
1- Jan-2006 to 31-Dec-2009	934	-0.208	0.01831	Yes
1- Jan-2006 to 31-Dec-2006	244	0.501	0.01011	Yes
1- Jan-2006 to 31-Dec-2008	713	0.024	0.01213	No
1- Jan-2006 to 31-Dec-2009	690	-0.271	0.02042	Yes
1- Jan-2007 to 31-Dec-2007	234	-0.008	0.011544	No
1- Jan-2008 to 31-Dec-2009	456	-0.303	0.02372	Yes
1- Jan-2008 to 31-Dec-2008	235	-0.200	0.014387	Yes
1- Jan-2009 to 31-Dec-2009	221	-0.329	0.030695	Yes

Source: Appendix - III

From the above table, the autocorrelation coefficient for banking sector stock return (R_{bt}) is also revealed to be significant at first order for the whole sample period and other nine (9) sub-sample periods. And remaining three (3) samples do not have significant first order autocorrelation. However, the correlations are not uniform. It means sometimes return series are positively auto-correlated and sometimes negatively. But their indeed have some kind of association with the previous trend of return series. As the total market capitalization gets a large contribution from this sector, the predictability in the movement of banking sector stocks may have helped active investors to make good prediction of total market movement.

The overall results from autocorrelation test are not consistent with the random walk assumptions. The existence of significant autocorrelation means that the stock return at time t is affected by the return of the previous day. Therefore, the market return of NEPSE is following a predictable way. Since, market return is following a predictable way which is determined by the cyclical trend an active investor with the information of historical market price movement can out perform with simple buy and hold strategy. Hence, the existence of significant autocorrelation violates the assumption of random walk model rejecting null hypothesis that the return follows a random walk.

4.3.2 Run Test

The run test is well-known approach to test and detect statistical dependencies (randomness), which may not be detected by the auto-correlation test. So, we prefer the run test to prove the random walk model because the test ignores the properties of distribution. The null hypothesis of the test is that observed series is a random series. We can state the test hypothesis as follows:

H_0: Market returns follow a random walk i.e. the observed number of run lies within the acceptable range of expected runs. OR, the calculated z value of run lies within the critical value of z at 99% level of confidence. (H_0: Z value of observed runs $\leq \pm 2.576$)

H_1: Market returns do not follow a random walk i.e. the observed number of run does not lie within the acceptable range of expected runs. OR, the calculated Z value of runs does not lie within the critical value of z at 99% level of confidence. (H_1 : Z value of observed runs $\geq \pm$ 2.576)

The number of runs is computed as sequence of the price changes of the same sign. When the expected number of run is significantly different from the observed number of runs, the test reject the null hypothesis that the daily returns are random.

As defined by Poshokwale, (1996, P: 89), "A lower as expected number of runs indicates market's over-reaction to information, subsequently reversed, while higher number of runs reflect a lagged response to information. Either situation would suggest an opportunity to make excess returns."

The run test converts the total number of runs into a Z statistics. For large samples, the z statistics give the probability of difference between the actual and expected number of runs. The z value is greater than or equal to $\pm$ 1.96, reject the null hypothesis at 5% level of significance (Sharma and Kennedy, 1977: 391-413). Table no. 4.4 presents the result of Run test for log market return (R_{mt}) in detains.

Table No. 4.4

Result of Run Test for Log Market Return (R_{mt})

Sample Period	Test Value (mean)	Cases < Test value	Cases $\geq$ Test value	Total cases	Number of Runs	Z value	Asymp. sign. (2-tailed)
1- Jan-2005 to 31-Dec-2009	0.000458	626	550	1176	399	-10.988	.000
1- Jan-2005 to 31-Dec-2005	-0.0011	107	129	236	80	-4.998	.000
1- Jan-2005 to 31-Dec-2006	-0.0005731	229	251	480	178	-5.723	.000
1- Jan-2005 to 31-Dec-2007	-0.000154	349	368	717	264	-7.124	.000
1- Jan-2005 to 31-Dec-2008	0.000011	467	486	953	342	-8.774	.000

1- Jan-2006 to 31-Dec-2009	0.00085325	535	405	940	313	-9.915	.000
1- Jan-2006 to 31-Dec-2006	-0.0000511	139	105	244	88	-4.270	.000
1- Jan-2006 to 31-Dec-2008	0.000381	374	343	717	255	-7.775	.000
1- Jan-2007 to 31-Dec-2009	0.001170	383	313	696	229	-8.927	.000
1- Jan-2007 to 31-Dec-2007	0.000694	120	117	237	87	-4.229	.000
1- Jan-2008 to 31-Dec-2009	0.00141332	257	202	459	153	-7.036	.000
1- Jan-2008 to 31-Dec-2008	0.0010143	108	128	236	89	-3.831	.000
1- Jan-2009 to 31-Dec-2009	0.0023697	133	90	223	58	-7.021	.000

Source: Appendix –III

From the above table, it is reveled that all of the total samples' z statistics of observed runs for daily market return (R_{mt}) is greater than $\pm$ 2.576 and negative, which means that the observed number of runs is less than the expected number of runs with observed significance level. It means market return is not generated randomly. There is some kind of association in the series of stock return. As the test result of all the samples shows that the market return is following a predictable way, the null hypothesis is rejected that the return series on the NEPSE follows a random walk. The outcomes of the run test are consistent with the autocorrelation test.

Similarly, table no. 4.5 presents the result of Run test of log return for banking sector stock (R_{bt}) in details.

Table No. 4.5

Result of Run Test of Log Return for Banking Sector Stock (R_{bt})

Sample Period	Test Value (mean)	Cases < Test value	Cases $\geq$ Test value	Total cases	Number of Runs	Z value	Asymp. Sign. (2-tailed)
1- Jan-2005 to	0.0006603	622	547	1169	401	-10.70	0.000

31-Dec-2009							
1- Jan-2005 to 31-Dec-2005	-0.001296	110	125	235	92	-3.416	0.001
1- Jan-2005 to 31-Dec-2006	-0.00065	236	243	479	182	-5.348	0.000
1- Jan-2005 to 31-Dec-2007	-0.000091	356	357	713	257	-7.533	0.000
1- Jan-2005 to 31-Dec-2008	0.00071	525	409	934	297	-10.893	0.000
1- Jan-2006to 31-Dec-2009	0.001153	374	339	713	247	-8.238	0.000
1- Jan-2006 to 31-Dec-2006	-0.000028	139	105	244	86	-4.532	0.000
1- Jan-2006to 31-Dec-2008	0.00071	374	339	713	247	-8.238	0.000
1- Jan-2007 to 31-Dec-2009	0.00157	732	318	690	223	-9.268	0.000
1- Jan-2007 to 31-Dec-2007	0.001053	120	114	234	92	-3.399	0.001
1- Jan-2008 to 31-Dec-2009	0.00184	250	206	456	141	-8.128	0.000
1- Jan-2008 to 31-Dec-2008	0.001134	116	119	235	77	-5.424	0.000
1- Jan-2009 to 31-Dec-2009	0.00258	130	91	221	58	-6.968	0.000

Source: Appendix III

From the above table, it is revealed that the result of run test for banking sector stock return is also the same. That is the calculated z statistics of daily market return for banking sector stocks (R_{bt}) with different sample size are greater than $\pm$ 2.576 and are negative. It means the observed number of runs is less than the expected number of runs at 1% level of significance.

Therefore, we can conclude that the banking sector stock return is not following a random walk.

In overall, the result of run test analysis on the NEPSE indicates that the daily stock return of NEPSE are not random as the probabilities associated with expected number of runs are all greater than the observed number of runs.

4.4 Analysis of Primary Data

An empirical investigation has been conducted in order to find out the behavior of Nepalese investors in Nepalese capital market. For this, questionnaire and interviews method have been used as a source of primary data. A total of 70 sets of questionnaire were distributed to the senior official of SEBON, NEPSE and banking sector employees, share brokers, professors, and general public. The responses received from various respondents have been arranged, tabulated and analyzed in order to facilitate the descriptive analysis of the study.

Question No. 1:

Number of respondents Involved in Share Trading Activates

To know whether the investors taken as sample are presently involved in share trading activities or not, a question was asked, "Have you invested in the shares of listed companies?" The responses given by respondents have been tabulated below:

Table No. 4.6

Number of respondents Involved in Share Trading Activities

Response	No. of respondents	%
Yes	70	100
No	-	-

Total	70	100

Source: Opinion Survey, 2007-08

From the above table it is revealed that all the respondents are presently involved in share trading activities. Although, all the respondents are involved in the share trading activities, the trading volume of the shares in NEPSE is very less and some companies' shares even do not trade everyday.

Question No. 2:

Sector Having Better Investment Opportunities

To know the viewpoint of respondents about the sector having better investment opportunities, a question was asked to them, "In which sector do you think the public have better opportunities for investment?" the responses provided by respondents are tabulated below:

Table No. 4.7

Sector Having Better Investment Opportunities

Sector	No. of respondents	%
Bank	31	44.29
Finance	15	21.14
Insurance	13	18.57
Manufacturing	4	5.71
Trading	1	1.43
Hotel	4	5.71
Others	2	2.86
Total	170	100

Source: Opinion Survey, 2007-08

From the above table, it is revealed that most of respondents i.e. 44.29% preferred banking sector as better investment opportunities while only 1.43% responded that there is better investment opportunities in trading sector.

Similarly, 21.14% respondents preferred finance sector, 18.57% preferred insurance sector, 5.71% preferred manufacturing sector, 5.71%

preferred hotel sector and 2.86% preferred others sector as better investment opportunities.

Question No. 3:

Generation of Idea to Invest in Share

To know the opinion about the source from where the investors get the idea to make investment in shares, a question was asked to them. The question was, "How did you get the idea to invest your money into shares at first?" The responses received from the respondents are tabulated below:

Table No 4.8

Generation of Idea to Invest in Share

Variables	No. of Respondents	% of Respondents
Friends	36	51.53
Brokers	5	7.14
Investors Education Program	4	5.71
Relatives	12	17.14
Others	13	18.57

Source: Opinion Survey, 2007-08

From the above table, we find that most of the respondents i.e. 51.53% were inspired by the 'friends' to make investment in shares. Similarly, 18.57% said 'others' source, 17.14% said 'relatives' and 7.14% said 'brokers' to get the idea to invest in share. Where as only 5.71% said investors' education program make them to make investment in shares.

Question No. 4:

Impressive Characteristics in Share Investment

To know the view-point of respondents about the impressive characteristics of share investment that attract the investors to make investment in shares, a question was asked to them. The question was, "By which special characteristics are you impressed to invest your money into stock than other sectors?" The responses received from the respondents are tabulated below:

Table No. 4.9

Impressive Characteristics in Share Investment

Sources	No. of Respondents	% of respondents
Dividend	32	45.71
Capital Appreciation	19	27.14
Participation in AGM	1	1.43
Marketability	15	21.43
Social status	3	4.29

Source: Opinion Survey, 2007-08

From the above table, it is revealed that most of the respondents i.e. 45.71% are interested with 'dividend'. Similarly, 27.14% said 'capital appreciation' and 21.43% said 'marketability' make them to make investment in shares, while 'social status' and 'participation in AGM' were found less inspiring factors to attract the investors in share trading activities.

Question No. 5:

Level of Return from Share Investment

To know whether the return from share market is satisfactory or not, a question was asked, “Are you satisfied with the return presently getting from your investment?” The responses have been tabulated below:

Table No. 4.10

Level of Return from Share Investment

Response	No. of investors	%
Yes	32	31.43
No.	48	68.57
Total	70	100

Source: Opinion Survey, 2007-08

From the above table it is cleared that 68.57% of the total respondents were found dissatisfied with the present level of return from share market while 31.43% were found satisfied.

Since most of the respondents are dissatisfied with the return presently getting from their investment, investors should participate actively and regularly in the capital market. It is all because of the passiveness of them.

Question No. 6:

Ability of the Companies to Meet the Target as Mentioned in Prospectus

To know the respondents’ view about the target achieved by the listed companies as mentioned in the prospectus, a question was asked, “Do you think that companies are able to meet the target as mentioned in prospectus in general?” The responses have been tabulated below:

Table No. 4.11

Ability of the Companies to Meet the Target as Mentioned in Prospectus

Response	No. of investors	%
Yes	14	20.00
NO	37	52.86
Don't Know	19	27.14
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, only 20.00% of the total respondents said that the companies are able to meet the target as mentioned in their prospectus and 52.86% said that they are not able to meet the target as mentioned in the prospectus. Where as 27.14% of them said that they do not know about it.

Since most of the companies are not able to meet the target result as mentioned in the prospectus, the forecasting of the companies' target should be thoroughly audited before being publishing publicly.

Question no. 7:

Adequacy of Timely Information of Nepalese Securities Market

To know the respondents' view about the present information distribution status at the securities market in Nepal, a question was asked, "In your opinion, are Nepalese investors getting sufficient and timely information regarding the listed companies regularly?" The responses received from the respondents are tabulated as below:

Table No. 4.12

Adequacy of Timely Information of Nepalese Securities Market

Response	No. of investors	%
Yes	10	14.28
No	60	85.72
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, it is cleared that only 14.28% of the total respondents are satisfied with the present availability of the information about the securities where as 85.72% of the respondents showed their dissatisfaction about the present situation of the availability of the information.

Since, most of the respondents are dissatisfied with the information disbursement of the NEPSE, it should provide necessary information correctly and timely. Although, NEPSE and SEBON both provide the necessary information by internet, publishing different books and articles but these information are relatively beyond the actual investors.

Question no. 8:

Efficiency of Monitoring Authorities in Regulatory Activities

In order to know the respondents' view about the efficiency of the monitoring and regulatory activities of regulatory authorities in Nepalese securities market, a question was asked, "Do you think that the regulatory authorities are regularly monitoring the performance status of the listed companies?" The responses have been tabulated as below:

Table No. 4.13

Efficiency of Monitoring Authorities in Regulatory Activities

Response	No. of investors	%
Yes	15	21.43
No	30	42.86
Don't know	25	35.71
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, it is revealed that 21.43% of the respondents responded the regulatory activities are efficient where as 42.86% of them opposed the response. But 35.71% of them revalued that they do not know about it.

Question no. 9:

Status of Grievances Handling of Investors by Different Institutions

In order to know the respondents' view about the status of grievances handling of the different institutions involved in share trading, a question was asked, "Are you satisfied with the grievances handling of the investors by different institutions involved in share trading and regulation activities?" The responses have been presented as below:

Table No. 4.14

Status of Grievances Handling of Investors by Different Institutions

Response	No. of Investors	%
Yes	15	21.43
No	55	78.57
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, it is cleared that only 21.43% of the respondents are satisfied with the performance of the different institutions in handling the grievances of investors where as 78.57% of them showed their dissatisfaction.

Question No. 10:

Analysis of Share Purchase Decision

In order to know the respondents' viewpoint about the share purchases decision, a question was asked, "How would you make a decision to purchase the share of particular company in share market?" The responses have been presented as below:

Table no. 4.15

Analysis of Share Purchase Decision

Variables	No. of respondent	%
Consult a broker	9	12.86
Act on whim	52	74.29
Analyze the company Mgmt.	3	4.29
Analyze the profit and loss	5	7.14
If other, please specify…	1	1.42
Total	70	100

Source: Opinion Survey, 2007-08

From the above table it is revealed that most of the respondents i.e. 74.29% act on whim, 12.86% consult the broker, 7.14% analyze the profit and loss of the company, 4.29% of them analyze the management team of the particular company and remaining 1.42% made their own view i.e. they see the trading trend of the share to estimate the liquidity state. But in my opinion, the personal saving also effects the share purchase decision. Those who have enough saving to invest can purchase the shares and debentures.

Question No. 11:

Analysis of Sell of Shares

In order to know the viewpoint of respondents about the selling decision of share, a question was asked, "When would you like to sell your shares in the share market?" The responses have been tabulated below:

Table No. 4.16

Analysis of Sell of Shares

Variables	No. of respondent	%
When company's profit decline	16	22.86
When company fail to pay dividend	24	34.28
When cash is needed	12	17.14
When market price is high and start to decline	10	14.29
If other, please specify	8	11.43
Total	70	100

Source: Opinion Survey, 2007-08

From the above table it is cleared that 34.28% respondents sell their shares when company fails to pay dividend, 22.86% respondents sell when

company's profit decline, 17.14% sell when cash is need and another 14.29% sell when market price be high and start to decline. While remaining 11.43% respondents sell their shares when they get other better investment opportunities. In my opinion, market price is the main factor that makes investor to sell their shares in the share market.

Question No. 12:

Analysis of Open-out-cry Trading System of NEPSE

In order to know the view point of respondents about the open-out-cry trading system adopted by the NEPSE, a question was asked, "Are you satisfied with the present trading system, adopted by NEPSE, which is open-out-cry system?" The responses have been tabulated below:

Table No. 4.17

Analysis of Open-out-cry Trading System of NEPSE

Response	No. of investors	%
Yes	9	12.86
No	47	67.14
Don't know	14	20.00
Total	70	100.00

Source: Opinion Survey, 2007-08

From the above table it is cleared that only 12.86% of the total respondents are satisfied with the open-out-cry trading system where as most of them i.e. 67.14% showed their dissatisfaction. But, 20% of them expressed their view that they do not know about it. It shows the irrationality of the investors. But recently, NEPSE has shifted this system i.e. open-out-cry system to electronic system.

Question No. 13:

Comparison of Present Return and Expectation from Share Investment

To compare the expected and actual earning status of the investors from the share investment, a question was asked, "What is the level of return you are presently getting in comparison to your expectation from share investment?" The responses have been tabulated below:

Table No. 4.18

Comparison of Present Return and Expectation from Share Investment

Response	No. of Respondent	%
Very high	0	0
High	8	11.43
Moderate	34	48.57
Low	18	25.71
Very Low	10	14.29
Total	70	100

Source: Opinion Survey, 2007-08

From the above table it is cleared that most of respondents i.e. 48.57% responded that they are getting moderate level of return, 25.71% responded low level of return, and 14.29% responded very low level of return from share investment in comparison to their expectation. Where as 11.43% respondents responded high level of return but nobody responded very high level of return in comparison to their expectation from share investment.

Question No. 14:

Level of Dishonest Activities in NEPSE

To know the view point of investors about the dishonest activities that the investors are facing in the stock market such as insider trading, a question was asked, ”To what extent do you think that the investors are facing different dishonest activities such as insider trading?” Five alternative options are given to the respondents. The responses have been tabulated below:

Table No. 4.19

Level of Dishonest Activities in NEPSE

Responses	**No. of Respondent**	**% of Respondent**
Very high	12	17.14
High	16	22.86
Moderate	37	52.86
Low	5	7.14
Very Low	0	0
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, most of the respondents i.e. 52.86% responded that it is at moderate level. Similarly, 22.86% responded their view at high level, 17.14% responded at very high level and only 7.14% responded at low level, while nobody responded at very low level.

Question No. 15:

Level of Investors' Awareness in the Securities Market

In order to know the viewpoint of investors about the investors' awareness in the securities market, a question was asked, "What is the level of awareness of the share investors in Nepal?" The responses received from the respondents are tabulated below:

Table No. 4.20

Level of Investors' Awareness in the Securities Market

Response	No. of Respondent	% of Respondent
Very high	0	0
High	8	11.43
Moderate	12	17.14
Low	41	58.57
Very Low	9	12.86
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, most of the respondents i.e. 58.57% responded that their level of awareness is at low level, where as nobody responded at very high level.

Similarly, 17.14% responded their view at moderate level, 12.86% responded at very low level and only 11.43% responded that their level of awareness is at high level.

Question No. 16:

Role of Whim and Rumors in Influencing the Decision of Investors in Share Investment

To know the respondents' viewpoint about the influence of whim and rumor to affect the decision of investors in NEPSE, a question was asked, "To what extent do you think that Nepalese investors are influenced by whim and rumors?" The responses received from the respondents are tabulated below:

Table No. 4.21

Role of Whim and Rumors in Influencing the Decision of Investors in Share Investment

Response	No. of Respondent	% of Respondent
Very high	16	22.86
High	35	50.00
Moderate	13	18.57
Low	4	5.71
Very Low	2	2.86
Total	70	100

Source: Opinion Survey, 2007-08

From the above table, most of the respondents i.e. 50% responded that whim and rumor are highly responsible in influencing the decision of the investors in share investment.

Similarly, 22.86% responded their view at very high level, 18.57% responded at moderate level, 5.71% responded at low level where as only 2.86% responded that whim and rumor are at very low responsible to influence the decision of the share investment.

4.5 Analysis of Investors' Behaviour

History of Nepalese capital market is not so long. The active participation of Nepalese public in stock market has started just after the flotation of common stock by some joint venture commercial banks. Therefore, the flotation of common stocks by these banks can be taken as the most important step to draw the attention of Nepalese public towards stock market. The recent history shows whenever any joint venture bank had made public offering, it had always been over-subscription. We can recall the Laxmi Bank, Himalayan Bank's shares allotment case where shares application was far more than the required capital. Similarly, Everest Bank, NCC Bank has also got similar response from the public. At that period, not only the banking industry but also some other financial institutions and hydro-electricity industry have enjoyed the same public enthusiasm in IPOs (Initial Public offerings). With the increase in number of share floating in the market, public attention toward secondary market has also increased. NEPSE index has reached up to 593.92 points from 155.16 within a short period of less than four (4) year.

But excessive high public response to primary issue and increase in stock market index is not enough for the development of capital market. As in every field of development, the need is for sustainable development. Though some companies have been able to raise fund quite easily from the public for their investment projects, and some active market participants are able to earn sufficient capital gain, we can't conclude this as the sign of development. Excessive over subscription of public issue shows that there is high liquidity among the investors due to inadequate investment opportunity. Similarly, dramatically increased in market price index may mislead the economy. While going through the stock price in the market, it is revealed

that some stock price has got price appreciation without any extra-ordinary financial performances. As NEPSE total market capitalization contains more than 65% from banking sector, overvaluation of banking sector stock leads the market index to be increased.

Normally, increase in stock prices is taken positively. Increase in stock price means better return to the investors. But, it should not be forgotten that every economic activity should be justifiable and which can sustain for a long period. If price increment is just by inefficiency, that can harm a native investors who generally takes passive investment strategy. Passive investment strategy is a relatively easy strategy since it does not require frequent analysis of investment and adjustments for the same. It is just a function of buying security and holding it for a long period with the aim to earn regular divided income. But such strategy is useful only in an efficient market. For an inefficient market like NEPSE a frequent analysis is needed. Not only the fundamental analysis but also technical analysis can be used to perform better in the market. To get the market toward efficiency, average investors should participate actively in the market. They should use both technical and fundamental analyzing tools before making investment decision; investors should be able to recognize the actual value of an investment that they will realize by holding it until the maturity. On the whole, every investor in the market should be continuously seeking the profitable opportunity to maximize their wealth.

As stated previously, the study about Nepalese investors is conducted through an observation of small number of investors. But the study of a small number of investors is not enough to generalize the behavior of the unlimited population of Nepalese investors. So, we also conduct other subjective study through gathering opinions and views of other related parties like stockbroker, company managers and experts. The following

subjective discussions are papered on the basis of the survey study of Nepalese capital market and investing public.

Nepal is one of the poorest countnry in the world. The per capital income of $ 290 (Economic survey 2008/09) indicates that average Nepalese don't have adequate earning even to meet their basic physiological need. When there is not sufficient earnings, there will not be saving and then no investment. But economic advancement of any nation has direct relationship with investment expenditure. Investment helps to increase income by several folds through dynamic multiplier effect. Although, adequate investment is not possible for a poor country like Nepal, it should have some initiative towards accumulating the scare savings into the capital.

It is the universal fact that if the capital market is efficient the capital formation work becomes easier. But the efficiency test of Nepal Stock Exchange revealed that the market is not efficient market. Even the knowledge of historical price series can be used to earn better return in the market. Therefore, passive investment strategy of a native investor can't yield better earnings in Nepalese Stock Market. Sometime the market follows the way of bull and sometime the way of a bear. That means the market is not following a "random walk", the minimum requirement for weak from efficient hypothesis. In short, we can say the market price in NEPSE is not reflecting the true value of the investment.

Since market efficiency is taken as the consequence of investors' behavior, the inefficiency of NEPSE implies that the Nepalese investors aren't efficient or are irrational. Though the previous analysis discovers that the NEPSE is an inefficient market, it doesn't describe the causes of inefficiency. Inefficient market is one, which lacks the conditions that have assumed by the efficient market hypothesis. Hence, we concentrate on the

topic: Large number of rational investors, which are regarded as the primary conditions for the efficiency and conclude their consequences for market inefficiency while analyzing this topic more emphasis has been given on the investors and their behavior.

4.5.1 Investor's Participation in NEPSE

Like other emerging capital market, NEPSE is also suffering from thin trading. Although, the large number of shareholders are general public, their inadequate participation or passiveness has made the market much thinner. Large number of investor (buyer/ seller) participation is one of the important conditions for an efficient market. It helps market not to be affected from some individuals or group of investors. But larger parts of Nepalese investors are passive. While going through the ownership structure of private sector commercial banks, a large portion of equity is held by foreigner joint venture company and by the promoters group. Only the remaining part of equity is held by Nepalese investors. Because of the restrictions imposed to promoter group and foreigner joint venture company, they can't trade their shares openly in the market. Only the stock held by general public are free to trade openly in the market. But the study shows that a number of investors are from outside the valley and most of them are passive. Even though the stock price rises up to unbelievable peak, they are not found to come to market to sell their stock. Similarly, investors within the valley are not so active. Since, their investment on stock is quite nominal portion of their wealth, they do not think necessary to go to market for small gains. But they think of being much wealthier by stock price appreciation. Thus, the large numbers of investors are passive.

However, there are some number of investors who are actively participating in the market. They take active investment strategy. These

investors include some institutional investors and some professional individual investors. Their average return is found to be more than 30% on their investment. The gain of these active traders is made on the expense of the investors who casually go to the market. These casual types of investors can also be divided into two categories. The first categories of casual investor who come to take short position are mostly inspirited by their monetary need. They sell stock by consulting the brokers. It is noteworthy to point here that brokers are also not fulfilling their duties ideally. They are much inspired by their own interest rather than customers' interest. So, taking decision about buying/ selling stock only on the basis of brokers' advice may cause losses to the investors. However, most of the stocks in the market are traded on overvalued price; sellers generally don't suffer so heavy loss if they come to the market after a long time. But the other types of investors who come to the market to employ their excess income on the stocks are likely to suffer loss because they will be investing on overvalued stocks.

Theoretically, when market prices are overvalued, investors get benefit from taking sort position which also helps to rectify market inefficiency. But due to the passiveness among the Nepalese investors in spite of trading of overvalued stock in the market, market has become quite inefficient. If a small number of investor behaves according to the theory that do not work to yield benefit to them and to rectify the market efficiency.

The promoters group can't trade their share openly to the public. But they can trade stocks within their group. Since their holdings of share are in large size, their trading obviously affects the market price of the stock. Legally, the overvalued stock doesn't help to increase the wealth of the promoters because they can not sell their stocks to the pubic; it provides benefits to them from some other way. Promoters may employ another

person to trade stock on their behalf. As the stock prices are controlled by them, they get benefit by manipulating share price in their favour. Since the monitoring and supervision aspects are not so strict here, the overvaluation of stocks may be the unethical activities of promoters group.

Stock price in the market is determined by demand and supply function. When stocks are demanded in overvalued price in the market, the general investors who are holding larger portion of market share should come to market to supply the stocks. Such rational activities help to maintain the stock price near to true value. But a large number of Nepalese investors are passive. Due to the lack of adequate investment opportunity, public demand is even increasing. Excessive high response to IPOs (Initial Public Offerings) shows that public is quite interested to invest in share market. The public is equally interested to buy stock in the secondary market too. Therefore, demand for stock is extremely high. Hence, the suppliers are passive and the demand is very high which result to the overvaluation of the stocks in the market. So, the larger numbers of passive investors are needed to stimulate in the market.

4.5.2 Rationality of Nepalese Investors

A rational investor is that who continuously look for opportunities for risk adjusted excess return and whenever any opportunity is found s/he puts in to effect proper scheme to capitalize the same. To recognize such opportunities, the investors use fundamental and technical tools and properly analyze the available investment alternatives. They are qualified enough to analyze the investment opportunities correctly. Thus, rational investors always try to maximize their wealth as much as possible.

To determine the rationality of Nepalese investors, first we look at their current status and then look whether they use fundamental and technical tools correctly to analyze investment opportunities.

4.5.2.1 Status of Nepalese Investors

As in every other field of financial activity, the participation of Nepalese women in stock market is very thin. Large numbers of common equity holders are from inside the valley. However, a number of stockholders are from outside as well. The number of participation in stock market from rural area is quite rare. Most of the investors have associated in capital market after subscribing IPOs from the primary market. As discussed earlier the market is suffering from thin trading. Most of the investors are passive in spite of availability of profitable opportunities in the market. The ownership of equity among the general public is much scattered and the investors are revealed to be investing very nominal part of their wealth in stocks. Most investors are having direct investment on stocks. That means the average investors don't use any investment intermediaries like mutual fund to manage their investment. So the concept of mutual fund is not popular as it should be.

Most of the investors are holding the shares bought from primary market for a long time. Even though the stock price have reached to an unbelievable peak, they do not want to sell them. The reason for this is the lack of idea about intrinsic value among the investors. "As a share purchased on Rs. 100 few years ago reached to Rs. 2500 with providing some cash divided as well, why should we sell it? It is a very profitable stock", comments an investor toward a commercial bank's stock. But he doesn't know that the share is overvalued and the price is decreasing in near future. Moreover, investors compare the probable wealth position with initial book

value of stock, which is quite a blunder mistake. The probable wealth position must be compare with current position instead of the initial.

Investors are not found to be comparing the divided yield of the stock with opportunity return; instead they look at general trend before making an investment decision. Most of the institutional and professional investors, who take active investment strategy, are found to be earning more than 30% on their investment. But most of the individual investors who buy stock in secondary market and take long position are suffering loss.

4.5.2.2 Fundamental Analysis and the Nepalese Investors

Fundamental analysis to investment choice assumes that each security has an intrinsic value that can be determined on the basis of such fundamentals as earnings, dividend, capital structure and growth potential. An analyst determines the intrinsic value on the basis of these fundamentals and compares this value with the current market price to determine if the security is under-or-overvalued. This kind of analysis typically focuses on key statistics in a company's financial statements to determine if the stock price is correctly valued.

Most fundamental information focuses on economic, industry and company statistics. The typical approach to analyzing a company involves four basic steps:

i. To determine the condition of the general economy
ii. To determine the condition of the industry
iii. To determine the condition of the company
iv. To determine the value of the company's stock.

4.5.2.2.1 Economic Analysis

The economy is studied to determine if overall conditions are good for the stock market. Is inflation a concern? Are interest rates likely to rise or fall? Are consumers spending a lot? Is the trade balance favourable? Is the money supply expanding or contracting? These are just some questions that the fundamental analyst would think to determine if economic conditions are right for the stock market.

Except few, none of the Nepalese investor is found to be performing such analysis while buying or selling stock. Even the institutional investors do not consider such thing while buying/ selling the securities. Since, the market is quit irrational and it is affected very less by the financial factors, such analysis produces no meaning. If the average investors were performing such economic analysis, the stock price banking sector could have never performed so well when the other industry are continuously suffering loss.

4.5.2.2.2 Industry Analysis

The company's industry obviously influences the outlook for the company. Even, the best stocks can post average return if they are in an industry that is struggling. It is often said that a weak stock in a strong industry is preferable to a strong stock in a weak industry.

Nepalese investors are found to consider the industry performance. Since banking industry is reporting better earning each year, investors are much interested in investing in the stock of this industry.

However, Nepalese investors don't possess strong data interpretation ability. The performance of banking sector is very hard to analyzed and predict for a long period. But investors are just looking at the current earnings to make investment decisions. Banking industry can't be analyzed only on the basis of current earnings. Investors should give a conscious look

at quality and portfolio of the investment, provision for loan loss, source of income whether it is fund based or services based and cash flow.

4.5.2.2.3 Company Analysis

After determining the economic and industry conditions, the company itself is analyze to determine its financial health. This is usually done by studying the company's financial statements. From these statements, a number of useful ratios can be calculated. The ratios fall under five (5) main categories: profitability, price, liquidity, leverage and efficiency. When performing ratio analysis on a company, the ratios should be compared to other companies within the same or similar companies to get a feel for what is considered "normal".

Most investment decisions of Nepalese public are not based on financial performance of the concerned company. Though some investors look at the total amount of profit for the year, they do not try to check the validity of that report. Though, they look at the key financial ratios reported along with the financial statements, they do not try to analyze their impact on their investment. Moreover, most investors are not able to interpret the financial indicators correctly.

4.5.2.2.4 Stock Price Valuation

After determining the condition and outlook of the economy, the industry and the company, the fundamental analyst is prepared to determine if the company's stock is overvalued, undervalued or correctly valued.

Several valuation models have been developed to help for determine the value of a stock. These include dividend models, which focus on the present value of expected dividends, earnings models which focus on the

present value of expected earnings and asset models which focus on the value of the company's assets.

Valuation of stock in a growing economy is quite a hard work. Value is based on the expectation of future cash flow. But the future environments in Nepalese context are quite unpredictable. The frequent changes in government policies affect the company's performance and then the return and risk exposure to the investing public. Moreover, growing stock can't be valued on the basis of current divided only. Most of the Nepalese companies have very short history. So, prediction of perpetual life on the basis of 10/12 years' performance is very difficult task.

The study revealed that most of the Nepalese investors are even not familiar with the valuation concept. They do not know how to value a stock. They think that the value is determined in the market. They are not able to distinguish the difference between price and value. In such situation how a stock market becomes an efficient market?

There is no doubt that fundamental analysis plays a major role in getting the market more efficient. However, our market is inefficient even in weak form, technical tools are equally important to eliminate the market inefficiency.

4.5.2.3 Technical Analysis and the Nepalese Investors

Technical analysis approach assumes that there are systematic dependencies in security market returns that can be exploited to yield abnormal returns. With the technical analysis, investors focus exclusively on the asset's price data, asking what does its past price behaviour indicate about its likely future price behavior. Technicians, chartists or market strategists, as they are variously known, believe that there are systematic

statistical dependencies in asset returns that history trends to repeat itself. They make price predictions on the basis of published data, looking for patterns and possible correlations, and applying rules of thumb to charts to assess ‘trends’, ‘support’ and ‘resistance level’. From these, they develop buy and sell signals.

Market timing is a form of technical analysis that aims to identify turning points in the performance of major stock indices. Other methods include filter rules, measures of ‘relative strength’, line and bar charts, moving average of prices over various period, the study of trading volume, aggregate demand and supply analysis and number other gauges that measure momentum, valuation, sentiment, leadership or monetary policy.

Technical analysis is based on the assumption that markets are driven more by psychological factors than fundamental values. Its proponents believe that asset price reflect not only the underlying ‘value’ of the assets but also the hopes and fears of those in the market. They assume that the emotional makeup of investors does not change, that in a certain set of investors does not change, that in a certain set of circumstances, investors will react in a similar manner to how they did in the past and that the resultant price moves are likely to be the same.

The technical analysis is useful only in an inefficient stock market, investors can use technical tool to earn better return in the market. But our study revealed that most of the Nepalese investors are passive. They are not using even the technical tools to find opportunities in the market. However, small group who is participating regularly in the market are using this tools and are beating the market regularly. The large numbers of active investors make investment decision only on the basis of rumor. The investment activities that are performed only on the basis of technical analysis are like

speculation. Moreover, Nepalese investors make investment decision based on rumor. So, we can take NEPSE as the big gamble market or as the irrational market.

Unless market price reflects the fundamental value of the stocks, the market is not regarded as an efficient market. Therefore, fundamental analysis among the investors is quite necessary to get NEPSE efficient. Since large part of investors are passive in spite of existence of opportunities for risk adjusted excess return, market is not able to get efficiency. If the large no. of investors were using fundamental and technical tools to seek opportunities in the market, the opportunities for risk adjusted excess return (market inefficiency) would have been vanished.

4.6 Major Findings

After having the analysis of NEPSE market return series and the investors' behavior, we have come to some findings, which mostly insist for rejecting null hypothesis. The test of market efficiency at weak order hypothesis is the core of this research. Both the model employed to test efficiency gives quite consistent result. Every sample of return series that found to be non-random in auto-correlation test is also found to be non-random in run test. All of the total samples of total market return series reject the null hypothesis by violating the assumption of random walk. Similarly, out of thirteen samples return series for banking sector, only three samples were revealed to be consistent with the assumption of weak form efficiency hypothesis in auto-correlation test and the remaining ten samples violate the assumption of random walk.

The efficiency test of NEPSE revealed the following major findings:

- The auto-correlation analysis of daily market return of NEPSE has detected significant first order correlation. It means the market return of today in NEPSE is affected by the return of yesterday. The price movement is not independent rather it has some relationship with the past price sequences. Hence, today's price change of stock in NEPSE is not an unbiased and independent outcome of yesterday's price change. OR, the market is not following a random walk, the minimum requirement for weak form efficiency. Thus, the past information about the stock price movement is useful to earn risk adjusted excess return in the NEPSE.
- Run test for the daily market return has also revealed the similar result that the stock price formation process in NEPSE is not independent from the historical price series. The observed number of run is quite lower than the runs that could be expected if the movement were random. The lower number of runs indicates the overreaction to the information, which allows active investors to earn risk-adjusted excess return in the market. Hence, this also suggests rejecting null hypothesis that the market follows a random walk.

Since, both the research model show the market return is not following a random walk, we conclude that the NEPSE is an inefficient market. The above researches were the test for weak form efficiency of the NEPSE. As the market could not meet the requirement of weak form efficient market hypothesis, it can be ascertained as inefficient under the all (semi-strong and strong) form of hypothesis.

The major findings of the study from the analysis of primary data and the subjective analysis of Nepalese investors' behavior are listed as follows:

- By analyzing the primary data, it was found that investing in the shares is popular since it provides sufficient return in comparison to other field of investment. But some of respondents also showed their dissatisfaction to invest in shares.
- 'Friends' was found to be highly inspiring source to make investment in shares. 'Others' and 'relatives' were found to be moderately inspiring sources while 'brokers' and 'investors education program' were found to be less inspiring sources to make investments in shares.
- 'Dividend' was found to be highly inspiring (motivating) factor for investors to make investment in shares. 'Capital appreciation' and 'Marketability' were found to be moderately inspiring factors to make investment in shares. While Social status and participation in AGM' were found to be less inspiring factor to make investment in shares.
- Most of the respondents i.e. 68.57% were found to be dissatisfied with their present level of return.
- Most of the respondents i.e. 52.86% said that the listed companies are not able to meet the target as mentioned in their prospectus.
- Most of the respondents i.e. 85.72% showed their dissatisfaction about the present situation of availability of the information about the securities.
- Most of the respondents i.e. 78.57% showed their dissatisfaction with the performance of the concerned institutions i.e. NEPSE, in handling the grievances of investors.
- Most of the respondents i.e. 74.29% showed make share purchase decision on whim without considering financial performances of the company and without consulting the experts.
- Most of the respondents i.e. 48.57% responded that they are getting moderate level of return while 14.29% respondents are getting very

low level of return and only 11.43% respondents are getting high level of return in comparison to their expectation from share investment.

- Most of the respondents i.e. 52.86% responded that they are facing at moderate level of dishonest activities in the stock market such as insider trading. Where as 7.14% responded that it is at low level.
- Most of the respondents i.e. 58.57% responded that their level of awareness is at low and 17.14% responded at moderate level. Where as 11.43% responded that their level of awareness is at high level.
- Most of the respondents i.e. 50% responded that whim and rumor are highly responsible while 2.86% responded that whim and rumor are at very low responsible to influence the decision of share investment.
- By analyzing the behavior of Nepalese investors', it is found that most of Nepalese investors are passive.
- Thin trading is the most serious problem in the market.
- A small number of active investors are making abnormal gain regularly.
- The investors following active strategy earn substantial return from market than that those following passive strategy.
- Fundamental tools of analysis are not working effectively because the market is affected very less by financial factors.
- Nepalese investors are not familiar with investment banking. They do not have any idea about the mutual funds so they are making direct investment towards the companies.
- Public are suffering from the high liquidity. It means they are not able to place their excess saving towards on appropriate investment alterative from which they can earn minimum rate of return.
- Investment decisions of Nepalese investors are based on the rumors and speculations. They do not compare the yield of their investment with other opportunity rather they look at the market movements and

if they found stocks to be increasing, they buy the securities and if it is decreasing they sell the securities.

- Investors are not able to interpret the financial events correctly. For example investors take the bonus share as the increment of their wealth position.

Thus our analysis revealed that the average Nepalese investors are behaving irrationally and the market inefficiency is also the consequence of irrational behavior of Nepalese investors. Hence, consistent with the finding of secondary data, primary data and investors behavior analysis also provide the evidence of market inefficiency.

CHAPTER-V
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

In the context of Nepal, the concept of capital market is neither very old nor very complex. It is still in creeping stage where various efforts have been made for the development of capital market. The history of securities

market began with the flotation of shares by Biratnagar Jute Mills and Nepal bank Ltd. in 1937 and the establishment of Securities Exchange Center Ltd. in 1976 which was converted into NEPSE in 1993. NEPSE had adopted as 'Open-out-Cry' system but recently it has adopted as electronic system. NEPSE is the only one stock Exchange and NEPSE Index is the only index in Nepalese capital market. NEPSE opened its trading floor on 13th February, 1994.

This study is conducted with the main objective of finding the efficiency of NEPSE and finding the effect of Nepalese investors' behavior on the level of efficiency of NEPSE. The study period covered the period of latest five year beginning from January 1, 2005 A.D. to December 31, 2009 A.D. The study is based on secondary and primary data. The analysis is based on the NEPSE index for total market composite and banking sector index for the study period, test of market efficiency is performed by the randomness analysis of daily market return through the use of Auto-correlation and Run test models. The overall findings from the empirical analysis of secondary data suggest that the daily market return in NEPSE is not following a random walk. The autocorrelation and run test have detected the existence of significant relationship in the series of market return. It means stock return or prices are following a predictable pattern. Therefore, an active investor with historical information about the stock prices can easily outperform with simple buy and hold strategy. As market is not following a random walk, it is concluded as an inefficient market. Since NEPSE can't meet the WFEMH, it is implicitly inefficient under the all form (semi-strong and strong) of hypothesis.

Study of primary data revealed that most of the respondents' level of awareness (rationality) towards securities market is at low. Their investment decision in shares is highly influenced by whim and rumors. It is also

revealed that most of respondents i.e. 68.57% were found dissatisfied with the present level of return from share market where as remaining 31.43% were found satisfied.

‘Dividend’ in shares and ‘Capital appreciation’ were found most inspiriting factors for investors to make investment in shares while ‘Social Status’ and ‘participation in AGM’ were found less inspiring factors. Similarly, ‘friend’ and ‘other sources were found highly inspiring sources to get the idea to make investment in share while ‘investors’ education programme’ and ‘brokers’ were found less inspiring sources to make investment in shares.

Likewise, only 14.28% of the respondents were satisfied with the present availability of the information about the securities while 85.72% showed their dissatisfaction.

Similarly, the study of Nepalese investors' behaviour revealed that the market is seriously suffering from thin participation of general investors. The study has discovered that most of the general investors are passive though there is availability of profitable opportunities in the market. The general investors are holding the shares for a long period. Since, the investment in the stocks for general public is quite nominal portion of their wealth; they do not have any eagerness to have frequent participation in the market. Thus, the study side is quite passive. On the other hand, the general public is not able to recognize appropriate sector to employ their savings. In such time, banking sector is the only sector which is reporting high profitability each year. So, the public demand for the banking sector stock is quite high. Since, demand is increasing and supply is passive, the stock price in the market has got overvalued. Besides thin trading, the immature behaviour of the Nepalese investor is also the other responsible factor for the inefficiency of

the NEPSE. Very few investors use fundamental and technical tools to analyze investment opportunity. Nepalese investors do not have clear concept of intrinsic value of their investment. They always interested on capital gain as well as dividend and their investment decision is much like speculation rather than investment.

Although Nepalese capital market is offering a number of opportunities for risk adjusted excess return. But the investors are not responding correctly to the market opportunities. Thus, such behaviour of investors is making the NEPSE an inefficient market. The passiveness among the general investors or thin trading in the market is the main cause of inefficiency of the NEPSE.

5.2 Conclusion

Overall evidence from both Secondary and Primary data analysis lead to the conclusion that NEPSE is not efficient with respect to any of so-called levels of efficiency. Processing of information in NEPSE is rather weak and such is perhaps because of the persistent of large number of non-actively traded share. In addition, NEPSE behaviour exhibits that price response to information is biased. Price at one time may be unfairly high and later on are unfairly low. It suggests that information alone is not moving the price; other probable reasons for such may be irrational behaviour of investors, unfair practices of market intermediaries, non-disclosure of information by listed companies on time, manipulative action of speculators etc. This provides evidence consistent with market inefficiencies.

The auto-correlation analysis of daily market return of NEPSE has detected significant first order correlation. It means the market return of today in NEPSE is affected by the return of yesterday. The price movement is not

independent rather it has some relationship with the past price sequences. Hence, today's price change of stock in NEPSE is not an unbiased and independent outcome of yesterday's price change. OR, the market is not following a random walk, the minimum requirement for weak form efficiency. Thus, the past information about the stock price movement is useful to earn risk adjusted excess return in the NEPSE.

Run test for the daily market return has also revealed the similar result that the stock price formation process in NEPSE is not independent from the historical price series. The observed number of run is quite lower than the runs that could be expected if the movement were random. The lower number of runs indicates the overreaction to the information, which allows active investors to earn risk-adjusted excess return in the market. Hence, this also suggests rejecting null hypothesis that the market follows a random walk.

By analyzing the behavior of Nepalese investors', it is found that most of Nepalese investors are passive. Thin trading is the most serious problem in the market. A small number of active investors are making abnormal gain regularly. The investors following active strategy earn substantial return from market than that those following passive strategy. Fundamental tools of analysis are not working effectively because the market is affected very less by financial factors. Nepalese investors are not familiar with investment banking. They do not have any idea about the mutual funds so they are making direct investment towards the companies. Public are suffering from the high liquidity. It means they are not able to place their excess saving towards on appropriate investment alterative from which they can earn minimum rate of return. Investment decisions of Nepalese investors are based on the rumors and speculations. They do not compare the yield of their investment with other opportunity rather they look at the market movements

and if they found stocks to be increasing, they buy the securities and if it is decreasing they sell the securities. Investors are not able to interpret the financial events correctly. For example investors take the bonus share as the increment of their wealth position.

Thus our analysis revealed that the average Nepalese investors are behaving irrationally and the market inefficiency is also the consequence of irrational behavior of Nepalese investors. Hence, consistent with the finding of secondary data, primary data and investors behavior analysis also provide the evidence of market inefficiency.

5.3 Recommendations

The conclusion of the study implies that past price movement may help to estimate the future price with reasonable accuracy. Since, stock price movements indicate predictable patterns, investors can benefit from the technical analysis, trading rules based on past price and fundamental analysis. As market reveals substantial sign of inefficiencies, investors who can accurately predict movement in market and properly identify the mis-priced securities can achieve superior returns. Thus, in such inefficient market, it appears to be useful for investors to pursue active investment strategies and to gain insight that is superior to that of other investors.

To do so, investors much posses advantage in the quality and timeliness of information. However, the current scenario of market implies that Nepalese stock market is not developed properly from informational aspects. Though it is mandatory for listed companies to disclose all price sensitive information to NEPSE and also to submit semi- annual reports and annual reports on regular basis to NEPSE and SEBO, most of the listed companies are not complying with this requirement. This is seriously hindering the informational efficiency of NEPSE. In this scenario, it is implicit that dissemination of timely and adequate information by listed companies can contribute to maintain the confidence level of investors and to develop fair securities market.

The failure of Nepalese securities market to maintain even the weak form of market efficiency implies serious issues that must be addressed as matter of urgency. So, for development of NEPSE as reasonably efficient market, the relevant recommendations in related area are made. The recommendations are made in four aspects (a) a legislative framework (b) regulation by the concerned authorities (c) self-regulation by market players (d) miscellaneous.

(a) Legislative framework

The first important aspect is development of adequate and consistent legislative framework. Absence of comprehensive Securities Exchange Act is major reason for weak compliance and ineffective enforcement system. Besides, there is also need of proper coordination in provisions of different legislation. In this perspective, prevailing rules and regulation have different provisions regarding the information disclosure in Nepal. As per Company Act, 1997, corporate bodies are required to disclose their yearly operations

within six months after the end of a fiscal year, whereas securities Exchange Act, 1997, has prescribed four months for the same. Bank and financial institutions ordinance and Insurance Act also have different provisions on this regard. Such conflict and inconsistencies in legal provision must be aligned to remove dilemma faced by the listed companies.

(b) Regulation by Concerned Authorities

Only full-fledged legislative framework in black and white format alone will not ensure its implementation. In our context, the concerned authorities, NEPSE and SEBO, must work in co-ordination to implement it effectively. Over the year there have been some reforms in Nepalese capital market, but there are still many issues to be addressed. Some of the issues and suggestive measure are briefly mentioned below:

- Investors' confidence in the securities investment is low. So, it must be restored through strengthening of investor protection and improvements in transparency, corporate governance and effective monitoring mechanism.
- As a policy to improve the market efficiency, the timely disclosure and dissemination of information to investors on performance of listed companies should be emphasized.
- Investor forum must be established to educate and encourage individuals to make their own investment decisions. Training programmes, meetings, seminars must be conducted and if possible TV/radio programmes with information about stock market may also be broadcasted to encourage the idea that individual need to be knowledgeable in order to make rational investment decisions and further to encourage their active participation in stock trading.

- Ensure strong regulatory enforcement and proper market surveillance, as without it market efficiency will be elusive. For this, concerned authorities should place stricter and more effective enforcement of laws in order to deal with the problem of stock price manipulation, market rigging, insider dealing and false trading.
- Besides, the professional advice for investors needs to be facilitated to assist in taking rational investment decision. Brokerage firms must be encouraged to conduct research and development activities and also required support should be provided for establishment of investment advisory services.
- Need for building professionalism and enhancing market capacity through extensive training to securities businesspersons.
- To ensure the proper information disclosure the securities market infrastructure, such as accounting standards and legal mechanisms, should be improved to this end. As such accounting and auditing practices should be as in par with internationally acceptable standards.

(c) Self-regulation by Market Players

Above measures, if considered properly by concerned authorities, is expected to curb the ongoing recession in the securities market. However, self- regulation by market players is also equally important for revival of Nepalese securities market. No doubt, proper information flow is necessary aspect for market efficiency but next often overlooked aspect is that the users need to use the disclosed information effectively. In this regard, both investors and brokers should effectively filter informational content of the available information in the market and incorporate such into price through trading.

- Moreover, investors should be self-conscious, aware and informative in matter of taking investment decision rationally. Investment should be based on sound investment criteria and clear perception of the market behaviour rather than guesswork, rumor and other less reliable news.
- Beside that, investors themselves should be active and sufficiently conscious enough to safeguard their fundamental investment rights and their other powers to get timely information from the companies.
- If management of the company is not serious on the matter that has decisive impact on the interest of investors, investors can lodge complains to concerned authorities, such can lead to decrease in credibility of company in the market and may result in decrease in price, which in turn can prove to be punitive action for non-complying companies.
- Brokers as important market participants also need to develop professional and ethnical approach in stock market activities. Full-fledged brokerage business is yet to be developed in NEPSE.
- Brokers should have sufficient client orientation in their service delivery approach and give suggestions on the basis of fundamental and technical principles of capital market.
- There is also need for change in their attitude. They must be investors friendly and through Broker's Association, they must respond to investor's problem with coordination of NEPSE.

(d) Miscellaneous

- With the span of time, security market is diversifying in its scope. So adoption of electronic and screen based transaction system is need of time. Further market infrastructures like central depository system of

securities, over the counter market and e-trading system and credit rating agency are necessary for promoting securities market standard.

- Institutional investors like mutual funds should be encouraged to play active role in the market so that more Nepalese could benefit from the market activity. Similarly, insurance, pension and provident funds should be permitted to invest beyond the banking and financial sectors.
- NEPSE is dominated by risky investment i.e. equity share, which may not be attractive to risk averter and risk neutral investors. So, there must be initiation towards investment instruments diversification.
- The stock exchange should have a high speed settlement and clearance system, investors- friendly environment, well equipped office, well-trained, brilliant and hard working staff.
- There is need of specialists in NEPSE floor, who supervise stock trading, handle special orders to ensure continuous liquid and orderly markets.
- The government need to seriously address the issues related to deteriorating law and order, economic slackness, poor business environment, low level of internal saving and investment as these factors are adversely affecting the securities market development.
- The government or concerned bodies should be made the provision of high penalty for negligence, manipulation of the reliable information and delay on AGM.
- The development of stock market is also depending on political stability of the nation. So, the government should try to maintain the political stability to developing the securities market.

Summarizing the whole discussion, it can be suggested that securities legislation should clearly provide definitions and general principles; rest may

be left to self-regulation and market practices. Nevertheless in instances of violation of the general principles, concerned authorities should take prompt and severe action.

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Appendix – I (1)

Date	Index	R_{bt}	Date	Index	R_{bt}	Date	Index	R_{bt}
1-Jan-05	269.03		2-Jan-05	264.12	-0.01842	7-Jan-05	259.99	-0.00338
			3-Jan-05	260.87	-0.01238	8-Jan-05	261.23	0.004758

Date	Index	R_{bt}	Date	Index	R_{bt}	Date	Index	R_{bt}
9-Jan-05	263.51	0.00869	25-Mar-05	186.16	-0.02943	3-Jun-05	226.58	-0.00352
10-Jan-05	252.24	-0.04371	26-Mar-05	198.18	0.062569	4-Jun-05	226.03	-0.00243
14-Jan-05	256.96	0.018539	27-Mar-05	185.44	-0.06644	5-Jun-05	226.48	0.001989
15-Jan-05	260.92	0.015293	29-Mar-05	175.29	-0.05629	6-Jun-05	224.9	-0.007
16-Jan-05	262.37	0.005542	1-Apr-05	178.56	0.018483	7-Jun-05	223.8	-0.0049
17-Jan-05	259.2	-0.01216	2-Apr-05	191.6	0.070485	6/10/2002	224.25	0.002009
18-Jan-05	257.76	-0.00557	3-Apr-05	193.73	0.011056	11-Jun-05	224.05	-0.00089
21-Jan-05	255.05	-0.01057	4-Apr-05	190.39	-0.01739	12-Jun-05	222.74	-0.00586
22-Jan-05	253.32	-0.00681	5-Apr-05	191.51	0.005865	13-Jun-05	219.05	-0.01671
23-Jan-05	252.4	-0.00364	8-Apr-05	197.2	0.029278	14-Jun-05	215.55	-0.01611
24-Jan-05	249.74	-0.01059	9-Apr-05	199.8	0.013098	17-Jun-05	214.09	-0.0068
25-Jan-05	255.81	0.024015	10-Apr-05	204.39	0.022713	18-Jun-05	216.65	0.011887
28-Jan-05	249.88	-0.02345	11-Apr-05	206.94	0.012399	19-Jun-05	217.37	0.003318
30-Jan-05	249.56	-0.00128	12-Apr-05	202.42	-0.02208	21-Jun-05	218.2	0.003811
31-Jan-05	248.42	-0.00458	15-Apr-05	200.42	-0.00993	24-Jun-05	220.38	0.009941
1-Feb-05	247.57	-0.00343	16-Apr-05	200.85	0.002143	25-Jun-05	220.21	-0.00077
4-Feb-05	244.55	-0.01227	17-Apr-05	203.19	0.011583	26-Jun-05	220.23	9.08E-08
5-Feb-05	242.09	-0.01011	18-Apr-05	204.15	0.004714	27-Jun-05	220	-0.00104
6-Feb-05	239.31	-0.01155	19-Apr-05	204.01	-0.00069	1-Jul-05	219.7	-0.00136
7-Feb-05	231.57	-0.03288	22-Apr-05	201.09	-0.01442	2-Jul-05	219.78	0.000364
8-Feb-05	225.6	-0.02612	23-Apr-05	201.75	0.003277	3-Jul-05	218.21	-0.00717
11-Feb-05	225.23	-0.00164	24-Apr-05	204	0.011091	4-Jul-05	216.62	-0.00731
12-Feb-05	225.1	-0.00058	25-Apr-05	205.67	0.008153	5-Jul-05	215.83	-0.00365
13-Feb-05	226.88	0.007876	26-Apr-05	206.21	0.002622	8-Jul-05	215.68	-0.0007
14-Feb-05	224.25	-0.0117	29-Apr-05	207.93	0.008306	10-Jul-05	215.54	-0.00065
15-Feb-05	224.25	0.00004	30-Apr-05	208.73	0.00384	11-Jul-05	212.72	-0.01317
18-Feb-05	222.77	-0.00662	1-May-05	210.73	0.009536	12-Jul-05	211.6	-0.00528
20-Feb-05	217.7	-0.02302	2-May-05	211.05	0.001517	15-Jul-05	212.68	0.005091
21-Feb-05	215.05	-0.01225	3-May-05	215.51	0.020912	16-Jul-05	219.35	0.03088
22-Feb-05	210.81	-0.01991	6-May-05	224.59	0.041269	17-Jul-05	210.79	-0.03981
25-Feb-05	209.31	-0.00714	7-May-05	238.96	0.06202	19-Jul-05	210.94	0.000711
26-Feb-05	206.93	-0.01144	8-May-05	244.53	0.023042	22-Jul-05	210.87	-0.00033
27-Feb-05	205.66	-0.00616	9-May-05	230.63	-0.05852	23-Jul-05	210.77	-0.00047
28-Feb-05	204	-0.0081	10-May-05	239.52	0.037822	24-Jul-05	211.44	0.003174
1-Mar-05	201.48	-0.01243	13-May-05	236.91	-0.01096	25-Jul-05	215.09	0.017115
4-Mar-05	197.48	-0.02005	14-May-05	237.95	0.00438	26-Jul-05	215.57	0.002229
5-Mar-05	192.9	-0.02347	15-May-05	237.37	-0.00244	29-Jul-05	215.93	0.001669
6-Mar-05	187.93	-0.0261	16-May-05	235.94	-0.00604	30-Jul-05	215.92	-4.60E-08
7-Mar-05	182.45	-0.02959	17-May-05	238.69	0.011588	1-Aug-05	214.89	-0.00478
8-Mar-05	173.4	-0.05088	20-May-05	239.09	0.001674	2-Aug-05	215.73	0.003901
11-Mar-05	168.99	-0.02576	21-May-05	240.93	0.007666	5-Aug-05	214.7	-0.00479
13-Mar-05	166.94	-0.01221	22-May-05	241.12	0.000788	6-Aug-05	215.05	0.001629
14-Mar-05	158.73	-0.05043	23-May-05	232.54	-0.03623	7-Aug-05	214.85	-0.00093
15-Mar-05	155.16	-0.02275	24-May-05	228.22	-0.01875	8-Aug-05	215.41	0.002603
18-Mar-05	156.99	0.011725	27-May-05	229.32	0.004808	9-Aug-05	215.97	0.002596
19-Mar-05	165.68	0.053876	28-May-05	228.32	-0.00437	12-Aug-05	215.56	-0.0019
20-Mar-05	177.21	0.067277	29-May-05	228.87	0.002406	13-Aug-05	216.4	0.003889
21-Mar-05	183.3	0.033789	30-May-05	228.24	-0.00276	14-Aug-05	217.92	0.006999
22-Mar-05	191.72	0.044912	31-May-05	227.38	-0.00378	15-Aug-05	218.8	0.00403

Date	Index	R_{bt}	Date	Index	R_{bt}	Date	Index	R_{bt}
16-Aug-05	220.59	0.008148	11-Nov-05	219.57	-0.00599	22-Jan-06	189.06	0.000158692
19-Aug-05	220.05	-0.00245	12-Nov-05	219.12	-0.00205	23-Jan-06	189.03	-0.000158692
20-Aug-05	221.98	0.008732	13-Nov-05	218.91	-0.00096	24-Jan-06	188.6	-0.002277362
21-Aug-05	223	0.004584	14-Nov-05	217.37	-0.00706	27-Jan-06	189.77	0.006184442
22-Aug-05	224	0.004474	15-Nov-05	216.72	-0.002995	28-Jan-06	190.88	0.005832146
23-Aug-05	225.38	0.006142	18-Nov-05	216.71	-0.000046	29-Jan-06	191.1	0.001151893
26-Aug-05	225.43	0.000222	19-Nov-05	216.42	-0.00134	31-Jan-06	196.72	0.028984547
27-Aug-05	223.96	-0.00654	20-Nov-05	216.37	-0.00023	3-Feb-06	210.89	0.069555273
28-Aug-05	223.47	-0.00219	21-Nov-05	214.76	-0.00747	4-Feb-06	229.55	0.0847842
29-Aug-05	221.71	-0.00791	22-Nov-05	212.2	-0.01199	5-Feb-06	231.15	0.00694598
2-Sep-05	218.73	-0.01353	25-Nov-05	211.53	-0.00316	6-Feb-06	221.02	-0.044813655
3-Sep-05	218.66	-0.00032	26-Nov-05	211.89	0.0017	7-Feb-06	215.84	-0.023715803
4-Sep-05	218.81	0.000686	27-Nov-05	212.2	0.001462	10-Feb-06	213	-0.013245227
5-Sep-05	218.43	-0.00174	28-Nov-05	212.39	0.000895	11-Feb-06	210.09	-0.013756155
6-Sep-05	218.29	-0.00064	2-Dec-05	212.61	0.001035	12-Feb-06	209.57	-0.002478198
9-Sep-05	217.31	-0.0045	3-Dec-05	212.24	-0.00174	13-Feb-06	206.91	-0.012773896
10-Sep-05	216.95	-0.00166	4-Dec-05	213.08	0.00395	14-Feb-06	206.3	-0.002952496
11-Sep-05	217.19	0.001106	5-Dec-05	213.98	0.004215	17-Feb-06	206.6	0.001453137
12-Sep-05	217.08	-0.00051	6-Dec-05	213.48	-0.00234	18-Feb-06	207.67	0.005165725
13-Sep-05	216.09	-0.00457	9-Dec-05	212.53	-0.00446	20-Feb-06	207.14	-0.002555388
16-Sep-05	216.16	0.000324	10-Dec-05	212.14	-0.00184	21-Feb-06	206.62	-0.002513536
17-Sep-05	216.02	-0.00065	11-Dec-05	311.98	0.385693	24-Feb-06	207.75	0.005454076
18-Sep-05	216.07	0.000231	12-Dec-05	211.12	-0.390512	25-Feb-06	206.94	-0.003906538
19-Sep-05	216.7	0.002911	13-Dec-05	211.13	0.000047	26-Feb-06	205.5	-0.006982862
23-Sep-05	215.52	-0.00546	16-Dec-05	210.63	-0.00237	27-Feb-06	203.81	-0.008257847
24-Sep-05	212.3	-0.01505	17-Dec-05	210.23	-0.0019	28-Feb-06	203.62	-0.000932676
25-Sep-05	310.35	0.3797	18-Dec-05	201.66	-0.04162	3-Mar-06	203.55	-0.000343837
26-Sep-05	310.22	-0.00042	19-Dec-05	201.36	-0.00149	4-Mar-06	202.64	-0.004480669
27-Sep-05	209.97	-0.39032	20-Dec-05	200.41	-0.00473	5-Mar-06	202.4	-0.001185068
30-Sep-05	209.01	-0.00458	23-Dec-05	200.81	0.001994	6-Mar-06	202.12	-0.001384357
1-Oct-05	208.7	-0.00148	24-Dec-05	200.67	-0.0007	7-Mar-06	200.73	-0.006900859
2-Oct-05	208.86	0.000766	25-Dec-05	197.75	-0.01466	10-Mar-06	200.54	-0.000946993
3-Oct-05	210.16	0.006205	26-Dec-05	198.01	0.923617	11-Mar-06	200.5	-0.000199481
4-Oct-05	210.28	0.000571	27-Dec-05	198.4	-0.92084	12-Mar-06	200.55	0.000249345
8-Oct-05	211.6	0.006258	30-Dec-05	198.4	0.000504	13-Mar-06	200.18	-0.00184663
9-Oct-05	211.7	0.000472	1-Jan-06	197.35		14-Mar-06	204.15	0.019638056
10-Oct-05	212.51	0.003819	2-Jan-06	196.82	-0.002689197	18-Mar-06	204.76	0.002983544
11-Oct-05	212.54	0.000141	3-Jan-06	196.28	-0.002747394	19-Mar-06	208.65	0.018819645
21-Oct-05	212.24	-0.00141	6-Jan-06	195.05	-0.006286275	20-Mar-06	210.8	0.01025161
22-Oct-05	213.1	0.004044	7-Jan-06	194.11	-0.004830927	21-Mar-06	216.03	0.02450747
23-Oct-05	213.59	0.002297	8-Jan-06	194.15	0.000206047	24-Mar-06	216.11	0.00037025
24-Oct-05	215.18	0.007417	10-Jan-06	192.53	-0.00837907	25-Mar-06	215.17	-0.004359124
25-Oct-05	214.69	-0.00228	13-Jan-06	192.59	0.000311591	26-Mar-06	211.33	-0.018007521
28-Oct-05	215.29	0.002791	14-Jan-06	192.57	-0.000103853	27-Mar-06	209.88	-0.006884954
29-Oct-05	218.58	0.015166	15-Jan-06	193.62	0.005437751	28-Mar-06	209.35	-0.002528446
30-Oct-05	220.41	0.008337	16-Jan-06	194.03	0.002115311	31-Mar-06	213.05	0.017519387
1-Nov-05	222.59	0.009842	17-Jan-06	194.68	0.003344399	1-Apr-06	215.92	0.013381089
7-Nov-05	221.43	-0.00523	20-Jan-06	189.52	-0.026862625	2-Apr-06	215.88	-0.000185271
8-Nov-05	220.89	-0.00244	21-Jan-06	189.03	-0.002588827	3-Apr-06	215.45	-0.001993834
						4-Apr-06	215.01	-0.002044325
						7-Apr-06	213.97	-0.00484872
						8-Apr-06	213.12	-0.003980431
						9-Apr-06	211.87	-0.005882508
						10-Apr-06	212.02	0.000707731
						15-Apr-06	211.47	-0.002597465

Date	Index	R_{bt}	Date	Index	R_{bt}	Date	Index	R_{bt}
16-Apr-06	208.98	-0.011844591	27-Jun-06	200.11	0.003403918	15-Sep-06	203.58	-0.002404024
17-Apr-06	207.46	-0.007300004	28-Jun-06	199.7	-0.002050975	16-Sep-06	203.68	0.000491087
18-Apr-06	207.58	0.000578258	1-Jul-06	199.4	-0.001503383	17-Sep-06	204.47	0.003871131
21-Apr-06	206	-0.007640639	2-Jul-06	198.93	-0.002359853	20-Sep-06	204.04	-0.0021052
22-Apr-06	205.21	-0.003842324	3-Jul-06	199.09	0.00080398	21-Sep-06	204.03	-0.000049
23-Apr-06	204.77	-0.002146447	4-Jul-06	199.24	0.000753144	23-Sep-06	204.27	0.001175606
24-Apr-06	203.99	-0.003816425	5-Jul-06	199.31	0.000351273	30-Sep-06	203.65	-0.003039814
25-Apr-06	204.99	0.004890224	6-Jul-06	200.67	0.006800366	31-Sep-05	204.54	0.00436072
28-Apr-06	204.24	-0.003665425	7-Jul-06	199.9	-0.003844526	1-Oct-06	204.55	0.000048889
29-Apr-06	204.65	0.00200543	8-Jul-06	199.33	-0.002855499	4-Oct-06	204.55	-0.000048889
30-Apr-06	204.75	0.00048852	9-Jul-06	199.19	-0.0007026	5-Oct-06	204.72	0.000879636
1-May-06	205.39	0.003120888	12-Jul-06	198.38	-0.00407476	6-Oct-06	204.8	0.000390701
2-May-06	205.43	0.000194732	13-Jul-06	198.31	-0.00035292	7-Oct-06	204.09	-0.00347282
5-May-06	205.23	-0.000974042	14-Jul-06	198.24	-0.000353045	8-Oct-06	205.09	0.004887834
6-May-06	205.06	-0.000828682	15-Jul-06	198.03	-0.001059884	11-Oct-06	205.24	0.000731119
7-May-06	204.46	-0.002930262	16-Jul-06	197.76	-0.00136436	12-Oct-06	205.64	0.001947041
8-May-06	203.63	-0.004067736	19-Jul-06	198.1	0.001717779	13-Oct-06	204.54	-0.005363512
9-May-06	203.37	-0.001277641	20-Jul-06	197.39	-0.003590487	14-Oct-06	204.82	0.001367989
12-May-06	202.79	-0.002856019	21-Jul-06	197.2	-0.000963025	15-Oct-06	205.11	0.001414876
13-May-06	202.59	-0.000986729	22-Jul-06	197.53	0.001672029	19-Oct-06	205.03	-0.000390111
14-May-06	202.06	-0.002619549	23-Jul-06	196.89	-0.003245274	20-Oct-06	205.18	0.000731333
15-May-06	203.11	0.005183021	26-Jul-06	197.04	0.000761557	21-Oct-06	205.19	4.87365E-08
19-May-06	203.2	0.000443012	27-Jul-06	196.91	-0.000659982	22-Oct-06	205.54	0.001704283
20-May-06	203.14	-0.000295319	28-Jul-06	197.06	0.000761479	25-Oct-06	205.78	0.001166975
21-May-06	202.77	-0.001823065	29-Jul-06	198.54	0.00748234	26-Oct-06	205.87	0.000437265
22-May-06	203.4	0.003102152	30-Jul-06	200.07	0.007676714	27-Oct-06	205.09	-0.003795994
23-May-06	203.82	0.002062768	2-Aug-06	202.01	0.009649896	28-Oct-06	204.55	-0.002636463
24-May-06	204.51	0.003379623	4-Aug-06	202.96	0.004691714	29-Oct-06	204.49	-0.00029337
25-May-06	204.63	0.000586596	5-Aug-06	203.69	0.003590315	1-Nov-06	204.26	-0.001125382
26-May-06	205.01	0.001855288	6-Aug-06	205.39	0.008311381	2-Nov-06	204.38	0.000587314
27-May-06	205.27	0.001267427	9-Aug-06	206.34	0.004614683	3-Nov-06	204.45	0.000342441
28-May-06	206.1	0.0040353	11-Aug-06	207.5	0.005606046	4-Nov-06	203.76	-0.003380616
29-May-06	206.12	0.000097	12-Aug-06	208.37	0.004184006	5-Nov-06	202.93	-0.004081739
30-May-06	205.82	-0.001456523	13-Aug-06	208.27	-0.000480031	8-Nov-06	203.17	0.001181975
31-May-06	205.76	-0.000291559	16-Aug-06	209.67	0.006699551	9-Nov-06	203.15	-9.84446E-08
1-Jun-06	205.55	-0.001021128	17-Aug-06	209.07	-0.002865742	10-Nov-06	204.45	0.006378824
2-Jun-06	205.72	0.000826708	18-Aug-06	207.15	-0.009225956	11-Nov-06	203.45	-0.004903172
5-Jun-06	205.22	-0.002433446	19-Aug-06	201.81	-0.026116508	12-Nov-06	202.88	-0.002805603
6-Jun-06	204.67	-0.002683648	20-Aug-06	200	-0.009009294	15-Nov-06	202.46	-0.002072335
7-Jun-06	204.76	0.000439636	23-Aug-06	197.15	-0.014352506	16-Nov-06	204.3	0.009047166
8-Jun-06	204.3	-0.00224906	24-Aug-06	196.13	-0.005187156	17-Nov-06	204.72	0.00205369
9-Jun-06	203.72	-0.002843	25-Aug-06	194.92	-0.006188487	18-Nov-06	204.19	-0.002592259
12-Jun-06	203.11	-0.002998798	26-Aug-06	196.11	0.006086508	19-Nov-06	203.75	-0.002157181
13-Jun-06	202.25	-0.004243148	27-Aug-06	198.99	0.014578846	23-Nov-06	202.76	-0.004870739
14-Jun-06	201.85	-0.001979709	30-Aug-06	199.34	0.001757337	24-Nov-06	205.09	0.011425894
15-Jun-06	201.3	-0.002728515	1-Sep-06	200.45	0.00555293	25-Nov-06	204.55	-0.002636463
16-Jun-06	201.26	-0.000198728	2-Sep-06	202.22	0.008791375	26-Nov-06	204.49	-0.00029337
19-Jun-06	200.78	-0.002387823	3-Sep-06	204.57	0.011554002	27-Nov-06	202.14	-0.011558548
20-Jun-06	200.59	-0.000946757	6-Sep-06	205.14	0.002782458	30-Nov-06	204.44	0.011314007
21-Jun-06	200.14	-0.002245902	7-Sep-06	205.6	0.002239861	31-Nov-06	204.73	0.001417504
22-Jun-06	200.52	0.001896871	8-Sep-06	205.85	0.001215215	1-Dec-06	204.71	-9.76944E-08
23-Jun-06	201.98	0.00725469	9-Sep-06	205.21	-0.003113903	2-Dec-06	204.66	-0.000244278
24-Jun-06	201.69	-0.001436817	10-Sep-06	204.28	-0.004542243	3-Dec-06	197.49	-0.035662116
25-Jun-06	200.7	-0.004920609	13-Sep-06	204.04	-0.001175549	6-Dec-06	196.74	-0.00380489
26-Jun-06	199.43	-0.006347958	14-Sep-06	204.07	0.000147019	7-Dec-06	196.42	-0.001627836

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8-Dec-06	195.82	-0.003059354	9-Mar-07	209.49	0.0105572	28-May-07	209.37	0.0010513
9-Dec-06	195.76	-0.000306451	10-Mar-07	207.19	-0.01104	31-May-07	210.03	0.0031474
10-Dec-06	195.7	-0.000306545	11-Mar-07	206.7	-0.002368	1-Jun-07	209.74	-0.001382
13-Dec-06	195.63	-0.000357754	12-Mar-07	206.75	0.0002419	2-Jun-07	211.74	0.0094904
14-Dec-06	195.26	-0.001893116	15-Mar-07	206.73	-0.0000967	3-Jun-07	212.67	0.0043826
15-Dec-06	195.09	-0.000871013	16-Mar-07	206.82	0.0004353	4-Jun-07	213.25	0.0027235
16-Dec-06	195.57	0.002457381	17-Mar-07	207.17	0.0016909	7-Jun-07	214.42	0.0054715
17-Dec-06	195.86	0.001481747	18-Mar-07	206.64	-0.002562	8-Jun-07	217.42	0.0138943
18-Dec-06	196.74	0.004482942	19-Mar-07	205.49	-0.005581	9-Jun-07	221.41	0.0181852
21-Dec-06	195.33	-0.007192624	22-Mar-07	206.9	0.0068382	6/10/2004	225.1	0.0165286
22-Dec-06	196.01	0.003475242	23-Mar-07	207.29	0.0018832	11-Jun-07	224.56	-0.002402
1-Jan-07	196.52		24-Mar-07	200.29	-0.034352	14-Jun-07	219.29	-0.023748
2-Jan-07	196.82	0.0015254	25-Mar-07	187.43	-0.066361	15-Jun-07	216.43	-0.0131279
5-Jan-07	196.77	-0.000254	26-Mar-07	188.54	0.0059047	16-Jun-07	216.41	-0.0000924
6-Jan-07	197.25	0.0024364	29-Mar-07	187.94	-0.003187	21-Jun-07	216.54	0.0006005
7-Jan-07	196.82	-0.002182	31-Mar-07	188.56	0.0032935	22-Jun-07	219.31	0.012711
8-Jan-07	196.57	-0.001271	1-Apr-07	188.45	-0.000584	23-Jun-07	221.99	0.0121461
9-Jan-07	195.84	-0.003721	2-Apr-07	188.27	-0.000956	24-Jun-07	224.19	0.0098616
12-Jan-07	196.65	0.0041275	5-Apr-07	189.82	0.0081992	25-Jun-07	225.68	0.0066242
13-Jan-07	197.98	0.0067405	6-Apr-07	181.75	-0.043444	28-Jun-07	225.41	-0.001197
14-Jan-07	197.77	-0.001061	7-Apr-07	194.1	0.0657414	29-Jun-07	225.95	0.0023928
15-Jan-07	198.88	0.0055969	8-Apr-07	194.58	0.0024699	30-Jun-07	227.68	0.0076274
16-Jan-07	201.61	0.0136335	9-Apr-07	194.86	0.001438	1-Jul-07	228.75	0.0046886
19-Jan-07	204.08	0.0121769	12-Apr-07	197.51	0.0135079	2-Jul-07	230.71	0.0085318
20-Jan-07	206.65	0.0125145	14-Apr-07	200.07	0.0128781	5-Jul-07	237.25	0.0279529
21-Jan-07	206.76	0.0005322	15-Apr-07	198.71	-0.006821	6-Jul-07	241.48	0.0176722
22-Jan-07	210.15	0.0162629	16-Apr-07	199.25	0.0027138	8-Jul-07	240.01	-0.006106
23-Jan-07	213.34	0.0150656	19-Apr-07	199.79	0.0027065	9-Jul-07	239	-0.004217
26-Jan-07	214.21	0.0040697	20-Apr-07	200.22	0.0021499	12-Jul-07	238.82	-0.000753
27-Jan-07	212.23	-0.009286	21-Apr-07	200.3	0.0003995	13-Jul-07	239.08	0.0010881
28-Jan-07	211.79	-0.002075	22-Apr-07	201.25	0.0047317	14-Jul-07	239.26	0.0007526
29-Jan-07	211.46	-0.001559	23-Apr-07	201.8	0.0027292	15-Jul-07	231.97	-0.030943
2-Feb-07	211.07	-0.001846	26-Apr-07	202.31	0.0025241	16-Jul-07	232.87	0.0038723
3-Feb-07	211.39	0.0015149	27-Apr-07	202.64	0.0016298	19-Jul-07	234.11	0.0053107
4-Feb-07	211.49	0.0004729	28-Apr-07	202.52	-0.000592	20-Jul-07	235.55	0.0061321
5-Feb-07	211.35	-0.000662	29-Apr-07	203.5	0.0048274	21-Jul-07	235.59	0.0001698
6-Feb-07	211.62	0.0012767	30-Apr-07	203.43	-0.000344	22-Jul-07	234.06	-0.006516
9-Feb-07	211.16	-0.002176	3-May-07	203.15	-0.001377	23-Jul-07	235.05	0.0042208
10-Feb-07	211.05	-0.000521	5-May-07	203.5	0.0017214	27-Jul-07	235.85	0.0033978
11-Feb-07	211.22	0.0008052	6-May-07	203.58	0.000393	28-Jul-07	236.16	0.0013135
12-Feb-07	211.41	0.0008991	7-May-07	203.57	-0.0000491	29-Jul-07	237.03	0.0036772
13-Feb-07	210.2	-0.00574	10-May-07	203.84	0.0013254	30-Jul-07	238.86	0.0076909
16-Feb-07	210.49	0.0013787	11-May-07	204.02	0.0008827	2-Aug-07	239.49	0.0026341
17-Feb-07	210.35	-0.000665	12-May-07	203.96	-0.000294	3-Aug-07	241.76	0.0094338
20-Feb-07	210.26	-0.000428	13-May-07	205.17	0.005915	4-Aug-07	243.89	0.0087718
23-Feb-07	210.16	-0.000476	14-May-07	205.27	0.0004873	5-Aug-07	245.12	0.0050306
25-Feb-07	209.67	-0.002334	17-May-07	205.95	0.0033072	6-Aug-07	246.91	0.007276
26-Feb-07	208.49	-0.005644	18-May-07	206.48	0.0025701	9-Aug-07	246.9	-0.0000405
27-Feb-07	208.12	-0.001776	19-May-07	206.54	0.0002905	10-Aug-07	248.27	0.0055335
1-Mar-07	207.91	-0.00101	20-May-07	206.93	0.0018865	11-Aug-07	234.23	-0.058213
2-Mar-07	208	0.0004328	21-May-07	206.73	-0.000967	12-Aug-07	251.74	0.0720933
3-Mar-07	208.15	0.0007209	24-May-07	207.51	0.0037659	13-Aug-07	256.11	0.0172102
4-Mar-07	208.25	0.0004803	25-May-07	207.98	0.0022624	16-Aug-07	259.08	0.0115299
5-Mar-07	207.58	-0.003222	26-May-07	208.19	0.0010092	17-Aug-07	259.31	0.0008874
8-Mar-07	207.29	-0.001398	27-May-07	209.15	0.0046006	18-Aug-07	258.65	-0.002548

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19-Aug-07	255.35	-0.012841	24-Nov-07	257.12	0.0056554	3-Feb-08	266.88	0.013467
20-Aug-07	252.65	-0.01063	25-Nov-07	257.8	0.0026412	4-Feb-08	270.86	0.014803
23-Aug-07	250.46	-0.008706	26-Nov-07	258.15	0.0013567	5-Feb-08	274.86	0.01466
24-Aug-07	246.66	-0.015288	29-Nov-07	257.27	-0.003415	6-Feb-08	282.81	0.028513
25-Aug-07	249.27	0.0105258	30-Nov-07	253.96	-0.012949	7-Feb-08	286.72	0.013731
26-Aug-07	251.14	0.0074739	1-Dec-07	251.61	-0.009297	8-Feb-08	282.6	-0.014474
27-Aug-07	252.35	0.0048065	2-Dec-07	252.34	0.0028971	9-Feb-08	279.3	-0.011746
7-Sep-07	249.14	-0.012802	3-Dec-07	251.34	-0.003971	10-Feb-08	278.48	-0.00294
8-Sep-07	246.83	-0.009315	6-Dec-07	252.02	0.0027018	11-Feb-08	280.01	0.005479
9-Sep-07	243.65	-0.012967	7-Dec-07	252.54	0.0020612	12-Feb-08	280.82	0.002889
10-Sep-07	243.1	-0.00226	8-Dec-07	248.63	-0.015604	13-Feb-08	281.74	0.003271
13-Sep-07	242.6	-0.002059	9-Dec-07	250.03	0.0056151	14-Feb-08	282.55	0.002871
14-Sep-07	241.28	-0.005456	10-Dec-07	250.26	0.0009195	15-Feb-08	286.23	0.01294
15-Sep-07	242.47	0.0049199	13-Dec-07	250.5	0.0009585	16-Feb-08	291.01	0.016562
16-Sep-07	248.43	0.0242831	14-Dec-07	250.19	-0.001238	17-Feb-08	296.27	0.017914
17-Sep-07	252.45	0.0160521	15-Dec-07	249.6	-0.002361	18-Feb-08	302.95	0.022297
20-Sep-07	251.75	-0.002777	16-Dec-07	249.93	0.0013212	19-Feb-08	305.91	0.009723
21-Sep-07	249.72	-0.008096	17-Dec-07	250.46	0.0021183	20-Feb-08	309.77	0.012539
22-Sep-07	247.91	-0.007275	20-Dec-07	251.11	0.0025919	21-Feb-08	312.48	0.00871
23-Sep-07	246.87	-0.004204	21-Dec-07	251.75	0.0025454	22-Feb-08	307.86	-0.014895
24-Sep-07	246.66	-0.000851	22-Dec-07	251.29	-0.0018289	23-Feb-08	304.07	-0.012387
28-Sep-07	246.07	-0.002395	23-Dec-07	251.31	0.0000796	24-Feb-08	302.11	-0.006467
29-Sep-07	246.82	0.0030433	24-Dec-07	252.3	0.0039316	25-Feb-08	300.48	-0.00541
30-Sep-07	247.45	0.0025492	27-Dec-07	252.84	0.002138	26-Feb-08	298.19	-0.00765
1-Oct-07	247.7	0.0010098	28-Dec-07	253.09	0.0009883	27-Feb-08	299	0.002713
4-Oct-07	247.36	-0.001374	29-Dec-07	251.43	-0.006581	28-Feb-08	300.74	0.005803
5-Oct-07	247.11	-0.001011	30-Dec-07	251.51	0.0003181	1-Mar-08	303.03	0.007586
6-Oct-07	247.33	0.0008899	31-Dec-07	251.46	-0.000199	2-Mar-08	304.91	0.006185
7-Oct-07	247.11	-0.00089	3-Jan-08	251.48		3-Mar-08	306.61	0.00556
8-Oct-07	246.93	-0.000729	4-Jan-08	247.42	-0.016276	4-Mar-08	308.28	0.005432
11-Oct-07	246.7	-0.000932	5-Jan-08	247.47	0.000202	5-Mar-08	310.47	0.007079
12-Oct-07	244.59	-0.00859	6-Jan-08	247.88	0.001655	6-Mar-08	314.43	0.012674
13-Oct-07	244.41	-0.000736	7-Jan-08	248.52	0.002579	7-Mar-08	314.48	0.000159
14-Oct-07	243.23	-0.00484	10-Jan-08	249.46	0.003775	8-Mar-08	312.96	-0.004845
18-Oct-07	243.51	0.0011505	11-Jan-08	251.95	0.009932	11-Mar-08	314.68	0.005481
19-Oct-07	243.95	0.0018053	12-Jan-08	255.01	0.012072	12-Mar-08	315.81	0.003585
26-Oct-07	243.43	-0.002134	13-Jan-08	255.52	0.001998	13-Mar-08	316.91	0.003477
27-Oct-07	243.51	0.0003286	14-Jan-08	225.39	-0.125468	14-Mar-08	320.54	0.011389
28-Oct-07	243.65	0.0005748	15-Jan-08	255.87	0.126837	15-Mar-08	320.89	0.001091
29-Oct-07	244.1	0.0018452	16-Jan-08	256.29	0.00164	18-Mar-08	320.48	-0.001279
1-Nov-07	244.62	0.002128	17-Jan-08	256.85	0.002183	19-Mar-08	320.54	0.000187
2-Nov-07	243.95	-0.002743	18-Jan-08	256.11	-0.002885	20-Mar-08	322.02	0.0046066
3-Nov-07	245.59	0.0067002	19-Jan-08	255.9	-0.00082	25-Mar-08	322.04	0.0000621
4-Nov-07	244.64	-0.003876	20-Jan-08	254.64	-0.004936	26-Mar-08	321.89	-0.000466
5-Nov-07	244.02	-0.002538	21-Jan-08	254.77	0.00051	27-Mar-08	319.8	-0.006514
9-Nov-07	243.88	-0.000574	22-Jan-08	255.4	0.002391	28-Mar-08	321.08	0.003995
10-Nov-07	246.29	0.0098334	23-Jan-08	255.4	7.83E-08	31-Mar-08	321.01	-0.000218
11-Nov-07	247.79	0.0060719	26-Jan-08	256.02	0.002425	1-Apr-08	322.04	0.003203
15-Nov-07	248.22	0.0017338	27-Jan-08	255.77	-0.000977	2-Apr-08	321.79	-0.000777
16-Nov-07	249.13	0.0036594	28-Jan-08	255.29	-0.001878	3-Apr-08	322.72	0.002886
17-Nov-07	250.06	0.003726	29-Jan-08	255.72	0.001683	4-Apr-08	320.66	-0.006404
18-Nov-07	251.11	0.0041902	30-Jan-08	259.38	0.014211	8-Apr-08	321.52	0.002678
19-Nov-07	252.43	0.0052429	31-Jan-08	259.98	0.002311	9-Apr-08	323.44	0.005954
22-Nov-07	254.2	0.0069874	1-Feb-08	261.74	0.006747	10-Apr-08	325.79	0.007239
23-Nov-07	255.67	0.0057662	2-Feb-08	263.31	0.00598	11-Apr-08	326.02	0.000706

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12-Apr-08	309.72	-0.05129	28-Jun-08	320.54	0.004816	23-Sep-08	331.37	-0.001086
16-Apr-08	309.6	-0.000388	31-June-05	322.47	0.006003	24-Sep-08	330.8	-0.001722
17-Apr-08	310.49	0.002871	1-Jul-08	326.88	0.013583	25-Sep-08	330.88	0.000242
18-Apr-08	304.89	-0.018201	2-Jul-08	329.02	0.006525	28-Sep-08	333.78	0.008726
19-Apr-08	305.53	0.002097	3-Jul-08	335.83	0.020487	29-Sep-08	333.16	-0.001859
22-Apr-08	304.48	-0.003443	4-Jul-08	336.85	0.003033	4-Oct-08	333.48	0.00096
23-Apr-08	303.24	-0.004081	7-Jul-08	335.67	-0.003509	5-Oct-08	327.9	-0.016874
24-Apr-08	301.39	-0.006119	8-Jul-08	328.94	-0.020253	6-Oct-08	331.32	0.010376
25-Apr-08	299.35	-0.006792	9-Jul-08	324.01	-0.015101	8-Oct-08	333.71	0.007188
26-Apr-08	297.81	-0.005158	10-Jul-08	322.98	-0.003184	11-Oct-08	330.76	-0.008879
29-Apr-08	296.69	-0.003768	11-Jul-08	327.69	0.014478	12-Oct-08	330.28	-0.001452
30-Apr-08	292.33	-0.014805	14-Jul-08	327.35	-0.001038	13-Oct-08	326.13	-0.012645
31-Apr-05	290.11	-0.007623	15-Jul-08	326.1	-0.003826	14-Oct-08	324.68	-0.004456
1-May-08	291.32	0.004162	16-Jul-08	325.35	-0.002303	15-Oct-08	324.71	0.000092
2-May-08	294.74	0.011671	17-Jul-08	323.54	-0.005579	18-Oct-08	324.55	-0.000493
3-May-08	296.14	0.004739	18-Jul-08	320.76	-0.00863	19-Oct-08	326.51	0.006021
4-May-08	297.17	0.003472	21-Jul-08	318.21	-0.007982	20-Oct-08	326.86	0.001071
5-May-08	297.33	0.000538	22-Jul-08	315.14	-0.009695	21-Oct-08	326.92	0.000184
6-May-08	298.1	0.002586	23-Jul-08	308.65	-0.020809	22-Oct-08	327.03	0.00052
9-May-08	298.36	0.000872	24-Jul-08	312.24	0.011564	25-Oct-08	327.03	-0.000183
10-May-08	297.4	-0.003223	25-Jul-08	314.76	0.008038	26-Oct-08	327.3	0.000825
11-May-08	296.47	-0.003132	26-Jul-08	315.16	0.00127	27-Oct-08	325.48	-0.003305
12-May-08	295.78	-0.00233	27-Jul-08	314.43	-0.002319	28-Oct-08	325.48	-0.002271
13-May-08	295.41	-0.001252	28-Jul-08	313.3	-0.0036	30-Oct-08	327.31	0.005607
14-May-08	294.82	-0.001999	29-Jul-08	311.05	-0.007208	2-Nov-08	327.14	-0.00052
15-May-08	293.63	-0.004045	30-Jul-08	309.59	-0.004705	3-Nov-08	327.62	0.001466
16-May-08	292.22	-0.004814	2-Aug-08	315.9	0.020177	4-Nov-08	321.27	-0.019573
17-May-08	292.18	-0.000137	3-Aug-08	320.69	0.015049	5-Nov-08	320.47	-0.002493
18-May-08	292.25	0.00024	4-Aug-08	322.28	0.004946	6-Nov-08	322.87	0.007461
19-May-08	292.54	0.000992	5-Aug-08	321.76	-0.001615	9-Nov-08	324.1	0.003802
20-May-08	292.75	0.000718	6-Aug-08	318.39	-0.010529	10-Nov-08	323.86	-0.000741
21-May-08	297.3	0.015423	9-Aug-08	316.24	-0.006776	11-Nov-08	325.42	0.004805
22-May-08	298.41	0.003727	10-Aug-08	314.45	-0.005676	12-Nov-08	327.95	0.007745
26-May-08	297.99	-0.001408	11-Aug-08	314.51	0.000191	13-Nov-08	329.32	0.004169
27-May-08	297.52	-0.001578	12-Aug-08	312.66	-0.0059	16-Nov-08	330.63	0.00397
28-May-08	297.84	0.001075	13-Aug-08	311.73	-0.002979	17-Nov-08	331.93	0.003924
29-May-08	299.29	0.004857	16-Aug-08	310.79	-0.00302	18-Nov-08	334.3	0.007115
30-May-08	298.63	-0.002208	17-Aug-08	311.5	0.002282	19-Nov-08	336.52	0.006619
3-Jun-08	298.01	-0.002078	18-Aug-08	311.01	-0.001574	20-Nov-08	337.15	0.00187
4-Jun-08	298.39	0.001274	19-Aug-08	312.17	0.003723	23-Nov-08	327.67	-0.028521
5-Jun-08	300.62	0.007446	20-Aug-08	312.86	0.002208	24-Nov-08	326.56	-0.003393
6-Jun-08	302.12	0.004977	23-Aug-08	314.17	0.004178	25-Nov-08	327.33	0.002355
6/10/2005	303.07	0.00314	24-Aug-08	314.24	0.000223	26-Nov-08	328.12	0.002411
11-Jun-08	303.06	-3.30E-08	25-Aug-08	316.62	0.007545	27-Nov-08	328.31	0.000579
12-Jun-08	304.49	0.004707	26-Aug-08	316.93	0.000979	1-Jan-09	329.06	
13-Jun-08	304.16	-0.001084	27-Aug-08	316.67	-0.000821	2-Jan-09	330.12	0.00321612
14-Jun-08	304.64	0.001577	31-Aug-08	317.07	0.001262	3-Jan-09	330.92	0.00242043
17-Jun-08	306.52	0.006152	3-Sep-08	317.31	0.000757	4-Jan-09	330.98	0.000181296
18-Jun-08	307.55	0.003355	4-Sep-08	318.01	0.002204	6-Jan-09	329.42	-0.004724418
19-Jun-08	310.4	0.009224	7-Sep-08	318.55	0.001697	8-Jan-09	329.12	-0.000911106
20-Jun-08	311.72	0.004244	16-Sep-08	318.98	0.001349	9-Jan-09	329.49	0.001123579
24-Jun-08	313.33	0.005152	17-Sep-08	319.67	0.002161	10-Jan-09	329.26	-0.000698292
25-Jun-08	314.27	0.002996	18-Sep-08	320.1	0.001344	12-Jan-09	329.02	-0.000729173
26-Jun-08	317.25	0.009438	21-Sep-08	325.93	0.018049	15-Jan-09	329.23	0.000638055
27-Jun-08	319	0.005501	22-Sep-08	331.73	0.017639	16-Jan-09	329.58	0.001062522

Date	Index	R_{bt}	Date	Index	R_{bt}	Date	Index	R_{bt}
17-Jan-09	329.69	0.000333702	30-Apr-09	410.17	0.067779825	17-Jul-09	439.67	0.004970597
18-Jan-09	329.81	0.000363912	1-May-09	431.85	0.051506598	18-Jul-09	442.15	0.005624746
19-Jan-09	328.42	-0.004223454	2-May-09	428.07	-0.008791572	19-Jul-09	448.5	0.01425949
22-Jan-09	328.41	-3.04E-08	3-May-09	420.27	-0.018389372	20-Jul-09	451.84	0.007419453
23-Jan-09	328.73	0.000973917	4-May-09	419.26	-0.002406109	23-Jul-09	454.69	0.006287733
24-Jan-09	329.74	0.00306772	7-May-09	422.11	0.006774691	24-Jul-09	455.07	0.000835385
25-Jan-09	330.36	0.001878504	8-May-09	425.16	0.007199625	25-Jul-09	453.76	-0.002882829
26-Jan-09	330.52	0.000484203	9-May-09	431.92	0.015774817	26-Jul-09	450.23	-0.007809861
30-Jan-09	331.48	0.002900304	10-May-09	433.46	0.003559134	27-Jul-09	438.38	-0.026672449
31-Jan-09	334.9	0.010264504	11-May-09	439.42	0.013656156	30-Jul-09	437.01	-0.003130036
1-Feb-09	333.76	-0.003409808	14-May-09	445.8	0.014414745	31-Jul-09	424.28	-0.029562463
2-Feb-09	335.15	0.004006823	15-May-09	449.79	0.008910386	1-Aug-09	405.01	-0.046481856
5-Feb-09	335.15	0.000149198	16-May-09	448.71	-0.002404008	2-Aug-09	391.98	-0.03270094
6-Feb-09	335.17	0.000059673	17-May-09	443.14	-0.012491052	3-Aug-09	387.37	-0.011830509
7-Feb-09	337.03	0.005534081	18-May-09	442.37	-0.001739111	6-Aug-09	399.99	0.032059238
9-Feb-09	339.95	0.008626601	21-May-09	440.24	-0.004826603	7-Aug-09	428.41	0.068641134
12-Feb-09	347.81	0.022857806	22-May-09	433.33	-0.01582047	8-Aug-09	440.82	0.028555948
13-Feb-09	359.84	0.034003135	23-May-09	424.31	-0.021035242	13-Aug-09	442.29	0.003329147
14-Feb-09	364.41	0.012620119	24-May-09	421.81	-0.005909344	14-Aug-09	439.84	-0.005554751
15-Feb-09	358.37	-0.01674154	25-May-09	418.91	-0.006898876	15-Aug-09	437.89	-0.004443287
16-Feb-09	358.37	2.79E-08	28-May-09	429.27	0.024429992	17-Aug-09	435.14	-0.006299919
20-Feb-09	358.93	0.001561411	29-May-09	436.38	0.016427332	20-Aug-09	429.64	-0.01272017
21-Feb-09	360.85	0.005334976	30-May-09	424.62	-0.027318772	21-Aug-09	426.16	-0.008132786
22-Feb-09	364.15	0.009103511	31-May-09	423.04	-0.003727914	22-Aug-09	422.98	-0.007489966
23-Feb-09	368.53	0.011956249	1-Jun-09	423.09	0.000118185	24-Aug-09	421.91	-0.002532875
27-Feb-09	375.64	0.019109118	4-Jun-09	422.95	-0.000330954	27-Aug-09	420	-0.00453731
28-Feb-09	380.62	0.013170264	5-Jun-09	421.99	-0.002272352	28-Aug-09	419.22	-0.001858869
1-Mar-09	284.03	-0.292721636	6-Jun-09	420.93	-0.002515068	29-Aug-09	420.97	0.00416573
2-Mar-09	377.86	0.28544389	7-Jun-09	419.08	-0.004404717	30-Aug-09	423.44	0.005850255
5-Mar-09	376.82	-0.002756137	8-Jun-09	420.93	0.004404717	31-Aug-09	426.39	0.006942593
6-Mar-09	368.21	-0.023114192	11-Jun-09	421.38	0.00106849	3-Sep-09	426.95	0.00131249
7-Mar-09	364.99	-0.008783472	12-Jun-09	421.51	0.000308463	4-Sep-09	426.91	-0.000093692
8-Mar-09	369.8	0.013092363	13-Jun-09	420.08	-0.003398333	5-Sep-09	424.08	-0.006651101
9-Mar-09	373.64	0.010330448	14-Jun-09	419.41	-0.001596208	7-Sep-09	424.38	0.000707164
12-Mar-09	374.48	0.00224563	15-Jun-09	419.11	-0.000715546	10-Sep-09	423.8	-0.001367634
13-Mar-09	378.38	0.010360585	18-Jun-09	421.07	0.004665675	11-Sep-09	423.58	-0.000519248
15-Mar-09	378.32	-0.000158583	19-Jun-09	422.92	0.004383945	12-Sep-09	425.62	0.004804531
16-Mar-09	378.41	0.000237866	20-Jun-09	424.66	0.004105813	13-Sep-09	425.24	-0.000893214
19-Mar-09	378.75	0.000898093	21-Jun-09	425.95	0.00303312	14-Sep-09	424.46	-0.001835943
20-Mar-09	379.36	0.001609265	22-Jun-09	426.05	0.000234742	18-Sep-09	432.81	0.01948106
21-Mar-09	378.34	-0.00269236	25-Jun-09	425.1	-0.002232275	19-Sep-09	441.4	0.019652661
22-Mar-09	377.98	-0.000951978	26-Jun-09	424.27	-0.00195439	20-Sep-09	442.14	0.00167508
23-Mar-09	377.42	-0.001482658	27-Jun-09	422.02	-0.005317339	21-Sep-09	440.16	-0.004488277
26-Mar-09	376.92	-0.001325662	28-Jun-09	423.12	0.00260312	24-Sep-09	439.79	-0.000840957
27-Mar-09	375.9	-0.002709813	29-Jun-09	422.81	-0.000732921	25-Sep-09	440.84	0.002384658
28-Mar-09	374.97	-0.002477128	2-Jul-09	424.87	0.004860334	26-Sep-09	441.63	0.00179043
30-Mar-09	374.9	-0.000186699	3-Jul-09	427.48	0.006124264	28-Sep-09	443.78	0.004856517
2-Apr-09	373.68	-0.003259508	4-Jul-09	429.17	0.003945607	8-Oct-09	448.82	0.011292972
3-Apr-09	371.03	-0.007116894	5-Jul-09	431.22	0.00476529	9-Oct-09	451.01	0.004867596
4-Apr-09	369.91	-0.003023189	6-Jul-09	433.89	0.006172645	10-Oct-09	450.98	-6.65E-08
5-Apr-09	370.83	0.002484004	9-Jul-09	433.89	-2.30E-08	11-Oct-09	448.87	-0.004689679
16-Apr-09	370.04	-0.002132629	10-Jul-09	435.04	0.002669983	12-Oct-09	449.37	0.001113288
17-Apr-09	366.41	-0.009858183	12-Jul-09	437.14	0.004815529	15-Oct-09	449.48	0.000244757
25-Apr-09	376.61	0.027457244	13-Jul-09	436.73	-0.000938355	16-Oct-09	447.76	-0.003833984
26-Apr-09	383.29	0.017581714	16-Jul-09	437.49	0.001738693	17-Oct-09	448.08	0.000714413

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18-Oct-09	447.9	-0.000401795	16-Nov-09	508.2	-0.001985434	12-Dec-09	567.87	0.019848061
19-Oct-09	450.47	0.005721489	19-Nov-09	509.45	0.002456642	13-Dec-09	577.66	0.017092941
26-Oct-09	452.67	0.004871901	20-Nov-09	506.2	-0.006399864	14-Dec-09	584.68	0.012079229
29-Oct-09	455.62	0.006495746	21-Nov-09	507.84	0.003234589	17-Dec-09	592.79	0.013775516
30-Oct-09	458.73	0.006802673	23-Nov-09	517.39	0.018630505	18-Dec-09	593.92	0.001904425
1-Nov-09	452.12	-0.01451417	26-Nov-09	531	0.025965079	19-Dec-09	592.79	-0.001904425
2-Nov-09	469.29	0.037273283	27-Nov-09	539.12	0.015176159	20-Dec-09	582.08	-0.018232309
5-Nov-09	472.67	0.007176556	28-Nov-09	550.86	0.021542513	21-Dec-09	586.24	0.007121367
6-Nov-09	478.33	0.0119034	29-Nov-09	571.45	0.036696297	24-Dec-09	590.02	0.006427173
7-Nov-09	485.14	0.014136638	30-Nov-09	562	-0.01667514	25-Dec-09	593.44	0.005779679
8-Nov-09	504.08	0.038297477	4-Dec-09	548.43	-0.024442199	26-Dec-09	593.42	-3.37E-08
9-Nov-09	517.28	0.025849328	5-Dec-09	545.15	-0.005998665	27-Dec-09	591.85	-0.002649187
12-Nov-09	522.45	0.009944972	6-Dec-09	544.87	-0.006071776	28-Dec-09	586.85	-0.008483974
13-Nov-09	508.51	-0.027044405	7-Dec-09	544.87	0.005558024	31-Dec-09	582.02	-0.008264439
14-Nov-09	510.02	0.00296506	10-Dec-09	550.18	0.009698263			
15-Nov-09	509.21	-0.001589435	11-Dec-09	556.71	0.011798961			

Appendix I(2)

Date	Index	R_{mt}	Date	Index	R_{mt}	Date	Index	R_{mt}
1-Jan-05	266.28		2-Apr-05	209.7	0.04207457	24-Jun-05	229.1	0.00626138
2-Jan-05	263.09	-0.01205221	3-Apr-05	211.11	0.00670139	25-Jun-05	229.33	0.00100343
3-Jan-05	261.08	-0.00766931	4-Apr-05	208.93	-0.01038006	26-Jun-05	229.36	0.00013081
7-Jan-05	260.67	-0.00157163	5-Apr-05	208.92	-0.00004786	27-Jun-05	229.17	-0.00082874
8-Jan-05	261.56	0.00340846	8-Apr-05	212.66	0.01774324	1-Jul-05	229.2	0.00013090
9-Jan-05	262.2	0.00244387	9-Apr-05	214.55	0.00884817	2-Jul-05	219.18	-0.04470168
10-Jan-05	255.92	-0.02424268	10-Apr-05	217.45	0.01342613	3-Jul-05	228.27	0.04063583
14-Jan-05	258.91	0.01161562	11-Apr-05	219.14	0.00774186	4-Jul-05	227.16	-0.00487452
15-Jan-05	261.44	0.00972430	12-Apr-05	216.21	-0.01346064	5-Jul-05	226.48	-0.00299797
16-Jan-05	262.88	0.00549284	15-Apr-05	214.94	-0.00589124	8-Jul-05	226.23	-0.00110446
17-Jan-05	260.65	-0.00851914	16-Apr-05	215.15	0.00097654	10-Jul-05	224.84	-0.00616314
18-Jan-05	259.75	-0.00345888	17-Apr-05	216.36	0.00560823	11-Jul-05	223.67	-0.00521729
21-Jan-05	257.73	-0.00780711	18-Apr-05	216.94	0.00267713	12-Jul-05	222.86	-0.00362798
22-Jan-05	255.91	-0.00708671	19-Apr-05	217.14	0.00092149	15-Jul-05	223.76	0.00403028
23-Jan-05	255.04	-0.00340543	22-Apr-05	215.1	-0.00943927	16-Jul-05	227.54	0.01675200
24-Jan-05	253.2	-0.00724071	23-Apr-05	215.45	0.00162583	17-Jul-05	222.06	-0.02437843
28-Jan-05	252.83	-0.00146236	24-Apr-05	216.83	0.00638477	19-Jul-05	222	-0.00027023
30-Jan-05	252.73	-0.00039560	25-Apr-05	218.09	0.00579419	22-Jul-05	221.65	-0.00157782
31-Jan-05	251.96	-0.00305138	26-Apr-05	218.55	0.00210700	23-Jul-05	221.49	-0.00072212
1-Feb-05	251.41	-0.00218527	29-Apr-05	219.51	0.00438297	24-Jul-05	221.75	0.00117318
4-Feb-05	248.72	-0.01075731	30-Apr-05	220.17	0.00300219	25-Jul-05	224.17	0.01085407
5-Feb-05	247.15	-0.00633233	1-May-05	221.43	0.00570654	26-Jul-05	224.47	0.00133738
6-Feb-05	245.4	-0.00710591	2-May-05	221.73	0.00135391	29-Jul-05	224.65	0.00080157
7-Feb-05	240.41	-0.02054373	3-May-05	224.69	0.01326125	30-Jul-05	224.57	-0.00035617
8-Feb-05	236.42	-0.01673592	6-May-05	230.77	0.02669987	1-Aug-05	223.86	-0.00316661
11-Feb-05	236.06	-0.00152387	7-May-05	240.04	0.03938403	2-Aug-05	224.52	0.00294393
12-Feb-05	236.01	-0.00021183	8-May-05	243.63	0.01484511	5-Aug-05	223.84	-0.00307796
13-Feb-05	236.6	0.00249678	9-May-05	234.72	-0.03725737	6-Aug-05	223.84	0.00004468
14-Feb-05	234.82	-0.00755169	10-May-05	240.46	0.02416044	7-Aug-05	223.63	-0.00093861
15-Feb-05	234.97	0.00063858	13-May-05	238.65	-0.00755571	8-Aug-05	223.68	0.00022356
18-Feb-05	233.75	-0.00520568	14-May-05	239.09	0.00184201	9-Aug-05	224.03	0.00156351
20-Feb-05	230.5	-0.01400131	15-May-05	238.42	-0.00280623	12-Aug-05	223.77	-0.00116123
21-Feb-05	228.75	-0.00762116	16-May-05	237.62	-0.00336107	13-Aug-05	224.32	0.00245487
22-Feb-05	226.03	-0.01196197	17-May-05	239.54	0.00804766	14-Aug-05	225.39	0.00475863
25-Feb-05	225.11	-0.00407856	20-May-05	239.9	0.00150175	15-Aug-05	226.02	0.00279126
26-Feb-05	223.46	-0.00735675	21-May-05	241.08	0.00490666	16-Aug-05	226.59	0.00251873
27-Feb-05	222.45	-0.00453007	22-May-05	241.45	0.00153358	19-Aug-05	226.37	-0.00097139
28-Feb-05	220.28	-0.00980289	23-May-05	235.88	-0.02333921	20-Aug-05	227.58	0.00533100
1-Mar-05	218.59	-0.00770164	24-May-05	238.19	0.00974547	21-Aug-05	228.4	0.00359665
4-Mar-05	215.89	-0.01242881	27-May-05	234.05	-0.01753391	22-Aug-05	229.02	0.00271086
5-Mar-05	211.76	-0.01931546	28-May-05	233.47	-0.00248118	23-Aug-05	229.88	0.00374810
6-Mar-05	208.53	-0.01537064	29-May-05	234.25	0.00333533	26-Aug-05	230.01	0.00056535
7-Mar-05	204.79	-0.01809785	30-May-05	233.89	-0.00153800	27-Aug-05	228.96	-0.00457547
8-Mar-05	198.37	-0.03185109	31-May-05	233.28	-0.00261147	28-Aug-05	228.54	-0.00183607
11-Mar-05	195.46	-0.01477822	3-Jun-05	232.81	-0.00201678	29-Aug-05	227.36	-0.00517659
13-Mar-05	193.83	-0.00837427	43/2002	232.59	-0.00094542	2-Sep-05	225.38	-0.00874680
14-Mar-05	187.88	-0.03117803	5-Jun-05	232.79	0.00085951	3-Sep-05	225.3	-0.00035502
15-Mar-05	186.22	-0.00887469	6-Jun-05	231.83	-0.00413242	4-Sep-05	225.59	0.00128635
18-Mar-05	186.94	0.00385894	7-Jun-05	231.17	-0.00285097	5-Sep-05	224.86	-0.00324121
19-Mar-05	192.71	0.03039876	10-Jun-05	231.45	0.00121050	6-Sep-05	224.54	-0.00142412
20-Mar-05	200.18	0.03803049	11-Jun-05	231.34	-0.00047538	9-Sep-05	223.92	-0.00276502
21-Mar-05	204.28	0.02027464	12-Jun-05	230.69	-0.00281367	10-Sep-05	223.71	-0.00093828
22-Mar-05	209.67	0.02604326	13-Jun-05	228.26	-0.01058949	11-Sep-05	223.87	0.00071496
25-Mar-05	213.74	0.01922546	14-Jun-05	226.04	-0.00977336	12-Sep-05	223.79	-0.00035741
26-Mar-05	213.71	-0.00014037	17-Jun-05	225.29	-0.00332351	13-Sep-05	223.03	-0.00340182
27-Mar-05	205.52	-0.03907660	18-Jun-05	226.83	0.00681238	16-Sep-05	222.98	-0.00022421
29-Mar-05	198.81	-0.03319376	19-Jun-05	227.24	0.00180589	17-Sep-05	222.87	-0.00049344
1-Apr-05	201.06	0.01125378	21-Jun-05	227.67	0.00189048	18-Sep-05	222.77	-0.00044879

Date	Index	R_{mt}	Date	Index	R_{mt}	Date	Index	R_{mt}
19-Sep-05	223.14	0.00165953	30-Dec-05	204.77	0.00009778	1-Apr-06	216.71	0.008666
23-Sep-05	222.12	-0.00458160	1-Jan-06	204.1		2-Apr-06	216.69	-9.20E-08
24-Sep-05	219.97	-0.00972660	2-Jan-06	203.61	-0.0024	3-Apr-06	216.36	-0.00152
25-Sep-05	218.48	-0.00679670	3-Jan-06	203.81	0.000982	4-Apr-06	216.22	-0.00065
26-Sep-05	218.22	-0.00119075	6-Jan-06	203.03	-0.00383	7-Apr-06	215.38	-0.00389
27-Sep-05	218.19	-0.00013749	7-Jan-06	202.37	-0.003256	8-Apr-06	214.8	-0.0027
30-Sep-05	217.53	-0.00302947	8-Jan-06	202.35	-0.000099	9-Apr-06	213.56	-0.00579
1-Oct-05	217.13	-0.00184052	10-Jan-06	200.98	-0.00679	10-Apr-06	214.32	0.003552
2-Oct-05	217.11	-0.00009212	13-Jan-06	200.82	-0.0008	15-Apr-06	213.68	-0.00299
3-Oct-05	218.03	0.00422853	14-Jan-06	200.8	-0.0001	16-Apr-06	211.99	-0.00794
4-Oct-05	217.9	-0.00059643	15-Jan-06	201.44	0.003182	17-Apr-06	211.37	-0.00293
8-Oct-05	218.76	0.00393900	16-Jan-06	201.64	0.000992	18-Apr-06	211.41	0.000189
9-Oct-05	218.88	0.00054840	17-Jan-06	202.07	0.00213	21-Apr-06	210.32	-0.00517
10-Oct-05	219.33	0.00205381	20-Jan-06	199.28	-0.0139	22-Apr-06	209.43	-0.00424
11-Oct-05	219.26	-0.00031921	21-Jan-06	198.51	-0.00387	23-Apr-06	209.49	0.000286
21-Oct-05	219.16	-0.00045618	22-Jan-06	198.55	0.000201	24-Apr-06	208.97	-0.00249
22-Oct-05	219.69	0.00241541	23-Jan-06	198.7	0.000755	25-Apr-06	209.69	0.00344
23-Oct-05	220.03	0.00154644	24-Jan-06	198.44	-0.00131	28-Apr-06	209.23	-0.0022
24-Oct-05	221.08	0.00476073	27-Jan-06	199.03	0.002969	29-Apr-06	209.41	0.00086
25-Oct-05	220.78	-0.00135790	28-Jan-06	199.52	0.002459	30-Apr-06	209.17	-0.00115
28-Oct-05	220.97	0.00086022	29-Jan-06	199.78	0.001302	1-May-06	209.56	0.001863
29-Oct-05	223.11	0.00963798	31-Jan-06	203.54	0.018646	2-May-06	209.62	0.000286
30-Oct-05	224.33	0.00545326	3-Feb-06	213-30	0.046837	5-May-06	209.51	-0.00052
31-Oct-05	225.4	0.00475842	4-Feb-06	225.96	0.057658	6-May-06	209.37	-0.00067
1-Nov-05	225.65	0.00110853	5-Feb-06	227.4	0.006353	7-May-06	209.01	-0.00172
7-Nov-05	224.29	-0.00604527	6-Feb-06	220.51	-0.03077	8-May-06	208.48	-0.00254
8-Nov-05	223.94	-0.00156170	7-Feb-06	217.12	-0.01549	9-May-06	208.2	-0.00134
11-Nov-05	222.97	-0.00434093	10-Feb-06	215.18	-0.00898	12-May-06	207.84	-0.00173
12-Nov-05	222.67	-0.00134638	11-Feb-06	213.7	-0.0069	13-May-06	207.8	-0.00019
13-Nov-05	222.49	-0.00080870	12-Feb-06	213.31	-0.00183	14-May-06	207.45	-0.00169
14-Nov-05	221.57	-0.00414359	13-Feb-06	211.52	-0.00843	15-May-06	208.09	0.00308
15-Nov-05	220.73	-0.00379833	14-Feb-06	211.21	-0.00147	19-May-06	208.31	0.001057
18-Nov-05	220.59	-0.00063446	17-Feb-06	211.28	0.000331	20-May-06	207.85	-0.00221
19-Nov-05	220.37	-0.00099782	18-Feb-06	211.9	0.00293	21-May-06	207.61	-0.00116
20-Nov-05	220.43	0.00027223	20-Feb-06	211.3	-0.00284	22-May-06	208.3	0.003318
21-Nov-05	219.25	-0.00536755	21-Feb-06	211.04	-0.00123	23-May-06	208.76	0.002158
22-Nov-05	217.36	-0.00865767	24-Feb-06	211.99	0.004491	26-May-06	208.76	4.79E-08
25-Nov-05	217.1	-0.00119689	25-Feb-06	211.53	-0.00217	27-May-06	208.8	0.000192
26-Nov-05	217.11	0.00004606	26-Feb-06	210.59	-0.00445	28-May-06	208.88	0.000383
27-Nov-05	217.31	0.00092077	27-Feb-06	209.37	-0.00581	29-May-06	209.1	0.001053
28-Nov-05	217.44	0.00059805	28-Feb-06	209.26	-0.00053	30-May-06	209.63	0.002531
2-Dec-05	216.98	-0.00211777	3-Mar-06	209.19	-0.00033	2-Jun-06	209.74	0.000525
3-Dec-05	216.26	-0.00332380	4-Mar-06	208.54	-0.00311	3-Jun-06	209.48	-0.00124
4-Dec-05	216.75	0.00226323	5-Mar-06	208.54	0	43/2003	209.35	-0.00062
5-Dec-05	217.2	0.00207397	6-Mar-06	208.29	-0.0012	5-Jun-06	209.09	-0.00124
6-Dec-05	216.79	-0.00188945	7-Mar-06	207.23	-0.0051	6-Jun-06	208.89	-0.00096
9-Dec-05	216.29	-0.00230904	10-Mar-06	207.2	-0.00014	9-Jun-06	208.98	0.000431
10-Dec-05	215.97	-0.00148059	11-Mar-06	207.15	-0.00024	10-Jun-06	208.89	-0.00043
11-Dec-05	215.87	-0.00046314	12-Mar-06	207.18	0.000145	11-Jun-06	210.86	0.009387
12-Dec-05	214.97	-0.00417789	13-Mar-06	207.24	0.00029	12-Jun-06	210.48	-0.0018
13-Dec-05	214.57	-0.00186246	14-Mar-06	209.66	0.01161	13-Jun-06	207.65	-0.01354
16-Dec-05	214.27	-0.00139912	18-Mar-06	210.1	0.002096	16-Jun-06	207.43	-0.00106
17-Dec-05	214.34	0.00032664	19-Mar-06	212.66	0.012111	17-Jun-06	206.82	-0.00295
18-Dec-05	208.08	-0.02964092	20-Mar-06	214.09	0.006702	18-Jun-06	206.47	-0.00169
19-Dec-05	207.55	-0.00255035	21-Mar-06	217.32	0.014974	19-Jun-06	206	-0.00228
20-Dec-05	206.57	-0.00473294	24-Mar-06	217.39	0.000322	20-Jun-06	205.92	-0.00039
23-Dec-05	206.43	-0.00067797	25-Mar-06	216.72	-0.00309	23-Jun-06	205.48	-0.00214
24-Dec-05	206.8	0.00179077	26-Mar-06	213.87	-0.01324	24-Jun-06	205.3	-0.00088
25-Dec-05	206.62	-0.00087079	27-Mar-06	212.76	-0.0052	25-Jun-06	204.94	-0.00176
26-Dec-05	204.34	-0.01109608	28-Mar-06	212.36	-0.00188	26-Jun-06	204.86	-0.00039
27-Dec-05	204.53	0.00092939	31-Mar-06	214.84	0.011611	27-Jun-06	205.82	0.004675

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30-Jun-06	205.67	-0.00073	29-Sep-06	206.84	-0.00116	30-Dec-06	201.23	-0.00496
1-Jul-06	205.12	-0.00268	30-Sep-06	206.83	-0.000048	31-Dec-06	201.57	0.001688
2-Jul-06	204.27	-0.00415	1-Oct-06	206.96	0.000628	1-Jan-07	201.88	-0.001785
3-Jul-06	204.61	0.001663	8-Oct-06	206.58	-0.00184	2-Jan-07	201.52	-0.000050
4-Jul-06	204.4	-0.00103	9-Oct-06	207.03	0.002176	5-Jan-07	201.51	0.001537
8-Jul-06	204.18	-0.00108	10-Oct-06	206.93	-0.00063	6-Jan-07	201.82	-0.001537
9-Jul-06	203.86	-0.00157	13-Oct-06	206.93	0.000145	7-Jan-07	201.51	0.043457
10-Jul-06	203.78	-0.00039	14-Oct-06	207.03	0.000483	8-Jan-07	210.46	-0.046787
11-Jul-06	203.79	4.91E-08	15-Oct-06	207.06	0.000145	9-Jan-07	200.84	0.002486
14-Jul-06	204.44	0.003184	16-Oct-06	207.6	0.002605	12-Jan-07	201.34	0.004213
15-Jul-06	205.46	0.004977	17-Oct-06	207.54	-0.00029	13-Jan-07	202.19	-0.001188
16-Jul-06	204.86	-0.00292	20-Oct-06	208.03	0.002358	14-Jan-07	201.95	0.003460
17-Jul-06	204.41	-0.0022	21-Oct-06	207.81	-0.00106	15-Jan-07	202.65	0.008647
18-Jul-06	204.31	-0.00049	22-Oct-06	207.58	-0.00111	16-Jan-07	204.41	0.007845
21-Jul-06	203.69	-0.00304	23-Oct-06	207.73	0.000722	19-Jan-07	206.02	0.008603
22-Jul-06	203.56	-0.00064	24-Oct-06	207.94	0.00101	20-Jan-07	207.8	0.000433
23-Jul-06	203.54	-9.80E-08	28-Oct-06	207.89	-0.00024	21-Jan-07	207.89	0.010717
24-Jul-06	203.29	-0.00123	29-Oct-06	207.49	-0.00193	22-Jan-07	210.13	0.009944
25-Jul-06	203.19	-0.00049	30-Oct-06	207.46	-0.00014	23-Jan-07	212.23	-0.002170
28-Jul-06	203.37	0.000885	31-Oct-06	207.65	0.000915	27-Jan-07	211.77	-0.001418
29-Jul-06	202.98	-0.00192	3-Nov-06	207.8	0.000722	28-Jan-07	211.47	-0.000378
30-Jul-06	202.77	-0.00104	4-Nov-06	208.1	0.001443	29-Jan-07	211.39	-0.001325
31-Jul-06	202.95	0.000887	5-Nov-06	207.57	-0.00255	2-Feb-07	211.11	0.001136
1-Aug-06	202.69	-0.00128	6-Nov-06	207.31	-0.00125	3-Feb-07	211.35	0.000378
4-Aug-06	202.7	4.93E-08	7-Nov-06	207.28	-0.00014	4-Feb-07	211.43	-0.000710
5-Aug-06	202.83	0.000641	10-Nov-06	207.04	-0.00116	5-Feb-07	211.28	0.000946
6-Aug-06	202.75	-0.00039	11-Nov-06	207.15	0.000531	6-Feb-07	211.48	-0.001420
7-Aug-06	203.57	0.004036	12-Nov-06	207.23	0.000386	9-Feb-07	211.18	-0.000521
8-Aug-06	204.44	0.004265	13-Nov-06	206.67	-0.00271	10-Feb-07	211.07	0.000474
11-Aug-06	205.63	0.005804	14-Nov-06	206.21	-0.00223	11-Feb-07	211.17	0.000663
13-Aug-06	206.21	0.002817	17-Nov-06	206.33	0.000582	12-Feb-07	211.31	-0.003651
14-Aug-06	206.57	0.001744	18-Nov-06	206.45	0.000581	13-Feb-07	210.54	0.000712
15-Aug-06	207.92	0.006514	19-Nov-06	206.72	0.001307	16-Feb-07	210.69	-0.000427
18-Aug-06	208.52	0.002882	20-Nov-06	206.4	-0.00155	17-Feb-07	210.6	-0.000190
20-Aug-06	209.25	0.003495	21-Nov-06	206	-0.00194	20-Feb-07	210.56	-0.000523
21-Aug-06	210.11	0.004101	24-Nov-06	205.83	-0.00083	23-Feb-07	210.45	-0.001950
22-Aug-06	210.42	0.001474	25-Nov-06	207.01	0.005717	25-Feb-07	210.04	-0.004246
25-Aug-06	211.54	0.005309	26-Nov-06	207.13	0.00058	26-Feb-07	209.15	-0.001340
26-Aug-06	211.22	-0.00151	27-Nov-06	206.76	-0.00179	27-Feb-07	208.87	-0.000910
27-Aug-06	209.81	-0.0067	28-Nov-06	205.66	-0.00533	1-Mar-07	208.68	0.000335
28-Aug-06	206.52	-0.01581	1-Dec-06	205.03	-0.00307	2-Mar-07	208.75	0.000335
29-Aug-06	205.32	-0.00583	2-Dec-06	204.96	-0.00034	3-Mar-07	208.82	-0.000287
1-Sep-06	203.18	-0.01048	3-Dec-06	205.36	0.00195	4-Mar-07	208.76	-0.001678
2-Sep-06	202.41	-0.0038	4-Dec-06	205.18	-0.00088	5-Mar-07	208.41	-0.001537
3-Sep-06	201.65	-0.00376	5-Dec-06	204.09	-0.00533	8-Mar-07	208.09	0.000817
4-Sep-06	202.45	0.003959	8-Dec-06	206.28	0.010673	9-Mar-07	208.26	-0.000913
5-Sep-06	204.44	0.009782	9-Dec-06	206.4	0.000582	10-Mar-07	208.07	-0.001635
8-Sep-06	204.36	-0.00039	10-Dec-06	206.35	-0.00024	11-Mar-07	207.73	0.000337
10-Sep-06	205.02	0.003224	11-Dec-06	206.42	0.000339	12-Mar-07	207.8	0.000241
11-Sep-06	206.11	0.005302	12-Dec-06	202.47	-0.01932	15-Mar-07	207.85	0.000144
12-Sep-06	207.54	0.006914	15-Dec-06	201.94	-0.00262	16-Mar-07	207.88	0.001346
15-Sep-06	208	0.002214	16-Dec-06	201.88	-0.0003	17-Mar-07	208.16	-0.001490
16-Sep-06	208.32	0.001537	17-Dec-06	201.5	-0.00188	18-Mar-07	207.85	-0.003760
17-Sep-06	208.46	0.000672	18-Dec-06	201.56	0.000298	19-Mar-07	207.07	0.004481
18-Sep-06	208.07	-0.00187	19-Dec-06	201.54	-9.90E-08	22-Mar-07	208	0.001825
19-Sep-06	207.58	-0.00236	22-Dec-06	201.51	-0.00015	23-Mar-07	208.38	-0.021587
22-Sep-06	207.43	-0.00072	23-Dec-06	201.29	-0.00109	24-Mar-07	203.93	-0.041654
23-Sep-06	207.41	-9.60E-08	24-Dec-06	201.22	-0.00035	25-Mar-07	195.61	0.003266
24-Sep-06	206.58	-0.00401	25-Dec-06	201.52	0.00149	26-Mar-07	196.25	-0.001887
25-Sep-06	206.59	0.000048	26-Dec-06	201.65	0.000645	29-Mar-07	195.88	0.002346
26-Sep-06	207.08	0.002369	27-Dec-06	202.23	0.002872	31-Mar-07	196.34	-0.006131

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1-Apr-07	195.14	0.000154	1-Jul-07	219.41	0.006089	6-Oct-07	234.14	-0.000940
2-Apr-07	195.17	0.004958	2-Jul-07	220.75	0.019736	7-Oct-07	233.92	-0.000470
5-Apr-07	196.14	0.005998	5-Jul-07	225.15	0.011833	8-Oct-07	233.81	-0.000342
6-Apr-07	197.32	0.007825	6-Jul-07	227.83	-0.004178	11-Oct-07	233.73	-0.005836
7-Apr-07	198.87	0.002712	8-Jul-07	226.88	-0.002560	12-Oct-07	232.37	-0.000344
8-Apr-07	199.41	0.000602	9-Jul-07	226.3	-0.000619	13-Oct-07	232.29	-0.004228
9-Apr-07	199.53	0.008434	12-Jul-07	226.16	0.001149	14-Oct-07	231.31	0.002159
12-Apr-07	201.22	0.008512	13-Jul-07	226.42	0.000839	18-Oct-07	231.81	0.002370
14-Apr-07	202.94	-0.004148	14-Jul-07	226.61	-0.020373	19-Oct-07	232.36	-0.001551
15-Apr-07	202.1	0.001730	15-Jul-07	222.04	0.002743	26-Oct-07	232	0.000259
16-Apr-07	202.45	0.001333	16-Jul-07	222.65	0.003587	27-Oct-07	232.06	0.000302
19-Apr-07	202.72	0.001627	19-Jul-07	223.45	0.004287	28-Oct-07	232.13	0.001335
20-Apr-07	203.05	0.000542	20-Jul-07	224.41	0.000045	29-Oct-07	232.44	0.001891
21-Apr-07	203.16	0.002949	21-Jul-07	224.42	-0.004466	1-Nov-07	232.88	0.002830
22-Apr-07	203.76	0.001471	22-Jul-07	223.42	0.002994	3-Nov-07	233.54	0.000257
23-Apr-07	204.06	0.001567	23-Jul-07	224.09	0.002407	3-Nov-07	233.6	-0.003602
26-Apr-07	204.38	0.001076	27-Jul-07	224.63	0.001246	4-Nov-07	232.76	-0.001505
27-Apr-07	204.6	-0.000244	28-Jul-07	224.91	0.002709	5-Nov-07	232.41	-0.000258
28-Apr-07	204.55	0.003465	29-Jul-07	225.52	0.005307	9-Nov-07	232.35	0.006350
29-Apr-07	205.26	0.002141	30-Jul-07	226.72	0.002555	10-Nov-07	233.83	0.004012
30-Apr-07	205.07	-0.003067	2-Aug-07	227.3	0.006446	11-Nov-07	234.77	0.001320
3-May-07	205.07	-0.020046	3-Aug-07	228.77	0.006231	15-Nov-07	235.08	0.001233
5-May-07	201	0.000597	4-Aug-07	230.2	0.004032	16-Nov-07	235.37	0.003224
6-May-07	201.12	0.000746	5-Aug-07	231.13	0.005437	17-Nov-07	236.13	0.004690
7-May-07	201.27	0.001092	6-Aug-07	232.39	0.000602	18-Nov-07	237.24	0.003240
10-May-07	201.49	0.000248	9-Aug-07	232.53	0.003992	19-Nov-07	238.01	0.004987
11-May-07	201.54	0.002775	10-Aug-07	233.46	0.009549	22-Nov-07	239.2	0.005004
12-May-07	202.1	0.011072	11-Aug-07	235.7	0.004487	23-Nov-07	240.4	0.003612
13-May-07	204.35	0.000294	12-Aug-07	236.76	0.011715	24-Nov-07	241.27	0.001243
14-May-07	204.41	0.001906	13-Aug-07	239.55	0.008149	25-Nov-07	241.57	0.000124
17-May-07	204.8	0.001464	16-Aug-07	241.51	0.000497	26-Nov-07	241.6	-0.002321
18-May-07	205.1	-0.000390	17-Aug-07	241.63	-0.001698	29-Nov-07	241.04	-0.008834
19-May-07	205.02	0.001316	18-Aug-07	241.22	-0.008828	30-Nov-07	238.92	-0.006340
20-May-07	205.29	-0.000780	19-Aug-07	239.1	-0.007009	1-Dec-07	237.41	0.002356
21-May-07	205.13	0.002191	20-Aug-07	237.43	-0.004898	2-Dec-07	237.97	-0.001472
24-May-07	205.58	0.002623	23-Aug-07	236.27	-0.009569	3-Dec-07	237.62	0.000252
25-May-07	206.12	0.000631	24-Aug-07	234.02	0.007620	6-Dec-07	237.68	0.001766
26-May-07	206.25	0.003147	25-Aug-07	235.81	0.005076	7-Dec-07	238.1	-0.010428
27-May-07	206.9	-0.013920	26-Aug-07	237.01	0.003370	8-Dec-07	235.63	0.003770
28-May-07	204.04	0.016381	27-Aug-07	237.81	-0.001599	9-Dec-07	236.52	0.000803
31-May-07	207.41	-0.010469	31-Aug-07	237.43	-0.007695	10-Dec-07	236.71	0.001013
1-Jun-07	205.25	0.015854	7-Sep-07	235.61	-0.006558	13-Dec-07	236.95	-0.000844
2-Jun-07	208.53	0.002921	8-Sep-07	234.07	-0.009832	14-Dec-07	236.75	-0.001564
3-Jun-07	209.14	0.001672	9-Sep-07	231.78	-0.002116	15-Dec-07	236.38	0.002746
43/2004	209.49	0.004620	10-Sep-07	231.29	-0.001688	16-Dec-07	237.03	0.002107
7-Jun-07	210.46	0.006158	13-Sep-07	230.9	-0.003949	17-Dec-07	237.53	0.001935
8-Jun-07	211.76	0.011783	14-Sep-07	229.99	0.003169	20-Dec-07	237.99	0.002015
9-Jun-07	214.27	0.011508	15-Sep-07	230.72	0.016592	21-Dec-07	238.47	-0.001133
10-Jun-07	216.75	-0.001524	16-Sep-07	234.58	0.011191	22-Dec-07	238.2	-0.000126
11-Jun-07	216.42	-0.015366	17-Sep-07	237.22	-0.006640	23-Dec-07	238.17	0.002684
14-Jun-07	213.12	-0.008529	20-Sep-07	235.65	-0.000849	24-Dec-07	238.81	0.001799
15-Jun-07	211.31	0.000662	21-Sep-07	235.45	-0.005665	27-Dec-07	239.24	0.000710
16-Jun-07	211.45	0.000284	22-Sep-07	234.12	-0.002823	28-Dec-07	239.41	-0.004647
21-Jun-07	211.51	0.008193	23-Sep-07	233.46	-0.000171	29-Dec-07	238.3	0.000084
22-Jun-07	213.25	0.008638	24-Sep-07	233.42	-0.001586	30-Dec-07	238.32	-0.000504
23-Jun-07	215.1	0.006534	28-Sep-07	233.05	0.002528	31-Dec-07	238.29	0.000378
24-Jun-07	216.51	0.004378	29-Sep-07	233.64	0.002010	3-Jan-08	238.32	-0.01114
25-Jun-07	217.46	-0.000230	30-Sep-07	234.11	-0.000513	4-Jan-08	235.68	-0.00319
28-Jun-07	217.41	0.001425	1-Oct-07	233.99	0.000427	5-Jan-08	234.93	0.00098
29-Jun-07	217.72	0.004262	4-Oct-07	234.09	-0.000385	6-Jan-08	235.16	0.00191
30-Jun-07	218.65	0.003470	5-Oct-07	234	0.000598	7-Jan-08	235.61	0.00182

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10-Jan-08	236.04	0.00692	13-Apr-08	293.26	0.00150	17-Jul-08	287.9	0.00624
12-Jan-08	237.68	0.00809	18-Apr-08	293.71	0.00003	18-Jul-08	288.03	0.00109
13-Jan-08	239.61	0.00138	19-Apr-08	293.71	-0.00382	19-Jul-08	289.93	0.00430
14-Jan-08	239.94	-0.00021	20-Apr-08	292.59	0.00338	20-Jul-08	290.88	0.00300
17-Jan-08	239.89	0.00050	21-Apr-08	293.58	0.00411	24-Jul-08	-291.97	-0.25661
18-Jan-08	240.01	0.00137	24-Apr-08	294.03	0.00447	25-Jul-08	292.47	0.27033
19-Jan-08	240.34	0.00158	25-Apr-08	294.98	0.00573	26-Jul-08	294.3	0.01426
20-Jan-08	240.72	0.00576	26-Apr-08	294.44	0.00325	27-Jul-08	294.62	0.00219
21-Jan-08	242.11	0.00679	27-Apr-08	295.33	-0.03366	28-Jul-08	295.89	-0.00219
24-Jan-08	243.76	0.01389	28-Apr-08	294.29	-0.00035	31-Jul-08	296.78	-0.01535
27-Jan-08	247.17	-0.00077	1-May-08	294.79	0.00190	1-Aug-08	229.61	-0.00949
28-Jan-08	246.98	0.00174	2-May-08	296.11	-0.01396	2-Aug-08	300.88	0.00040
31-Jan-08	247.41	-0.00065	3-May-08	297.81	-0.09906	3-Aug-08	305.2	0.00992
1-Feb-08	247.25	-0.00125	4-May-08	298.78	0.09973	4-Aug-08	305.87	0.00047
2-Feb-08	246.94	0.00440	5-May-08	288.89	-0.00351	7-Aug-08	305.2	-0.00120
3-Feb-08	248.03	0.01095	9-May-08	288.79	-0.00493	8-Aug-08	300.55	-0.00176
4-Feb-08	250.76	0.00104	10-May-08	289.34	-0.00613	9-Aug-08	297.71	-0.00401
7-Feb-08	251.02	0.00263	11-May-08	285.33	-0.00342	10-Aug-08	297.83	-0.00601
8-Feb-08	251.68	0.00079	12-May-08	258.42	-0.00250	11-Aug-08	300.8	-0.00543
9-Feb-08	251.88	0.00815	15-May-08	285.52	-0.01035	14-Aug-08	300.94	-0.00611
10-Feb-08	253.94	0.01311	16-May-08	284.52	-0.00503	15-Aug-08	300.58	-0.01399
11-Feb-08	257.29	0.00682	17-May-08	283.12	0.00323	16-Aug-08	300.05	0.00863
14-Feb-08	259.05	0.02169	18-May-08	281.39	0.00750	17-Aug-08	298.85	0.00512
15-Feb-08	264.73	0.00906	19-May-08	280.43	0.00237	18-Aug-08	297.06	0.00092
16-Feb-08	267.14	-0.00525	22-May-08	279.73	0.00290	21-Aug-08	295.45	-0.00191
17-Feb-08	265.74	-0.00763	24-May-08	276.85	0.00089	22-Aug-08	293.65	-0.00361
21-Feb-08	263.72	-0.00118	25-May-08	275.46	0.00292	23-Aug-08	289.57	-0.00400
22-Feb-08	263.41	0.00371	26-May-08	276.35	0.00228	24-Aug-08	292.08	0.01380
23-Feb-08	264.39	0.00223	29-May-08	278.43	-0.00075	25-Aug-08	293.58	0.00116
24-Feb-08	264.98	0.00207	30-May-08	279.09	-0.00146	28-Aug-08	293.85	0.01544
25-Feb-08	265.53	0.00166	31-May-08	279.9	-0.00214	29-Aug-08	293.29	-0.00034
28-Feb-08	265.97	0.00917	1-Jun-08	280.15	-0.00111	30-Aug-08	291.61	-0.00676
1-Mar-08	268.42	0.01108	2-Jun-08	280.97	-0.00129	31-Aug-08	290.56	-0.00408
2-Mar-08	271.41	0.00793	5-Jun-08	281.61	-0.00347	1-Sep-08	289.4	0.00027
3-Mar-08	273.57	0.01470	6-Jun-08	281.4	-0.00345	4-Sep-08	293.42	0.00037
4-Mar-08	277.62	0.00671	7-Jun-08	280.99	0.00014	5-Sep-08	293.76	-0.00201
7-Mar-08	279.49	0.00823	8-Jun-08	280.39	0.00018	6-Sep-08	298.33	-0.00225
9-Mar-08	281.8	0.00577	9-Jun-08	280.08	-0.00004	7-Sep-08	298.23	0.00150
10-Mar-08	283.43	-0.00986	12-Jun-08	279.72	0.00363	8-Sep-08	296.22	-0.00089
11-Mar-08	280.65	-0.02581	13-Jun-08	278.75	0.00700	11-Sep-08	294.93	0.00286
14-Mar-08	273.5	0.01073	14-Jun-08	277.79	0.00110	12-Sep-08	293.73	0.00146
15-Mar-08	276.45	-0.00646	15-Jun-08	277.83	-0.00117	13-Sep-08	293.81	0.00262
16-Mar-08	274.67	-0.00482	16-Jun-08	277.88	-0.00153	14-Sep-08	293.92	-0.00075
17-Mar-08	273.35	0.00365	19-Jun-08	277.87	0.00239	15-Sep-08	293.33	0.00518
18-Mar-08	274.35	0.00444	20-Jun-08	278.88	0.00171	18-Sep-08	292.67	0.00327
21-Mar-08	275.57	0.00554	21-Jun-08	280.84	-0.00139	19-Sep-08	293.11	-0.00064
22-Mar-08	277.1	0.00490	22-Jun-08	281.15	0.00046	20-Sep-08	292.85	0.27663
23-Mar-08	278.46	0.00144	26-Jun-08	280.82	-0.00007	21-Sep-08	293.69	0.00202
24-Mar-08	278.86	0.00358	27-Jun-08	280.39	0.00443	22-Sep-08	294.12	0.00082
28-Mar-08	279.86	0.00435	28-Jun-08	281.06	0.00628	25-Sep-08	294.89	0.00386
29-Mar-08	281.08	0.00935	29-Jun-08	281.54	0.00274	26-Sep-08	294.67	-0.28538
30-Mar-08	283.72	0.00218	30-Jun-08	281.15	-0.00011	27-Sep-08	296.2	0.00061
31-Mar-08	284.34	-0.00046	3-Jul-08	281.28	0.00410	28-Sep-08	297.17	0.00145
1-Apr-08	284.21	0.00456	4-Jul-08	281.26	0.00049	29-Sep-08	296.98	0.00121
4-Apr-08	285.51	-0.00028	5-Jul-08	282.51	0.00112	2-Oct-08	296.37	0.00108
5-Apr-08	285.43	0.00378	6-Jul-08	284.29	0.00428	5-Oct-08	296.55	0.00151
6-Apr-08	286.51	0.01059	10-Jul-08	285.07	0.00045	6-Oct-08	296.98	0.00081
7-Apr-08	289.56	0.00527	11-Jul-08	285.04	0.00658	9-Oct-08	297.34	0.01490
8-Apr-08	291.09	-0.00151	12-Jul-08	286.21	0.00327	18-Oct-08	297.66	0.17468
11-Apr-08	290.65	0.00405	13-Jul-08	286.35	0.00374	19-Oct-08	298.11	-0.16649
12-Apr-08	291.83	0.00489	14-Jul-08	286.67	0.00171	20-Oct-08	298.35	-0.00108

Date	Index	R_{mt}	Date	Index	R_{mt}	Date	Index	R_{mt}
23-Oct-08	302.83	0.00242	23-Jan-09	305.72	0.00258	16-May-09	387.86	-0.00380
24-Oct-08	360.63	0.00600	24-Jan-09	306.51	0.00127	17-May-09	384.58	-0.01160
25-Oct-08	305.32	-0.00114	30-Jan-09	306.9	0.00695	18-May-09	384.11	-0.01530
26-Oct-08	304.99	0.00065	31-Jan-09	309.04	-0.00260	21-May-09	382.65	-0.00430
27-Oct-08	305.73	-0.01138	1-Feb-09	308.25	0.00217	22-May-09	378.23	-0.00540
30-Oct-08	307.57	0.00725	2-Feb-09	308.92	0.00055	23-May-09	372.48	0.01813
31-Oct-08	307.22	0.00596	5-Feb-09	309.09	0.00262	24-May-09	370.89	0.01207
6-Nov-08	307.42	-0.00596	6-Feb-09	309.09	0.00135	25-May-09	368.89	-0.02010
7-Nov-08	303.94	-0.00373	7-Feb-09	310.32	0.00742	28-May-09	375.64	-0.00240
8-Nov-08	306.15	-0.00863	9-Feb-09	312.63	0.01606	29-May-09	380.2	0.00062
10-Nov-08	307.98	-0.00600	12-Feb-09	317.69	0.02570	30-May-09	372.64	0.00024
13-Nov-08	306.15	0.00020	13-Feb-09	325.96	0.01047	31-May-09	371.74	-0.00160
14-Nov-08	305.01	-0.00023	14-Feb-09	329.39	-0.01070	1-Jun-09	371.97	-0.00190
15-Nov-08	302.39	0.00481	15-Feb-09	325.9	-0.00320	43/2006	372.06	-0.00310
16-Nov-08	300.58	0.00070	16-Feb-09	324.86	0.00151	5-Jun-09	371.47	0.00330
17-Nov-08	300.64	-0.00481	20-Feb-09	325.35	0.00653	6-Jun-09	370.77	0.00210
20-Nov-08	300.57	0.00140	21-Feb-09	327.48	0.00712	7-Jun-09	369.62	0.00027
21-Nov-08	302.02	0.00037	22-Feb-09	329.82	0.00969	8-Jun-09	370.84	-0.00250
22-Nov-08	302.23	0.00119	23-Feb-09	333.03	0.01357	11-Jun-09	371.62	0.00328
23-Nov-08	300.78	-0.00236	27-Feb-09	337.58	0.01023	12-Jun-09	371.72	0.00054
24-Nov-08	301.2	-0.00140	28-Feb-09	341.05	0.00652	13-Jun-09	370.79	0.00493
27-Nov-08	301.31	0.00405	1-Mar-09	343.28	-0.01110	14-Jun-09	372.01	0.00384
28-Nov-08	301.67	-0.00036	2-Mar-09	339.58	0.00024	15-Jun-09	372.21	0.00412
29-Nov-08	300.96	0.00106	5-Mar-09	339.58	-0.01530	18-Jun-09	374.05	0.00434
30-Nov-08	300.54	-0.01323	6-Mar-09	334.42	-0.00640	19-Jun-09	375.49	0.00050
1-Dec-08	301.76	-0.00171	7-Mar-09	332.28	0.00926	20-Jun-09	377.04	-0.00110
4-Dec-08	301.65	0.00540	8-Mar-09	335.37	0.00743	21-Jun-09	378.68	-0.00240
5-Dec-08	301.97	0.00247	9-Mar-09	337.87	0.00534	22-Jun-09	378.87	-0.00550
6-Dec-08	298	-0.00043	12-Mar-09	337.32	-0.00100	25-Jun-09	378.45	-0.00190
7-Dec-08	297.49	0.00333	13-Mar-09	339.79	0.00077	26-Jun-09	377.55	0.00104
8-Dec-08	299.1	0.00508	15-Mar-09	339.68	0.00112	27-Jun-09	375.47	0.00434
11-Dec-08	299.84	0.00291	16-Mar-09	339.34	-0.00280	28-Jun-09	374.75	0.00500
12-Dec-08	299.71	0.00283	19-Mar-09	339.6	-0.00050	29-Jun-09	375.14	0.00466
13-Dec-08	300.71	0.00325	20-Mar-09	339.98	-0.00050	2-Jul-09	376.77	0.00422
14-Dec-08	302.24	0.00530	21-Mar-09	339.03	-0.00210	3-Jul-09	378.66	-0.29710
15-Dec-08	303.12	0.00501	22-Mar-09	338.86	-0.00160	4-Jul-09	380.43	0.30376
18-Dec-08	303.98	0.00175	23-Mar-09	338.7	0.00015	5-Jul-09	382.04	0.00184
19-Dec-08	304.97	-0.02686	26-Mar-09	337.99	0.00006	6-Jul-09	283.85	0.00342
20-Dec-08	306.59	-0.00187	27-Mar-09	337.45	-0.00240	9-Jul-09	384.6	-0.00050
21-Dec-08	308.13	0.00386	28-Mar-09	337.52	-0.00540	10-Jul-09	385.31	0.00098
22-Dec-08	308.67	0.00169	30-Mar-09	337.52	-0.00220	12-Jul-09	386.63	0.00343
25-Dec-08	300.49	0.00391	2-Apr-09	336.71	0.00185	13-Jul-09	386.45	0.00406
26-Dec-08	299.93	-0.00560	3-Apr-09	334.88	-0.00150	16-Jul-09	386.83	0.01006
27-Dec-08	301.09	0.00169	4-Apr-09	334.15	-0.00740	17-Jul-09	388.16	0.00560
28-Dec-08	301.6	0.00358	5-Apr-09	334.77	0.02008	18-Jul-09	389.74	0.00519
29-Dec-08	302.78	0.00033	16-Apr-09	334.27	0.01379	19-Jul-09	393.68	0.00065
1-Jan-09	303.26	0.00296	17-Apr-09	331.81	0.05205	20-Jul-09	395.89	-0.00220
2-Jan-09	304.16	0.00413	25-Apr-09	338.54	0.03610	23-Jul-09	397.95	-0.00630
3-Jan-09	305.42	0.00141	26-Apr-09	343.24	-0.00650	24-Jul-09	398.21	-0.01920
4-Jan-09	305.85	-0.00080	30-Apr-09	361.58	-0.01200	25-Jul-09	397.35	-0.00220
5-Jan-09	305.62	-0.00060	1-May-09	374.87	-0.00290	26-Jul-09	394.86	-0.02020
8-Jan-09	305.44	0.00082	2-May-09	372.45	0.00473	27-Jul-09	387.34	-0.03230
9-Jan-09	305.69	-0.00050	3-May-09	367.99	0.00614	30-Jul-09	386.5	-0.02220
10-Jan-09	305.55	-0.00020	4-May-09	366.94	0.01126	31-Jul-09	378.76	-0.00870
12-Jan-09	305.5	0.00052	7-May-09	368.68	0.00617	1-Aug-09	366.73	0.02214
15-Jan-09	305.66	0.00062	8-May-09	370.95	0.01114	2-Aug-09	358.69	0.05246
16-Jan-09	305.85	0.00026	9-May-09	375.15	0.01092	3-Aug-09	355.6	0.01995
17-Jan-09	305.93	0.00078	10-May-09	377.47	0.00672	6-Aug-09	363.56	0.00222
18-Jan-09	306.17	-0.00290	11-May-09	381.7	-0.00160	7-Aug-09	383.14	-0.00370
19-Jan-09	305.27	0.00010	14-May-09	385.89	-0.00850	8-Aug-09	390.86	-0.00270
22-Jan-09	305.3	0.00137	15-May-09	388.49	-0.00120	13-Aug-09	391.73	-0.00330

Date	Index	R_{mt}	Date	Index	R_{mt}
14-Aug-09	390.29	-0.00820	28-Nov-09	478.01	-0.00610
15-Aug-09	389.23	-0.00490	29-Nov-09	492.46	-0.00400
17-Aug-09	387.94	-0.00540	30-Nov-09	486.19	-0.00360
20-Aug-09	384.79	-0.00240	3-Dec-09	479.83	0.00735
21-Aug-09	382.91	-0.00300	4-Dec-09	476.93	0.00867
22-Aug-09	380.83	-0.00150	5-Dec-09	475.01	0.00985
24-Aug-09	379.93	0.00272	6-Dec-09	473.31	0.01729
27-Aug-09	378.81	0.00384	7-Dec-09	476.8	0.01773
28-Aug-09	378.24	0.00396	10-Dec-09	480.95	0.01099
29-Aug-09	379.27	0.00102	11-Dec-09	485.71	0.01130
30-Aug-09	380.73	-0.00030	12-Dec-09	494.18	0.00512
31-Aug-09	382.24	-0.00410	13-Dec-09	503.02	0.00087
3-Sep-09	382.63	0.00144	14-Dec-09	508.58	-0.01210
4-Sep-09	382.5	-0.00010	17-Dec-09	514.36	0.00812
5-Sep-09	380.92	-0.00010	18-Dec-09	517	0.00629
7-Sep-09	381.47	0.00583	19-Dec-09	517.45	0.00446
10-Sep-09	381.42	-0.00110	20-Dec-09	511.22	-0.00030
11-Sep-09	381.37	-0.00160	21-Dec-09	515.39	-0.00150
12-Sep-09	383.6	0.01306	24-Dec-09	518.64	-0.00490
13-Sep-09	383.17	0.01391	25-Dec-09	520.96	-0.00590
14-Sep-09	382.56	0.00094	26-Dec-09	520.78	0.01229
18-Sep-09	387.59	-0.00330	27-Dec-09	520.02	-0.00150
19-Sep-09	393.02	-0.00120	28-Dec-09	517.46	-0.00490
20-Sep-09	393.39	0.00202	31-Dec-09	514.42	-0.00590
21-Sep-09	392.09	0.00082			
24-Sep-09	391.62	0.00386			
25-Sep-09	392.41	0.00811			
26-Sep-09	392.73	0.00412			
28-Sep-09	394.25	0.00088			
8-Oct-09	397.46	-0.00370			
9-Oct-09	399.1	0.00226			
10-Oct-09	399.45	0.00085			
11-Oct-09	397.98	-0.00260			
12-Oct-09	398.88	0.00060			
15-Oct-09	399.22	-0.00080			
16-Oct-09	398.2	0.00379			
17-Oct-09	398.44	0.00355			
18-Oct-09	398.14	0.00485			
19-Oct-09	399.65	0.00522			
26-Oct-09	401.07	0.00799			
29-Oct-09	403.02	-0.01550			
30-Oct-09	405.13	0.02696			
31-Oct-09	408.38	0.00493			
1-Nov-09	402.11	0.01059			
3-Nov-09	413.1	0.01102			
5-Nov-09	415.14	0.02714			
6-Nov-09	419.56	0.02073			
7-Nov-09	424.21	0.00824			
8-Nov-09	435.88	-0.01730			
9-Nov-09	445.01	0.00910			
12-Nov-09	448.69	0.00692			
13-Nov-09	441	-0.00410			
14-Nov-09	445.03	0.00000			
15-Nov-09	448.12	0.00202			
16-Nov-09	447.43	0.01456			
19-Nov-09	445.58	0.03409			
20-Nov-09	445.58	0.00164			
21-Nov-09	446.48	0.01794			
23-Nov-09	453.03	0.02978			
26-Nov-09	468.74	-0.01280			
27-Nov-09	469.51	-0.01320			

Auto Correlations
Log of the Daily Market Return – R_{mt})

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-09	0.00045	0.02341	1176
1-Jan-05 to 31-Dec-09$_{t-1}$	0.000460	0.023411	1176

Correlations

		1-Jan-05 to 31-Dec-09	1-Jan-05 to 31-Dec-09$_{t-1}$
1-Jan-05 to 31-Dec-09	Pearson Correlation	1.000	-.263
	Sig. (2-tailed)	.	.000
	N	1176	1176
1-Jan-05 to 31-Dec-09$_{t-1}$	Pearson Correlation	-.263	1.000
	Sig. (2-tailed)	.000	.
	N	1176	1176

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-05	-0.00111	0.01105	236
1-Jan-05 to 31-Dec-05$_{t-1}$	-0.00113	0.011051	236

Correlations

		1-Jan-05 to 31-Dec-05	1-Jan-05 to 31-Dec-05$_{t-1}$
1-Jan-05 to 31-Dec-05	Pearson Correlation	1.000	.246
	Sig. (2-tailed)	.	.000
	N	236	236
1-Jan-05 to 31-Dec-05$_{t-1}$	Pearson Correlation	.246	1.000
	Sig. (2-tailed)	.000	.
	N	236	236

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-07	-0.000152	0.00858	717
1-Jan-05 to 31-Dec-07$_{t-1}$	-0.000158	0.00858	717

Correlations

		1-Jan-05 to 31-Dec-07	1-Jan-05 to 31-Dec-07$_{t-1}$
1-Jan-05 to 31-Dec-07	Pearson Correlation	1.000	.250
	Sig. (2-tailed)	.	.000
	N	717	717
1-Jan-05 to 31-Dec-07$_{t-1}$	Pearson Correlation	.250	1.000
	Sig. (2-tailed)	.000	.
	N	717	717

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-08	0.0000114	0.02148	953
1-Jan-05 to 31-Dec-08$_{t-1}$	0.0000071	0.02148	953

Correlations

		1-Jan-05 to 31-Dec-05	1-Jan-05 to 31-Dec-05$_{t-1}$
1-Jan-05 to 31-Dec-08	Pearson Correlation	1.000	-.205
	Sig. (2-tailed)	.	.000
	N	953	953
1-Jan-05 to 31-Dec-08$_{t-1}$	Pearson Correlation	-.205	1.000
	Sig. (2-tailed)	.000	.
	N	953	953

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-06 to 31-Dec-09	0.00085	0.02558	940
1-Jan-06 to 31-Dec-09$_{t-1}$	0.000853	0.025583	940

Correlations

		1-Jan-06 to 31-Dec-09	1-Jan-06 to 31-Dec-09$_{t-1}$
1-Jan-06 to 31-Dec-09	Pearson Correlation	1.000	-.288
	Sig. (2-tailed)	.	.000
	N	940	940
1-Jan-06 to 31-Dec-09$_{t-1}$	Pearson Correlation	-.288	1.000
	Sig. (2-tailed)	.000	.
	N	940	940

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-07 to 31-Dec-09	0.001170	0.0294621	696
1-Jan-07 to 31-Dec-09$_{t-1}$	0.0011715	0.029461	696

Correlations

		1-Jan-07 to 31-Dec-09	1-Jan-07 to 31-Dec-09$_{t-1}$
1-Jan-07 to 31-Dec-09	Pearson Correlation	1.000	-.304
	Sig. (2-tailed)	.	.000
	N	696	696
1-Jan-07 to 31-Dec-09$_{t-1}$	Pearson Correlation	-.304	1.000
	Sig. (2-tailed)	.000	.
	N	696	696

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-08 to 31-Dec-09	0.001413	0.0359087	459
1-Jan-08 to 31-Dec-09$_{t-1}$	0.00141	0.03590817	459

Correlations

		1-Jan-08 to 31-Dec-09	1-Jan-08 to 31-Dec-09$_{t-1}$
1-Jan-08 to 31-Dec-09	Pearson Correlation	1.000	-.310
	Sig. (2-tailed)	.	.000
	N	459	459
1-Jan-08 to 31-Dec-09$_{t-1}$	Pearson Correlation	-.310	1.000
	Sig. (2-tailed)	.000	.
	N	459	459

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-06	-0.000573196	0.009124996	480
1-Jan-05 to 31-Dec-06$_{t-1}$	-0.000584671	0.00912561	480

Correlations

		1-Jan-05 to 31-Dec-06	1-Jan-05 to 31-Dec-06$_{t-1}$
1-Jan-05 to 31-Dec-06	Pearson Correlation	1.000	.322
	Sig. (2-tailed)	.	.000
	N	480	480
1-Jan-05 to 31-Dec-06$_{t-1}$	Pearson Correlation	.322	1.000
	Sig. (2-tailed)	.000	.
	N	480	480

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-06 to 31-Dec-06	-0.0000511203	0.00674384	244
1-Jan-06 to 31-Dec-06$_{t-1}$	-0.0000800472	0.00675148	244

Correlations

		1-Jan-06 to 31-Dec-06	1-Jan-06 to 31-Dec-06$_{t-1}$
1-Jan-06 to 31-Dec-06	Pearson Correlation	1.000	.512
	Sig. (2-tailed)	.	.000
	N	244	244
1-Jan-06 to 31-Dec-06$_{t-1}$	Pearson Correlation	.512	1.000
	Sig. (2-tailed)	.000	.
	N	244	244

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-07 to 31-Dec-07	0.0006996	0.00731610	237
1-Jan-07 to 31-Dec-07$_{t-1}$	0.00067682	0.00732554	237

Correlations

		1-Jan-07 to 31-Dec-07	1-Jan-07 to 31-Dec-07$_{t-1}$
1-Jan-07 to 31-Dec-07	Pearson Correlation	1.000	.008
	Sig. (2-tailed)	.	.899
	N	237	237
1-Jan-07 to 31-Dec-07$_{t-1}$	Pearson Correlation	.008	1.000
	Sig. (2-tailed)	.899	.
	N	237	237

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-08 to 31-Dec-08	0.0010	0.0404224	236
1-Jan-08 to 31-Dec-08$_{t-1}$	0.0009	0.0404240	236

Correlations

		1-Jan-08 to 31-Dec-08	1-Jan-08 to 31-Dec-08$_{t-1}$
1-Jan-08 to 31-Dec-08	Pearson Correlation	1.000	-.261
	Sig. (2-tailed)	.	.000
	N	236	236
1-Jan-08 to 31-Dec-08$_{t-1}$	Pearson Correlation	-.261	1.000
	Sig. (2-tailed)	.000	.
	N	236	236

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-09 to 31-Dec-09	0.00236973	0.0302781	223
1-Jan-09 to 31-Dec-09$_{t-1}$	0.0023808	0.0302755	223

Correlations

		1-Jan-09 to 31-Dec-09	1-Jan-09 to 31-Dec-09$_{t-1}$
1-Jan-09 to 31-Dec-09	Pearson Correlation	1.000	-.395
	Sig. (2-tailed)	.	.000
	N	223	223
1-Jan-09 to 31-Dec-09$_{t-1}$	Pearson Correlation	-.395	1.000
	Sig. (2-tailed)	.000	.
	N	223	223

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-06 to 31-Dec-08	0.0003815	0.0239412	717
1-Jan-06 to 31-Dec-08$_{t-1}$	0.0003736	0.0239422	717

Correlations

		1-Jan-06 to 31-Dec-08	1-Jan-06 to 31-Dec-08$_{t-1}$
1-Jan-06 to 31-Dec-08	Pearson Correlation	1.000	-.237
	Sig. (2-tailed)	.	.000
	N	717	717
1-Jan-06 to 31-Dec-08$_{t-1}$	Pearson Correlation	-.237	1.000
	Sig. (2-tailed)	.000	.
	N	717	717

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1-Jan-05 to 31-Dec-09	0.000458669	0.023411	1176
1-Jan-05 to 31-Dec-09$_{t-1}$	0.000460431	0.023411	1176
1-Jan-05 to 31-Dec-05	-0.00111297	0.0110506	236
1-Jan-05 to 31-Dec-05$_{t-1}$	-0.0011337116	0.0110511	236
1-Jan-05 to 31-Dec-07	-0.0001524677	0.00858520	717
1-Jan-05 to 31-Dec-07$_{t-1}$	-0.0001583223	0.00858626	717
1-Jan-05 to 31-Dec-08	0.0000114854	0.021486	953
1-Jan-05 to 31-Dec-08$_{t-1}$	0.000007130	0.0214864	953
1-Jan-06 to 31-Dec-09	0.000853251	0.025583	940
1-Jan-06 to 31-Dec-09$_{t-1}$	0.000853806	0.0255834	940
1-Jan-07 to 31-Dec-09	0.0011703	0.0294621	696
1-Jan-07 to 31-Dec-09$_{t-1}$	0.00117154	0.0294618	696
1-Jan-08 to 31-Dec-09	0.00141332	0.0359087	459
1-Jan-08 to 31-Dec-09$_{t-1}$	0.00141631	0.035908	459
1-Jan-05 to 31-Dec-06	-0.0005731965	0.0091249	480
1-Jan-05 to 31-Dec-06$_{t-1}$	-0.000584671	0.0091256	480
1-Jan-06 to 31-Dec-06	-0.000051120	0.00674384	244
1-Jan-06 to 31-Dec-06$_{t-1}$	-0.000080047	0.00675148	244
1-Jan-07 to 31-Dec-07	0.000699641	0.00731610	237
1-Jan-07 to 31-Dec-07$_{t-1}$	0.000676823	0.00732554	237
1-Jan-08 to 31-Dec-08	0.00101437	0.0404224	236
1-Jan-08 to 31-Dec-08$_{t-1}$	0.00099382	0.0404240	236
1-Jan-09 to 31-Dec-09	0.00236972	0.030278	223
1-Jan-09 to 31-Dec-09$_{t-1}$	0.00238081	0.030275	223
1-Jan-06 to 31-Dec-08	0.000381599	0.0239412	717
1-Jan-06 to 31-Dec-08$_{t-1}$	0.000373648	0.0239422	717

Runs Test
(Log of Market Return- R_{mt})

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
1-Jan-05 to 31-Dec-09	1176	0.00045866	0.023411	-.29708	.30376
1-Jan-05 to 31-Dec-05	236	-0.001112970	0.0110506	-.04470	.04207
1-Jan-05 to 31-Dec-07	717	-0.0001524677	0.00858520	-.04679	.05766
1-Jan-05 to 31-Dec-08	953	0.000011485	0.0214861	-.28538	.27663
1-Jan-06 to 31-Dec-09	940	0.000853251	0.0255835	-.29708	.30376
1-Jan-07 to 31-Dec-09	696	0.00117030	0.0294621	-.29708	.30376
1-Jan-08 to 31-Dec-09	459	0.00141332	0.0359087	-.29708	.30376
1-Jan-05 to 31-Dec-06	480	-0.000573196	0.00912499	-.04470	.05766
1-Jan-06 to 31-Dec-06	244	-0.0000511203	0.00674384	-.03077	.05766
1-Jan-07 to 31-Dec-07	237	0.000699641	0.00731610	-.04679	.04346
1-Jan-08 to 31-Dec-08	236	0.00101437	0.0404224	-.28538	.27663
1-Jan-09 to 31-Dec-09	223	0.00236972	0.0302781	-.29708	.30376
1-Jan-06 to 31-Dec-08	717	0.000381599	0.0239412	-.28538	.27663

Runs Test

	1-Jan-05 to 31-Dec-09	1-Jan-05 to 31-Dec-05	1-Jan-05 to 31-Dec-07	1-Jan-05 to 31-Dec-08	1-Jan-06 to 31-Dec-09	1-Jan-07 to 31-Dec-09	1-Jan-08 to 31-Dec-09	1-Jan-05 to 31-Dec-06	1-Jan-06 to 31-Dec-06	1-Jan-07 to 31-Dec-07	1-Jan-08 to 31-Dec-08	1-Jan-09 to 31-Dec-09	1-Jan-06 to 31-Dec-08
Test Value (mean)	0.000458	-0.00111	-0.000154	0.000011	0.00085325	0.001170	0.00141332	-0.0005731	-0.0000511	0.000694	0.0010143	0.0023697	0.000381
Cases < Test Value	626	107	349	467	535	383	257	229	139	120	108	133	374
Cases >= Test Value	550	129	368	486	405	313	202	251	105	117	128	90	343
Total Cases	1176	236	717	953	940	696	459	480	244	237	236	223	717
Number of Runs	399	80	264	342	313	229	153	178	88	87	89	58	255
Z	-10.988	-4.998	-7.124	-8.774	-9.915	-8.927	-7.036	-5.723	-4.270	-4.229	-3.831	-7.021	-7.775
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Appendix – III

Auto Correlations

(Log of the Daily Banking Sector Stock Return - R_{bt})

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2005-31Dec09	6.603158E-04	4.793131E-02	1169
1 Jan 2005-31Dec09t-1	6.516883E-04	4.793383E-02	1169

Correlations

		1 Jan 2005-31Dec09	1 Jan 2005-31Dec09t-1
1 Jan 2005-31Dec09	Pearson Correlation	1.000	-.398
	Sig. (2-tailed)	.	.000
	N	1169	1169
1 Jan 2005-31Dec09t-1	Pearson Correlation	-.398	1.000
	Sig. (2-tailed)	.000	.
	N	1169	1169

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2005-31Dec05	-1.2959051E-03	.1006304	235
1 Jan 2005-31Dec05t-1	-1.3763483E-03	.1006365	235

Correlations

		1 Jan 2005-31Dec05	1 Jan 2005-31Dec05t-1
1 Jan 2005-31Dec05	Pearson Correlation	1.000	-.423
	Sig. (2-tailed)	.	.000
	N	235	235
1 Jan 2005-31Dec05t-1	Pearson Correlation	-.423	1.000
	Sig. (2-tailed)	.000	.
	N	235	235

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2005-31Dec07	-9.1094538E-05	5.837676E-02	713
1 Jan 2005-31Dec07t-1	-1.0764358E-04	5.838028E-02	713

Correlations

		1 Jan 2005-31Dec07	1 Jan 2005-31Dec07t-1
1 Jan 2005-31Dec07	Pearson Correlation	1.000	-.408
	Sig. (2-tailed)	.	.000
	N	713	713
1 Jan 2005-31Dec07t-1	Pearson Correlation	-.408	1.000
	Sig. (2-tailed)	.000	.
	N	713	713

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2005-31Dec08	7.099328E-04	1.213129E-02	713
1 Jan 2005-	7.053622E-04	1.213195E-02	713

Correlations

		1 Jan 2006-31Dec08	1 Jan 2006-31Dec08t-1
1 Jan 2005 31Dec08	Pearson Correlation	1.000	.024
	Sig. (2-tailed)	.	.519
	N	713	713
1 Jan 2005	Pearson	.024	1.000

31Dec08t-1			

31Dec08t-1	Correlation		
	Sig. (2-tailed)	.519	.
	N	713	713

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2006-31Dec09	1.152513E-03	1.830594E-02	934
1 Jan 2006-31Dec09t-1	1.158486E-03	1.830378E-02	934

Correlations

		1 Jan 2006-31Dec09	1 Jan 2006-31Dec09t-1
1 Jan 2006-31Dec09	Pearson Correlation	1.000	-.208
	Sig. (2-tailed)	.	.000
	N	934	934
1 Jan 2006-31Dec09t-1	Pearson Correlation	-.208	1.000
	Sig. (2-tailed)	.000	.
	N	934	934

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2007-31Dec09	1.569942E-03	2.042276E-02	690
1 Jan 2007-31Dec09t-1	1.584130E-03	2.041932E-02	690

Correlations

		1 Jan 2007-31Dec09	1 Jan 2007-31Dec09t-1
1 Jan 2007-31Dec09	Pearson Correlation	1.000	-.271
	Sig. (2-tailed)	.	.000
	N	690	690
1 Jan 2007-31Dec09t-1	Pearson Correlation	-.271	1.000
	Sig. (2-tailed)	.000	.
	N	690	690

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2008-31Dec09	1.835218E-03	2.371799E-02	456
1 Jan 2008-31Dec09t-1	1.817706E-03	2.372841E-02	456

Correlations

		1 Jan 2008-31Dec09	1 Jan 2008-31Dec09t-1
1 Jan 2008-31Dec09	Pearson Correlation	1.000	-.303
	Sig. (2-tailed)	.	.000
	N	456	456
1 Jan 2008-31Dec09t-1	Pearson Correlation	-.303	1.000
	Sig. (2-tailed)	.000	.
	N	456	456

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2005-31Dec06	-6.5000171E-04	7.077881E-02	479
1 Jan 2005-31Dec06t-1	-6.9562852E-04	7.078319E-02	479

Correlations

		1 Jan 2005-31Dec06	1 Jan 2005-31Dec06t-1
1 Jan 2005-31Dec06	Pearson Correlation	1.000	-.414
	Sig. (2-tailed)	.	.000
	N	479	479
1 Jan 2005-31Dec06t-1	Pearson Correlation	-.414	1.000
	Sig. (2-tailed)	.000	.
	N	479	479

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2006-31Dec06	-2.7922623E-05	1.010657E-02	244
1 Jan 2006-31Dec06t-1	-5.2923615E-05	1.010541E-02	244

Correlations

		1 Jan 2006-31Dec06	1 Jan 2006-31Dec06t-1
1 Jan 2006-31Dec06	Pearson Correlation	1.000	.501
	Sig. (2-tailed)	.	.000
	N	244	244
1 Jan 2006-31Dec06t-1	Pearson Correlation	.501	1.000
	Sig. (2-tailed)	.000	.
	N	244	244

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2007-31Dec07t-1	1.052993E-03	1.159448E-02	234
1 Jan 2007-31Dec07t-1	1.087611E-03	1.158368E-02	234

Correlations

		1 Jan 2007-31Dec07	1 Jan 2007-31Dec07t-1
1 Jan 2007-31Dec07	Pearson Correlation	1.000	-.008
	Sig. (2-tailed)	.	.906
	N	234	234
1 Jan 2007-31Dec07t-1	Pearson Correlation	-.008	1.000
	Sig. (2-tailed)	.906	.
	N	234	234

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2008-31Dec08	1.134446E-03	1.438744E-02	235
1 Jan 2008-31Dec08t-1	1.062834E-03	1.443203E-02	235

Correlations

		1 Jan 2008-31Dec08	1 Jan 2008-31Dec08t-1
1 Jan 2008-31Dec08	Pearson Correlation	1.000	-.200
	Sig. (2-tailed)	.	.002
	N	235	235
1 Jan 2008-31Dec08t-1	Pearson Correlation	-.200	1.000
	Sig. (2-tailed)	.002	.
	N	235	235

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2009-31Dec09	2.580383E-03	3.069508E-02	221
1 Jan 2009-31Dec09t-1	2.632168E-03	3.068635E-02	221

Correlations

		1 Jan 2009-31Dec09t-1	1 Jan 2009-31Dec09t-1
1 Jan 2009-31Dec09	Pearson Correlation	1.000	-.329
	Sig. (2-tailed)	.	.000
	N	221	221
1 Jan 2009-31Dec09t-1	Pearson Correlation	-.329	1.000
	Sig. (2-tailed)	.000	.
	N	221	221

** Correlation is significant at the 0.01 level (2-tailed).

Descriptive Statistics

	Mean	Std. Deviation	N
1 Jan 2006-31Dec08	7.099328E-04	1.213129E-02	713
1 Jan 2006-31Dec08t-1	7.053622E-04	1.213195E-02	713

Correlations

		1 Jan 2006-31Dec08	1 Jan 2006-31Dec08t-1
1 Jan 2006-31Dec08	Pearson Correlation	1.000	.024
	Sig. (2-tailed)	.	.519
	N	713	713
1 Jan 2006-31Dec08t-1	Pearson Correlation	.024	1.000
	Sig. (2-tailed)	.519	.
	N	713	713

Run Test
(Log Return for Banking Sector Stock- R_{bt})

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
1 Jan 2005-31Dec09	1169	6.603158E-04	4.793131E-02	-.92084	.92362
1 Jan 2005-31Dec05	235	-1.2959050E-03	.1006304	-.92084	.92362
1 Jan 2005-31Dec07	713	-9.1094499E-05	5.837676E-02	-.92084	.92362
1 Jan 2006-31Dec08	713	7.099329E-04	1.213129E-02	-.12547	.12684
1 Jan 2006-31Dec09	934	1.152513E-03	1.830594E-02	-.29272	.28544
1 Jan 2007-31Dec09	690	1.569942E-03	2.042276E-02	-.29272	.28544
1 Jan 2008-31Dec09	456	1.835218E-03	2.371799E-02	-.29272	.28544
I1 Jan 2005-31Dec06	479	-6.5000166E-04	7.077881E-02	-.92084	.92362
1 Jan 2006-31Dec06	244	-2.7922601E-05	1.010657E-02	-.04481	.08478
1 Jan 2007-31Dec07	234	1.052993E-03	1.159448E-02	-.06636	.07209
1 Jan 2008-31Dec08	235	1.134446E-03	1.438744E-02	-.12547	.12684
1 Jan 2009-31Dec09	221	2.580383E-03	3.069508E-02	-.29272	.28544
1 Jan 2006-31Dec08	713	7.099329E-04	1.213129E-02	-.12547	.12684

	1 Jan 2005-31Dec09	1 Jan 2005-31Dec05	1 Jan 2005-31Dec07	I1 Jan 200642-31Dec08	I1 Jan 2006-31Dec09
Test Value	6.603158E-04	-1.2959050E-03	-9.1094502E-05	7.099329E-04	1.152513E-03
Cases < Test Value	622	110	356	374	525
Cases >= Test Value	547	125	357	339	409
Total Cases	1169	235	713	713	934
Number of Runs	401	92	257	247	297
Z	-10.700	-3.416	-7.533	-8.238	-10.893
Asymp. Sig. (2-tailed)	.000	.001	.000	.000	.000

	1 Jan 2007-31Dec09	1 Jan 2008-31Dec09	1 Jan 2005-31Dec06	1 Jan 2006-31Dec06	1 Jan 2007- 31Dec07
Test Value	1.569942E-03	1.835218E-03	-6.5000169E-04	-2.7922601E-05	1.052993E-03
Cases < Test Value	372	250	236	139	120
Cases ≥ Test Value	318	206	243	105	114
Total Cases	690	456	479	244	234
Number of Runs	223	141	182	86	92
Z	-9.268	-8.128	-5.348	-4.532	-3.399
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.001

	1 Jan 2008- 31Dec08	1 Jan 2009- 31Dec09	1 Jan 2006- 31Dec08
Test Value	1.134446E-03	2.580383E-03	7.099329E-04
Cases < Test Value	116	130	374
Cases ≥ Test Value	119	91	339
Total Cases	235	221	713
Number of Runs	77	58	247
Z	-5.424	-6.968	-8.238
Asymp. Sig. (2-tailed)	.000	.000	.000

APPENDIX-IV

Questionnaire

To, …….. Date: ……..

Dear Sir/ Madam,

I hereby request you to fill up the questionnaire prepared by me for collecting the precious data from you, which will be prepared for facilitating the research conducted for the partial fulfillment of the requirement of the MBS degree. This research topic is related to the "Level of Market Efficiency and the investors Rationality". The views takes will be used for the purpose of this study only. The view will be kept confidential and will not be publish anywhere. I would like to request to provide your valuable answers to the research problems. Some questions do have possible answers but some others call for a bit explanatory. While filling the questionnaire please put the tick mark (√) on the box. Your kind co-operation will be helpful to complete this study successfully.

Thank You !

Your Sincerely,
Saraswati Shrestha
(Researcher)

Tribhuvan University

Makawanpur Multiple Campus Hetauda

A Survey on

Level of Market Efficiency and the Investors Rationality

Name of the Respondent :

Designation :

Department/Office :

Qualification :

Date :

Signature of the Respondent :

Please Tick (Ě) the correct answer.

1. Have you invested in shares of the listed companies?

☐ Yes ☐ No

2. In which sector do you think public have better opportunities for investment?

☐ Securities investment sector:

- ☐ Banking sector
- ☐ Finance sector
- ☐ Insurance sector
- ☐ Manufacturing sector
- ☐ Trading sector
- ☐ Hotel sector
- ☐ Others

3. How did you get the idea to invest your money into shares at first?

☐ From friends ☐ From relatives ☐ From stock brokers

☐ Investor's education programmed organized by concern authorities

☐ Other media, please specify…….

4. By which special characteristics are you impressed to invest your money into stock than other sectors?

☐ Dividend ☐ Marketability

☐ Capital appreciation ☐ Social status

☐ Participation in AGM

5. Are you satisfied with the return you are presently getting from your investment?

☐ Yes ☐ No

6. Do you think that companies are able to meet the targeted stage as mentioned in prospectus in general?

☐ Yes ☐ No

7. In your opinion, are Nepalese Investors getting sufficient and timely information regarding the listed companies regularly?

☐ Yes ☐ No

8. Do you think that the regulatory authorities are regularly monitoring the performance status of the listed companies?

☐ Yes ☐ No

9. Are you satisfied with the grievances handling of the investors by different institutions involved in share trading and regulation activities?

☐ Yes ☐ No

10. How would you make a decision to purchase the share of particular company in share market?

☐ Consult a broker

☐ Act on whim

☐ Analyze the company management

☐ Analyze the past profit & loss

☐ If other, please specify ……

11. When would you like to sell your shares in the share market?

- ☐ When company's profit decline
- ☐ When company fell to pay dividend
- ☐ When cash is needed
- ☐ When high market price and start to decline
- ☐ If other, please specify ……

12. Are you satisfied with the present trading system adopted by NEPSE, which is open out cry system?

☐ Yes ☐ No

13. What is the level of return you are presently getting in comparison to your expectation from share investment?

5 Very high	4 High	3 Moderate	2 Low	1Very low
☐	☐	☐	☐	☐

14. To what extent do you think that investors are facing different dishonest activities such as insider trading?

5 Very high	4 High	3 Moderate	2 Low	1Very low
☐	☐	☐	☐	☐

15. What is the level of awareness (rationality) of the shares investors in Nepal?

5 Very high	4 High	3 Moderate	2 Low	1Very low
☐	☐	☐	☐	☐

16. To what extent do you think that Nepalese investors are influenced by whim and rumors?

5 Very high	4 High	3 Moderate	2 Low	1Very low
☐	☐	☐	☐	☐

Thanks for your co-operation!