FIRM SPECIFIC AND MACROECONOMIC DETERMINANTS OF COMMON STOCK PRICES: EVIDENCE FROM COMMERCIAL BANKS OF NEPAL

A Research dissertation submitted to

Kathmandu University School of Management

in partial fulfillment of the requirements for the

Degree of Masters of Philosophy (MPhil) in Management

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DECLARATION

I hereby declare that this dissertation entitled *Firm specific and macroeconomic determinants of common stock prices: Evidence from commercial banks of Nepal* embodies the result of an original research work I carried out in partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management of the Kathmandu University and that this dissertation has not been submitted for candidature for any other degree.

Dipendra Karki September, 2015

RECOMMENTADATION

This is to certify that *Dipendra Karki* has completed his research work on *Firm specific and macroeconomic determinants of common stock prices: Evidence from commercial banks of Nepal* under our Supervision and that his dissertation embodies the result of his investigation conducted during the period he worked as an MPhil candidate of the School of Management. The dissertation is of the standard expected of a candidate for the degree of MPhil in management and has been prepared in the prescribed format of the School of Management. The dissertation is forwarded for evaluation.

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September, 2015

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APPROVAL

We have conducted the viva-voce examination of the dissertation *Firm Specific and Macroeconomic Determinants of Common Stock Prices: Evidence from Commercial Banks of Nepal* by Dipendra Karki and found the dissertation to be original work of the candidate and written according to the prescribed format of the School of Management. We approve the dissertation as the partial fulfillment of the requirements for the degree of Master of Philosophy (MPhil) in Management.

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ABSTRACT

This dissertation relates cross-sectional differences in stock prices of Nepalese commercial banks to the underlying behavior of six firm specific variables: earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio, and firm size. It also examines the cointegrating relationship between stock prices and macroeconomic variables; namely gross domestic product, inflation, and interest rate. This study uses both primary and secondary sources of data. The balanced panel data from ten commercial banks including 150 observations are used for the period of 2000-2014. The earnings per share and stock dividend per share are the more significant determinants of stock prices of commercial banks in Nepal. The performance of the stock dividend is especially noteworthy; this variable is statistically and economically the most important of the six firm specific variables investigated. The result also shows the existence of cointegration between included macroeconomic variables and stock prices and therefore exhibits long-run equilibrium relationship in the context of Nepal. The findings have important implications to formulate the policy in managing stock market of Nepal and in other managerial decisions like making investment strategies, restructuring and development.

Key words: Stock prices, Earnings per share, Stock dividend, Fixed Effect Model, Macroeconomic variables, Cointegration test, Error Correction Model

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LIST OF ABBREVIATIONS AND SYMBOLS

ADF	Augmented Dickey-Fuller
BPS	Book value per share
CD	Cash dividend per share
CV	Coefficient of variation
DW	Durbin-Watson
ECM	Error Correction Model
EPS	Earning per share
FEM	Fixed Effect Model
FEV	Firm Specific Variables
GDP	Gross Domestic Product
IMF	International Monetary Fund
INF	Inflation
IR	Interest Rate
MEV	Macroeconomic Variables
MPS	Market price per share
NEPSE	Nepal Stock Exchange Limited
NI	NEPSE index
OLS	Ordinary Least Square
P/E	Price earnings ratio
REM	Random Effect Model
SD	Stock dividend per share
SEBON	Securities Board of Nepal
VIF	Variance Inflationary Factor

CHAPTER I

INTRODUCTION

General Background

Stock prices prophecy has received a considerable attention from both academicians and practitioners since it can be used as a measure of risk in financial markets. The pricing implication has come into limelight since the publication of seminal work of Markowitz (1952) - the mean-variance portfolio theory. Since then there is an ongoing debate on whether the market risk factors explain better or there are some other anomalies influencing common stock prices.

Gonedes (1972) investigated the relationship between the efficient capital market and accounting information. The study reported that the reliability of market reactions as a means of evaluating the informational content of accounting numbers is predicated upon the possibility of conditioning, so that investors will react in a particular manner to accounting numbers. Thus, announcement of earnings and dividends is helpful to investors to predict their future return. There is a theoretical links between financial reporting and stock prices (Nicholas & James, 2004). The information contained in earning provides information to determine share value, which represents the present value of expected future dividends (Beaver, 1968). Easton and Harris (1991) considered the earning as an explanatory variable for stock prices. Among several firm specific characteristics, the most prominent ones in determining stock prices are earnings-to-price ratio (Basu, 1977), book-to-market equity ratio (Chan, Hamao & Lakonishok, 1991), dividend (Friend & Puckett, 1964), and firm size defined by market value of equity (Banz, 1981).

Similarly, a number of studies have been conducted to examine the effect of macroeconomic variables on the stock markets of industrialized as well as developing economies. Some studies showed that there is in fact a relationship between stock prices and certain macroeconomic indicators, those studies were mostly conducted in developed economies, Fama and Schwert (1977), among many others, found a negative relationship between stock prices and inflation in the US market, But what about less developed economies? Some studies showed no relationship between the economies and the financial markets of less developed countries like Asian markets. Fung and Lie (1990) explained that macroeconomic factors can't be reliable indicators for price movements in the Asian markets because of the inability of stock markets to fully capture information about the change in macroeconomic fundamentals. The relevance of the studies conducted in developed and big capital markets is yet to be seen in the context of smaller, developing and under-developed capital markets. The stock market behavior in such type of markets is thus one of the important areas of the study in finance. Hence, it is felt necessary to study the behaviour of stock market prices in the context of smaller, emerging and developing capital markets like Nepal. Besides, there is a further need to examine the predictive power of the firm specific and macroeconomic factors in determining the stock prices in the context of Nepal.

The relationship between the stock price and financial and non- financial variables is very important to study for many reasons. First, it helps policy makers understand the full effect of prevailing and upcoming policies and regulations. Second, if investors were aware of this relationship and fully understood it, then they will make more informed investment decisions thus reducing their exposure to risk. And third, knowing which force leads the other can help in reducing the shock

factor because the public will be somewhat aware of what might happen in the economy or the financial market and thus will be able to take protective measures. Avadhani (1996) stated that Capital Market is a wide term comprise of all operations in the new issues and stock market. The stock market serves as a veritable tool in the mobilization and allocation of savings among competing uses which are critical to the growth and efficiency of the economy (Alile, 1984). Through mobilization of resources the stock market promotes economic growth by providing avenue to pool large and long term capital through issuing of shares and stocks and other equities for industries in dire need of finance to expand their business. Thus, the overall development of the economy is a function of how well the stock market performs and empirical evidences have proved that development of the capital market is sine qua non for economic growth. While developed economies have fully explored the mobilization of resources through the capital market, the developing countries are yet to fully usurp the benefits of raising capital via the capital market.

Stock market facilitates the situation of country's economy. Generally, it is taken as a barometer of an economy. Growth in stock index is normally considered as a good sign since it implies the investors are confident about the future prospect of the economy. It helps to promote investment in the economy. However, a rapid increase in the stock market index is always a matter of concern. If the increase in the index is not justified by the fundamentals, such a rise cannot be sustained and eventually the index will plummet endangering the economic and financial stability. Hence, it is essential that the policymakers keep eyes on the stock market development and ready to take appropriate measures, if needs arise, to prevent the build-up of bubbles and collapse in the market. For this, it is necessary to understand the relationship between the stock market index and the financial and non-financial factors that influence it.

Stock market also represents the national policy towards industrial sector as well as security market, which are formulated by government authorities. If the change in stock price is dependent on their past values, there exists a trend or pattern in the price movement which are profitable to the security analyst. The study is designed to test whether the changes in stock price of the individual securities are independent or dependent. In the situation of independent behavior of stock price changes, general or institutional investors such as mutual funds can easily drop their technical analysis functions shift to restrict their efforts in acute fundamental analysis. When successive price changes shows dependence, security analyst can just perform technical analysis and discern profitable patterns. In this way, preciously being well informed about the price behavior of the market, investment analysis function becomes simple. Besides it, researcher, shareholders and financial institutions, insurance companies may also benefit in one way or the other from this study by obtaining valuable information too.

The stock market is a pendulum that forever swings between unsustainable optimism and unjustified pessimism (Graham, 1973). Stock prices volatility has received a great attention since it acts as a measure of risk in financial markets. Schwert (1989) concluded that there is a volatility puzzle regarding common stock prices. The puzzle highlighted by the results was that stock volatility is not more closely related to other measures of economic volatility. It seems that pricing volatility does not follow any pattern. In some cases, volatility is closely related with macroeconomic variables and in some cases macroeconomic variables have no impact upon volatility. What factors are responsible for these changes in volatility? Every individual specially related with stock market in this or that way, tries to get answer to these questions. There are several studies which examined the stock prices volatility.

Officer (1973) correlated these changes to the volatility of macroeconomic variables. Similarly, many others attempted to relate changes in stock prices and economic variables, including Fama (1981), Thorbecke (1997), Maghayreh (2003), Kandir (2008), and Alagidede and Panagiotidis (2010).

Since the adoption of economic liberalization policy in the beginning of 1980s, Nepal has guided towards a change in the financial architecture of the economy. In the contemporary scenario, the activities in the financial markets and their relationships with the real sector have assumed significant importance. The initiation of financial sector reform program has brought number of structural and institutional changes in different segments of the financial markets. This leads to the number of banks and financial institutions come in to operation, widening of network of participants call for a reexamination of the relationship between the stock market and the financial and non-financial variables in Nepal.

Correspondingly, researches are also being conducted to understand the current working of the economic and the financial system in the new scenario of Nepal. Nepalese studies have been attempted to relate changes in stock prices with firm specific and macroeconomic variables, including Pradhan (1993, 2003), Basnet (2007), Adhikari (2009), and Joshi (2012). These studies mainly focused on either firm specific impact or macroeconomic influences on stock prices rather than joint perspective. This study differs from them since it has examined the firm specific as well as macroeconomic determinants of common stock prices. Such analysis on stock markets has come to the fore since this is the most sensitive segment of the economy and it is through this segment that the country's exposure to the outer world is most readily felt. This study is an endeavor in this direction.

Varying evidences of relationship between financial and macroeconomic variables with stock prices were widely documented in the existing literature. The outcome of most studies suggests that with minor degrees of variation- there is a relationship between macroeconomic variables and stock prices. For example, there exists a positive relationship between stock prices and economic output (Foresti, 2006), as well as a negative relationship between inflation and stock returns (Hoguet, 2008). Researchers were successful in finding a relationship between stock prices and the different macroeconomic and financial indicators in countries like Brazil (Chatrath, 2002), Jordan (Maghayreh, 2003), and Lithuania (Pilinkus, 2009) as well. Due to variations in results, it was found difficult to determine which specific variable could be consistent indicator to determine stock prices. Viewed in this perspective, the study devoted to examine the relationship between stock prices with firm specific and macroeconomic variables may be a rewarding one.

Statement of the Problem

Even though there is much theoretical and empirical research on firm specific and macroeconomic determinants of stock prices in developed economies, there is still a significant research gaps and the relevance of these studies is yet to be seen in the context of smaller, under-developed and developing economies like Nepal. The empirical studies have found that variables relating to firm characteristics have significant explanatory power for average stock prices. Graham (1973) pointed out that stocks do well or poorly in the future because the businesses behind them do well or poorly-nothing more, and nothing less. Indeed in some markets, prices exhibit common movements that are hard to explain by movements in fundamentals (Watanabe, 2008). Thus the behavior of stock market is volatile, and till now its causes are unclear.

Among the several contradictions, earlier one was Basu's (1977) evidence that when common stocks were sorted on earnings-to-price ratios, future returns on high earnings-to-price stocks were observed higher. On the contrary, Chan, Hamao and Lakonishok (1991) observed earnings-to-price ratio to loose its significance in predicting stock returns. A fierce debate is raging regarding the fundamental basis for dividend investing. Some analysts believe that dividend investing constitutes a fundamentally sound technique that may be recommendable to many investors. Other analysts take the view that dividend investing is fundamentally "dumb." Dividend irrelevance theory by Miller and Modigliani (1961) under the assumption of perfect capital markets argued that dividend policy should be irrelevant to stock price. It considered that values are determined solely by real considerations of the earning power of the firm and not by how the fruits of the earning power are "packaged" for distribution. Probably, the earliest and best-known observation of this "dividend effect" was made by Graham and Dodd (1962), who went so far as to assert that a dollar of dividend has four times the average impact on price as does a dollar of retained earnings. Friend and Puckett (1964) also found that when stock prices are related to current dividends and retained earnings, higher dividend payout is usually associated with higher price earnings ratio.

In relation to firm size effect, Banz (1981), Reinganum (1981), and Keim (1983) observed that small firms have higher stock returns and larger firms have lower returns. However, there are few tests on empirical validity of firm specific characteristics in determining stock prices in the context of Nepal and studies find no unanimous conclusion about this. Hence, the present study attempts to examine the extent of predictive power of firm specific characteristics in determining stock prices using more recent data of commercial banks in Nepalese stock market.

Besides firm specific variables, studies also suggest that there is significant relationship between macroeconomic variables and stock returns. The underlying theoretical constructs establish a link between macroeconomic volatility and stock returns based on transmission mechanism between the key macroeconomic variables, namely, inflation, interest rate, and gross domestic product (GDP).

Fisher (1930) found that stock prices are positively related to inflation, and hence stock investment can be used as a hedge against inflation. Jaffe and Mandelkar (1976), Nelson (1976), and Fama and Schwert (1977), among others, have argued that stock returns are inversely related to inflation. Similarly, Fama (1981) documented the negative relationship between stock returns and inflation. The evidences have suggested three dominant hypotheses, namely, tax effect, proxy effect, and the reverse causality hypotheses, explaining the negative effects of inflation on stock returns. This argument shows a contrary opinion to the priori expectation of Fisher hypothesis which assumes that stock returns are positively related to inflation and hence stock investment can be used as a hedge against inflation.

In relation to interest rate effect, several studies argue in favor of inverse relationship between stock returns and level of interest rates. Thorbecke (1997) demonstrated that liquidity in the economy could help in reduction of interest rates. This extra liquidity could be channeled to the stock market thus driving up the demand and prices of stocks. Similarly, Kandir (2008) demonstrated a negative relationship between stock prices and interest rate. Such a negative relation implies that investors tend to invest less in stocks when interest rates go up causing stock price to fall. Despite these evidences, the studies also revealed that interest rate changes may not be enough to influence stock-price misalignments. Bernanke and Gertler (2001) argued that the volatile nature of stock prices is hard to predict and that

monetary authorities only change interest rates in reaction to stock price movements, when they expect such movements to affect inflation. Goodfriend (1986) also noted no stable correlation between stock returns and short-term interest rates; as a result it would be difficult for interest rates to target stock price changes appropriately. Because of these controversies, this study attempts to identify the interest rate effect on Nepalese stock market.

The empirical evidences in relation to real sectors' influence proxied by GDP on the stock prices also documented mixed results. It is argued that stock prices respond to the volatility in GDP. In this context, Gjerde and Saettem (1999) observed a significant positive association between the GDP, industrial production and stock prices. Contrary to these findings, Flannery and Protopapadakis (2002) reported no relation between stock returns and real GDP.

The major problem to conduct a research in emerging markets as reported by Platt (1998) is unavailability of large samples and also concluded that country income is the best predictors of functioning of stock markets and emerging markets have very low correlation with developed stock markets. Moreover, the studies on stock pricing behaviour of small and emerging capital markets lacked unanimous conclusion. Chaudhary (1996) found that the volatility in different smalls markets is explained by different variables. Rao (2008) analyzed the volatility persistence in emerging equity markets in comparison to equity returns in the developed market and concluded that small markets exhibit significant own spillover effects.

The recent studies have found evidences of both trend-following and contrarian behavior among various investor groups. Securities are bought by trend followers upon price appreciation and sell them upon depreciation, while contrarians trade in the opposite way. Such trading behavior has been found in every market. In

majority of markets, stock prices have been found to be much more that the stocks' fundamental values. However, few others including Watanabe (2008) reported no conclusive evidence about the effect of fundamentals on common stock prices.

Though most of the studies on stock pricing are based on developed countries especially in the USA and Europe however, very few studies have been conducted in the Nepali context. A study of the effect of dividends on common stock prices in Nepalese context (Pradhan, 2003) showed the strong dividend effect, and a very weak retained earning effect, indicating attractiveness of dividend among Nepalese investors. Basnet (2007) reported that market price per share (MPS) is well explained by dividend and returns in Nepalese stock market. Baskota (2007) found that there is no persistence of volatility in Nepalese stock market and the stock price movements are not explained by the macroeconomic variables. Bhattarai and Joshi (2009) documented both short-run and long-run interdependence among stock index and some macroeconomic variables.

History indicates that useful theoretical developments have not been uniform across all areas of stock pricing models in Nepal. Despite of the success of the empirical studies of developed and matured capital markets, little is known about the results of applying the model to emerging and developing capital markets like Nepal. Hence, there is a need to explore whether the earnings power of the firm alone can predict stock prices, or inclusion of firm size and dividends subsume the effect on stock returns in the context of stock market in Nepal. Besides, there is a further need to examine the relationship in between stock prices and macroeconomic variables in the context of Nepal. Therefore, this study related to firm specific and macroeconomic determinants of common stock prices in Nepal occupies an important place in financial management.

With the growing number of commercial banks in the country, a question as to whether their performance influence stock market's volatility has become relevant. The performance of Banking sector and stock market had attracted attention in the finance literature considering their pivotal role in the economy. Nepalese stock market has passed through different stages. Major political changes occurred during this study period and the market index (NEPSE) has witnessed significant ups and downs. Recently, after the results of the second CA election in November, 2013, the NEPSE index took an upward trend until August 2014. On July 14, 2014 the benchmark index reached 1036.1, the highest in the last six years. Earlier, on August 31, 2008, the NEPSE index had reached its all-time high of 1175.38 points before plunging to a record low of 292.31 on June 15, 2011. Hence the study period is found more relevant to examine the relationship of various determinants of stock price.

Different from prior studies in Nepal, this study has used two models namely; panel data analysis and time series analysis simultaneously. Concerning to firm specific determinants, it is based on the study of commercial banks only but many of the analytical methods and approaches used can undoubtedly be of great use to other sectors of listed companies in Nepalese stock market. Compared to other related studies available in Nepal this study has segregated the dividend into cash dividend and stock dividend to analyze the comparative strength of relationship with stock prices. The study is perhaps the first of its kind in Nepal.

The conclusions of the prior studies are not unanimous in most of the cases. Furthermore, the updated data of different region and time are to be used so as to confirm the relationship between existing variables and to investigate relationship with new variables. Thus, this study aims to fill such a research gap by examining the

influences of different firm specific and macroeconomic factors on common stock prices in Nepalese context.

To sum up, the study basically deals with following issues:

1. How sensitive are the stocks of the commercial banks about the given changes in the earnings as a whole?
2. How far the market prices of the shares are explained by the book value per share as shown in the balance sheet?
3. What is the extent of possibility that companies with generous dividend distribution policies consistently sell at a premium over those poorly payout? Is the reverse ever true?
4. What is the level of consistency in explanatory power of earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio, and firm size when considered individually and when considered together?
5. What is the direction and magnitude of causal relationship between stock market prices and macroeconomic variables such as inflation, interest rate, and gross domestic product?
6. Do cointegrating relationships exist between macroeconomic variables and stock market prices?

Objective of the Study

The major objective of this study is to analyze the variables that affect stock prices of commercial banks in Nepal and examine the cointegrating relationship between stock market index and macroeconomic variables. The specific objectives are as follows.

- To examine the explanatory power of firm specific variables namely;

earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio and firm size in determining the stock prices of commercial banks when considered individually and when considered together.

- To examine the existence of short run or long run relationship between stock market index and macroeconomic variables such as GDP, inflation, and interest rate.
- To understand the opinion of market participants such as executives, investors, and security businesspersons on the determinants of common stock prices in Nepalese market.

Organization of the Study

The study has organized into five chapters, each devoted to some aspects of the study of determinants of stock prices in Nepal. Chapter one is introductory chapter which describes the major issues to be investigated along with objectives of the study. The chapter two is devoted to theoretical analysis and brief review of literature on determinants of stock prices from both developed and emerging countries along with the review of studies in Nepalese context. Besides, this chapter ends up with concluding remarks associated with the findings and major ideas of the studies. This chapter provides a framework on which the whole study stands and from which the testable hypothesis are developed. Chapter three deals with the methodology applied in the study. It also deals with nature and sources of data, variables used, statistical tools and models employed in the study, methods of analysis, and definition of variables and hypothesis. Chapter four covers the empirical analysis and presentation of data. Lastly, chapter five discusses and summarizes the study along with some specific implication and limitations.

CHAPTER II

REVIEW OF LITERATURE

This chapter provides conceptual framework of the study and deals with review of empirical studies associated with firm specific and macroeconomic determinants of stock market prices. This chapter has been organized into four sections. The first section briefly discusses the theoretical considerations. Second section consists of an in-depth chronological review of related studies in the context of both developed and emerging stock markets. It also includes brief reviews of empirical works conducted in the context of Nepal. The third section presents theoretical framework of the various factors and stock prices. Finally, the fourth section presents concluding remarks of the overall literature review.

Theoretical Considerations

Many general investors are puzzled about the stock prices in the market. The investor's main dilemma is that whether or not to invest in the particular asset/assets, so that they can get better sustainable and fair return of their investment with bearing minimum/zero risk. In this point of view, many people have been studying the way security price fluctuate for over a century. Mackay (1841) assembled a book of readings about Tulip-mania and some equally famous market "bubbles" which had a self-explanatory title: Extraordinary Popular Delusions and the Madness of Crowds. In contrast to Mackey's astonishing stories, Bachelier (1900) set a forth formal model in which security prices were random outcomes that had probabilities attached to them. There are several factors in determining stock market prices.

The basic foundation for pricing theory was laid down by Markowitz (1952) through a seminal work entitled 'Portfolio Selection'. Markowitz portfolio theory asserts that the riskiness of a single asset is entirely different from that of a portfolio of assets. According to this theory, a single asset may be very risky when held in isolation, but not much risky when held in combination with other assets in a portfolio. The prior studies found different firm specific and macroeconomic variables that influence the pricing of common stocks.

Firm Specific Variables and Stock Prices

Basu (1977) and Banz (1981) observed that the price-to-earnings ratio and the market capitalization of common equity (firm size), respectively, provided considerably more explanatory power on prediction of stock prices. Ball (1978) stated that the firm with higher earnings-to-price ratio is also expected to have higher stock prices. In contrast, Chan, Hamao and Lakonishok (1991) reported no conclusive evidence about earnings-to-price effect on common stock returns in Japan.

Baker and Wurgler (2004b) revealed that the disappearance of dividends can be explained by lower market valuations of payers during such periods. Companies pay dividends in order to raise the stock prices of their shares above their fundamental values. Baker and Wurgler (2004a) noted that the increase in the value of a company paying dividends reflects the risk assessment by investors. Indeed, dividend-paying firms are considered less risky than non-payers ones. Thus, investors who prefer cash dividend payments during gloomy period as an indicator of the firm's safety are therefore more willing to pay dearly to buy dividend-paying stocks.

The size effect on common stock prices was first reported by Banz (1981). This study reported a negative relationship between firm size, measured by market value of equity, and common stock returns. The observed negative relation simply

implies that larger stocks have smaller returns. However, the empirical results vary among different studies and there is no unanimous evidence of size effect. Though controversial, the findings collectively represent a set of facts that stand as a challenge for alternative pricing models. Some studies employ cross-sectional regression technique to represent these ad hoc effects in the following form:

$$P_i = b_0 + b_1 \beta_i + b_2 \Sigma C_{ij} + e_i$$

Where C_{ij} represents firm's characteristics j for stock i.

Macroeconomic Variables and Stock Prices

The dynamic relationships between macroeconomic variables and stock market returns have been widely discussed and debated. Elton and Gruber (1991) stated that the determinants of stock prices are the required rate of return and expected cash flows. Economic variables which impact future cash flows and required returns can therefore be expected to influence share prices. Gross domestic product (GDP) is one of the fundamental macroeconomic variables employed in the past studies to trace out macroeconomic influences on stock prices. It is used as a proxy of real aggregate economic activity in an economy. Higher GDP represents economic prosperity of the country and stock returns are expected to influence positively. McMillan (2005) reported a significant positive relation between GDP and stock prices.

The interest rate (IR) risk is another important financial and economic factor affecting the price of common stocks. Reily and Brown (2000), however, argued that cash flows from stocks could change along with interest rates and it would not be certain whether this change in cash flows would augment or offset the change in interest rates. Though controversies exist about exact relationship between interest rates and stock market prices, this study hypothesizes a negative relationship between interest rates and stock prices basically for two reasons. First, the reduction in interest

rates reduces the cost of borrowing and thus serves as an incentive for expansion. This will have a positive effect on future expected returns for the firm. Second, as considerable stock investments are made with borrowed money, hence an increase in interest rates would make stock transactions more costly. Investors will require a higher rate of return before investing. This will reduce the demand for stock investment and thus lead to decline in stock prices.

Besides interest rate (IR) and GDP, the rate of inflation (INF) is another interrelated macroeconomic variables influencing stock market activity and hence the common stock prices. As the worth of rupees gets reduced due to high money supply i.e. inflation, it is expected that the stock prices would be high in the time of high inflation. This implies the positive relationship between inflation and stock prices. In contrast to this, some other findings propose three dominant hypotheses, namely, tax effect, proxy effect, and the reverse causality, explaining the effects of inflation on stock market returns. The tax effect hypothesis argues that inflation introduces a corporate tax liability and reduces real after-tax earnings, thus reducing common stock returns. The proxy effect hypothesis explains that real activity is positively related to common stock returns, but negatively related to inflation through the money demand effect. Similarly, reverse causality hypothesis states that future economic activity is correlated with increased domestic borrowing or increased supply of money. This simply means that an increase in domestic borrowing or issuance of money has inflationary effects that dampen real activity. However, the studies by Geyser and Lowies (2001), Ibrahim and Aziz (2003), and many others found positive relation between stock prices and inflation. This study also assumes positive relation between stock prices and inflation.

Review of Empirical Studies

This section provides a review of major empirical studies associated with firm specific and macroeconomic influences on cross-section of common stock prices. The review of literature has been presented on periodical basis. Therefore the following sections cover the major studies undertaken; a) before 1990, b) after 1990 and before 2000, c) in between 2000 to 2005, d) after 2005, and e) Major Studies conducted in Nepalese context

Review of Major Studies before 1990

Fisher (1930) conducted the study regarding the behavior of stock market prices and explained how the market rate of interest and inflation affected the stock prices. As the rate of inflation rises, the nominal rate of interest also goes up. Consequently, real rate of interest remained the same in the long run. Thus, it was concluded that there was a positive one-to-one relationship between rate of inflation and stock prices.

Earnings related strategies have a long tradition in the investment community. The most popular of these strategies, which calls for buying stocks that sell at low multiples of earnings, can be traced back at least to Graham and Dodd (1940) who proposed that a necessary but not a sufficient condition for investing in a common stock is a reasonable ratio of market price to average earnings. The author advocated that a prudent investor should never pay as much as 20 times earnings and a suitable multiplier should be 12 or less. A numerous empirical evidences have enquired on the earnings effect on stock returns.

According to the model of Gordon and Shapiro (1956), the current stock price equals the present value of its future dividends. They assumed that the dividend is a constant fraction of the profits carried out by the company. The

expected receipt of dividend income is an incentive for investing in a given stock, particularly if the yield on investment exceeds the return offered on other alternative investments like savings accounts. Investors may pay a premium for shares in issue. The major studies conducted before 1990 has been summarized in the following table.

Table 1

Review of the Major Studies before 1990

Study	Major Findings
Fisher (1930)	The results concluded that there is a positive one-to-one relationship between rate of inflation and stock prices.
Graham and Dodd (1940)	The study advocates for buying stocks that sell at low multiples of earnings.
Gordon and Shapiro (1956)	The current stock price equals the present value of its future dividends.
Nicholson (1960)	Low price-to earnings stocks provided returns greater than the average stock.
Modigliani and Miller (1961)	Dividend policy of a corporation is irrelevant since it is nothing to do with shareholders wealth.
Gordon (1962)	Dividend policy of firm affects its value. Investors value the present dividend more than future capital gain.
Friend and Puckett (1964)	When stock prices are related to current dividends and retained earnings, higher dividend payout is usually associated with higher price earnings ratio.
Basu (1977)	There is a significant negative relation between price-to-earnings ratios and stock prices.
Ball (1978)	Earnings-to-price explains the portion of expected returns that is in fact compensation for risk.
Banz (1981)	Small firms have significantly larger risk adjusted returns than large firms.
Schwert (1981)	The study reported negative reaction of stock markets to the announcement of unexpected inflation, although the magnitude of the reaction was small.

Gertler and Grinols (1982)	The results indicated that stock returns are negatively correlated with inflation.
Chen, Roll and Ross (1986)	The results showed a long-term equilibrium relationship exists between stock prices and macroeconomic variables and inflation is significant in explaining the expected returns.
Chawala and Srinivasan (1987)	Both dividend and retained earnings significantly explain the variations in share price in chemical industry.
Aggarwal, Hiraki and Rao (1988)	Portfolios of high earnings-to-price stocks outperformed those with low earnings-to-price stocks.
Jaffe, Keim and Westerfield (1989)	The earnings yield effects were significant in both January and non-January months.
Schwert (1989)	The study noted weak evidence that macro-economic volatility could help predict stock returns.

Details of the studies have been presented as following:

According to Modigliani and Miller (1961), under perfect market situation, the dividend policy of a firm is irrelevant as it does not affect the value of the firm. They argue that the value of the firm depends on the firm's earnings which result from its investment policy. Thus, when investment decision of the firm is given, dividend decision-the split of earnings between dividends and retained earnings-is of no significance in determining the value of the firm. The irrelevance is based on the following hypotheses;

a) The firm operates in perfect capital markets where investors behave rationally.
b) Information is freely available to all transactions and flotation costs do not exist. Perfect capital markets also imply that no investor is large enough to affect the market price of a share.
c) Taxes do not exist; or there are no differences in the tax rates applicable to capital gains and dividends. This means that investors value a rupee of dividend as much as a rupee of capital gains.

d) The firm has a fixed investment policy.

e) Risk of uncertainty does not exist. That is, investors are able to forecast future prices and dividends with certainty, and one discount is appropriate for all securities and all time periods.

As postulated in dividend relevance theory by Gordons's Model (1962), investors are different towards current dividends and retention of earnings. The share price is reduced if the discount rate increases with the length of time in future in case dividend payment is lowered down. Gordon concluded that dividend policy of a firm affects its value. The conclusion of the study is that investor value the present dividend more than future capital gain. Gordon model is based on the following assumptions;

a) The firm is all equity firms, and it has no debt.

b) No external financing is available. Consequently retained earnings would be used to finance any expansion.

c) The internal rate of return, r, of the firm is constant. This ignores diminishing marginal efficiency of investment as represented.

d) The appropriate discount rate k for the firm remains constant.

e) The firm and its stream of earnings perpetual.

f) Corporate taxes do not exist.

g) The retention ratio, b, once decided upon, is constant. Thus growth rate, g =br, is constant forever.

The first extensive study of the relation between price-to-earnings and subsequent total returns was published by Nicholson (1960) showing that low price-to earnings stocks consistently provide returns greater than the high P/E companies, and this difference is known as the value premium.

Probably, the earliest and best-known observation of this "dividend effect" was made a generation ago by Graham and Dodd (1962), who went so far as to assert that a dollar of dividend has four times the average impact on price as does a dollar of retained earnings. Then, Friend and Puckett (1964) provided the relationships between dividends and stock prices using regression analysis of 110 firms from five industries for the period of 1956 to 1958. The regression results $P_t = a + bD_t + CR_t$ exhibited the strong dividends effect and relatively weak retained earnings effects on three of the five industries, i.e. chemicals, foods and steels.

Basu (1977) introduced the notion that price-to-earnings ratios might explain stock market prices and found that, for the sample of NYSE firms, there was a significant negative relation between price-to-earnings ratios and average returns. As the study observed if one had followed this strategy of buying the quintile of lowest price-to-earnings stocks and selling short the quintile of highest price-to-earnings quintile stocks, based on annual rankings, the average annual abnormal returns would have been 6.75 percent over 1957 to 1975 period.

The empirical enquiry into the earnings effect was started by Ball (1978) and argued that earnings related variables like the earnings-to-price ratio could be used as proxies for expected returns. In that case, earnings-to-price explains the portion of expected return that is in fact compensation for risk variables omitted from the tests. A valid question, then, is whether a documented relation between average returns and earnings-to-price is due to the influence of earnings-to-price, or whether earnings-to-price is merely a proxy for other explanatory variables of expected returns.

Banz (1981) was the first to document size effect. For the period 1926 to 1975, the study estimated a model of the form revealed in equation (2.1).

$$R_i = b_0 + b_1\beta_i + b_2 S_i + e_i \qquad \ldots\ldots\ldots\ldots (2.1)$$

Where S_i is a measure of the relative market capitalization (known as firm size) for firm *i*. Banz (1981) examined the relationship between total market value of equity and common stock returns. The study included all common stocks quoted on the NYSE for at least five years between 1926 and 1975. Data were derived from monthly returns file of the Center for Research in Security Prices (CRSP) of the University of Chicago. Using pooled cross-sectional and time series regression of the form given in equation (2.1), the study reported that small NYSE firms, on average, have significantly larger risk adjusted returns than large NYSE firms. The study found negative statistical association between returns and firm size. However, the study also reported that the size effect was not linear in the market proportion but was most pronounced for the smallest firms in the sample. The effect was also not very stable through time. An analysis of the ten year sub-periods showed substantial differences in the magnitude of the coefficient of the size factor. Finally, the study concluded no theoretical foundation for such an effect, and it was even not confirmed whether the factor was size itself or whether size was just a proxy for one or more true but unknown factors correlated with size. Therefore, it suggested to offer some conjectures and even to discuss some factors for which size was suspected to proxy.

The analytical study on reaction of stock prices to the new information about inflation was conducted by Schwert (1981). The author extended the evidence on the relationship between stock returns and inflation by examining the daily returns from 1953-1978. The study revealed negative reaction of stock markets to the announcement of unexpected inflation in the CPI, although the magnitude of the reaction was small. It postulated that the stock markets did react to unexpected inflation around CPI announcement time, and the stock markets did not seem to react to unexpected inflation during the CPI sampled period, that is, several weeks before the announcement date.

With regard to risk premium for common stock returns associated with unemployment and inflation, Gertler and Grinols (1982) investigated the monthly returns on 712 securities listed on the New York Stock Exchange from January 1970 to January 1980. The study observed statistical relationship between expected security returns and the macroeconomic setting. The addition of unemployment and inflation improved the explanatory power of the regressions significantly. Further, each macroeconomic factor was statistically significant on average over the period. Particularly, the results indicated negative relationship of stock returns with inflation including market as a whole.

Chen, Roll and Ross (1986) found a long-term equilibrium relationship between stock prices and relevant macroeconomic variables, namely, term structure of interest rate, industrial production, inflation, among others, between 1953 and 1984 in the US stock market. The study revealed that industrial production and measure of unanticipated inflation could explain the expected stock returns significantly.

The impact of dividend and retained earnings was studied by Chawala and Srinivasan (1987). They took 18 chemicals and 13 sugar companies and estimated cross-sectional relationship for the year 1969 to 1973. The basic objectives of the study were to set a model to explain stock price, dividend, and retained earnings. They found that in the case of chemical industry the estimated coefficients had the correct sign and the coefficient of determination of all the equations were very high. But in the case of sugar industry, they found that the sign for retained earnings is negative in both years. The conclusion made was dividend hypothesis holds well in the chemical industry. Both dividend and retained earnings significantly explain the variations in share price in chemical industry. They noticed that impact of dividend is more pronounced than that of the retained earnings but the market has started shifting towards more weight for retained earnings.

Aggarwal, Hiraki, and Rao (1988) provided the evidence of significant earnings-to-price effect for a sample of 574 firms listed in the first section of the Tokyo Stock exchange during the period from 1974 to 1983. Including the firms only with positive earnings in the sample, the study revealed that portfolios of high earnings-to-price stocks could outperform those with low earnings-to-price stocks even after controlling for differences in systematic risk and size across portfolios.

In an attempt to evaluate the relationship between size and earnings to price effect on stock returns, Jaffe, Keim, and Westerfield (1989) used CRSP monthly stock return data for relatively a longer period from 1951 to 1986. The study was confined to earnings per share data from the COMPUSTAT files and the Contemporary Research file for the 1967-1986 periods and from the "back data" versions of these two files for the 1950-1966 period. Over the entire period, the study reported a significant earnings-to-price effect in both January and other eleven months.

The relationship of stock volatility with respect to real and macroeconomic volatility was examined by Schwert (1989). Using the monthly standard deviation of stock returns on Standard and Poor's composite portfolio from January 1928 through December 1987, and daily estimates of returns from February 1885 through December 1927 on the Dow Jones composite portfolio, the study examined whether the financial assets volatility could predict macroeconomic volatility or vice versa. The macroeconomic variables used in the study were Producer's Price Index (PPI) inflation, monetary base growth and the industrial production growth. The study indicated a significant relationship between stock returns and PPI inflation during sub-period 1953-1987. For the rest of the period, the PPI were found to have no power to explain the financial assets return. Thus, study noted weak evidence that macroeconomic volatility could help predict stock and bond returns volatility.

Review of Major Studies after 1990 and before 2000.

Wong and Lye (1990) showed significant earnings-to-price effect in the case of Singapore stock market for the sample period 1975 to 1985. The study observed stronger earnings-to-price effect than the size effect. The evidences from these findings show that in Japan and Singapore, there is significant price-to- earnings effect similar to that found in the U.S. market. The major studies conducted after 1990 and before 2000 has been summarized in the following table 2

Table 2

Review of the Major Studies after 1990 and before 2000

Study	Major Findings
Wong and Lye (1990)	There is a significant earnings-to-price effect on Singapore stock returns and the effect is even stronger than that of size.
Reinganum (1990)	Small OTC stocks have significantly lower returns than NYSE and AMEX firms with the same size.
Chan, Hamao and Lakonishok (1991)	The performance of book-to-market equity was found reasonably significant in explaining the stock returns.
Chen (1991)	The market excess return was negatively related to the economic growth variables such as T-bill rate, lagged production growth rate, the default spread and term structure and positively related to expected future economic growth rate such as market dividend price ratio and unexpected future GNP growth.
Easton and Harris (1991)	The study confirmed the earning is an important elements for stock valuation and it can be used as an explanatory variable for stock return.
Fama and French (1992)	Book-to-market equity is important in explaining the average stock returns and it is found stronger than size effect.
Davis (1994)	The study revealed significant relationship between book-to-market equity, cash flow yield and earnings yield, and subsequent returns. The study also demonstrated January seasonal in the explanatory power of these variables.

Lakonishok, Shleifer and Vishny (1994)	The glamour stocks outperformed value stocks because market consistently over estimated future growth rates of glamour stocks relative to value stocks.
Fama and French (1995)	The study showed that within book-to-market equity groups, small stocks tend to be less profitable than big stocks.
Kothari, Shanken and Sloan (1995)	The study noted that relationship between book-to-market equity and returns is weaker and less consistent than that in Fama and French (1992).
Mukherjee and Naka (1995)	They found that a long-term equilibrium relationship exists between the Japanese stock market and the six macroeconomic variables.
La Porta (1996)	The low earnings growth stocks beat high earnings growth stock significantly when stocks are sorted by expected growth rate in earnings.
Kim (1997)	The firm size is marginally significant in explaining average stock returns and book-to-market equity has significant explanatory power to average stock returns.
Knez and Ready (1997)	Firm size has significant positive relation with average returns.
Grauer (1999)	The results indicated negative size coefficients in OLS and GLS regression of expected excess returns on equal weighted portfolio betas and size.

Details of the studies have been presented as following:

Additional evidence in Reinganum (1990) suggested that the relative price behavior of small and large firms might differ for over-the counter (OTC) stocks. Using data for the 1973-1988 period, the study reported significantly lower returns for small OTC stocks than NYSE and AMEX firms with the same size. The study further noted such differences to exist because of the differences in liquidity and differential costs of trading small stocks in these two types of markets. Hence, the basic implication of this study is that market structure may be an important influence on the measured size effect.

Chan, Hamao and Lakonishok (1991) attempted to study cross-sectional differences in stock returns in Japan using four variables, namely, earnings-to-price, cash flow yield, size and book-to-market equity. The study used monthly data on stocks listed in the Tokyo Stock Exchange (TSE) from January 1971 to December 1988. The results indicated that high earnings-to-price stocks could outperform low earnings-to-price stocks. Small stocks achieved substantially higher returns than large stocks. However, regression analysis produced a striking result. The earnings-to-price effect was not significant across the different regression models including in the case when earnings-to-price was the only independent variable. Among the four variables investigated, it was hardest to disentangle the effect of the earnings-to-price variable.

The relationship between changes in financial investment opportunities and changes in the macroeconomic variables in context of US was studied by Chen (1991). The study pointed out that the market excess returns could be forecasted using macroeconomic variables such as lagged production growth rate, the term structure, the T-bill rate, the default spread and the dividend yield. The market excess return was observed negatively related to the economic growth variables such as T-bill rate, lagged production growth rate, the default spread and term structure and positively related to expected future economic growth rate such as the market dividend price ratio and unexpected future GNP growth.

Easton and Harris (1991) considered the earning as an explanatory variable for returns. They investigated whether prior period dividend to beginning stock price ratio can explain stock return or not? In other words, is it possible to predict future dividend and stock price through dividend or not? It was concluded that earning is an important elements for stock valuation and it can be used as an explanatory variable for stock return.

In an attempt to study the cross-section of average stock returns, Fama and French (1992) evaluated the joint roles of market beta, size, earnings yield, leverage, and book-to-market equity by using all non-financial firms in the intersection of the NYSE, AMEX and NASDAQ returns file from the CRSP and COMPUSTAT files covering the period from July 1963 to December 1990. The study revealed that the relation between average stock return and book-to-market equity was strongly positive. The regressions results also confirmed the importance of book-to-market equity in explaining the cross-section of average stock returns.

The study on cross-section of common stock returns by Davis (1994) used data from July 1940 to June 1963 with respect to book values, earnings, book-to-market equity, earnings-to-price, among others, during Pre-COMPUSTAT era. The study found significant relationship between variables such as book-to-market equity, cash flow yield and earnings-to-price, and subsequent returns during the period. Earnings-to-price displayed significant explanatory power in the regression analysis as well. The study also demonstrated a seasonal effect of the independent variables; much of the book-to-market equity, and earnings-to-price effects were in January.

Lakonishok, Shleifer and Vishney (1994) examined whether glamour stocks have negative returns around subsequent earnings announcements, and value stocks have positive returns. This was consistent with the market having the wrong expectations initially. Value Strategies call for buying stocks that have low prices relative to some measure of value (i.e. earnings, dividends, historical prices, or book assets). The sample period covered in the study was from the end of April 1963 to the end of April 1990. Using returns data from CRSP and accounting data from COMPUSTAT for universe of stocks in NYSE and AMEX, the authors found that glamour stocks did underperform relative to value stocks over 1968-90 period.

The analytical study to ascertain whether the behavior of stock prices, in relation to size and book-to-market equity, reflect the behavior of earnings was conducted by Fama and French (1995). The study focused on six portfolios formed yearly from a simple sort of firms into two groups on market equity and another simple sort into three groups on book-to-market equity. Using NYSE, AMEX and NASDAQ stocks data from 1963 to 1992, the study showed that size and book-to-market equity were related to profitability. The result confirmed that firms with high book-to-market equity tended to be persistently distressed and conversely, low book-to-market equity stocks were found to be sustained with strong profitability.

Kothari, Shanken and Sloan (1995) presented a different view on cross-sectional variations in stock returns. The study examined whether book-to-market equity could capture cross-sectional variation in average returns over a longer 1947 to 1987 period. The study noted that the relationship between book-to-market equity and returns was weaker and less consistent than that in Fama and French (1992).

The empirical testing of the dynamic relationship between macroeconomic variables and the Japanese stock market was made by Mukherjee and Naka (1995). The study used six macroeconomic variables and employed a vector error correction to a model of seven equations. They found that a long-run equilibrium relationship exists between the Japanese stock market and the six macroeconomic variables such as exchange rate, money supply, inflation, industrial production, long-term government bond rate and call money rate.

La Porta (1996) examined whether investors make the type of systematic mistakes that are consistent with the errors in expectation hypothesis when they forecast growth in earnings. The study used data from CRSP monthly NYSE, AMEX tape. The study revealed earnings growth as only significant variable in multivariate

regressions when it was combined with size, book-to-market equity, and cash-flow-to-price ratio. The regression results confirmed the role of the expected rate of earnings growth in explaining stock returns.

The joint evaluation of explanatory power of beta, firm size, book-to-market equity, and the earnings-to-price ratio for average stock returns was made by Kim (1997) correcting two currently controversial biases: selection bias in COMPUSTAT and errors in variables bias. The purpose of the study was to reassess whether firm size, book-to-market equity, and earnings-to-price did have significant explanatory power to average stock returns. The study was based on stock returns and firm size data on all NYSE and AMEX firms listed on the CRSP monthly return file for at least two years during the period July 1958 to December 1993 and for at least one month after June 1963. The study found that the selection bias in COMPUSTAT did have no significant impact on the estimation from book-to-market equity. Remarkably, the study documented the firm size being marginally significant in explaining average stock returns when monthly returns were used, but insignificant when quarterly returns were used. Earnings-to-price was also found significant. However, book-to-market equity was still found to have significant explanatory power to average stock returns, even though the error in variables bias was corrected.

In an attempt to analyze the risk premia on size and book-to-market, Knez and Ready (1997) included a robust regression estimator. The study found that the risk premium on size that was estimated by Fama and French (1992) completely disappears when the 1 percent most extreme observations are trimmed each month, the authors showed that negative relation between firm size and average returns was driven by a few extreme positive returns in each month. In fact, when only one percent of each month's observations were trimmed, there was a significant positive

relation between firm size and average returns. Thus, this result contradicts with usual negative relation between firm size and stock returns.

Grauer (1999) examined the scenario where the size effect is responsible for stock pricing and where it is false. The study investigated whether the coefficients from regression of population expected excess returns on beta and size could allow to distinguish between scenario. The data set employed in the study consisted of 10 size portfolios compiled from all NYSE and AMEX stocks contained in the CRSP database with returns from the period 1926 to 1989. The author used ordinary least square (OLS) and generalized least square (GLS) regressions and reported true coefficients of OLS and GLS as predicted earlier. The results also indicated negative size coefficients in an OLS and a GLS regression of expected excess returns on equal weighted portfolio betas and size. However, author postulated that the size effect was simply an artifact caused by using equal-weighted proxy portfolio betas instead of market portfolio betas.

Review of Major Studies in between 2000 to 2005

Maysami and Koh (2000) concluded that changes in the macroeconomic variables can predict the stock market movements. As Maysami and Koh study for the case of the U.S., Singapore, and Canada, it could be inferred that the significant influence of the macroeconomic variables on the stock market index is rather empirically proven for the developed countries. Nonetheless, the empirical finding for the case of the developing economies is still a puzzle. Despite the existence of a unidirectional causality from economic activities to stock market, there are also a substantial number of studies that show a significant relationship, running from stock market to economic variables. The major studies conducted in between 2000 to 2005 have been summarized in the following table 3.

Table 3

Review of the Major Studies in between 2000 to 2005

Study	Major Findings
Maysami and Koh (2000)	The study concluded that changes in the macroeconomic variables can predict the stock market movements.
Bilson et al. (2001)	Their Findings suggested that goods prices and real activity (GDP) have limited ability to explain the variation in returns.
Daniel, Titman and Wei (2001)	The small firms and high book-to-market firms could earn very high risk-adjusted abnormal returns.
Geyser and Lowies (2001)	Their findings revealed a strong positive correlation between inflation and stock prices of Namibian firms.
Ewing (2002)	The results indicated that inflation shock is associated with a negative and statistically significant impact on stock returns.
Flannery and Protopapadakis(2002)	The study demonstrated the significant negative effect of real gross national product on volatility.
Wongbangpo and Sharma (2002)	The Results suggested that, in the long-run, stock prices are positively related to growth in output.
Ibrahim and Aziz (2003)	The study found a positive long-run relationship between stock prices and industrial production and between stock prices and inflation.
Gomes, Kogan and Zhang (2003)	The relation between returns and size was found significantly negative.
Maghayereh (2003)	Macro-economic variables were found significant in predicting stock prices.
Adel (2004)	The study reported a reliably negative relation between stock prices and inflation; where as the level of real economic activity affected the stock price positively.
Kumar and Sehgal (2004)	Returns on the portfolio sorted on book-to-market equity were almost identical, however, strong positive value effect emerged for earnings yield sorted portfolios.
Maysami, Howe and Hamzah (2004)	The study documented a significant positive relationship between inflation and stock returns and between stock returns and real economic activity.

Chen et al. (2005)	Their result showed that yield spread is not a significant determinant for stock prices.

Details of the studies have been presented as following:

In an attempt for explaining stock returns in selected emerging markets, Bilson et al. (2001) used value weighted world market index and some macroeconomic variables. Findings suggested that goods prices and real activity (GDP) have limited ability to explain the variation in returns. Money supply has greater importance, while the most significant variables are the exchange rate and the world market return.

The empirical assessment of the return pattern in Japanese portfolios was conducted by Daniel, Titman, and Wei (2001). This study evaluated the return pattern with reference to explanatory power of Fama and French (1993) three factor model versus Daniel and Titman (1997) characteristics model. The study examined monthly data on common stocks listed on Tokyo Stock Exchange from January 1971 to December 1997 for the purpose of testing portfolios sorted on firm size and book-to-market ratio. The results indicated that small firms and high book-to-market firms could earn very high risk-adjusted abnormal returns. When portfolios were sorted on the size, book-to-market and factor loading, the results demonstrated a positive relation between average mean excess returns and factor loading rankings. However, the study also revealed no significant relation between factor loadings and returns within a size and book-to-market equity group.

Geyser and Lowies (2001) examined the relationship between share prices and inflation within a sample of firms listed in Namibian and Johannesburg Stock Exchanges. Their findings revealed a strong positive correlation between inflation and stock prices of Namibian firms. In South Africa, companies belonging to the mining sector cannot be served as an inflation hedge, whereas stock prices of firms in other sectors are slightly positively correlated with inflation.

An investigation into the response of the NASDAQ Financial 100 index to macroeconomic news was carried out by Ewing (2002) using the data from January 1988 to September 2000. The macroeconomic variables used in the study were, monetary policy shock, real output, inflation and risk. The results indicated that monetary policy shocks reduced financial sector returns having significant initial impact that continued to affect returns for around 2 months. Unexpected changes in economic growth was found to have a positive initial effect but exhibited no persistence. Similarly, an inflation shock was associated with a negative and statistically significant initial impact which did last for up to 1 month after the time of shock.

Flannery and Protopapadakis (2002) evaluated the effect of macroeconomic variables on the daily returns to a broad equity market index over the 1980-1996 periods. The study included daily returns for the value-weighted NYSE, AMEX, NASDAQ market index obtained from CRSP. The study reported the significant effect of consumer price index, producer price index, and money supply on market value weighted returns. All three significant coefficients were negative indicating that higher than anticipated inflation or money supply depressed equity values. The study also demonstrated the significant negative effect of real gross national product on volatility.

The relationship between stock prices and some macroeconomic factors was examined by Wongbangpo and Sharma (2002) in the case of five ASEAN countries (Indonesia, Malaysia, Philippines, Singapore & Thailand). Results suggested that, in the long-run, stock prices are positively related to growth in output. In the short-run, stock prices are found to be functions of past and current values of macroeconomic variables.

Ibrahim and Aziz (2003) in an attempt to establish a dynamic linkage between stock prices and macroeconomic variables in the case of Malaysia, analyzed standard and well-accepted methods of co-integration and vector auto-regression. The study considered the interactions between the Malaysian equity market and four macroeconomic variables including real output, money supply, price level and exchange rate. The study used data from January 1977 to August 1997. The study found a positive long-run relationship between stock prices and industrial production. This result was as per expectation and as such the study reasoned that real industrial production growth affect firm's expected future cash flow positively. It also reported a positive relationship between stock prices and inflation in context of Malaysia.

The attempt has been made to examine a link between expected stock returns and firm characteristics such as firm size and the book-to-market ratio by Gomes, Kogan and Zhang (2003). Using Fama and MacBeth (1973) regressions of stock returns on size and book-to-market equity, the logarithm of market value (firm size) appeared to contain useful information about the cross-section of common stock returns. The relation between stock returns and size was found significantly negative. The study also confirmed the importance of the book-to-market ratio in addition to the size in explaining the cross-sectional properties of stock returns.

Maghayereh (2003) investigated the long run relationship between the Jordanian stock prices and selected macroeconomic variables, such as interest rates, inflation and industrial production, by using Johansen's co-integration analysis and monthly time series data over the period from January 1987 to December 2000. The results suggested a co-integration of stock price index with macroeconomic variables and provided a long run equilibrium relation with stock price index. Additionally, the study concluded that macroeconomic variables could be significant in predicting stock

prices as such that stock price variability being fundamentally linked to economic variables.

The existence of long-term equilibrium relationship between stock prices and certain macroeconomic variables was examined by Adel (2004). The macroeconomic variables used in the study were real economic activity, money supply, inflation, and interest rate. The vector error correction model was used to determine the impact of these macroeconomic variables on Amman Stock Exchange (ASEX). The sample period consisted of 92 quarterly observations for each variable from March 1980 to December 2003. The study reported a reliably negative relation between stock prices and inflation; whereas the level of real economic activity affected the stock price positively. The results also showed that the money supply could have positive influence on stock prices. Among other, the study postulated that industrial production was one of the positive determinant factors of stock prices consistent to the findings of Chen, Roll and Rose (1986) and Mukherjee and Naka (1995).

The effect of company characteristics on common stock returns in Indian context was analyzed by Kumar and Sehgal (2004) using adjusted month-end data for share prices of 364 companies from July 1989 to March 1999. The share price data were taken from Capital Market Line Software. The Bombay Stock Exchange (BSE) national index was used as a surrogate for aggregate wealth and yields on 91-day Treasury bills were used as a risk free proxy. As per the priori expectation, the study revealed a strong negative relationship between firm size and stock returns. The empirical results, however, provided a mixed picture in relation to value effect. The returns on the portfolio sorted on book-to-market equity were almost identical; however, a strong and positive value effect emerged for earnings-to-price sorted portfolio.

In an attempt to examine the long-run equilibrium relationship between macroeconomic variables and the Singapore stock market index, Maysami, Howe and Hamzah (2004) used monthly time-series data. The study documented a significant positive relationship between inflation and Singapore stock returns. A possible explanation for the positive relationship, as study postulated, might be the government's active role in preventing prices escalation as the economy continued to improve after the 1997 crisis. The study also posited a significant positive relation between stock returns and real economic activity as proxied by the industrial production index as observed by Chen, Roll and Ross (1986).

Chen et al. (2005) used the yield spread to measure the term structure effect on the Taiwanese hotel stock returns. Their yield spread is derived from a subtraction of 10-year' government bond yield and 3-month treasury bills rate. Their result shows that yield spread is not a significant determinant for stock prices. This could be as suggested by Mukherjee and Naka (1995) that changes in both short and long term rates are expected to affect the discount rate in the similar way.

Review of Major Studies after 2005

Gan, Lee, Yong and Zhang (2006) examined the relationship between the New Zealand Stock Exchange (NZSE) index and a set of macroeconomic variables during the period of January 1990 to January 2003 using time series data on inflation, long-term interest rate, short-term interest rate, real gross domestic product, and narrowly defined money supply. The co-integrated test indicated the existence of long run relationship between NZSE index and the macroeconomic variables. The study observed that New Zealand stock returns could be consistently determined by the interest rate, money supply and real GDP. The major studies conducted after 2005 has been summarized in the following Table 4

Table 4

Review of the Major Studies after 2005

Study	Major Findings
Gan, Lee, Yong and Zhang (2006)	The results indicated that New Zealand stock returns are consistently determined by interest rate, money supply and real gross domestic product.
Wong, Tan and Liu (2006)	The study revealed negative relation of stock returns with betas and firm size and positive relation with B/M equity.
Coleman and Tettey (2008)	Inflation rate was found to have negative effect on stock market performance.
Fama and French (2008)	The study reported significant positive coefficient of book-to-market equity implying that higher book-to-market stocks have higher returns than lower book-to-market stocks.
Kandir (2008)	There is no significant effect of industrial production, money supply and oil price index on stock returns.
Liu and Shrestha (2008)	The study demonstrated a positive relationship between stock prices and industrial production and money supply, and a negative relationship with inflation, interest rate and exchange rate.
Adjasi (2009)	The asymmetric parameter showed the presence of a significant leverage effect for inflation and interest rate.
MarianVorek (2009)	The study found that there is a negative correlation between the stock's yield and its level of price earnings ratio.
Pilinkus (2009)	The results revealed that GDP deflator, net export, foreign direct investment lead stock market returns.
Simlai (2009)	The study reported that two risk factors based on the mimicking return for the size and book-to-market ratios could play a significant role in capturing strong variation in stock returns over an extended period of time.
Ebrahimi and Chadegani (2011)	The results theoretically supported the existence of relationship between earning, dividend and stock return.

Abu-Libdeh and Harasheh (2011)	The results indicated a significant relationship between the macroeconomic variables used and stock prices. Moreover, the causality analysis negated any kind of causal nexus.
Osamwonyi and Osagie (2012)	Macroeconomic variables (interest rate, inflation, GDP, and money supply) influence stock market index in Nigeria
Mgbame and Ikhatua (2013)	The study concluded that accounting information (EPS, BPS and DPS) influences stock volatility and as such the regulation of disclosures might be an area for consideration.
Shafana, Rimziya and Jariya (2013)	The findings of this study revealed that no relation in the economy between firm size and return, and negative relation between book-to-market equity and return.
Hasan et al. (2014)	The small size firms with high book to market ratio tend to provide higher average monthly returns than big firms. The study also found that the size and value premium have very strong power to explain cross-section of expected stock return in DSE.

Details of the studies have been presented as following:

Cross-section of stock returns on the Shanghai Stock Exchange (SSE) was investigated by Wong, Tan and Liu (2006). The study explored the cross-sectional stock returns behavior on the share market of the SSE. They estimated the effects of beta, firm size, book-to-market equity ratio and a variable unique to the Chinese stock markets- the proportion of firm's floating equity over total equity of SSE over the period 1993-2002. The study revealed the negative relation of stock returns with beta and firm size and positive relation with book-to-market equity ratio. The results indicated that returns are higher for small, value stocks with low systematic risk. Size was found to be positively related with beta but negatively related with stock returns, and book-to-market equity ratio. The study suggested that larger firms have higher systematic risk and lower returns, and value stocks have higher returns, lower systematic risk and are smaller in size.

Coleman and Tettey (2008) examined the effect of macroeconomic variables on the performance of stock markets by using Ghana Stock Exchange as a case study. The study was based on time series data covering the period 1991-2005 and used co-integration and error correction techniques to ascertain both short-term and long-term relationships. The study revealed adverse effect of lending from deposit money banks on stock market performance and particularly found to serve as major hindrance to business growth in Ghana. Again, while inflation rate was found to have negative effect on stock market performance, the results indicated that it would take time for this to take effect due to the presence of a lag period and that investors would benefit from exchange-rate losses as a result of domestic currency depreciation.

The effect of book-to-market equity in expected stock returns has been assessed by Fama and French (2008) in different approach and studied whether the past changes in book-to-market and price did contain independent information about the expected cash flows that could enhance the estimates of expected stock prices. The study used data from 1926 to 2006 and examined the effect in terms of share issue, changes in price and book equity per share and new issue of shares. The study reported significant positive coefficient of book-to-market equity implying that higher book-to-market stocks could have higher returns than lower book-to-market stocks.

Kandir (2008) investigated the role of macroeconomic factors in explaining Turkish stock prices. The macroeconomic variables used in the study were growth rate of industrial production index, change in consumer price index, growth rate of narrowly defined money supply, change in exchange rate, and interest rate. The study used data for all non-financial firms for the period from July 1997 through June 2005. Three portfolios were formed according to the rank of the firms by book-to-market equity, earnings yield, and leverage ratio. The study revealed significant effects of

exchange rate and interest rate on stock returns. Similarly, inflation rates were found positively related to the stock prices. The study demonstrated a negative relation between stock returns and interest rate meaning that investors tended to invest less in stocks when interest rate rise causing stock prices to fall.

The relationship between Chinese stock market indices and a set of macroeconomic variables was investigated by Liu and Shrestha (2008). The variables used in the study were; money supply, industrial production, inflation, exchange rate and interest rate. Using heteroscedastic cointegration analysis and monthly data covering January 1992 to December 2001, the results showed that the cointegration relationship did exist between stock prices and the macroeconomic variables in the highly speculative Chinese stock market. Detailed analysis indicated that the stock market performance was positively related to that of macro economy in the long-run. Particularly, the study demonstrated a positive relationship between stock prices and industrial production and money supply, and a negative relationship between stock prices and inflation, interest rate and exchange rate.

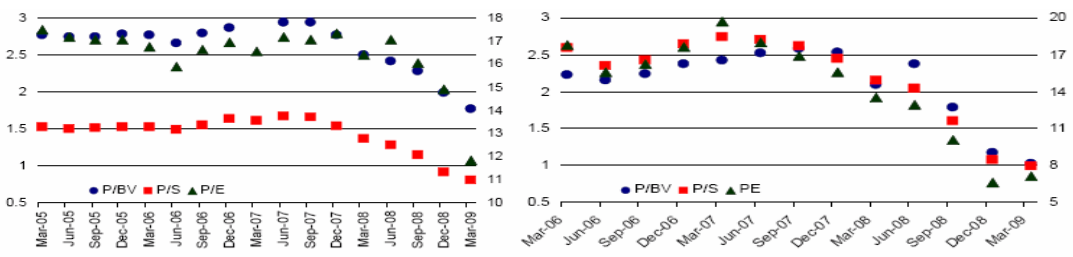
Adjasi (2009) analyzed the impact of macroeconomic uncertainty on stock price volatility in Ghana Stock Exchange (GSE). Data on stock market price index were obtained from the GSE, while macroeconomic variables - consumers price index (proxy for inflation), exchange rate, money supply, and interest rates were obtained from the International Monetary Fund's Statistical CD-ROMS. The study used volatility models to estimate the effect of macroeconomic volatility on stock returns due to the time-varying volatility nature of financial returns. Using autoregressive conditional heteroscedasticity (ARCH) model, the study found significant ARCH effect parameters for all variables except cocoa prices, inflation and oil prices. The asymmetric parameter showed the presence of a significant leverage effect for

inflation and interest rate. The positive sign in the case of inflation indicated that a positive shock in inflation could increase volatility more than a negative shock. The study also reported the presence of a significant volatility persistence effect in the exchange rate, stock prices, money supply, and interest rates.

Specially, in connection with falls in stock prices, Marian Vorek (2009) examined the strategy of value investing and its prediction for stock performance. The study prepared estimates of a common stock's intrinsic value by multiplying the respective multiplier (e.g. P/E, P/S, P/CF, P/BV) times the respective actual quantity of stock's earnings, sales, cash flow, book value, etc. The test on historic yields of stocks with their level of price earnings ratio was conducted. The results found that there is a negative correlation between the stock's yield and its price earnings ratio. He derived the investments strategies from undervalued basic fundaments which are expected to determine the stock price. This was typical for stocks traded with discount and at low multiples of sales, book value, earnings and cash flow. From long term prospective, the investment strategies based on the investments into stocks with low multiples result in comparably higher annual return. Success of these strategies was illustrated as on picture below.

Figure 1

Development of Trading Multiples of S&P 500 Index and PX Index (March 2005 – March 2009)



There was a decline in trading multiples of S&P 500 and PX prior to the current crisis. The multiples of S&P 500 peaked in summer 2007, when stocks were traded at 3 times multiple of book value, which means that investors valued the company 3

times higher than its accounting value of the equity. Price earnings and sales multiples amounted to 17 and 1.6 respectively. Then, in September the trading multiple fell down to 1.8 for book value multiple, 12 for price earnings ratio and 0.6 for sales multiple.

Pilinkus (2009) analyzed relationship between a group of macroeconomic variables and Lithuanian stock market index to investigate whether stock prices serve as a leading indicator for macroeconomic variables in Lithuanian economy or vice versa. The study employed Granger causality tests to estimate the relationship between Lithuanian stock market index and forty macroeconomic variables depicting the health of Lithuanian economy from December 1999 to March 2008. The study revealed that some macroeconomic variables, for example, GDP deflator, net export, foreign direct investment, could lead stock market returns, while some variables such as GDP, material investment, construction volume index were led by the stock market index. Finally, other macroeconomic indices such as money supply, payment balance, and stock market returns were found to cause each other.

The performance of common stock returns with respect to two popularly known firm level characteristics- size and book-to-market equity- was investigated by Simlai (2009). The study used all NYSE, AMEX and NASDAQ stocks between July 1926 and June 2007, and divided into various size and book-to-market equity groups. It relied upon the use of various versions of the simple Fama-French (FF) model. The study reported that two risk factors based on the mimicking return for the size and book-to-market ratios could play a significant role in capturing strong variation in stock returns over an extended period of time. The study also postulated that volatility persistence could significantly improve the common risk factors' impact in explaining the time series variation in size and book-to-market sorted portfolios.

The impact of firm specific variables on stock prices of Iran was studied by Ebrahim and Chadegani (2011). The study was proposed to investigate whether the current period earning divided by stock price at the beginning of the stock market period, current period dividend divided by stock price at the beginning of the stock market period, prior dividend divided by stock price at the beginning of the stock market period and the reverse of stock price at the beginning of the stock market period are relevant to explain stock market returns in Iran. It used cross-section and panel data regression models for testing the effects of the above variables on stock returns. The results showed that in some years, shareholders pay special attention to dividends and the variable prior dividend divided by stock price at the beginning of the stock market period affected stock return. Moreover, the study found a significant relationship between current period earning divided by stock price at the beginning of the stock market period and stock return. Thus, results theoretically supported the existence of relationship between earning, dividend and stock return.

The study by Abu-Libdeh and Harasheh (2011) investigated the correlation and causality relationships between stock prices and some macroeconomic variables in Palestine. Two methodologies were used in order to determine the relationships. First they used a regression analysis for ten years' quarterly data (40 observations) taking quarterly market index as dependent variable and five macroeconomic variables (inflation, GDP, exchange rate, Libor rate and balance of trade) as the independent variables. Second, Granger causality test was conducted to assess the causality relationship. The results of the regression analysis as a whole indicated a significant relationship between the macroeconomic variables and stock prices. Moreover, the causality analysis negated any kind of causal relationships between each particular macroeconomic variable and stock prices.

The relationship between macroeconomic variables and the Nigerian capital market index was examined by Osamwonyi and Osagie (2012). The study considered the yearly data of several macroeconomic variables; interest rates, inflation, exchange rates, fiscal deficit, GDP and money supply from 1975 to 2005; and tried to reveal the relative influence of these variables on the 'All Share Index' of the Nigerian capital market. In pursuance of this, the Vector Error Correction Model (VECM) was used to study the short-run dynamics as well as long-run relationship between the stock market index and the selected macroeconomic variables. The major finding was that macroeconomic variables influence stock market index in Nigeria. It was recommended that the adoption of appropriate economic policies will be beneficial to the stock market and this in turn would result in needed growth in the capital market.

Mgbame and Ikhatua (2013) conducted a study to examine if Book values per share, Dividend per share and Earnings per share have a significant effect on stock volatility in Nigeria. To capture stock returns volatility clustering, leptokurtosis and leverage effects on the share price series; the GARCH models were used. Using the simple random sampling technique for the period 2000-2010, gave a total of 100 company years/data points. Findings revealed that there are enough evidences to reject the assumptions of conditional normality in stock prices data series and accepted the existence of stock volatility in Nigerian stock market. The study also concluded that accounting information influences stock volatility and as such the regulation of disclosures might be an area for consideration by the relevant agencies alongside the need to address volatility issues in the Nigerian capital market.

Similarly, relationship between stock returns and firm size, and book to market equity was studied by Shafana, rimziya and Jariya (2013). They attempted to find empirical evidences from selected companies listed on Milanka price index in

Colombo stock exchange. The sample of the study consisted of 12 companies out of total 25 companies listed on Milanka price index. The formal tests applied were the Fama-MacBeth (1973) procedure for the period from 2005 to 2010. Empirical findings revealed that Book-to-market equity has a significant negative role in expected stock returns while the firm size does not have any significant behavior. The selected firm specific factors more significantly explain the behavior of stock returns for financial companies than non-financial companies.

In a very recent year, Hasan et al. (2014) conducted a study regarding the size and value effect to explain cross-section of expected returns in Dhaka Stock Exchange (DSE) in Bangladesh. Using the well-known Fama and French (1993) three-factor methodology in association with descriptive statistics the results evidenced that small size firms with high book to market ratio tend to provide higher average monthly returns than big size firms. The study also evidenced that the size and value premium have very strong power to explain cross-section of expected stock returns in Dhaka.

To sum up, the studies on firm specific variables have not documented consistent results. Some of these studies found that fundamental characteristics associated with firms are significant in explaining the common stock returns where others do not. Similarly, many of these studies have documented that macroeconomic variables do influence stock market prices and hence the stock returns, though the results are not consistent. Some found that inflation has significant effect on stock market returns while others found that real sector activity proxied by GDP captures much of the variation. Though these findings are available in many developed foreign stock markets, the effect of macroeconomic indicators is yet inconclusive in Nepalese stock market. Hence, this study attempts to reexamine the association among these variables in predicting stock prices in the context of Nepal.

Review of Nepalese Studies

On the contrary to the number of studies associated with cross-sectional and macroeconomic volatility of stock prices in context of other developed capital markets, there are few empirical works in the context of Nepal. This sub-section provides review of empirical works associated with cross-sectional variation in common stock prices in the context of Nepalese stock market. A brief overview on some related studies with their major findings is provided in the Table 5.

Table 5

Review of Nepalese Evidences on Common Stock Prices

Study	Major Findings
Pradhan (1993)	Larger stocks have lower profitability as such that returns are negatively related to the market value of equity.
Manandhar (1998)	There is significant positive relationship between market capitalization and DPS.
Pradhan (2003)	Strong dividend effect and very weak retained earnings effect in determining market price of the share indicating attractiveness of dividends among Nepalese investors.
Pradhan and Balampaki (2004)	The results indicated that total yield is positively determined by earning-to-price and size and negatively determined by book-to-market equity.
G.C. and Neupane (2006)	The study found the empirical evidence of long-run integration and causality of macroeconomic variables (real GDP, nominal GDP, market capitalization) and stock market indicators of Nepal.
Baskota (2007)	There is no persistence of volatility in Nepalese stock market and the stock price movements are not explained by the macro-economic variables.
Basnet (2007)	Market price per share (MPS) is well explained by dividend and earnings announcement.

Adhikari (2009)	Dividend announcement does convey some significant information and the market tries to adjust itself to new pieces of information. There is positive return following the announcement of cash dividend.
Bhattarai and Joshi (2009)	The study documented both short-run and long-run interdependence among stock index and some macroeconomic variables (CPI, T. bills rate).
K.C. (2009)	The author postulated that book-to-market equity is the most significant positive determinants of stock returns in Nepalese stock market.
Joshi (2012)	The impact of dividends is more pronounced than that of retained earnings in the context of Nepal
Shrestha and Subedi (2014)	The performance of stock market is found to respond positively to inflation and broad money growth, and negatively to interest rate.

Details of the studies have been presented as following:

In an attempt to address the stock market behavior in a small capital market in the context of Nepal, Pradhan (1993) examined relationship of market equity, market value to book value, price-earnings ratio, and dividends with liquidity, leverage, profitability, assets turnover and interest coverage ratio. The study was based on the data derived from the 17 companies listed in Nepal Stock Exchange (NEPSE) for the period 1986 to 1990. The study, among others, used simple linear regression to test whether profitability are significantly related to market equity. The study documented that larger stocks have lower profitability, meaning that returns are negatively related to the market value of equity. However, the study also noted that returns on larger stocks are less variable than that on smaller stocks.

Manandhar (1998) examined the relationship between dividend policy and value of the firm to identify some financial variables that are significant to the value of the firm. The study was based on the secondary financial data of top ten companies of the year 1995/1996 on the basis of traded amount. The results of the study found that DPS and ROE have positive impact on market capitalization while EPS and P/E have negative impact on market capitalization. For dividend, it was concluded that there is significant positive relationship between market capitalization and DPS.

The relative importance of dividends and retained earnings in determining market price of the share in Nepalese context was first studied by Pradhan (2003). He used cross section data of 29 companies from 1994 to 1999 with the total of 93 observations. The result showed the customary strong dividend effect, and very weak retained earnings effect, indicating attractiveness of dividends among Nepalese investors.

Pradhan and Balampaki (2004) examined the fundamental factors affecting stock returns in the context of Nepal using pooled cross-sectional data of 40 enterprises listed in NEPSE covering a period of 5years from 1995/96 to 1999/00. The study revealed significant positive effect of earnings-to-price and cash flow yield on dividend yield. Similarly, capital gain yield was found to be positively influenced by earnings to price and size, whereas, the same was negatively influenced by book-to-market equity. Besides, total yield was positively determined by earnings-to-price and size and negatively determined by book-to-market equity. The authors found book-to-market equity to be more informative than other variables.

In an attempt to examine the existence of causality relationship between stock market and economic growth, G.C. and Neupane (2006) conducted the study entitled as “Stock Market and Economic Development: a Causality Test”. The study was

based on the time series data for the year 1988 to 2005 using Granger causality test. The study found the empirical evidence of long-run integration and causality of macroeconomic variables and stock market indicators even in a small capital market of Nepal. The causality was observed only in real terms but not in nominal variables. In econometric sense, it depicts that the stock market plays significant role in determining economic growth and vice versa. Interestingly, the causation is evident with a lag of 3 to 4 years. The paper highlighted the importance of stock market development for fostering economic development.

Baskota (2007) considered the NEPSE data during 1994 to 2006 and analyzed the effect of trading days, trading volumes, base money supply, interest rate, inflation and industrial production by means of regression analysis. The study concluded that there is no persistence of volatility in Nepalese Stock Market and stock price movements are not explained by macro-economic variables. Further, the study conducted event analysis for selected political incidents and concluded that the politics is not only the factor that explains the stock price movement in Nepal.

The cross-sectional relationship between stock prices and firm specific variables was studied by Basnet (2007) that considered effect of earnings per share (EPS), dividend per share (DPS) and Cash flow on stock prices and concluded that market price per share (MPS) is well explained by dividend and returns. But the extent of dividend and retained earning effect is different in different industry. Dividend leads to significant positive effect on MPS and earning announcements helps to increase the stock price. It further concluded that the high price of the stock of financial institutions is the high dividend offered by this sector.

Adhikari (2009) studied on dividend policy of Nepalese Enterprises, in which he has examined the dividend announcement effect of financial institutions, insurance companies and other companies from the period of 2000 to 2005. The sample comprised of 71 cash dividend announcements. For announcement effect of dividend, it was concluded that dividend announcement does convey some significant information and the market tries to adjust itself to new pieces of information as and when they become available. There is positive return following the announcement of cash dividend, and positive reaction of the market to the dividend announcement is not due to other events. The study further explained that Nepalese capital market is still at infant stage, few stockbrokers and investors use to play role to influence market price of share. Many investors use to buy/sell common stock based on market price trends without going through balance-sheet and other statements of accounts.

The dynamic relationship among the market indexes and macroeconomic factors was studied by Bhattarai and Joshi (2009) in the context of Nepalese stock market. The study documented both short-run and long-run interdependence among stock index and some macroeconomic variables. The estimated results suggest unidirectional short-run (positive) causal relationship running from consumer price index (CPI) to stock index but reverse causality in the long run (from stock index to CPI), supporting the widely-held view that stock returns are a hedge against inflation. The multivariate results also confirmed absence of long-run causality but supported positive and unidirectional relationship flowing from money supply to stock index in the short run. Nevertheless, the multivariate results revealed long-run causality running from stock index to treasury bill rate but no short-run linkage. The variance decompositions results showed a strong relative exogeneity of stock index, while the impulse response graphs showed that the response of stock index to shocks in

macroeconomic variables didn't persist for long period. The policy implication of the study was that monetary authority in Nepal would be able to influence the stock market only in the short run, but not in the long run, either directly through its intermediate target (money supply) and its impact on the inflation or indirectly through increased access to the financial services.

The cross-sectional variation in common stock returns in Nepal with respect to market risk premium, size, book-to-market equity, cash flow yield and earnings yield was examined by K.C. (2009). The study was based on the data from 48 companies listed in NEPSE with a total of 291 observations from the period 1998/99 to 2006/07. The study revealed that the joint roles of size, book-to-market equity, cash flow yield and earnings yield in explaining stock returns in general do not give strong supportive evidence. When portfolios were formed on size, the results indicated that large stocks achieve higher returns, higher excess returns, and larger market risk premium. However, the size, on a multiple log-linear model exhibited significant negative coefficient. Similarly, book-to-market equity demonstrated significant positive relations with stock returns and excess returns reliably across all the models of simple and multiple regressions and analysis of portfolios sorted by book-to-market equity. The author postulated that book-to-market equity is the most significant positive determinants of stock returns in Nepalese stock market.

The empirical evidences regarding the impact of dividends on stock prices were examined by Joshi (2012) in Nepalese stock market. To achieve the objective of the study, a descriptive and analytical research design had been administered. The secondary data were used to test this impact. In order to examine the impact of dividends on stock prices, a multivariate linear regression analysis had been implied in which current market stock price was taken as a dependent variable and four other

variables namely Dividend Per Share (DPS), Retained Earnings Per Share (REPS), Lagged Price Earnings Ratio (P/E ratio) and Lagged Market Price Per Share (MPS) as the explanatory variables. The overall conclusion drawn in the study revealed that, the impact of dividends is more pronounced than that of retained earnings in the context of Nepal. Dividend has a significant effect on market stock price in both banking and non-banking sector.

Shrestha and Subedi (2014) empirically examined the determinants of the stock market performance in Nepal using monthly data for the period of mid-August 2000 to mid-July 2014. The impact of major changes in politics and Nepal Rastra Bank's policy on lending against share collateral was also been assessed. Empirical results obtained from OLS estimations of behavioural equations revealed that the performance of stock market is found to respond positively to inflation and broad money growth, and negatively to interest rate. This suggests that, in Nepal, share investors seem to take equity as a hedge against inflation and consider stock as an alternative financial instrument. Further, availability of liquidity and the low interest rates stimulate the performance of the Nepalese stock market. More importantly, stock market has been found to respond significantly to changes in political environment and the policy of Nepal Rastra Bank. These findings help to design policies to stabilize or stimulate the share market in Nepal

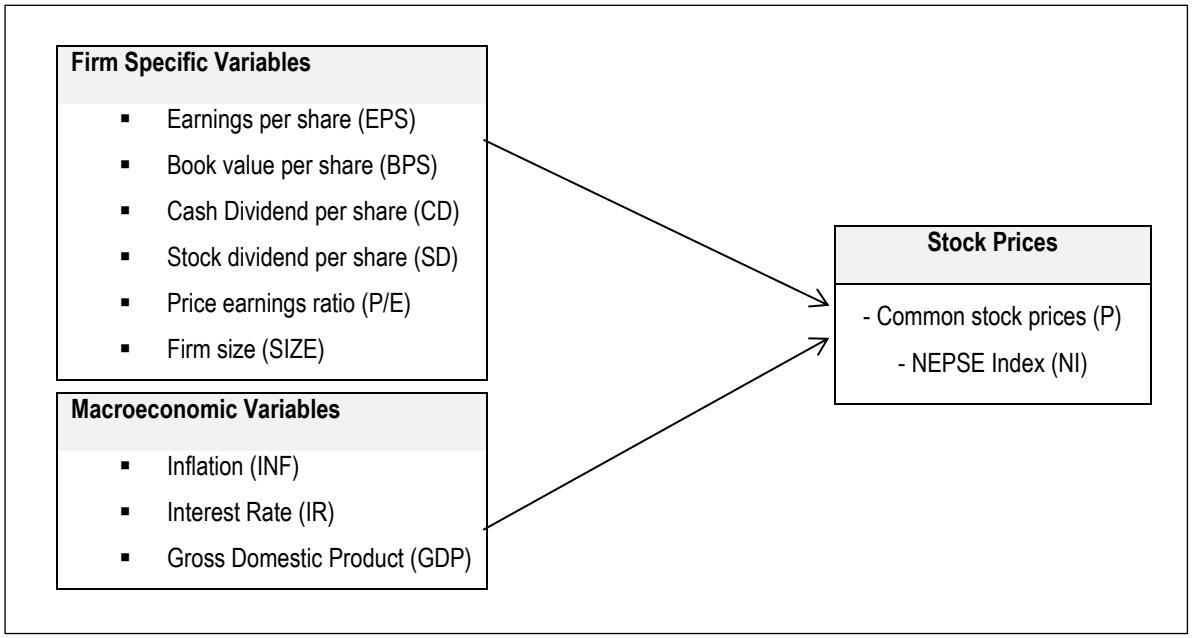
These findings associated with the studies on firm specific fundamentals and macroeconomic influences on common stock returns in the context of Nepal also vary across the studies as in the case of developed capital markets.

Theoretical Framework

The majorities of the existing literatures related to the determinants of common stock prices basically focused on the several proxies of fundamental and economic indicators. Therefore, based on the established relationship from findings of prior studies, the major factors affecting stock prices are categorized into two parts- the factors relating to firm's characteristics and the factors relating to macroeconomic variables. The schematic diagram of the relationship between stock prices and these factors are shown in Figure 1.

Figure 1

Theoretical Framework of the Study



Dependent Variable	Stock Price								
Independent Variables	EPS	BPS	CD	SD	P/E	SIZE	INF	IR	GDP
Expected relationship	'+'ve	'+'ve	'+'ve	'+'ve	'-'ve	'-'ve	'+'ve	'-'ve	'+'ve

As shown in Figure 1, the variation in stock prices can be explained by the factors relating to firm specific characteristics and the macroeconomic variables. The definition of the variables used and their priori expected relationship with common stock prices are discussed in the following chapter.

Concluding Remarks

The study on the behavior of stock market prices can be traced back to 1930, when Fisher explained how the market rate of interest and inflation affected the stock prices (Fisher, 1930). A large body of evidences suggests that the common stock prices are significantly explained by a number of firm specific factors and macroeconomic variables. Among other, Banz (1981) and Fama and French (1992) have postulated significant effect on cross-section of common stock returns. Similarly, studies by Chan, Hamao and Lakonishok (1991), Fama and French (1992; 1995; 2008), and other have documented the significant price earnings and book-to-market equity effects on the cross-section of stock returns. Despite of inconsistency of findings among several studies, the majority of them provide some consensus in relation to price earnings ratio and dividend per share on common stock prices.

In addition to the firm specific characteristics' effect, the studies have also documented the impact of some leading macroeconomic variables on stock market returns. For example, Ibrahim and Aziz (2003) reported significant positive relation of stock market returns with inflation and negative relation with money supply indicating that money supply contributes to the inflation uncertainty. Chen (1991) found significant positive relation between stock returns and change in real economic activity measured by real GDP. Similarly, Kandir (2008) demonstrated a negative relationship between stock returns and interest rate. Despite these revelations, no consistencies have been observed among the studies in terms of the influences of different factors on stock market prices. This indicates that there is further research gap to examine the influences of different factors in determining stock prices.

Though aforesaid findings are available in developed and developing economies, there are only few studies of this type in the context of Nepal. Therefore, the findings derived from the studies in developed stock markets are yet to be tested for their relevancy in the context of smaller, immature and developing stock markets. This study is an attempt to identify the most persistent factors explaining stock prices and to evaluate the roles of firm specific and macroeconomic variables with a slightly different set of variables and data of more recent period. This study also extends existing literature by adding firm specific variables: cash dividend per share and stock dividend per share with uniquely segregation of total dividend per shares. In doing so this research study would not only be able to meet the academic requirement, but also contribute in the practical aspect of the capital market and financial architecture of Nepal.

CHAPTER III

RESEARCH METHODOLOGY

This chapter discusses different aspects of the research methodology including research design, data collection and data analysis methods. This chapter has been divided into four sections. First section provides a description of research design used in the study. Second section deals with nature and sources of data. Similarly, third section describes the population and sample along with the selection of enterprises for the purpose of study. Finally, the fourth section describes method of analysis including the empirical models. The details of the research methodologies adopted are given in the following paragraphs.

Research Design

This study has employed descriptive and causal comparative research designs to deal with the fundamental issues associated with factors influencing common stock prices in the context of Nepal. The descriptive research design has been adopted for fact-finding and searching adequate information about factors affecting common stock prices. This design has also been employed to assess the opinions, perceptions, and characteristics of respondents with respect to market preferences and market efficiency including factors affecting common stock prices in Nepal. Besides, an effort has also been made to describe the nature of pooled stock prices of 10 commercial banks consisting of 150 observations during fiscal year 1999/2000 to 2013/2014, with respect to firm specific variables such as earnings per share, book value per share, cash dividend per share, and stock dividend per share along with price earnings ratio. This study is also based on correlational research design. This

design has been adopted to ascertain and understand the directions, magnitudes and forms of observed relationship between common stock prices and firm specific and macroeconomic variables. This study further aims to test the existing theoretical status based on the statistical model thus the positivism research paradigm has been followed. The detailed methodological issues are discussed extensively in respective sections of this study.

Nature and Sources of Data

Based on the literature review presented in chapter two, the stock prices of the commercial banks are influenced by several factors and among them firm specific variables and macro-economic variables are found to be more important. The necessary data related to firm (bank) specific variables have been collected from the individual bank's annual reports, reports published by Nepal Rastra Bank, and SEBON. The data related to macroeconomic variables such as GDP, inflation, and interest rates have been collected from quarterly economic bulletin published by NRB, and database of IMF and World Bank. The study is based on the panel data of 10 commercial banks of Nepal for the total period of 15 years from fiscal year 1999/2000 to 20013/2014. Thus, the study primarily deals with the secondary data.

Prior studies devoted on determinants of common stock prices; Basu (1977), Jaffe, Keim, and Westerfield (1989), Chan, Hamao and Lakonishok (1991), Chen et. al. (2005) and Fama and French (2008) among others applied panel data. Grauer (1999) and Ebrahimi and Chadegani (2011) applied panel data to examine the determinants of common stock prices using the different sets of explanatory variables. Thus, the present study is also based on the panel data analysis of ten commercial banks of Nepal. Further, time series analysis has been employed to examine the cointegrating relationship between stock market index and used macroeconomic

variables. This method has been popularly used by previous researchers such as Chen, Roll, and Ross (1986), Mukherjee and Naka (1995), Maysami and Koh (2000), Karki (2012), and Abu-Libdeh and Harasheh (2011) among many others.

This study is an empirical research based on secondary as well as primary data. The primary data used in this study were collected through field study and online questionnaire survey based on structured questionnaire. The basic purpose of primary sources of information analysis is to survey the opinions of stakeholders and to analyze their perceptions with respect to factors affecting common stock prices. The description of respondents' profile and response rate is given in Table 6.

Table 6

Response Rate of Questionnaire Survey

S.N.	Type of respondents	Distributed	Returned	Response rate
1	Investors	60	42	70%
2	Executives and employees	82	55	67%
3	Brokers and Security Business Persons	18	12	66.67%
	Total	160	109	68.13%

Details of questionnaire contents are given in Appendix A.

Population and Sampling

There are thirty **c**ommercial banks operating in Nepal till date. The sample banks that have been used for the study purpose are selected on the basis of availability of required information and data as per the criterion shown in Table 7.

Table 7

Criteria for Selecting Sample Banks

S.N.	Criteria	Condition
1.	Type of bank	The Bank in the sample should be a commercial bank.
2.	Establishment	Bank should be the one that has already been established by 1999 A.D.
3.	Financial Statement	Bank should not be one that has not published its financial statement regularly.
4.	Stock Trading	The Bank should listed in NEPSE and traded its stock prior to 2000 A.D

Commercial banks which established before 1999 A.D. have been taken as the sample banks. Only 13 banks were established prior to 1999 A.D. Agricultural Development Bank and Nepal Bank limited listed their shares in NEPSE very recently and started trading of shares only by 2011 and 2012 A.D. respectively. Whereas, Rastriya Banijya Bank still isn't issuing its shares to the public. Due to unavailability of data these three banks were excluded from the sample. On the basis of the criteria given, the selected commercial banks are shown in Table 8.

Table 8

Selected Sample Banks, Study Period and Number of Observations

S.N.	Name of Bank	Estd.	Study Period	No. of Obs.
1	NABIL Bank Limited	1984	2000-2014	15
2	Nepal Investment Bank Limited	1986	2000-2014	15
3	Standard Chartered Bank Nepal Limited	1987	2000-2014	15
4	Himalayan Bank Limited	1993	2000-2014	15
5	Nepal SBI Bank Limited	1993	2000-2014	15
6	Nepal Bangladesh Bank Limited	1994	2000-2014	15
7	Everest Bank Limited	1994	2000-2014	15
8	Bank of Kathmandu Limited	1995	2000-2014	15
9	Nepal Credit & Commerce Bank Limited	1996	2000-2014	15
10	NIC Asia Bank Limited	1998	2000-2014	15
	Total			150

Note. This table presents the study period and number of observations with respect to selected banks.

The balanced panel data of 15 years have been collected from selected ten commercial banks for the period of 2000 to 2014. During this period Nepalese banking industry have passed through different stages and major political changes occurred. The stock market has plunged to the all-time low of 292.31 points on June 15, 2011 from all time high 1175.38 points on August 31, 2008 and there has been observed remarkable fluctuations in stock prices of commercial banks as well. Due to this scenario, the aforesaid study period seems to be appropriate for analyzing the determinants of stock prices of commercial banks.

Methods of Data Analysis

Zikmund (1997) suggested that the choice of the methods of statistical analysis depends on (a) the type of question to be answered, (b) the number of variables, and (c) the scale of measurement. Thus, based on these criterion descriptive statistics, correlational analysis, panel data regression, and time series econometric models were applied as the methods of analysis. The statistical and econometric models have been explained as follows:

Descriptive Statistics

Descriptive analysis refers to the transformation of the raw data into a form that will make them easy to understand and interpret. The descriptive statistics such as mean, median, standard deviations, frequency distribution, minimum and maximum were used to summarize the data in this study.

Correlation Analysis

Correlation analysis has been used to identify the direction and magnitude of relationship between different pairs of variables. The relationship has been explained by using bivariate Pearson correlation coefficient and Spearman rank correlation coefficient. The value of correlation coefficient ranges from -1 to +1. If correlation coefficient is exactly -1, two variables are said to have perfect negative correlation as such that they move together exactly into opposite direction. On the other hand, if correlation coefficient is +1, the variables are said to be perfectly positively related.

Analysis of Portfolios Formed

For the purpose of portfolio analysis, total 150 observations of all sample banks have been grouped into five equal percentile groups of portfolios. At each univariate sort of portfolios, the properties of stock prices movement has been observed and analyzed with respect to the movement in firm specific variables.

Econometric Models

The econometric models employed in this study intends to analyze the relationship between cross-section of common stock prices and the firm specific and macroeconomic variables such as EPS, BPS, CD, SD, P/E, LnSIZE, GDP, INF, and IR. The balanced panel data set from 10 commercial banks for the period of 2000 to 2014 have been considered. Asteriou (2006) argued that panel data models being more efficient methodology; control the chance of biased results by providing more degree of freedom on pooling the data. Different models were applied following the model selection tests (Hausman test, BP test, F test). Based on the panel data, first of all pooled OLS model has been estimated in order to analyze overall impact of firm specific and macro-economic variables on stock prices of the banks without considering bank and time specific effect.

Pooled OLS Model

In panel data analysis, the simple ordinary least square regression has been conducted by pooled OLS model to identify the impact on dependent variable by different explanatory variables excluding the impact of industry and time effects. In pooled OLS, estimation will be done with the whole sample (nxT). Pooled OLS has been conducted to have at least a baseline comparison model in this study. The regression analysis started from the following model:

$$P_{it} = \alpha_0 + \alpha_i \beta_{it} + \beta_i X_{it} + \varepsilon_{i.t.} \quad \text{.....(3.1)}$$

Where,

P_{it}= Dependent variable (Stock market price/Stock market index) for bank *i* at time *t*

α_0 = Constant term, assumed to be constant over time

α_i = Coefficient of bank specific characteristics

β_{it}= Vector of bank specific variables of bank *i* at time *t*

β_i = Coefficient of macro-economic indicators

X_{it} = Vector of macroeconomic variables for bank i at time t and is common for all the banks

ε_{it}= Stochastic error term assumed to have zero mean, constant variance and normal distribution. Subscript *i* is the *ith* subject (bank) i.e. 1, 2, 3.....and *t* is time period for the variables. In this model, *i* takes the value from 1 to 10 representing sample banks i.e. the cross-sectional units; and *t* ranges from 2000 to 2014.

This model can also be presented in detail form considering all the explanatory variables in the model as follows;

$$Stock\ Prices\ (P_{it}) = \alpha + b_{1t}\,EPS_{it} + b_{2t}\,BPS_{it} + b_{3t}\,CD_{it} + b_{4t}\,SD_{it} + b_{5t}\,P/E_{it} + b_{6t}\,LnSIZE_{it} + b_{7t}\,GDP_{it} + B_{8t}\,INF_{it} + b_{9t}\,IR_{it} + \varepsilon_{it} \quad \text{…….3.1(a)}$$

One-Way Fixed Effect Model (FEM)

In above model (3.1) the intercept is assumed to be constant over time. But in reality the intercept might be different based on the characteristic of different banks. In order to identify the bank specific effects, one way fixed effect model has been conducted. This model identifies the impact of different independent variables to the dependent variable in the case of heterogeneity among cross sectionals units i.e. different banks in this study. The following one way fixed effect model was estimated to examine the bank specific effect on common stock prices the banks:

$$P_{it} = \alpha_0 + \alpha_i\,\beta_{it} + \beta_i X_{it} + \sum_{i=1}^{9} \delta_i B_i + \varepsilon_{it} \text{.....(3.2)}$$

This model shows that the intercept might be different with bank specific reasons and $\delta_i\,B_i$ represents dummy variable for the bank where $B_i = 1$ if the cross-sectional unit is 1 and 0 other wise and it was used in a similar way for remaining dummies (B_i). Total dummy variables used were 9 (total number of banks used in the study less one). The reason for deducting one dummy variable was to avoid the

dummy variable trap. Dummy variables trap is the condition or situation of perfect collinearity.

The one-way fixed effect model can also be presented in detail form considering all the explanatory variables in the study as follows;

$$Stock\ Prices\ (P_{it}) = \alpha + b_{1t}\, EPS_{it} + b_{2t}\, BPS_{it} + b_{3t}\, CD_{it} + b_{4t}\, SD_{it} + b_{5t}\, P/E_{it} + b_{6t}\, LnSIZE_{it} + b_{7t}\, GDP_{it} + B_{8t}\, INF_{it} + b_{9t}\, IR_{it} + \sum_{i=1}^{9} \delta_i \beta_i + \varepsilon_{it} \quad \text{.....3.2(b)}$$

Models to Analyze Macroeconomic Variables

As one of the objective of this study is to identify whether there exist long-run equilibrium between stock prices and macroeconomic variables, the methodology employed to examine the long-run equilibrium is the Cointegration test and Error Correction Model (ECM). The modeling strategy adopted in this study is based on the widely used Engle-Granger methodology (Engle & Granger, 1987). The steps involved for cointegration test are described as follows:

Unit Root Test

First, it is important to determine whether the variables used are stationary or non-stationary. Running a regression of non-stationary variables may lead to spurious regression problem. Hence, examination of a long-run relation requires that a Cointegration test be carried out. To this end, the augmented Dickey-Fuller (ADF) test of stationarity is performed both on the levels and the first differences of the variables (Dickey & Fuller, 1981). The objective of carrying out Unit root test is to determine the order of integration of the variables. If a series $\{y_t\}$ is not stationary while the first difference $\{\Delta y_t\}$ appear to be stationary then the series is said to be integrated of order 1 (unit root) denoted as $I(1)$. A series is integrated of order d, $I(d)$ if it can be difference d times to achieve

stationarity. The ADF unit root test uses the various specifications of the following regression:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta Y_{t-i} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3)$$

Where,

Y_t = the level of the variable under consideration,

Δ represents first-differences and β is constant term,

t= deterministic time term,

ε_t = normally distributed random error term with zero mean and constant variance.

ΔY_{t-i} are added to correct for serial correction in the error term (ε_t). The number of lags in the ADF test is determined using the Schwarz information criteria.

Cointegration Test

In the second step, cointegration test is performed to identify the existence of a long-run relationship. Cointegration concept was introduced through the works of Engle and Granger (1987) and Johansen (1988) seminal papers. Cointegration test is conducted to ascertain if there is any long-run relationship between two or more non- stationary time series. The existence of a long-run or equilibrium relationship among a set of non-stationary time series implies that their stochastic trends must have commonality. Individually, the series may drift or wander apart, but in the long run they will move together to restore equilibrium, since, equilibrium relationship means that the variable cannot move independently of each other. This linkage among the stochastic trends necessitates that the variables are cointegrated (Enders, 2004). The cointegration test used Engle-Granger two-step procedure; which involve estimating the cointegrating regression equation (3.4) using Ordinary Least Squares (OLS) and then conducting

unit root tests for the residuals $\hat{\varepsilon_t}$. According to Engle and Granger (1987), the stationarity of the residuals of the regression implies that the series are cointegrated.

$$Y_t = \beta X_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.4)$$

Where, both Y_t and X_t are non stationary variables and integrated of order 1 (i.e. $Y_t \sim I(1)$ and $X_t \sim I(1)$). In order for Y_t and X_t to be cointegrated, the necessary condition is that the estimated residuals from Eq. (3.4) should be stationary (i.e. $\varepsilon_t \sim I(0)$).

Error Correction Model (ECM)

The error correction model help to capture the rate of adjustment taking place among the various variables to restore long-run equilibrium in response to short-term disturbances due to the impact of macroeconomic variables on stock market prices of Nepal. According to the Granger representation theorem (Granger, 1983; Engle & Granger, 1987), if a set of variables are cointegrated, then there exists a valid error-correction mechanism. Hence, a necessary and sufficient condition for cointegration is the existence of an error correction mechanism (ECM). If dependent variable *NI* is denoted as y_t and the entire explanatory variables in equation (3.4) as x_t, there exist an error-correction representation of the form:

Given that; $z_t = \begin{bmatrix} y_t \\ x_t \end{bmatrix} \sim CI(1,1)\,,\ \beta' z_{t-1} = \varepsilon_t$

$$\Delta y_t = \alpha_1 + \phi_1 (\beta' z_{t-1}) + \sum_{i=1}^{k} \varphi_j' \Delta z_{t-j} + \nu_t$$

$$\Delta x_t = \alpha_2 + \phi_2 (\beta' z_{t-1}) + \sum_{i=1}^{k} \lambda_j' \Delta z_{t-j} + \upsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.5)$$

Where, Z_t refers to deviation of a variable from its long-run path given by *I(1)* variables and ν_t and υ_t are well-behaved error terms and $|\phi_1| + |\phi_2| \neq 0$. If all terms in the ECM are I(0) 'stationary', then there is no inferential problem and it can be

estimated by the OLS method. The error correction models above describe how y_t and x_t behave in the short-run consistent with a long-run relationship. A significant error correcting parameter indicates that cointegration indeed exist among the variables. Hence, ECM also serves as a confirmatory test for cointegration.

Conditional on finding cointegration between Y_t and X_t, the estimated residuals (β) from the first step long-run regression (3.4) may then be imposed in the error correction term ($Y_t - \beta X_t$) in the following equation.

$$\Delta Y_t = \alpha_1 \Delta X_t + \alpha_2 (Y - \beta X)_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.6)$$

Where, Δ represents first-differences and ε_t is the error term. Note that the estimated coefficient α_2 in the equation should have a negative sign and be statistically significant. Note also that, to avoid an explosive process, the coefficient should take a value between -1 and 0. According to the Granger Representation Theorem (GRT), negative and statistically significant α_2 is a necessary condition for the variables in hand to be cointegrated.

Two different basic models were estimated considering common stock prices (P) and Stock Market/NEPSE index (NI) as the dependent variables using firm specific and macroeconomic indicators as explanatory variables.

Primary data also were analysed to understand the perceived view of the practitioners on the determinants of common stock prices in Nepalese stock market.

Definition of Variables and Hypothesis

The operational definitions and justification of incorporating the variables used in the study have been presented in this section. This section explains the firm specific and macroeconomic variables employed in the study along with their measurement criteria and research hypothesis pertinent to each explanatory variable. The descriptions of the variables are as follows:

Dependent variable

Dependent variables included in the models are common stock prices of individual commercial bank and NEPSE Index [proxy of stock prices/market index].

Stock Price (P_{it})

The common stock price has been used as dependent variable of the study. It is the annual closing day data of market price per share of each individual bank representing the sample. In the present study (P_{it}) has been applied as the dependent variable. In several prior studies (e.g., Graham and Dodd (1940), Basu (1977), La porta (1996), Marian Vorek (2009), Hasan et al.(2014), among others), stock price (P_{it}) was taken into consideration as a measure of efficiency of the companies.

NEPSE Index (NI)

NEPSE Index (NI) is a market value weighted index composed of the shares of listed companies from different sectors in the Nepalese stock exchange. It gives the investor a general idea about the direction and performance of the market. It is computed by dividing the total market value of all listed companies in the market for the current period over the total market value of companies included in the index for the previous period (1994). This index has been used in NEPSE since the trading session in 1994, where the closing prices in that session were used as a reference point. In the present study, annual closing day data of NI has been applied as the second dependent variable as a proxy of stock market prices. While measuring the impact of macroeconomic variables on stock prices, Market Index was used as the proxy of stock prices in several prior studies; for eg. Fisher (1930), Schwert (1981), Mukherjee and Naka (1995), Osamwoyi and Osagie (2012), among others.

Independent variables

The independent variables include the proxies of firm specific variables and macroeconomic indicators.

Firm specific variables

Firm specific variables consist of earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio and firm size. The descriptions of the firm specific variables used in the model are as follows:

Earnings per share (EPS)

Comparing the prices of two stocks is meaningless. Similarly, comparing the earnings of one company to another really doesn't make any sense. Using the raw numbers ignores the fact that the two companies undoubtedly have a different number of outstanding shares. It makes more sense to look at earnings per share (EPS) for use as a comparison tool. The earnings per share is calculated by taking the net earnings divided by the outstanding shares.

$$EPS = \frac{Net\ Earnings}{Outstanding\ Shares}$$

The EPS is helpful in comparing one company to another, assuming they are in the same industry, but it doesn't tell you whether it's a good stock to buy or what the market thinks of it. Ball (1978) applied the earnings to price ratio as a proxy variable for the degree of earnings. According to the theoretical model, a positive relation is expected between earnings per share and stock prices (Agrawal, Hiraki & Rao, 1988). Kumar and Sehgal (2004) found a positive influence of earnings on stock prices. Mgbame and Ikhatua (2013) also found a positive relation between earnings per share (EPS) and stock prices. Hence, the priori sign of EPS is expected to be positive in this study. Thus, the research hypothesis for the study will be as follows;

H_1: Banks with higher earnings per share (EPS) do have higher stock market prices.

Book value per share (BPS)

Book value per share is just one of the methods for comparison in valuing of a company. The book value per share only looks at the equity on the balance sheet. Conceptually, book value per share is similar to net worth, meaning it is assets minus debt, and may be looked at as though what would occur if operations were to cease.

$$Book\ Value\ Per\ Share\ (BPS) = \frac{Total\ Shareholder's\ equity}{Total\ Outstanding\ Shares}$$

The ratio of book value per share deserves mention because of its significant explanatory power to predict cross-sectional differences in stock prices both in the United States and other countries. However, investment analysts (Graham & Dodd, 1940) have long argued that the magnitude of the deviation of current market price from book value per share is an important indicator of expected returns. A succession of studies by the researchers like; Stattman (1980), Keim (1983), Rosenberg, Reid and Lanstein (1985), and Fama and French (1992) have documented a significant positive relation between book-to-market equity, the proxy of book value per share and stock prices. In recent study, Mgbame and Ikhatua (2013) also found positive relationship between book value per share (BPS) and stock prices. The priori sign of book value per share is expected to be positive in the model for common stock pricing. Thus, the research hypothesis for the study is written as;

H_2: Increase in book value per share (BPS) increases common stock prices of the banks.

Cash dividend per share (CD)

It refers to the sum of declared cash dividends for every ordinary share issued. Cash dividend per share (CD) is the total cash dividends paid out over an entire year divided by the number of outstanding ordinary shares issued. CD can be calculated by using the following formula:

$$Cash\ Dividend\ Per\ Share\ (CD) = \frac{Sum\ of\ cash\ dividends\ over\ a\ period}{Total\ outstanding\ shares}$$

The cash planning in anticipation of cash dividend is very important. The cash account and the reserves account of a company will be reduced when the cash dividend is paid. Thus, both the total assets and the net worth of the company are reduced when the cash dividend is distributed. With the assumption of perfect capital market, Modigliani and Miller (1961) stated that dividend policy is irrelevant to stock valuation since it is nothing to do with shareholders wealth. However, several studies by Gordon and Sahpiro (1956), Chawala and Srinivasan (1987), Ebrahim and Chadegani (2011) and others have reported a significant positive relation with dividend per share and stock prices. So, the priori sign of this measure is expected to be positive. Thus, the research hypothesis is;

H_3 : Cash dividend per share (CD) has a positive relationship with stock prices of the banks.

Stock dividend per share (SD)

The sum of declared stock dividends for every ordinary share issued. Stock dividend per share (SD) is the total stock dividends paid out over an entire year divided by the number of outstanding ordinary shares issued. SD can be calculated by using the following formula:

$$Stock\ Dividend\ Per\ Share\ (SD) = \frac{Sum\ of\ stock\ dividends\ over\ a\ period}{Total\ outstanding\ shares}$$

A stock dividend is simply the issue of additional shares of stocks to existing stockholders in lieu of or in addition to the cash dividend. The effect of increasing the number of outstanding shares of the company is also said to be a stock dividend. The shares are distributed proportionately, thus, a shareholder retains his proportionate ownership of the company. The declaration of the stock dividend will increase the

equity share capital and reduces the reserves and retained earnings of the company. The total net worth is not affected by the stock dividend. The effects of a stock dividend can be summarized as increase in the number of outstanding stock, transfer of retained earnings balance to capital accounts, cause no change in net worth and par value of the company along with maintaining the shareholders' same proportional ownership.

According to the theoretical model, a positive relation is expected between stock dividend per share and stock prices Friend and Puckett (1964). Basnet (2007) also found a positive relation between dividend per share (DPS) and stock prices. Hence, the priori sign of stock dividend per share (SD) is expected to be positive in stock pricing models.

H_4 : Stock dividend per share (SD) has a positive relationship with stock market prices of the banks.

Price-earnings ratio (P/E)

The price-earnings (P/E) ratio looks at the relationship between the stock price and the company's earnings. The P/E is the most popular metric of stock analysis, although it is far from the only one that should consider. The P/E ratio is calculated by taking the market share price and dividing it by the company's EPS.

$$P/E = \frac{Stock\ Price}{EPS}$$

The P/E gives an idea of what the market is willing to pay for the company's earnings. The higher the P/E the more the market is willing to pay for the company's earnings. Some investors read a high P/E as an overpriced stock and that may be the case, however it can also indicate the market has high hopes for this stock's future and has bid up the price. Conversely, a low P/E may indicate a "vote of no confidence" by the market or it could mean this is a sleeper that the market has overlooked. Known as

value stocks, many investors made their fortunes spotting these "diamonds in the rough" before the rest of the market discovered their true worth.

Basu (1977) introduced the notion that price-to-earnings ratios might explain variations of the stock prices and found that, for the sample of NYSE firms, there was a significant negative relation between price-to-earnings ratios and average stock prices. Chou and Johnson (1990) also found negative relationship between PE ratio and stock prices. So, the priori expected sign of this measure is negative. The research hypothesis for the study is given as;

H_5: Price earnings ratio (PE) has a negative relationship with stock prices of the banks.

Firm size (LnSIZE)

Firm size has different meanings such as size of asset investment, size of sales, size of paid up capital, and market value of equity. Mostly, in all cross sectional studies of common stock returns, firm size has been taken in to account as one of the prominent variable as initiated by Banz (1981). Firm size in this study has been defined in terms of natural logarithm of par value of equity i.e. paid up capital. It has been calculated as par value per share at the end of period *'t'* multiplied by number of outstanding shares of common stock of a firm at the end of period *'t'*. The firm size has been obtained taking natural logarithm of par value (in billion) of equity as shown in equation as follows:

$$LnSIZE_{i,t} = ln\ (PV_{i,t} \times N_{i,t})$$

In above equation, $LnSIZE_{it}$ is the natural logarithm of Par value of equity for firm *'i'* at the end of year *'t'*, $PV_{i,t}$ refers to the par value per share of common stock of i^{th} firm at the end of year *'t'* and $N_{i,t}$ refers to the number of outstanding shares of common stock of i^{th} firm at the end of year *'t'*.

Following the discovery of a size premium in the US equity markets, numerous studies have demonstrated its existence in most stock markets around the world. Models have been estimated for France (Hawawini & Viallet, 1987), United Kingdom (Corhay, Hawawini & Michel, 1988), Belgium (Hawawini, Michel & Corhay, 1989), Canada (Calvet & Lefoll, 1989), and Japan (Chan, Hamao & Lakonishok, 1991). There was, however, a significant negative relationship between firm size and stock prices in all countries except Canada and France. In this study also, the priori sign of this measure is expected to be negative. Thus, the research hypothesis for the study will be as follows;

H_6: Small banks (SIZE) have significantly higher stock market prices.

Macroeconomic variables

As per the literature, macro-economic factors have also been shown to explain significant variation in stock prices. The descriptions of the macroeconomic variables used in this study as the independent variables are as follows:

Gross domestic product (GDP)

GDP is used as a proxy of real aggregate economic activity in an economy. In this study nominal GDP has been considered for analysis. GDP is a monetary value of goods and services produced in an economy in a fiscal year. GDP growth measures the level of economic development of the country. Higher GDP represents economic prosperity of the country and stock returns are expected to influence positively. Ibrahim and Aziz (2003), McMillan (2005) and many others found significant positive relationship between GDP and stock returns. The priori expected sign of this measure is positive. Thus, the research hypothesis can be written as:

H_7 : Gross Domestic Product (GDP) has a positive relationship with stock prices.

Inflation (INF)

In literature, inflation has been used as one of the macro-economic variables as predictor of stock prices. As the worth of rupees gets reduced due to high inflation, it is expected that the stock prices would be high in the time of Inflation. Despite the mix evidences across different studies, Geyser and Lowies (2001), Ibrahim and Aziz (2003), Alagidede and Panagiotidid (2010), and many others found a positive long-run relationship between stock prices and inflation. The priori expected sign of this variable is also assumed positive. Thus, the research hypothesis for this study will be as follows;

H_8 : Inflation (INF) has a positive relationship with stock prices.

Interest rate (IR)

The interest rate (IR) risk is another important financial and economic factor affecting the value of common stocks. The reduction in interest rates reduces the cost of borrowing and thus serves as an incentive for expansion. This will have a positive effect on future expected returns for the firm, so as stock prices. Since, a considerable stock investments are made with borrowed money, an increase in interest rates would make stock transactions more costly. Investors will require a higher rate of return before investing. This will reduce the demand for investment and thus lead to decline in stock prices. Thorbecke (1997), Reily and Brown (2000), Kandir (2008), and many others found negative relationship between inflation and stock prices. So, the priori expected sign of this measure is negative. Based on the literature, the research hypothesis for this study will be as below;

H_9 : Interest Rate (IR) has a negative relationship with stock prices.

CHAPTER IV

RESULTS

This chapter provides results derived from analysis of primary and secondary data to deal with various issues associated with common stock prices in the context of Nepalese commercial banks. The statistical and econometric models described in chapter three were applied for the analysis purpose. This chapter is divided into three sections. The first section deals with presentation and analysis of secondary data. The second section presents the analysis of primary data and the results of questionnaire survey. Finally, the third section covers the conclusion derived from data analysis.

Analysis of Secondary Data

This section analyzes the secondary data associated with firm specific and macroeconomic variables and stock prices. The methods used for this purpose are descriptive statistics, correlational analysis, analysis of univariate sorts of portfolios, and regression analysis using pooled OLS and one-way fixed effect model. Furthermore, cointegration test has been performed to examine the long-run equilibrium between macroeconomic variables and stock market prices. Detail analysis has been presented in the following sub-sections.

The Structure and Pattern of Variables

The structure and pattern of common stock prices (dependent variable) for all the sampled banks associated with the study period 1999/00 to 2013/14 are analyzed and tabulated in the Table 9. This table shows the pattern of the stock market prices (P) of selected commercial banks in Nepal. The mean value measures the average price of the stock of individual sample banks and all sample banks for particular year and standard deviation measures the variability in market prices.

Table 9

Stock Prices of Selected Commercial Banks for the Period 1999/2000 to 2013/2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	1400	1401	1985	1700	1165	1502	995	998	105	550	1180	551.71
2001	1500	1150	2144	1500	1500	1100	650	850	110	399	1090	606.26
2002	700	760	1575	1000	401	490	405	254	110	245	594	437.35
2003	740	795	1640	836	255	360	445	198	108	220	560	462.77
2004	1000	940	1745	840	307	354	680	295	115	218	649	499.64
2005	1505	800	2345	920	335	265	870	430	120	366	796	682.58
2006	2240	1260	3775	1100	612	199	1379	850	94	496	1201	1102.87
2007	5050	1729	5900	1740	1176	550	2430	1375	316	950	2122	1879.75
2008	5275	2450	6830	1980	1511	1001	3132	2350	457	1284	2627	1996.13
2009	4899	1388	6010	1760	1900	280	2455	1825	335	1126	2198	1863.91
2010	2384	705	3279	816	741	265	1630	840	275	626	1156	982.16
2011	1252	515	1800	575	565	266	1094	570	167	520	732	499.92
2012	1355	511	1799	653	635	121	1033	628	126	468	733	527.34
2013	1815	784	1820	700	850	300	1591	553	223	554	919	602.95
2014	2535	960	2799	941	1280	700	2631	564	642	970	1402	889.93
Mean	2243	1077	3030	1137	882	517	1428	839	220	599	1197	1178.12
S.D.	1562.46	514.11	1788.19	465.96	510.49	394.79	862.86	601.12	159.96	333.31		

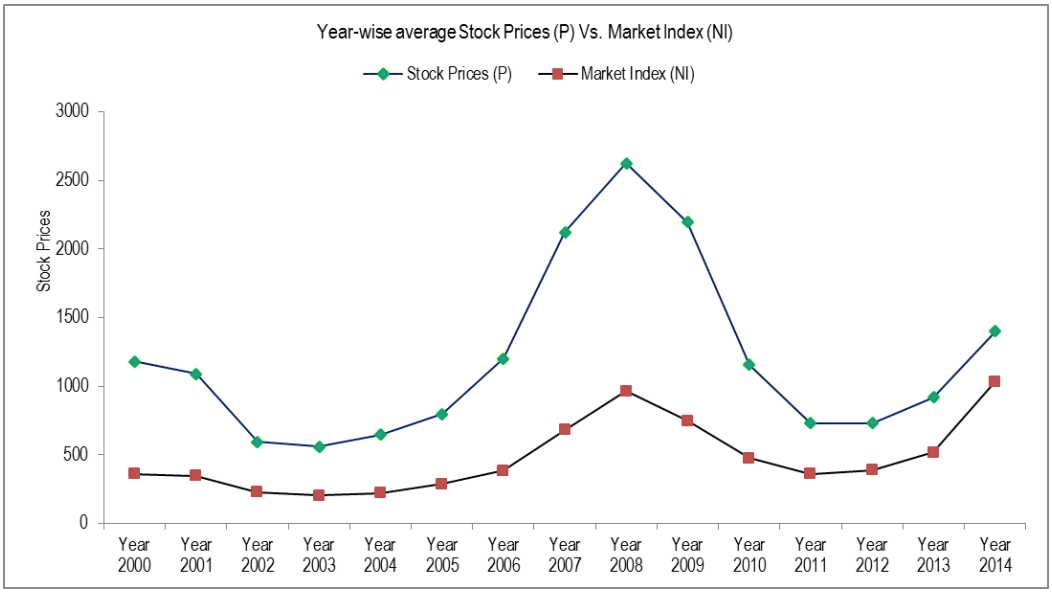
Source: Data from the annual reports of respective commercial banks. Figures are in Rupees.

The Table 9 shows the variability in stock prices of each commercial bank during the span of time i.e from 1999/2000 to 2013/2014. During the study period, the stock of Standard Chartered Bank has the highest average market price of Rs. 3030 followed by NABIL (Rs.2243), EBL (Rs.1428), HBL (Rs.1137) and NIB (Rs.1077) and the lowest of Nepal Credit and Commerce Bank (Rs.220). Most prominently, it has been observed that the banks which have started the commercial operations earlier and have higher portfolios do have higher stock prices in the market. The standard deviation on stock prices is highest for Standard Chartered Bank (1788.19) followed by NABIL (1562.46), EBL (862.86) and is lowest for Nepal Credit and Commerce Bank (159.96). This shows that higher the market value of stock prices higher is the standard deviation. The banks having higher market value of stocks do possess higher variations in their stock prices.

During the study period, the average stock price of the selected banks is highest for the year 2008 with the value Rs. 2627 followed by year 2009 (Rs.2198), and year 2007 (Rs.2122) and the lowest average price Rs.560 is observed for the year 2003. It is noteworthy that the Nepalese stock market has jumped to the all-time high 1175.38 points on August, 2008. This empirical evidence asserts that the market prices of the stocks of those selected banks in 2008 were also soared to the higher values along with market index. The standard deviation on stock prices is highest for the year 2008 (1996.13) followed by the year 2007 (1879.75), year 2009 (1863.91) and is lowest for the year 2002 (437.35). The highest variability in prices has been observed for the same year that has highest average stock prices. The overall average stock price of the sample banks for the study period is found to be Rs. 1197.

Figure 2

Trend of Movement of Average Prices (P) of Sample Banks and Market Index (NI)



Note: This figure shows the plot of average stock prices (P) of sample Banks and NEPSE Index (NI); proxy of stock prices, for the year 2000 to014. The vertical axis measures the average stock prices and market index and horizontal axis represents the study period.

As shown in the above figure 2, the pattern of average stock prices (P) and NEPSE Index (NI) both nearly resemble with each-other. Stock price (P) is the dependent variable to study the impact of firm specific characteristics, and market

index (NI) is the dependent variable to study the impact of macroeconomic indicators. The figure evidenced the saying that "Nepalese stock market is mostly dominated by the stock of listed commercial banks".

Pattern of Firm Specific Variables from 2000-2014

The patterns of each variable (e.g., EPS, BPS, CD, SD, PE, and SIZE) of sample banks have been presented in the Table 10 to Table 15.

Table 10

Pattern of Earnings per share of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	84	54	116	83	42	116	35	39	0.16	5	57.42	41.29
2001	59	33	127	94	9	83	32	28	0.59	10	47.56	41.89
2002	55	34	141	60	10	18	33	2	-11.35	1	34.27	44.18
2003	85	40	149	49	11	20	26	18	1.67	5	40.47	45.46
2004	93	52	144	49	14	1	46	28	0.49	14	44.15	45.08
2005	105	40	143	48	13	1	54	30	-0.74	23	45.63	46.04
2006	129	59	176	59	18	1	63	44	-84.77	16	48.02	70.86
2007	137	63	167	61	39	1	78	44	-16.56	24	59.74	56.81
2008	116	58	132	63	28	80	92	60	35.63	26	69.06	36.07
2009	113	37	110	62	36	116	100	55	29.35	28	68.64	37.11
2010	84	53	78	32	24	55	100	43	30.28	34	53.33	25.94
2011	71	39	70	45	25	10	83	45	15.78	38	44.18	24.27
2012	84	28	73	40	23	40	89	38	12.69	30	45.77	26.62
2013	95.14	46.2	65.7	34.19	32.75	38.75	91.88	36.64	25.23	47.41	51.39	24.73
2014	83.68	40.7	65.47	33.1	34.83	39	86.04	13.25	25.07	35.98	45.71	24.45
Mean	92.92	45.13	117.14	54.15	23.97	41.32	67.26	34.93	4.23	22.49	50.35	40.55
S.D.	23.58	10.71	38.09	17.67	11.19	40.59	27.19	15.48	29.33	13.68		

Source: Data on firm specific variables in Appendix C.

Note: The table shows the pattern of earnings per share (EPS) of selected commercial banks in Nepal. The mean value measures the average earnings per share of individual sample banks and all sample banks for particular year and standard deviation measures the variability in earnings per share.

The average earnings per share (EPS) of the ten sample banks during 2000 to 2014 stood to be Rs.50.35. Standard Chartered Bank Nepal recorded the highest EPS (Rs.176) on 2006 whereas NCC Bank recorded the lowest and negative earnings per share (-Rs.84.77) for the same year. The average EPS of SCB is also recorded highest as Rs. 117.14 followed by NABIL (Rs.92.92), EBL (Rs.67.26), HBL (Rs.54.15) and the

NCC Bank recorded lowest as Rs.4.23. The standard deviation is highest for NBB (40.59) followed by SCB (38.09), NCC (29.33) and is the lowest for NIB (10.71). It indicates that the earnings by NBB possess higher variation than others whereas NIB has the more consistent earning records during the period.

The chronological study from the Table 10 reveals that the average earnings per share of the banks are all-time high for the year 2008 (Rs.69.06) followed by year 2009 (Rs.68.64), year 2007 (Rs.59.74), and is lowest for the year 2002 (Rs.34.27). It can be related that the highest average earnings per share on the year 2008 provides the strong fundamental supports to attain the all-time highest NEPSE Index of 1175.38 points on the same year 2008. For the year 2006 the standard deviation is recorded the highest as 70.86 and is followed by the year 2007 (56.81), year 2005 (46.04), and is observed lowest on the year 2011 (24.27).

Table 11

Book value per share of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	251	303	299	363	188	330	171	195	67	104	227.10	98.35
2001	216	276	328	399	148	206	145	208	73	104	210.30	101.18
2002	233	308	364	393	195	174	151	172	-41	105	205.40	128.06
2003	267	216	403	444	100	190	150	193	16	110	208.90	133.04
2004	301	247	399	247	91	182	172	218	27	124	200.80	107.09
2005	337	201	422	240	111	33	93	214	37	137	182.50	126.75
2006	381	240	468	229	121	-217	218	231	-44	116	174.30	196.76
2007	418	235	512	265	132	-364	293	165	-73	139	172.20	247.98
2008	354	223	402	248	161	-295	322	223	49	138	182.50	198.02
2009	324	162	328	257	195	60	345	206	78	146	210.10	102.15
2010	265	190	241	227	148	115	332	175	109	135	193.70	72.13
2011	225	171	228	200	154	112	264	179	125	152	181	48.26
2012	269	161	256	193	153	147	326	168	131	157	196.10	64.84
2013	275	151	249	192.02	161.26	162	342.06	196.19	156.03	190	207.46	62.46
2014	251	141	249	209.92	171.15	169	346.94	184.8	178.95	211	211.28	59.15
Mean	291.13	215	343.20	273.80	148.63	66.93	244.73	195.20	59.27	137.87	197.58	123.99
S.D.	59.79	53.64	89.58	83.08	32.58	199.48	90.65	21.02	74.62	31.09		

Source: Data on firm specific variables in Appendix C.

Note: The table 4.3 shows the pattern of book value per share (BPS) of sample banks in Nepal. The mean value measures the average book value per share of individual sample banks and all sample banks for particular year and standard deviation measures the variability in book value per share.

The year-wise observation in Table 11 shows that the highest average book value per share Rs. 211.28 is documented on the year 2014 followed by the year 2001 (Rs.210.30), year 2009 (Rs.210.10), and year 2003 (Rs.208.90) and the lowest value Rs.172.20 is observed on the year 2007. Similarly, the standard deviation is recorded highest for the year 2007 (247.98) followed by the year 2008 (198.02), year 2006 (196.76), and year 2003 (133.04) and the lowest for the year 2014 (59.15).

From Table 11, the average book value per share of the sample banks during 2000-2014 remained Rs.197.58. Standard Chartered Bank Nepal Ltd documented the highest level of book value per share (Rs.512) on the year 2007 and Nepal Bangladesh Bank Ltd ranked at the lowest level with negative value (-Rs.364) for the same year 2007. During the study period, the average book value per share is recorded highest for SCB (Rs.343.20) followed by NABIL (Rs.291.13), HBL (Rs.273.80), EBL (Rs.244.73) and the lowest Rs.59.27 is observed for NCC Bank. The highest standard deviation 199.48 is recorded to NBB followed by EBL (90.65), SCB (89.58), HBL (83.08) and the lowest 21.02 is recorded to Bank of Kathmandu Limited. Banks with comparatively higher book value per share is considered to be a sound bank.

The Table 12 shows that average cash dividend provided to shareholders is the highest 80.77% for Standard Chartered Bank Nepal Ltd followed by NABIL (51.67%), EBL (20.77%), HBL (17.04%), whereas NCC Bank doesn't provide cash dividend to its shareholders during the study period. It is noted that 0.26% cash dividend shown in the table for NCC Bank for the year 2012 is only the tax adjustment of 5% stock dividend distributed on that year.

Table 12

Cash Dividend per share of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	55	25	100	50	15	0	0	0	0	0	24.50	33.95
2001	40	0	100	27.5	0	5	5	0	0	10	18.75	31.61
2002	30	0	100	25	0	0	0	10	0	0	16.50	31.45
2003	50	20	110	1.32	8	0	20	5	0	0	21.43	34.79
2004	65	15	110	0	0	0	20	10	0	0	22	36.83
2005	70	12.5	120	11.58	0	0	0	15	0	10	23.91	39.72
2006	85	20	130	30	5	0	25	18	0	0.53	31.35	42.91
2007	100	5	80	15	12.59	0	10	20	0	1.05	24.36	35.55
2008	60	7.5	80	25	0	0	20	2.11	0	1.05	19.57	28.39
2009	35	20	50	12	2.11	0	30	7.37	0	0.79	15.73	17.49
2010	30	25	55	11.84	5	0	30	15	0	26.32	19.82	17.02
2011	30	25	50	16.84	5	0	50	16.75	0	20	21.36	18.11
2012	40	5	45	13.42	5	0	1.58	21.32	0.26	25	15.66	16.62
2013	40	25	40	10	7.5	7.89	50	0.74	0	20	20.11	17.95
2014	45	25	41.5	6.05	7.02	12	50	10.41	0	15	21.20	18.08
Mean	51.67	15.33	80.77	17.04	4.81	1.66	20.77	10.11	0.02	8.65	21.08	28.34
S.D.	21.02	9.58	31.42	12.81	4.70	3.68	18.48	7.40	0.07	10.08		

Source: Data on firm specific variables in Appendix C.

Note: The table shows the pattern of cash dividend per share (CD) of sample banks in Nepal. The mean value measures the average CD of individual and all sample banks for particular year and standard deviation measures the variability in cash dividend per share. All the figures are in percentage terms.

As shown in Table 12 for the study period of 15 years, the highest cash dividend ever provided is 130% by Standard Chartered Bank Nepal Ltd. on the year 2006, followed by 120% on the year 2005, 110% on the year 2004 and 2003. NABIL Bank recorded 100% cash dividend on the year 2007. The standard deviation is also highest for SCB (31.42), followed by NABIL (21.02) and EBL (18.48). Banks with comparatively higher cash dividend per share is considered to be a strong bank.

The consecutive observation in table 12 shows that the highest average cash dividend per share is 31.35% on the year 2006 followed by the year 2000 (24.5%), year 2007 (24.36%) and the lowest on the year 2012 (15.66%). The standard deviation is found highest for the year 2006 (42.91), followed by the year 2005 (39.72), year 2004 (36.83) and the lowest 16.62 is observed on the year 2012. The overall average cash dividend by the sample banks during the period is 21.08%.

Table 13

Stock Dividend per share of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	55	50	100	75	0	100	20	31.58	0	0	43.16	39.33
2001	60.11	0	100	57.5	20	55	0	0	0	10	30.26	35.42
2002	30	30	100	35	0	0	20	10	0	0	22.50	30.66
2003	50	20	120	25	8	0	0	5	0	0	22.80	37.73
2004	65	15	110	20	0	0	0	10	0	0	22	36.83
2005	70	12.5	120	31.58	0	0	20	15	0	30	29.91	38.06
2006	85	55.46	140	35	5	0	0	48	0	10.53	37.89	46.19
2007	140	30	130	40	17.59	0	30	20	0	21.05	42.86	50.19
2008	100	40.83	130	45	0	0	30	42.11	0	21.05	40.89	43.44
2009	85	20	100	43.56	42.11	0	30	47.37	0	15.79	38.38	33.26
2010	70	25	70	36.84	17.5	0	30	30	0	26.32	30.56	24.13
2011	30	50	50	36.84	17.5	0	10	34.75	0	20	24.91	18.46
2012	60	30	60	28.42	17.5	0	30	26.32	5	25	28.22	19.69
2013	25	10	10	5	12.5	10	10	14	0	0	9.65	7.23
2014	20	15	10	15	15.05	10	12	0.55	0	15	11.26	6.48
Mean	63.01	26.92	90.00	35.32	11.52	11.67	16.13	22.31	0.33	12.98	29.02	33.64
S.D.	31.72	16.27	41.40	16.88	11.60	28.26	12.36	16.25	1.29	10.89		

Source: Data on firm specific variables in Appendix C.

Note: The table shows the pattern of stock dividend per share (SD) of sample banks. The mean value measures the average SD of individual and all sample banks for particular year and standard deviation measures the variability in stock dividend per share. All the figures are in percentage terms.

The Table 13 shows the highest average stock dividend per share 43.16% on the year 2000 followed by the year 2007 (42.86%), year 2008 (40.89%) and the lowest on the year 2013 (9.65%). The standard deviation is found highest for the year 2007 (50.19), followed by the year 2006 (46.19), year 2008 (43.44) and the lowest 6.48 is observed on the year 2014. As the stock dividend is simultaneously higher for the year 2007 and 2008, the market prices has been observed higher and the NEPSE Index reached the all-time high 1175.38 points on the year 2008. This shows the attractiveness of stock dividend among the Nepalese investors.

For the study period of 15 years, the highest stock dividend ever provided is 140% by Standard Chartered Bank Nepal and NABIL Bank on the year 2006 and the year 2007 respectively, followed by 130% on the year 2007 and 2008 by Standard

Chartered Bank Nepal Ltd. It is assumed that banks with comparatively higher stock dividend payout ratio do have sound financial health. In the Table 13, the average stock dividend provided to shareholders is recorded highest 90% of Standard Chartered Bank Nepal Ltd followed by NABIL (63.01%), HBL (35.32%), NIBL (26.92%), whereas NCC Bank provided only one time stock dividend 5% on the year 2012 with the lowest average of 0.33%. The standard deviation is also highest for SCB (41.40), followed by NABIL (31.72) and NBB (28.26).The overall average stock dividend by the selected commercial banks during the study period is 29.02%.

Table 14

Price-to-Earnings Ratio of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	16.67	25.94	17.11	20.48	27.74	12.95	28.43	25.59	656.25	110.00	94.12	199.51
2001	25.42	34.85	16.88	15.96	166.67	13.25	20.31	30.36	186.44	39.90	55	64.79
2002	12.73	22.35	11.17	16.67	40.10	27.22	12.27	127.00	-9.69	245.00	50.48	77.69
2003	8.71	19.88	11.01	17.06	23.18	18.00	17.12	11.00	64.67	44.00	23.46	17.55
2004	10.75	18.08	12.12	17.14	21.93	354.00	14.78	10.54	234.69	15.57	70.96	121.09
2005	14.33	20.00	16.40	19.17	25.77	265.00	16.11	14.33	-162.16	15.91	24.49	101.73
2006	17.36	21.36	21.45	18.64	34.00	199.00	21.89	19.32	-1.11	31.00	38.29	57.23
2007	36.86	27.44	35.33	28.52	30.15	550.00	31.15	31.25	-19.08	39.58	79.12	166.29
2008	45.47	42.24	51.74	31.43	53.96	12.51	34.04	39.17	12.83	49.38	37.28	14.85
2009	43.35	37.51	54.64	28.39	52.78	2.41	24.55	33.18	11.41	40.21	32.84	16.78
2010	28.38	13.30	42.04	25.50	30.88	4.82	16.30	19.53	9.08	18.41	20.82	11.09
2011	17.63	13.21	25.71	12.78	22.60	26.60	13.18	12.67	10.58	13.68	16.86	5.93
2012	16.13	18.25	24.64	16.33	27.61	3.03	11.61	16.53	9.93	15.60	15.96	6.99
2013	19.08	16.97	27.70	20.47	25.95	7.74	17.32	15.09	8.84	11.69	17.08	6.63
2014	30.29	23.59	42.75	28.43	36.75	17.95	30.58	42.57	25.61	26.96	30.55	8.03
Mean	22.88	23.66	27.38	21.13	41.34	100.97	20.64	29.87	69.22	47.79	40.49	83.87
S.D.	11.64	8.61	14.63	5.79	36.07	166.35	7.42	28.78	185.34	59.82		

Source: Data on firm specific variables in Appendix C.

Note: The table shows the pattern of price earnings ratio (PE) of selected commercial banks in Nepal. The mean value measures the average price earnings ratio of individual sample banks and all sample banks for particular year and standard deviation measures the variability in price earnings ratio.

The Table 14 shows that average price earnings ratio is recorded lowest 20.64 times for EBL followed by HBL (21.13), NABIL (22.88), NIB (23.66), and the highest 100.97 is recorded for Nepal Bangladesh Bank Ltd. The standard deviation of

PE is highest for NCC (185.34), followed by NBB (166.35), NICA (59.82), and is lowest for HBL (5.79).

The observation in table 14 shows that the highest average PE ratio 94.12 times is documented on the year 2000 followed by the year 2007 (79.12), and year 2004 (70.96) and the lowest is reported on the year 2012 (15.96), followed by the year 2011 (16.86), and year 2013 (17.08). The standard deviation of PE is found highest for the year 2000 (199.51) followed by the year 2007 (166.29) and the lowest 5.93 is observed on the year 2011. The overall average PE ratio of the selected commercial banks during the study period is 40.49 times. It is assumed wise to invest on the stock that has low price earnings ratio. Graham and Dodd (1940) advocated for buying stocks that sell at low multiples of earnings.

Table 15

Firm Size of Sample Banks for the Period of 2000 to 2014

Year	NABIL	NIB	SCB	HBL	NSBI	NBB	EBL	BOK	NCC	NICA	Mean	S.D.
2000	39.28	13.54	33.95	24.00	14.39	12.00	11.84	18.00	35.00	49.15	25.12	13.35
2001	49.17	17.00	33.95	30.00	14.39	24.00	22.09	23.40	35.00	49.97	29.89	12.29
2002	49.17	17.00	33.95	39.00	42.49	36.00	25.93	46.36	35.00	49.99	37.49	10.39
2003	49.17	29.53	33.95	42.90	42.52	36.00	31.50	46.36	49.00	50.00	41.09	7.77
2004	49.17	29.53	37.46	53.63	42.69	36.00	31.50	46.36	70.00	50.00	44.63	12.05
2005	49.17	58.77	37.46	64.35	43.19	72.00	31.50	46.36	70.00	50.00	52.28	13.64
2006	49.17	59.06	37.46	77.22	64.02	72.00	37.80	46.36	70.00	66.00	57.91	14.35
2007	49.17	80.14	41.33	81.08	64.78	72.00	37.80	60.31	70.00	66.00	62.26	15.13
2008	68.92	120.39	62.08	101.35	87.45	74.41	49.14	60.31	140.00	94.39	85.84	28.72
2009	96.57	240.71	93.20	121.62	87.45	186.03	63.88	84.44	140.00	114.05	122.79	53.78
2010	144.91	240.91	139.85	160.00	165.36	186.03	83.05	118.22	140.00	131.16	150.95	42.12
2011	202.98	301.14	161.02	200.00	186.93	200.94	111.96	135.95	140.00	131.16	177.21	54.69
2012	202.98	376.62	161.02	240.00	209.40	200.94	123.16	160.42	140.00	131.16	194.57	74.48
2013	243.68	414.48	185.39	276.00	235.57	221.03	160.11	168.44	147.00	231.16	228.29	77.44
2014	304.72	476.87	204.17	289.80	265.02	243.14	180.12	192.02	147.00	231.16	253.40	92.80
Mean	109.88	165.05	86.42	120.06	104.38	111.50	66.76	83.55	95.20	99.69	104.25	86.42
S.D.	87.45	162.45	64.65	91.26	84.41	83.30	53.09	56.53	47.02	62.65		

Source: Data on firm specific variables in Appendix C.

Note: The table shows the pattern of firm size (SIZE) of sample banks in Nepal. The mean value measures the average firm size of individual sample banks and all sample banks for particular year and standard deviation measures the variability in firm size. All the figures are in 10 million.

In the recent year of the study (2014), Nepal Investment Bank possesses the largest firm size of Rs. 476.87 crore among the selected commercial banks followed by NABIL (Rs.304.72 crore), HBL (Rs. 289.80 crore) and the lowest size is observed for NCC (Rs.147.00 crore). In the Table 15, the average firm size is recorded highest Rs.165.05 crore of Nepal Investment Bank Ltd followed by HBL (Rs.120.06 crore), NBB (Rs.111.50 crore) and NABIL (Rs.109.88 crore) and the lowest Rs.66.76 crore is observed for EBL. The standard deviation is highest for NIB (162.45) followed by HBL (91.26) and NABIL (87.45).The overall average firm size of the selected commercial banks during the study period is Rs.104.25 crore.

The Table 15 shows the highest average firm size Rs.253.40 crore on the year 2014 with the consequential growth from the lowest of Rs.25.12 crore from the year 2000. The standard deviation is found highest for the year 2014 (92.80) and the lowest for the year 2003 (7.77). The continuous growth on firm size of the Nepalese banking industry has been observed due to the regulatory requirement imposed by central bank of Nepal to maintain minimum paid up capital of Rs.200 crore by the year 2014.

Year-wise average values and patterns of each firm specific variables and data on macroeconomic variables have been illustrated in Table 16. As shown in the Table, the market index (NEPSE), proxy of stock prices was found minimum 204.90 points for the year 2003 and maximum 1036.11 points for the year 2014 and the mean value is recorded to be 919.53 points. The standard deviation of market index (NI) is observed to be 503.75.

The nominal values of GDP shows the consequential growth from lowest Rs.379.49 billion on the year 2000 to the highest Rs.1928.52 billion on the year 2014. The mean value is recorded to be Rs.919.53 billion.

Table 16

Year-wise Average Value of the Firm Specific Variables and Data on Macroeconomic Variables

Year	P	EPS	BPS	CD	SD	PE	SIZE	NI	GDP	INF	IR
2000	1180.1	57.42	227.1	24.50	43.16	94.12	25.12	360.7	379.49	2.48	5.3
2001	1090.3	47.56	210.3	18.75	30.26	55.00	29.90	348.4	441.52	2.69	4.94
2002	594	34.27	205.4	16.50	22.50	50.48	37.49	227.5	459.44	3.03	3.78
2003	559.7	40.47	208.9	21.43	22.80	23.46	41.09	204.9	492.23	5.71	2.98
2004	649.4	44.15	200.8	22.00	22.00	70.96	44.63	222	536.75	2.84	1.47
2005	795.6	45.63	182.5	23.91	29.91	24.49	52.28	286.7	589.41	6.84	3.94
2006	1200.5	48.02	174.3	31.35	37.90	38.29	57.91	386.8	654.08	6.92	3.25
2007	2121.6	59.74	172.2	24.36	42.86	79.12	62.26	683.9	727.83	5.75	2.77
2008	2627	69.06	182.5	19.57	40.90	37.28	85.84	963.4	815.66	9.88	5.13
2009	2197.8	68.64	210.1	15.73	38.38	32.84	122.8	749.1	988.27	11.08	6.80
2010	1156.1	53.33	193.7	19.82	30.57	20.82	150.95	477.7	1192.77	9.32	8.13
2011	732.4	44.18	181	21.36	24.91	16.86	177.21	362.9	1366.95	9.27	8.52
2012	732.9	45.77	196.1	15.66	28.22	15.96	194.57	389.7	1527.34	9.45	1.15
2013	919	51.39	207.46	20.11	9.65	17.09	228.29	518.27	1692.64	9.04	1.19
2014	1402.2	45.71	211.28	21.20	11.26	30.55	253.4	1036.11	1928.52	9.00	0.02
Mean	1197.24	50.36	197.58	21.08	29.02	40.49	104.25	481.21	919.53	6.89	3.96
S.D.	1178.12	40.55	123.99	28.34	33.64	83.87	86.42	262.38	503.75	2.99	2.54

Note: This table shows the average value of each firm specific variable and the data on macroeconomic variables for the period 1999/00 through 2013/14. NI is the NEPSE Index, INF is the Inflation, IR is the interest rate (measured as the rate of 91-days government treasury bills rate), and GDP is the gross domestic product (nominal value in billion).

In Table 16, the rate of inflation (INF) shows the fluctuating trend ranging from all-time low of 2.48% for the year 2000 to the ever highest 11.08% for the year 2009. The mean value of inflation for the study period is calculated to be 6.89%.

Similarly, the interest rate (IR) measured in terms of 91-day's government treasury bills rate is recorded highest 8.52% for the year 2011 and the lowest 0.02% for the year 2014. The mean value of IR during the period is observed to be 3.96%.

Descriptive Statistics

As this study has employed descriptive research design, among others, descriptive statistics have been used to describe the characteristics of stock prices with firm specific and macroeconomic variables. The descriptive statistics used in this

study consists of mean, median, standard deviation, minimum and maximum values associated with variables under consideration.

Table 17 summarizes the descriptive statistics of firm specific and macroeconomic variables used in this study during the period 1999/2000 through 2013/2014 associated with 10 sample commercial banks listed in NEPSE.

Table 17

Descriptive Statistics of the Variables for the Period of 2000 to 2014

Variables	Mean	Median	Minimum	Maximum	Std. Dev.	N
Dependent Variable						
Stock Market Prices	1197.24	850	94	6830	1178.12	150
Stock Market Index	481.21	386.80	204.90	1036.11	262.39	15
Firm Specific Variables						
Earnings per share	50.35	40	-84.77	176	40.55	150
Book value per share	197.58	193	-364	512	28.34	150
Cash dividend per share	21.08	10.20	0.00	130	28.34	150
Stock dividend per share	29.02	20	0.00	140	33.64	150
Price-earnings ratio	40.49	21.40	-162.16	656.25	83.87	150
Firm Size	104.25	69.46	11.84	476.87	86.42	150
Macroeconomic Variables						
Gross Domestic Product	919.53	727.83	379.49	1928.52	503.75	15
Inflation	6.89	6.92	2.48	11.08	2.99	15
Interest Rate	3.96	3.78	0.02	8.52	2.54	15

Source: Data on firm specific variables in Appendix C and D

Note: This table shows descriptive statistics- mean, median, standard deviation, minimum and maximum values of firm specific and macroeconomic variables. Size refers to paid up capital (in 10 million) of the company and N refers to the number of observations.

In Table 17, market price per share of the sample banks ranges from minimum Rs 94 to maximum Rs.6830 with an average of Rs. 1197.12 and standard deviation of 1178.12. The wider range of market price of share implies that the firm included in the sample varies remarkably in terms of their market share price.

The Table also reveals that earning per share of the firms varies significantly. It ranges from minimum negative Rs. 84.77 to maximum positive Rs. 176 with a mean value and standard deviation of Rs 50.35 and 40.55 respectively.

The firms also differ in terms of their book value per share. Book value per share has average value of Rs 197.58 per share with a minimum to maximum range of negative Rs 364 per share to Rs 512 per share respectively.

The firms reveal similarities in terms of their cash dividend per share and stock dividend per share (in percentage). Cash dividend per share has average ratio of 21.08% with a minimum to maximum range of zero percentage to 130% respectively, whereas stock dividend per share falls within the range of minimum zero percentage to maximum 140% with an average of 29.02%.

Similarly, price earnings ratio has mean value of 40.49 times and standard deviation of 83.87 with minimum to maximum range of negative 162.16 to positive 656.25 times. It also indicates that firms differ significantly in terms of their price earnings ratio.

As shown in Table 17, form size of the sample banks during the study period ranges from minimum Rs 11.84 crore to maximum Rs. 476.87 crore with an average of Rs. 104.25 crore and standard deviation of 476.87. it also shows that the firm included in the sample varies significantly in terms of their size variables as well

Table 17 also shows the descriptive statistics of the stock market index and macroeconomic variables over the sample period. It shows that the market index ranges from minimum 204.90 to maximum 1036.11 with a mean value of 481.205 over the study period. The volatility in NEPSE index indicated by standard deviation variation has been noted as 262.39 during the period, which shows the higher variation and volatility nature of the market index.

GDP varies within the ranges of minimum 379.49 to maximum 1928.52 with a mean value of 919.53 over the study period. The inflation during the period ranges from minimum 2.48 to maximum 11.08 with an average of 6.89 for the period.

Similarly, interest rate varies within the range of 0.02 to 8.52 percent with the standard deviation of 2.54 during the period.

Kolmogorov-Smirnov (KS) test of normality shows that distribution of time series data are normal in all cases. The *p*-values for *KS* statistics (appendix B) are greater than 10 percent in all cases which do not reject the normality hypothesis meaning that time series are normally distributed.

Correlation Analysis

The correlation between the variables under consideration in the study has been presented in this section. Table 18 summarizes the correlation matrix with Pearson correlation coefficients in the lower left triangle and Spearman rank correlation coefficients in the upper right triangle that explain the direction and magnitude of relationship among different pairs of firm specific variables of ten sample banks with 150 observations during the period 1999/2000 to 2013/014.

Table 18

Pearson and Spearman Correlation Matrix

	P	EPS	BPS	CD	SD	PE	SIZE
P	1	0.810**	0.778**	0.676**	0.732**	0.266**	-0.036
EPS	0.722**	1	0.815**	0.758**	0.743**	-0.201*	-0.011
BPS	0.599**	0.734**	1	0.720**	0.745**	-0.032	-0.170*
CD	0.616**	0.815**	0.641**	1	0.713**	-0.084	0.084
SD	0.745**	0.823**	0.685**	0.825	1	-0.025	-0.084
PE	-0.082	-0.249**	-0.341**	-0.155	-0.155	1	-0.050
SIZE	-0.081	-0.066	-0.101	-0.079	-0.187*	-0.139	1

Source: Data on firm specific variables in Appendix C

Note: Bi-variate Pearson correlation coefficients are in the lower left triangle and Spearman rank correlation coefficients are in upper right triangle. The sample consists of 10 Banks for the period of 1999-2014. P is the market price per share of common stock, EPS is the earnings per share, BPS is the book value per share, CD is the cash dividend per share, SD is the stock dividend per share, PE refers to price earnings ratio defined as the market price per share divided by corresponding earning price per share, Size refers to paid up capital (in 10 million) of the company. '*' sign indicates that correlation is significant at 5 percent level and '**' indicates that correlation is significant at 1 percent level.

Both Pearson and Spearman correlation coefficients indicate the significant relationship between the Stock Market Price and Earnings per share, Book value per share, Cash dividend per share and Stock dividend per share. Price earnings ratio shows the expected negative sign but the relationship with stock prices is not significant in the case of Pearson correlation coefficients (-0.082). However, relationship between price earnings ratio and stock prices is found significantly positive (other than expectation) in the case of Spearman rank correlation coefficient (0.266). There is no significant relationship found between stock price and Size of the bank in both Pearson (-0.081) and Spearman correlation coefficient (-0.036) though the priori expected sign negative is maintained.

The Pearson correlation coefficients in Table 18 shows that market prices per share of common stocks are positively related to earning per share (0.722), book value per share (0.599), cash dividend per share (0.616) and stock dividend per share (0.745) and the relationships are significant at 1 percent level. Market prices per share are negatively related to price earnings ratio (-0.082) and size of the firm (-0.081) though it couldn't maintain the level of significance. In addition of EPS, BPS, CD, and SD, the price earnings ratio (PE) also shows the significant relationship with stock prices in the case of Spearman rank correlation coefficients (0.266). In Spearman rank correlation coefficients, Earnings per share (EPS) shows the most significant and stronger positive relation ($\rho = 0.810$) with market price per share than other variables. This suggests that the information contents of earnings per share more significantly influence the stock prices.

In Pearson correlation coefficients, among given set of variables, the stock dividend per share reveals significant and stronger positive relation ($r = 0.745$) with market price per share than other. This suggests that the information contents of stock

dividend more significantly influence the stock prices. The sign of coefficient is positive as to the priori expected sign. In the case of Nepalese commercial banks, the strong positive relationship may be due to the information content and boost up of investor's confidence with assumptions that the bank will perform better in future.

Among the firm related fundamental variables in Pearson correlation coefficients as shown in Table 18, the highest positive and significant correlation coefficient is recorded as 0.823 between earnings per share and stock dividend per share and the highest negative and significant correlation coefficient is accounted as 0.341 between price earnings ratio and book value per share. The result of high positive correlation between earnings per share and stock dividend per share supports the fact that if the company earns more than it will be able and provides more stock dividend per share. The highest negative correlation between price earnings ratio and book value per share suggests that if the company has high price earnings ratio i.e. market value of share is unexpectedly higher than the book value per share and such company's market price of the share shall be decreased as the investors realize the position and get other better investment alternatives.

The other correlations are relatively lower and are statistically significant. Gujarati (1995) states that high correlations (in excess of 0.8) are a sufficient but not necessary condition for the existence of multicollinearity because it can exist even though the correlations are comparatively low (less than 0.5). However, low correlations observed among different pairs of explanatory variables in Table 18 give sufficient evidence to believe that the problem of multicollinearity may not exist in the analysis.

Table 19 reports the bivariate Pearson's correlation coefficient between different set of macroeconomic variables used in the study. Result shows the significant positive

correlation between stock market index and inflation (0.593). It supports with the priori expectation where it was assumed that stock market moves in the direction to that of inflation. This result is consistent with Ibrahim and Aziz (2003), and Kandir (2008). Moreover, the observed positive relationship in this study gives a primary indication that stock investments in Nepal may offer a hedge against inflation.

Table 19

Correlation Coefficient of Different Pairs of Macroeconomic Variables

Variables	NI	INF	IR	GDP
NEPSE	1			
INF	0.593*	1		
IR	-0.081	0.171	1	
GDP	0.519*	0.737**	-0.217	1

Source: Data on macroeconomic variables in Appendix D.

Note: This table presents bi-variate Pearson's correlation coefficient between different pairs of macro-economic variables used in the study. The double asterisk (**) sign indicates that result is significant at 1 percent level and, single asterisk (*) sign indicates that result is significant at 5 percent level.

The correlation coefficient between market index and GDP is observed to be 0.519. The observed significant positive relationship between NEPSE index and GDP is consistent with priori expectation. This result is consistent with Adel (2004) and Pilinkus (2009), among others, who reported reliably positive relationship between stock market returns and real activity proxied by GDP, and inconsistent with studies by Flannery and Protopapadakis (2002) who observed significant negative relationship between GDP and stock market returns. This result again gives an approximate indication that development in real sector activity may contribute positively to the stock market.

In Table 19 the correlation coefficient between market index and interest rate is found to be -0.081. The result shows that relationship between interest rate and NEPSE index is negative as it was hypothesized though it is not statistically significant. This result approximately indicates that interest rate level in Nepal does

not have any role to predict the stock market returns. Among macroeconomic variables used in this study, the interest rate has been observed to be negatively related with GDP and positively related with inflation whereas significantly positive relationship has been observed between GDP and inflation. The observed negative relationship between interest rate and GDP may give a meaningful conclusion that decrease in interest rate attracts most investors toward real sector investment. The significantly positive relationship between inflation and GDP indicates that inflation encourages productivity and output level to increase the GDP. However, statistical inferences about the causal relationship between different pairs of these macro-economic variables cannot be drawn simply based on the correlation analysis. Hence, these issues have been further explored in the next several sections of this chapter.

Analysis of Portfolios Formed on One-way Sorts

Properties of stock market prices with respect to firm specific variables have been analyzed in this subsection by forming five equal percentiles portfolios based on one-way sorts of earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio and size of the firm.

Table 20

Properties of Portfolios Sorted by Earnings per Share

	Portfolios Sorted by EPS				
	Low 1	2	3	4	High 5
EPS	3.52	28.75	41.21	65.30	113.84
P	324	696	813	1585	2578
BPS	71.5	171.46	187.10	222.13	339
CD	1.59	6.09	12.90	24.35	60.64
SD	2.39	13.14	20.29	34.48	75.15
PE	108.71	24.30	20.05	24.22	22.36
SIZE	66.20	126.85	147.95	102.12	79.12
N	31	29	30	30	30

Source: Data on firm specific variables in Appendix C

Note: This table presents the average value of six firm specific variables sorted into five equal percentile group portfolios by earnings per share that include total 10 sample banks with 150 observations for the period of 1999/00 to 2013/14. 'N' denotes the number of observations in each portfolio. The EPS has been divided into five equal percentile categories on the basis of its minimum and maximum value and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

Table 20 shows that market price of stocks increase with earnings per share when it moves from lowest percentile group portfolio 1 to the highest percentile group portfolio 5. The average stock price on lowest portfolio is Rs.324 and it shows a clear pattern of increment with EPS and that reaches to maximum Rs. 2578 in highest earnings portfolio. The results indicate that banks with higher level of EPS have higher stock price per share and vice versa. This result is consistent with the postulates that stock prices are larger for the firms with larger earnings per share and confirms with prior studies by Easton and Harris (1991) and Davis (1994).

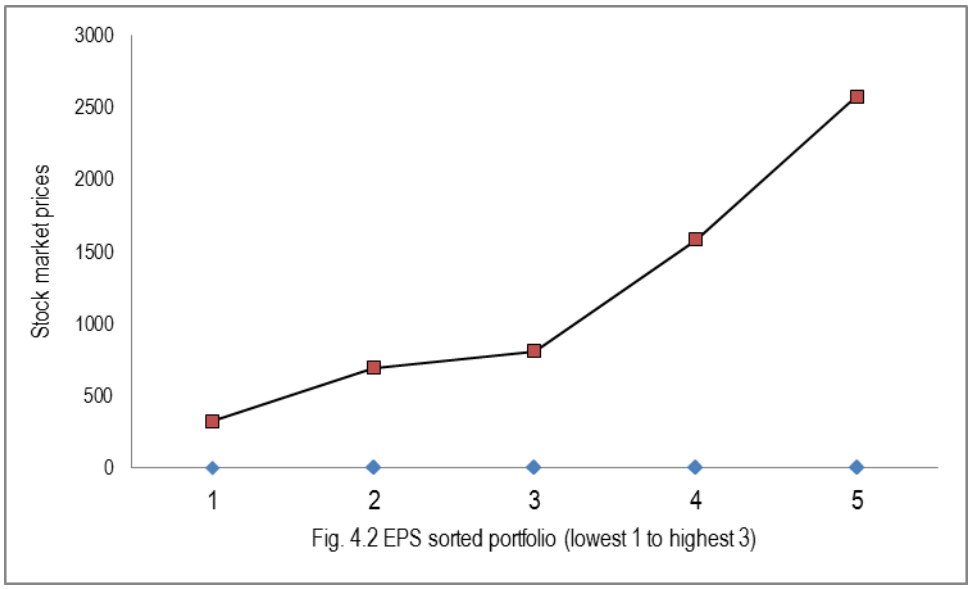
Table 20 also indicates the pattern of movement of other variables with respect to earnings per share. As the results show, book value per share, cash dividend per share and stock dividend per share also increase with increase in EPS from lowest portfolio- 1 to highest portfolio- 5. The book value per share in lowest portfolio is Rs. 71.50, which increases to Rs. 339 in highest portfolio. The cash dividend per share increases from 1.59% in lowest to 60.64% in highest portfolio. Similarly, stock dividend per share increases from 2.39% in lowest portfolio to 75.15% in highest portfolio. The results in general imply that firms with higher earnings per share have higher book value per share and provide higher dividend to its shareholders.

As shown in Table 20, price earnings ratio shows the movement in opposite direction with earnings per share. Price earnings ratio decreases from lowest portfolio 1 to portfolio 2 and 3 from 108.71 times to 24.30 and 20.05 times and then slightly increases in portfolio 4 to 24.22 times and again decline to 79.15 times in highest portfolio 5. In general it implies that there is inverse relation in between price

earnings ratio and earnings per share. It suggests that if the company has high price earnings ratio i.e. market value of share is unexpectedly higher than the earnings per share such company's share price shall be decreased as the investors realize the position and get other better investment alternatives. Size shows the initial movement in positive direction with earnings per share but the pattern is found reversed for highest portfolios sorted by earnings per share. It indicates that low size banks are generating higher earnings per share in recent days.

Figure 3

Trend of Average Market Price per Share with Respect to Five Earnings per share Sorted Portfolios of 10 Sample Banks during the Period 1999/00 through 2013/14



Note: This figure shows the plot of average market prices of stock associated with each of the five EPS sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the size of EPS sorted five portfolios from lowest portfolio 1 to highest 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to EPS.

Figure 3 shows the graphic pattern of movement in market price per share with respect to earnings per share in five EPS sorted portfolios. The market price of common stock line shows a trend of upward movement to the right with increase in earnings per share from portfolio lowest to highest (1 to 5). This implies that market price per shares are higher for the banks with higher earnings per share.

Table 21

Portfolios Sorted by Book Value per Share

	Portfolios Sorted by BPS				
	Low 1	2	3	4	High 5
BPS	34.87	152.08	193.13	244.90	362.90
P	322	748	788	1544	2584
EPS	14.18	31.28	35.12	63.70	107.49
CD	0.78	10.19	10.27	26.98	57.18
SD	1.78	16.60	17.28	34.78	74.65
PE	88.69	27.78	37.89	24.31	23.76
SIZE	79.88	158.53	49.17	111.88	56.09
N	30	30	30	30	30

Source: Data on firm specific variables in Appendix C

Note: The table presents the average value of six firm specific variables sorted into five equal percentile group portfolios based on the book value per share that include total 10 sample banks with 150 observations for the period from 1999/00 to 2013/14. 'N' denotes to the number of observations in each portfolio. The BPS has been divided into five equal percentile categories on the basis of minimum and maximum value of total observations and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

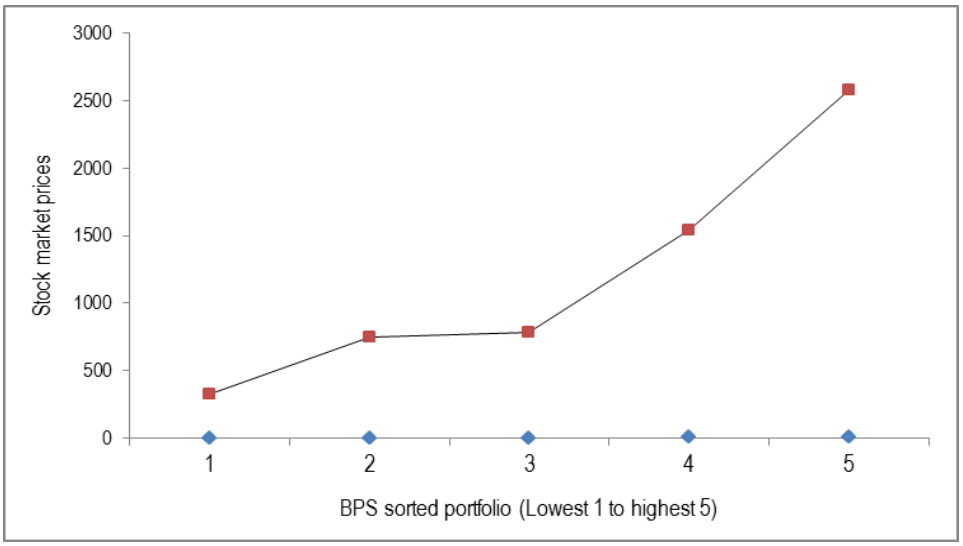
The market prices per share show a general pattern of movement into same direction with firm's book value per share. In other words, the common stock prices increase with book value per share. The average price per share for the lowest size portfolio (that is, portfolio 1) is Rs. 322 and it has been increased to Rs. 2584 in the highest size portfolio (that is, portfolio 5). The results in general indicate that the banks having higher BPS have higher stock prices in the market. Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) find that average returns on U.S. stocks are positively related to the ratio of a firm's book value of common equity to its market value (BE/ME). In Nepalese context also the result is consistent with these studies.

In addition to the pattern of movement in stock prices, Table 21 also indicates the patterns of movement in other firm specific variables with the variable; book value per share. The results indicate that earnings per share, cash dividend per share

and stock dividend per share increase with increase in book value per share. The earnings per share for the lowest portfolio 1 is Rs. 14.18 which has been increased to Rs. 107.49 in the largest portfolio 5. Similarly, cash dividend per share has been increased from 0.78% in small portfolio to 57.18% in large portfolio. On the other hand, stock dividend per share has been increased significantly from 1.78% in the lowest portfolio to 75.65% in the highest portfolio. The results in general imply that firms with high book value per share have higher earnings per share and provide higher dividend to its shareholders. However, price earnings ratio shows the movement in opposite direction with book value per share except for portfolio 3. Price earnings ratio has been decreased significantly from 88.69% in the lowest portfolio to 23.76% in the highest portfolio. Size shows the random movement with book value per share. No specific pattern was found in the relationship of size and book value per share. It implies that, in general, book value per share is independent of that size but positively related with earnings of the company.

Figure 4

Trend of Movement in Av. Market Price per Share with Respect to Five Book Value per Share Sorted Portfolios of 10 Sample Banks during the Period of 2000 to 2014



Note: This figure shows the plot of average market prices of stock associated with each of the five BPS sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the size of BPS sorted five portfolios from lowest portfolio 1 to highest 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to BPS.

The relationship of movement in stock market prices with respect to book value per share is graphically depicted in Figure 4. The stock prices line shows a general upward trend which implies that common stock prices increase with the book value per share. As the graph shows, the pattern of increase in stock prices from portfolio 1 to 3 seems to have a steady linear slope. However, the slope of line has been increased significantly when moved from portfolio 3 to 5. This implies that the rate of increment in stock prices is larger in portfolio 3 to 5. It indicates that the stocks having higher book value per shares have higher market prices.

Table 22

Portfolio Sorted on Cash Dividend per Share

	Portfolios Sorted by Cash Dividend				
	Low 1 (< 10%)	2(≥10%≤ 15%)	3(>15%≤ 25%)	4(>25%≤ 50%)	High 5(>50%)
CD	1.56	12.32	21.72	39.58	88.75
P	671	896	998	1988	2981
EPS	27.08	37.62	47.74	80.21	127.31
BPS	127.92	201	205.40	277.87	367.50
SD	11.80	19.55	25.74	41.13	102.19
PE	59.75	29.01	20.05	24.03	23.54
SIZE	94.15	108.6	143.78	130.85	49.77
N	69	20	22	23	16

Source: Data on firm specific variables in Appendix C

Note: This Table presents the average value of six firm specific variables sorted into five equal percentile group portfolios by cash dividend per share that include 10 sample banks with 150 observations for the period from 1999/00 to 2013/14. 'N' denotes to the number of observations in each portfolio. The CD has been divided into five equal percentile categories on the basis of its minimum and maximum value and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

Table 22 shows that market prices of common stocks increase with cash dividend per share when it moves from lowest group portfolio to the highest group portfolio. The average market price of stock on lowest portfolio is Rs. 671 and on

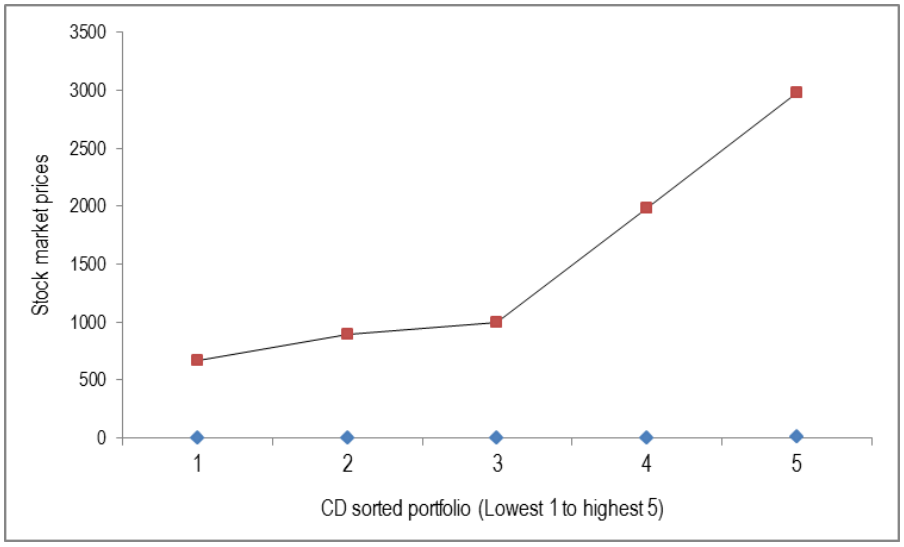
highest portfolio is Rs. 2981. It shows a clear pattern of increment with cash dividend per share. The results indicate that banks with higher level of cash dividend per share have higher market price per share and vice versa. This result is consistent with the findings of Baker and Wurgler (2004b) which postulates that dividend paying forms are considered less risky than non-payers ones and investors are more willing to pay dearly to buy dividend paying stock.

Table 22 also indicates the pattern of movement of other firm specific variables with respect to cash dividend per share. As the results show, earnings per share, book value per share and stock dividend per share also increase with cash dividend per share from lowest portfolio to highest portfolio. The average earnings per share in lowest portfolio is equal to Rs. 27.08, which has been increased to Rs. 37.62, Rs. 47.74, Rs. 80.21 and Rs. 127.31 in portfolios 2, 3, 4 and 5 (highest) respectively. The book value per share in lowest cash dividend per share portfolio is equal to 127.92, which has been increase to Rs. 367.50 in the highest portfolio. Similarly, the stock dividend per share in lowest portfolio is equal to 11.80%, which has been increased to 102.19% in the highest portfolio. The results in general state that firms with high cash dividend per share have higher earnings per share, higher book value per share, and also provides higher stock dividend to its investors. However, Price earnings ratios and Size show the almost opposite direction with cash dividend per share.

Figure 5 shows the graphic pattern of movement in market price per share with respect to cash dividend per share in five CD sorted portfolios. The market price of common stock line shows a trend of upward movement to the right with increase in cash dividend per share from portfolio lowest to highest (1 to 5). This implies that market price per shares are higher for the firms with higher cash dividend per share.

Figure 5

Trend of Movement in Average Stock Price with Respect to Five Cash Dividend per Share Sorted Portfolios of 10 Sample Banks for the Period of 2000 to 2014



Note: This figure shows the plot of average market prices of stock associated with each of the five CD sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the size of CD sorted five portfolios from lowest portfolio 1 to highest 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to CD.

Table 23 shows that market prices of common stocks increase with stock dividend per share when it moves from lowest group portfolio to the highest. The average market price of stock on lowest portfolio is Rs. 435 and on highest portfolio is Rs. 2932. It shows a clear pattern of increment with stock dividend per share. The results indicate that banks with higher level of stock dividend per share have higher market price per share and vice versa. This result is consistent with the findings of Gordon (1962) which postulates that dividend policy of firm affects its value. Investors value the present dividend more than future capital gain.

The Table 23 also indicates the pattern of movement of other variables with respect to stock dividend. As the results show, EPS, BPS and CD increase with stock dividend per share from lowest to highest portfolio. The EPS in lowest portfolio is Rs. 19.32, which increases to Rs. 116.30 in highest portfolio. The BPS in lowest portfolio is Rs. 92.87, which has been increased to Rs. 346.96 in the highest portfolio.

Similarly, the cash dividend per share shows increasing pattern along with stock dividend except for portfolio 3, where it falls to 15.03% from 16.89% in portfolio 2. The cash dividend in lowest portfolio is 3.06%, which has been increased to 71.96% in the highest portfolio. The results state that banks with high stock dividend have higher earnings per share, higher book value per share, and also provides higher cash dividend to its investors. However, Price earnings ratios and firm size show almost opposite direction with stock dividend per share. This indicates that banks having lower size in terms of capital preferred to give higher stock dividend to its investors.

Table 23

Portfolio Sorted on Stock Dividend per Share

	Portfolios Sorted by Stock Dividend				
	Low				High
	1 (< 10%)	2(≥ 10% <20%)	3(≥ 20% ≤ 30%)	4(> 30% < 60%)	5(≥ 60%)
SD	0.61	12.98	25.26	44.07	95.22
P	435	967	1162	1328	2932
EPS	19.32	40.27	51.22	58.04	116.30
BPS	92.87	193.40	215.71	242.43	346.96
CD	3.06	16.89	15.03	19.94	71.96
PE	71.64	28.59	26.77	23.78	25.48
SIZE	86.07	171.97	113.08	90.21	67.00
N	47	26	31	23	23

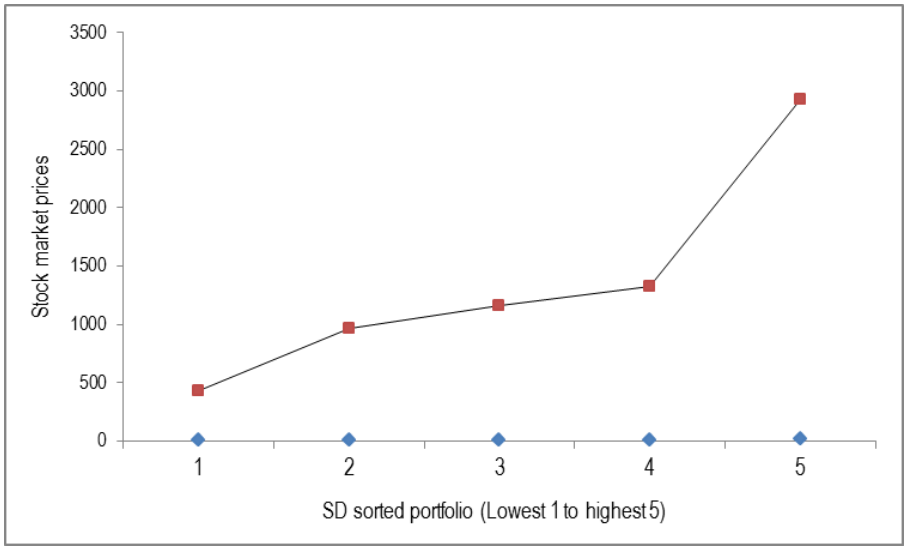
Source: Data on firm specific variables in Appendix C

Note: This Table presents the average value of six firm specific variables sorted into five equal percentile group portfolios by stock dividend per share that include 10 sample banks with 150 observations for the period from 1999/00 to 2013/14. 'N' denotes to the number of observations in each portfolio. The SD has been divided into five equal percentile categories on the basis of its minimum and maximum value and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

Figure 6 shows the graphic pattern of movement in market price per share with respect to stock dividend per share in five SD sorted portfolios. The market price of common stock line shows a trend of upward movement to the right with increase in portfolio from lowest to highest (1 to 5). This implies that market price per shares are higher for the banks that yield higher stock dividend

Figure 6

Trend of Movement in Average Stock Price with Respect to Five Stock Dividend per Share Sorted Portfolios of 10 Sample Banks for the Period 2000 to 2014



Note: This figure shows the plot of average market prices of stock associated with each of the five SD sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the size of SD sorted five portfolios from lowest portfolio 1 to highest 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to SD.

Table 24

Portfolios Sorted by Price Earnings Ratio

	Portfolios Sorted by PE				
	Low 1	2	3	4	High 5
PE	2.54	15.96	21.69	30.02	129
P	594	1042	1074	1561	1711
EPS	51.22	64.62	49.54	51.07	35.83
BPS	157.80	243.74	215.90	223.11	149.77
CD	19.78	32.38	21.60	15.97	15.69
SD	24.55	37.54	29.59	24.95	28.34
SIZE	104.87	111.78	107.90	116.57	81.29
N	30	30	30	29	31

Source: Data on firm specific variables in Appendix C

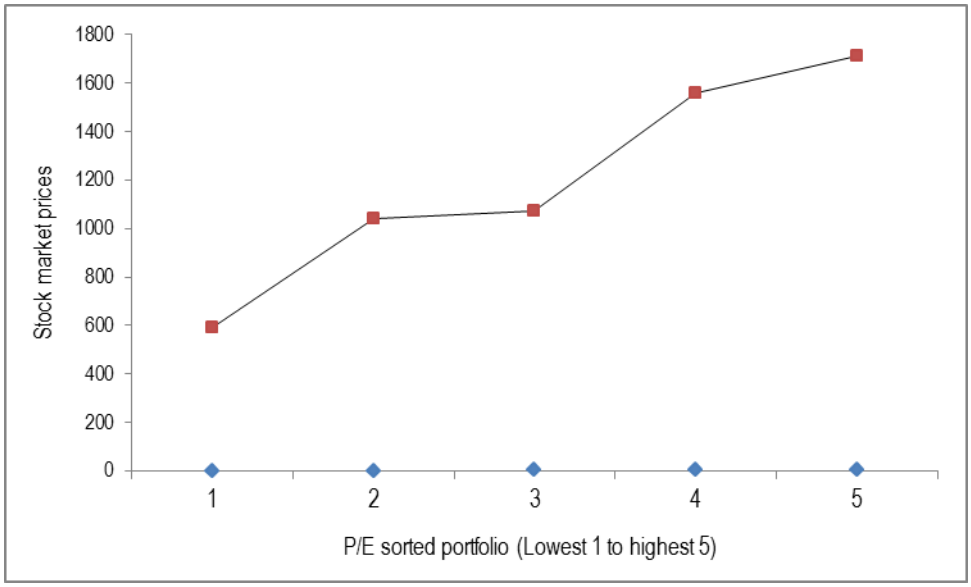
Note: The Table presents the average value of six firm specific variables sorted into five equal percentile group portfolios based on the price earnings ratio that include 10 sample banks with 150 observations for the period from 1999/00 to 2013/14. 'N' denotes to the number of observations in each portfolio. The PE has been divided into five equal percentile categories on the basis of total observations and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

The stock prices show a general pattern of movement into same direction with firm's price earnings ratio. The average stock price for the lowest size portfolio (that is, portfolio 1) is Rs. 594. The price continuously increased up for each portfolio 2, 3, 4 and reached the value of Rs. 1711 for the highest portfolio 5. The results in general indicate that the bank's having higher price earnings ratio have higher stock prices. Marian Vorek (2009) found a negative correlation between stock's yield and its level of price earnings ratio. In Nepalese context the result is inconsistent with this study.

As shown in Table 24, the value of earnings per share gives the general decreasing trend with price earnings ratio. The EPS decreases from 51.22 to 35.83 (from lowest portfolio to the highest portfolio). Similarly, Cash dividend shows the general declining trend along with increasing PE ratio from lowest to highest portfolio. It gives the indication that the market price of stock is overvalued for the banks that give low cash dividend. The pattern of movement in PE ratios with other variables; book value per share, stock dividend per share and size has puzzling results.

Figure 7

Trend of Movement in Average Stock Price with Respect to Five Price Earnings Ratio Sorted Portfolios of 10 Sample Banks during the Period 1999/00 through 2013/14



Note: This figure shows the plot of average market prices of stock associated with each of the five PE sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the size of PE sorted five portfolios from lowest portfolio 1 to highest 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to PE.

The relationship of movement in stock market prices with respect to price earnings ratio is graphically depicted in Figure 7. The stock market prices line shows a general upward trend which implies that common stock prices increase with the price earnings ratio. As the graph shows, the pattern of increase in stock prices from portfolio 1 to 5 seems to have a steady linear slope. Therefore, the banks having higher stock prices have higher price earnings ratio.

Table 25

Portfolios Sorted by SIZE

	Portfolios Sorted by SIZE				
	Low 1	2	3	4	High 5
SIZE	29.12	52.61	103.30	177.45	280.08
P	1304	1249	1240	1076	933
EPS	65.12	46.81	40.20	53.47	43.42
BPS	250.38	212.34	128.91	203.50	184.13
CD	31.55	21.12	12.31	20.35	17.43
SD	42.00	31.24	23.62	20.98	17.97
PE	54.14	37.11	51.43	21.28	21.78
N	37	38	35	22	18

Source: Data on firm specific variables in Appendix C

Note: The Table presents the average value of six firm specific variables sorted into five equal percentile group portfolios based on the size that include total 10 sample firms with 150 observations for the period from 1999/00 to 2013/14. 'N' denotes to the number of observations in each portfolio. The SIZE has been divided into five equal percentile categories on the basis of its minimum and maximum values and the average of different bank specific variables are calculated as the mean values that fall in the respective portfolio.

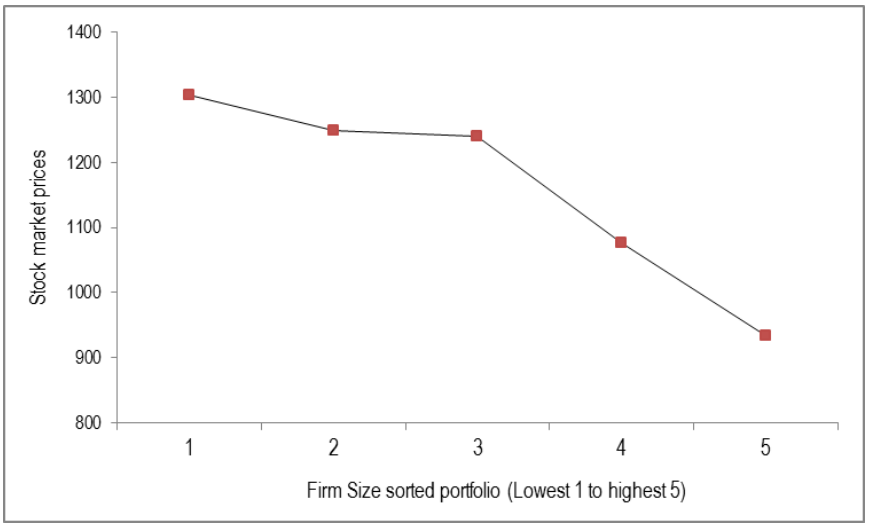
The common stock prices show a general pattern of movement into opposite direction with firm size. In other words, the common stock prices decrease with firm size. The average stock price for the lowest size portfolio (i.e., portfolio 1) is Rs. 1304 and it has been decreased to Rs. 933 in the largest size portfolio (i.e., portfolio 5). The results in general indicate that the larger size banks have lower market price for its

stock. Earlier studies, for example Banz (1981), Chan, Hamao and Lakonishok (1991), and Gomes, Kogan and Zhang (2003), among others, have documented that stock returns vary inversely with firm size. The result supports these studies.

In addition to stock prices, Table 25 also indicates the patterns of movement in other variables with firm size. The results indicate that stock dividend per share declines with increase in firm size. The average stock dividend for small size portfolio is 31.55 percent which has been declined to 17.97 percent in large firm size portfolio. The result shows that higher the capital size, the distribution of stock dividend will be lower. As shown in Table 25, the value of earnings per share and book value per share show the general decreasing trend with size of the firm. The pattern of movement in firm size with other variables; cash dividend per share and price earnings ratio has puzzling results.

Figure 8

Trend of Movement in Average Stock Price with Respect to Five Firm Size Sorted Portfolios of 10 Sample Banks during the Period 1999/00 through 2013/14



Note: This figure shows the plot of average market prices of stock associated with each of the five SIZE sorted portfolios. The vertical axis measures the stock prices and horizontal axis measures the firm size from lowest portfolio 1 to highest portfolio 5. Each dot on the upward moving line in the figure shows plot of stock prices corresponding to firm SIZE.

Figure 8 shows a general declining pattern of average stock prices with increase in size of the bank. There is steady trend of decline in stock prices from SIZE portfolio 1 to 5. However, the rate of decline in average stock prices from SIZE portfolio 3 to 5 is somewhat steeper. Hence, the results suggest that rate of decline in average stock prices with respect to firm size is larger in higher quintile SIZE portfolios than that in lower quintile SIZE portfolios. Hence, the banks having larger capital size have lower market price of the share.

Econometric Models

Panel data analysis has been used as described in chapter three. In order to test the statistical significance and robustness of the results, firstly, pooled OLS regression has been performed for various specifications of the models. One-way fixed effect model then conducted to identify the bank specific effect on stock prices. The regression analysis examines the estimated relationship of stock prices with firm specific and macroeconomic variables separately and jointly for pooled data of 10 sample banks that include 150 observations during the period 1999/2000 through 2013/2014. In this section, an attempt also has been made to test the validity of the model through statistical test of significance such as *t*-test, *F*-test, adjusted coefficient of determination (*Adj.* R^2), and the test of autocorrelation and multicollinearity.

Pooled OLS Model

The regression results have been reported in Table 26. The model specifications I through VI report the simple regression results, where stock prices have been regressed on various firm specific variables individually. The specifications VII through XII report the multiple regression results, where various firm specific variables taken together have been used as regressors. Specification XII represents the complete model including all firm specific variables. The full version of the model

has been reported in specification XIII, where all the firm specific and macroeconomic variables have been used as explanatory variables.

Table 26

Pooled OLS Regression of Stock Prices on Firm Specific and Macroeconomic Variables for 10 Sample Banks for the Period of 2000 to 2014.

Indep.	Regression Results												
Variables	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
Intercept	140.69 (1.32)	71.93 (0.49)	657.66 (6.93***)	440.52 (5.17***)	1243.96 (11.64***)	1486.19 (2.87***)	19.77 (0.16)	241.99 (1.99**)	188.97 (1.85*)	-663.19 (-1.69*)	-494.64 (-1.36)	-716.42 (-1.86*)	751.93 (1.33)
EPS	20.98 (12.71***)						17.78 (7.37***)		11.97 (4.05***)		12.64 (4.21***)	10.84 (3.42***)	6.27 (2.04**)
BPS		5.70 (9.11***)					1.43 (1.81*)	1.60 (2.26**)		2.08 (2.82***)		1.29 (1.68*)	1.53 (2.02**)
CD			25.59 (9.51***)						-7.15 (-1.68*)		-8.19 (-1.93*)	-8.47 (-2.01**)	-2.51 (-0.60)
SD				26.08 (13.57***)				22.04 (8.47***)	19.18 (5.25***)	22.21 (8.57***)	20.39 (5.47***)	19.34 (5.15***)	17.51 (4.75***)
P/E					-1.15 (-1.00)					1.49 (1.83*)	1.38 (1.81*)	1.76 (2.22**)	2.25 (3.05***)
LnSIZE						-66.82 (-0.57)				172.27 (2.18**)	134.29 (1.73*)	152.32 (1.96*)	-466.77 (-2.55**)
GDP													0.13 (0.44)
INF													192.12 (4.94***)
IR													-36.12 (-1.33)
F	161.43***	83.01***	90.34***	184.17***	1.01	0.32	83.60***	97.21***	72.81***	51.95***	45.83***	39.14***	34.44***
Adj. R^2	0.52	0.36	0.38	0.55	0.01	0.002	0.53	0.56	0.59	0.58	0.60	0.61	0.66
SEE	817.52	946.16	931.49	789.05	1178.10	1180.81	811.29	778.29	753.32	765.63	744.46	739.80	684.86

Source: Data on firm specific variables in Appendix C

Note: This Table shows regression results of stock prices on six firm specific and three macroeconomic variables based on pooled cross-sectional data of 10 sample banks listed in NEPSE with 150 observations from the year 1999/00 to 2013/14. The regression results consist of various specifications of the models in the form of simple and multiple regressions. The reported values are intercepts and slope coefficients of respective explanatory variables with t-statistics in the parentheses. Dependent variable is the stock price denoted as $P_{it,}$ and independent variables are: Earnings per Share (EPS_{it}), Book Value per Share (BPS_{it}), Cash Dividend per Share (CD_{it}), Stock Dividend per share (SD_{it}), Price Earnings Ratio (P/E_{it}), Firm Size (LnSIZE), Gross Domestic Product (GDP), Inflation (INF), and Interest Rate (IR). The reported results also include the values of F-statistics (F), adjusted coefficient of determination (Adj. R^2), and standard error of estimates (SEE). The triple asterisk (***) sign indicates that result is significant at 1 percent level, double asterisk (**) sign indicates that result is significant at 5 percent level, and single asterisk (*) sign indicates that result is significant at 10 percent level.

The simple regression result of stock prices on earnings per share (EPS) in specification I shows a positive relationship. The slope coefficient of EPS (20.982) is significant at 1 percent level which implies that stock prices increase with increase in earnings per share. In general it implies that Rs.1 increase in EPS leads to Rs.20.98 increase in stock prices. The adjusted coefficient of determination is 0.52. It implies that 52 percent of the total variations in common stock prices are captured by earnings per share. The reported *F*-statistic (161.43) is also significant at 1 percent level

meaning that the model explains better the stock prices. This result is consistent with the studies by Basu (1977), Jaffe, Keim, and Westerfield (1989), Wong and Lye (1990), Kumar and Sehgal (2004), and Mgbame & Ikhatua (2013).

Similarly, the regression result of stock prices on book value per share in specification II shows a positive relationship between stock prices and BPS and the regression coefficient of BPS (5.70) is statistically significant at 1 percent level. The reported *F*-statistic (83.01) is also significant at 1 percent level and the adjusted coefficient of determination is 0.36. It implies that 36 percent of the total variations in common stock prices are captured by book value per share. The positive and significant relationship between BPS and stock prices found in this study is consistent with the prior studies by Fama & French (1992), and Simlai (2009). However it contradicts the results by Shafana, Rimziya, and Jariya (2013) that documented negative relation between book-to-market equity and stock returns.

In another simple regression result of specification III, common stock prices are observed to be positively related with cash dividend per share and coefficient (25.59) is again significant at 1 percent level. The result indicates that 38 percent variations in common stock prices are captured by cash dividend per share.

The regression of common stock prices on stock dividend per share in specification IV shows a positive relationship between stock prices and stock dividend per share and the coefficient (26.08) is significant at 1 percent level. The result shows, 55 percent variability associated with common stock prices are explained by stock dividend per share. The regression results on dividend support the prior studies by Gordon and Shapiro (1956), Chawala and Srinivasan (1987), and Baker and Wurgler (2004b).

In specification V, simple regression with price earnings ratio is negatively related with stock prices though the coefficient (-1.15) is not statistically significant. Moreover, only 1 percent variability associated with common stock prices are explained by price earnings ratio. This result supports the findings of negative relationship by many earlier studies including Marian and Vorek (2009). However, as reported by Chan, Hamao, and Lakonishok (1991) there is no statistically significant and conclusive evidence about E/P effect on common stock returns.

The simple regression result of stock prices on firm size in specification VI shows a negative relationship though the coefficient (-66.82) is not statistically significant. Similarly, the coefficient of adjusted R square is found very low (0.002). This result of negative relationship is consistent with the studies by Banz (1981), Grauer (1999), and Gomes, Kogan, and Zhang (2003). As documented by Shafana, Rimziiya, and Jariya (2013), firm size does not show any significant behavior in determining stock prices.

In all simple regressions, the explanatory variables show the expected customary sign of relationship with stock prices. It also shows that the variables such as earnings per share, book value per share, cash dividend per share, and stock dividend per share individually explain the variations in common stock prices as indicated by adjusted R^2 in the respective specifications of the model. The results of simple regressions in model specifications I through VI establish the robustness of results obtained in the analysis of one-way sort of portfolios formed on EPS, BPS, CD, SD, P/E, and SIZE.

As an additional check of the robustness of results, two or more firm specific variables have been included as explanatory variables in multiple regressions of specifications VII through XII. When both EPS and BPS are included as explanatory

variables in specification VII, both variables maintain their observed direction of relationship and statistical significance with stock prices. However, coefficient of BPS is now maintaining 10 percent level of significance instead of 1% in alone. Further, the inclusion of BPS and SD as explanatory variables in specification VIII also shows that these variables have retained their observed direction of relationship and statistical significance.

In specification IX, three variables, namely earnings per share, cash dividend per share, and stock dividend per share have been used as explanatory variables. The results show that EPS (11.97) and SD (19.18) still maintain their expected direction of relationship and statistical significance with stock prices. Surprisingly, CD (-7.15) changes its observed sign to negative and looses its statistical strength from 1 percent to 10 percent level of significance. These results suggest that earnings per share and stock dividend per share consistently predict the stock returns whereas cash dividend per share does not.

The use of four variables namely BPS, SD, P/E, and SIZE together as repressors in specification X has provided an important insight into the regression results. The results indicate that BPS (2.08) and SD (22.21) still maintain their expected direction of relationship and statistical importance because coefficients are again significant at 1 percent level. Moreover, in this specification of model, P/E and firm size both have also reported their statistical significance at 10 percent and 5 percent level respectively but both the coefficients of P/E (1.49) and LnSIZE (172.27) change their observed sign to positive. The reported *F*-statistic (51.95) is also significant at 1 percent level and adjusted R square (0.58) meaning that the model explains better the stock prices.

Five variables, namely earnings per share (EPS), cash dividend per share (CD), stock dividend per share (SD), Price earnings ratio (P/E), and firm size (LnSIZE) have been used as explanatory variables in specification XI. The results show that stock prices have significant positive relationship with EPS, SD, PE and LnSIZE and significant negative relationship with CD. It indicates that earnings per share and stock dividend are still a significant predictor of stock prices. The reported *F*-statistic (45.83) is also significant at 1% level and the adjusted R^2 value is 0.60. It implies that 60% of the total variations in stock prices are captured by the model.

All the firm specific variables are included as predictors in specification XII. The regression results of specification XII again establish the economic and statistical significance of earnings, book value and stock dividend per share in predicting stock prices while the performance of other variables are poor when included together in the model. The reported *F*-statistic (39.14) is also significant at 1 percent level and adjusted R^2 (0.61) meaning that the model explains better the stock prices.

Specification XIII represents full form of the model 3.1, where all firm specific and macroeconomic variables are included as determinants of stock prices. The firm specific variables; EPS, BPS and SD maintain their observed direction of relationship and statistical significance in explaining stock prices. The priori expected sign of gross domestic product, inflation and interest rate also holds true in the model. The regression result shows that the observed relationship is statistically significant for INF (192.12) but the significance couldn't be maintained for GDP (0.13) and IR (-36.12). The observed positive relationship of GDP and inflation and negative relationship of interest rate with stock prices are consistent with the studies by Fama (1981), Chen, Roll and Ross (1986), Thorbecke (1997), and Ibrahim and Aziz (2003). However, the result contradicts the findings of Bilson et al. (2001), and Flannery and

Protopapadakist (2002). In Nepalese context, the results also support the findings by Shrestha and Subedi (2014). The adjusted coefficient of determination (R^2) is 0.66. It implies that 66% of the total variations in common stock prices are captured by the model. The reported F-statistics (34.44) is also significant at 1% level meaning the model explains better the stock prices of commercial banks in Nepal.

This study hypothesized that stock prices are positively related to earnings per share, book value per share, cash dividend per share, stock dividend per share, gross domestic product, and inflation and negatively related with price earnings ratio, firm size, and interest rate. Thus, the observed relationship of common stock prices with earnings per share, book value per share, stock dividend per share, gross domestic product, inflation, and interest rate is according to priori sign expectation although the priori sign expectations do not hold consistently with other firm specific variables; cash dividend per share, price earnings ratio and firm size. Among all, earnings per share and stock dividend per share have been observed as the best predictors because coefficients are statistically and economically significant across all the specifications.

The explanatory power of the model indicated by adjusted coefficient of determination have also been improved in the specifications where earnings per share and stock dividend per share are explanatory variable along with other firm specific variables, and it is the best in model XIII where adjusted R^2 is 0.66. Overall, firm size and price earnings ratio have been observed as poor predictor of stock prices because their effects have been subsumed by earnings per share in multiple regressions.

Fixed Effect Model (FEM)

In order to identify the bank specific effects on stock prices, one-way fixed effect model of panel data analysis has been conducted. The result of analysis is shown in Table 27.

Table 27

One-way Fixed Effect Model with and without Considering Macroeconomic Variables

Independent Variables	Regressions	
	Without Macroeconomic Variables	With Macroeconomic Variables
Const	-117.26 (505.06)	1692.88** (749.92)
EPS	9.62*** (3.64)	5.80* (3.48)
BPS	0.99 (0.84)	1.19 (0.84)
CD	-21.32*** (4.97)	-15.23*** (4.88)
SD	22.19*** (4.03)	17.79*** (3.98)
PE	1.92** (0.76)	2.30*** (0.71)
LnSIZE	188.39** (77.81)	-435.38** (211.21)
GDP		0.07 (0.30)
INF		189.86*** (38.93)
IR		-39.83 (25.76)
N	150	150
Adj. R^2	0.650	0.698
F	19.45***	20.12***

Source: Data on appendix-C

Note: This Table shows One-way Fixed Effect regression results of stock prices on six firm specific variables and three macroeconomic variables based on panel data of 10 commercial banks with 150 observations for period 2000-2014. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error in the parentheses. Dependent variable is the stock price (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (LnSIZE), gross domestic product (GDP), inflation (INF), and interest rate (IR). The single asterisk (*) sign indicates that result is significant at 10 percent level, double asterisk (**) sign indicates that result is significant at 5 percent level, and triple asterisk (***) sign indicates that result is significant at 1 percent level.

Table 28 presents one-way fixed effect model (FEM) with bank specific dummies (banks) considering with and without macroeconomic variables.

Table 28

Impact of Bank Specific Dummies on Stock Prices

Panel (P_{it} = Stock Price)		
Independent Variables	Regressions	
	Without Macroeconomic Variables	With Macroeconomic Variables
Const	-117.26	1692.88**
	(505.06)	(749.92)
EPS	9.62***	5.80*
	(3.64)	(3.48)
BPS	0.99	1.19
	(0.84)	(0.84)
CD	-21.32***	-15.23***
	(4.97)	(4.88)
SD	22.19***	17.79***
	(4.03)	(3.98)
PE	1.92**	2.30***
	(0.76)	(0.71)
LnSIZE	188.39**	-435.38**
	(77.81)	(211.21)
GDP	-	0.07
		(0.30)
INF	-	189.86***\
		(38.93)
IR	-	-39.83
		(25.76)
Bank-NIB	-613.90**	-694.17**
	(296.39)	(276.00)
Bank-SCB	558.83**	433.18
	(280.20)	(264.42)
Bank-HBL	-847.10***	-865.07***
	(294.60)	(274.74)
Bank-NSBI	-419.45	-695.43**
	(325.56)	(309.82)
Bank-NBB	-1069.81***	1218.49***
	(339.89)	(320.41)
Bank-EBL	-37.68	-470.49
	(308.433)	(308.57)
Bank-BOK	-702.53**	-981.93***
	(310.86)	(297.13)
Bank-NCC	-733.89**	-1019.81***
	(350.51)	(333.19)
Bank-NICA	-669.10**\	-972.995***\
	(319.43)	(300.37)
N	150	150
Adj. R^2	0.650	0.698
F	19.45***	20.12***

*Significance codes: * Significant at 10%, ** Significant at 5%, *** Significant at 1%*

Note: Regression results of stock prices on six firm specific variables and three macro-economic variables based on panel data of 10 commercial banks with 150 observations for the period 2000- 2014. The regression model includes one-way fixed effect model. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error in the parentheses. Dependent variable is stock prices (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (SIZE), gross domestic product (GDP), inflation (INF), and interest rate (IR).

Table 29 presents comparative regression results of pooled OLS and one-way fixed effect model (FEM) with or without macroeconomic variables.

Table 29

Comparison of Regression Results of Pooled OLS and One-way Fixed Effect Model with and without Macroeconomic Variables

Independent Variables	Regressions			
	Pooled OLS	Pooled OLS	One-way Fixed Effect	One-way Fixed Effect
Const	-716.42* (385.71)	751.93 (567.38)	-117.26 (505.06)	1692.88** (749.92)
EPS	10.83*** (3.17)	6.27** (3.08)	9.62*** (3.64)	5.80* (3.48)
BPS	1.29* (0.77)	1.53** (0.76)	0.99 (0.84)	1.19 (0.84)
CD	-8.47** (4.21)	-2.51 (4.15)	-21.32*** (4.97)	-15.23*** (4.88)
SD	19.34*** (3.76)	17.51*** (3.69)	22.19*** (4.03)	17.791*** (3.98)
PE	1.76** (0.79)	2.25*** (0.74)	1.92** (0.76)	2.30*** (0.71)
LnSIZE	152.32* (77.75)	-466.77** (183.27)	188.39** (77.81)	-435.38** (211.21)
GDP		0.13 (0.29)		0.07 (0.30)
INF		192.12*** (38.92)		189.86*** (38.93)
IR		-36.12 (27.15)		-39.83 (25.76)
N	150	150	150	150
Adj. R^2	0.606	0.662	0.650	0.698
F	39.14***	33.44***	19.45***	20.12***

Source: Data on appendix-C

Note: This Table shows regression results of stock prices on six firm specific variables and three macro-economic variables based on panel data of 10 commercial banks with 150 observations for the period of 2000-2014. The regression models include pooled OLS and one-way fixed effect model. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error in the parentheses. Dependent variable is the stock price (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (LnSIZE), gross domestic product (GDP), inflation (INF), and interest rate (IR). The single asterisk (*) sign indicates that result is significant at 10 percent level, double asterisk (**) sign indicates that result is significant at 5 percent level, and triple asterisk (***) sign indicates that result is significant at 1 percent level.

The first firm specific variable is the earnings per share *(EPS)*. In one-way fixed effect model of table 26, the sign of this coefficient is positive and statistically significant when regressed with (5.8) or without (9.62) macroeconomic variables. However, the coefficient looses its level of significance from 1% to 10 percent. It implies that when the impact of macro-economic factors is considered, the impact of earnings per share on stock prices of the banks tends to decrease. This may happen as the macroeconomic variables subsume the effect of earnings on stock prices. The positive and statistically significant relationship between earnings per share and stock prices in Nepalese context shows that the common stock prices increase due to increase in earnings per share of the banks. The result is consistent with the findings of Easton and Haris (1991), Davis (1994), Kumar and Sehgal (2004), and Ebrahim and Chadegani (2011). This result also supports the finding of Basnet (2007) in the context of Nepal.

The sign of the coefficients of book value per share (*BPS)* are positive in all the cases. The coefficients are statistically significant in pooled OLS but are found insignificant in one-way fixed effect model. This implies that, there is no any notable bank specific impact of book value on stock market prices.

There is a negative coefficient of the cash dividend per share *(CD)* in all the regressions presented in the above tables. The coefficients of cash dividend are all significant except in pooled OLS when macroeconomic variables are added in the models. The estimated CD coefficients are -15.23 and -21.31 and are statistically significant in one-way fixed effect model as presented in Table 27. The result indicates that the cash dividend impacts negatively on stock prices. The result here contradicts the priori expected sign of this study and also findings of Adhikari (2009) in Nepalese context.

The coefficients of stock dividend per share are positive and statistically significant for all the cases presented in above Table 26, 27, 28 and Table 29. It has still retained its observed direction of relationship and statistical significance with the inclusion of macroeconomic variables in the specification. This result suggests that stock dividend consistently predict the stock prices in Nepalese commercial banks. The positive relationship implies that as the bank increases stock dividend the market price of the shares also increases. For example in one-way fixed effect model without macroeconomic variables, 1 percent increase in stock dividend leads to 22.19 percent increase in stock price of the given bank. The observed direction of relationship between stock dividend and stock prices is as per the priori expectation. This finding supports the findings of different studies such as Gordon (1962), Friend and Puckett (1964), and Ebrahim and Chadegani (2011). The result also supports the statement quoted by Pradhan (2003) as there is a strong dividend effect in determining market price of the share indicating attractiveness of dividends among Nepalese investors.

Similarly, the coefficients of price earnings ratio have all positive sign and are statistically significant in all cases. The analysis illustrates that the inclusion of macroeconomic variables makes the P/E ratio statistically more significant. It implies that when the impact of macro-economic factors such as GDP, inflation, and interest rate is considered, the impact of price-to-earnings ratio on stock prices of the banks tends to increase. This study contradicts the prior hypothesis of negative relationship between price earnings ratio and stock prices. The result contradicts the findings of Nicholson (1960), Ball (1978), and Marian Vorek (2009).

Despite of statistical significance, the observed direction of relationship between firm size (LnSIZE) and stock prices is not consistent for different specifications within the model. The sign of the coefficient is positive and statistically

significant in pooled OLS (152.32) and one-way fixed model (188.39) without macroeconomic variables. However, the observed direction of relationship changed to be negative and statistically significant when macroeconomic variables are included in the models. The positive and statistically significant coefficients of firm size contradict the priori expected sign of this study and support the findings of Reinganum (1990), and Knez and Ready (1997). The comparative study in table 28 illustrates that the inclusion of macroeconomic variables makes the SIZE statistically more significant and shows the priori expected negative sign. It implies that when the impact of macro-economic factors such as GDP, inflation, and interest rate is considered, the impact of firm size on stock prices of the banks tends to be more considerable. The negative coefficients of firm size suggest that as the firm size increases the stock price decreases and vice versa. This result is consistent with the findings of Grauer (1999), Kumar and Sehgal (2004), and Hasan et.al (2014). This result also supports the finding of Pradhan (1993) in Nepalese context.

In table 28, dummy variable has not assigned for NABIL bank so, it acts as the benchmark. And all the comparisons should be made in relation to the benchmark category. The differential intercept coefficients for rest of the banks have been illustrated in the table. Compared with this for the full model in the table 4.18(b) indicates that the average stock price of NIB Bank is lower by about Rs.694 from an actual average stock price Rs. 1693 of NABIL so, come to be Rs.999 (1693-694). Similarly, the stock price of SCB (Rs.1260) is higher by Rs.433 than an average stock price of NABIL (Rs.1693) and so on for other banks as compared to NABIL. The results are like same when the macroeconomic variables are excluded in the model. The result regarding the impact of bank specific effect on stock prices supports the pattern of stock prices in sample banks for the study period.

In case of macroeconomic variables the results are like as pooled OLS model. The priori expected sign of GDP, INF and IR also holds true for one-way fixed effect model. The regression coefficient of INF (189.86) only is statistically significant to explain the stock prices whereas others do not. This result gives a primary indication that stock investments in Nepal may offer a hedge against inflation.

The adjusted coefficients of determination (R^2) are 0.698 and 0.650 for one-way fixed effect model with and without macroeconomic variables. It implies that 69.8% and 65% of the total variations in common stock prices are captured by one-way fixed effect model with and without macroeconomic variables respectively. The reported F statistics 20.12 and 19.45 for the model with and without macroeconomic variables are also significant at 1 percent level of significance meaning that one-way fixed effect model explains better the stock prices.

Analysis of Cointegration between Stock Prices and Macroeconomic Variables

One of the major objectives of this study is to examine the long-run equilibrium between stock prices and macroeconomic variables. The empirical studies associated with macroeconomic influences on common stock prices have documented a causal relationship between stock prices and macroeconomic variables. For example, Jefferis and Okeahalam (2000) examined the effect of macroeconomic variables and found that stock prices have positive long-run relationship with real GDP. Therefore, it is a matter of interest to explore whether macroeconomic variables such as inflation, interest rate and GDP could capture the variation in stock market prices. The methodology employed to test long-run equilibrium in this study is the cointegration test and the modeling strategy adopted is based on the widely used Engle-Granger methodology (Engle & Granger, 1987). The steps involved for cointegration test are described as follows:

Stationarity/Unit Root Test

First step is to determine whether the variables used are stationary or non-stationary. Many macroeconomic time series contain unit roots dominated by stochastic trends as developed by Nelson and Plosser (1982). Knowing that unit root tests are sensitive to the presence of deterministic regressors, tests for each variable then is performed on both levels and first differences of variables. Table 30 reports the results of Augumented Dickey Fuller (ADF) test for the model without constant and no trend, and with constant and no trend.

Table 30

Augmented Dickey-Fuller Test for Variables of Model

Variables	Without Constant and no Trend			With Constant and no Trend		
	Level (τ)	First Difference	Second Difference	Level (τ)	First Difference	Second Difference
NI	0.638	-2.204**		-1.815	-3.955***	
	(0.854)	(0.027)		(0.373)	(0.001)	
GDP	13.645	1.131	-2.169**	1.688	-0.027	-2.719*
	(0.999)	(0.923)	(0.034)	(0.999)	(0.939)	(0.099)
INF	0.179	-5.072***		-1.648	-5.364***	
	(0.732)	(0.000)		(0.434)	(0.001)	
IR	-1.269	-3.446***		-1.537	-3.381**	
	(0.178)	(0.002)		(0.486)	(0.032)	
Critical Values						
1%		-2.66			-3.75	
5%		-1.95			-3.00	
10%		-1.60			-2.62	

Note: This Table shows the unit root tests of the macroeconomic variables for the period of 1999/00 to 2013/14 using Augmented Dickey Fuller criteria The variables are NEPSE Index (NI), rate of inflation (INF), interest rate (IR) defined as the 91 days treasury bills rate and the nominal gross domestic product (GDP) Rs. in billion. As the plot of the data suggests, model with constant and trend is avoided. Probabilities are in parentheses. ***, **, and * denote rejection of the unit root hypothesis at 1%, 5%, and 10% respectively. Tests for unit roots have been carried out on Gretl software.

According to Table 30, investigating the stationary of variables using ADF test shows that none of the variables were stationary at the level and become stationary after first order difference whereas the variable GDP becomes stationary after second order difference. Hence it is concluded that the variables in the model are integrated of order one I(1). This result is consistent to the finding of Nelson and Plosser (1982)

that most of the macroeconomic variables are non-stationary at level, but they are stationary after first differencing.

Cointegration Test

Testing for Cointegration (long-run equilibrium) entails testing the order of integration of the error term in the relationship. For the purpose of this study therefore, testing for Cointegration implies testing for stationarity in the residuals of the regression equation. In order to estimate the long-run relationship between variables using the Engle-Granger integration technique, first, it is to find the optimal order of the VAR model using lag determining criteria.

Table 31

Number of Optimal Lag Using Schwarz-Bayesian Criteria

Number of Lags	Schwarz-Bayesian Criteria (BIC)
5	12.920
4	12.844*
3	13.554
2	13.387
1	13.888

* indicates amount of optimal lag

According to the above Table it can be claimed that optimal lag of the VAR model regarding the Schwarz –Bayesian criteria is four.

The test for Cointegration has been conducted using the residuals based method of Engle and Granger (1987). According to Engle and Granger, if the residuals obtained from the above static regression are stationary, it implies that the variables are cointegrated. Hence, there is a tendency for the variables to move together in the long-run even though the variable may wander or drift individually apart. The results obtained using the Engle and Granger (1987) Cointegration test is presented in Table 32.

Table 32

Cointegrating Regression: OLS Estimates of the Long-run Model

Dependent variable	Independent variables	Coefficient	*t* - Statistics	Probability
NI	Const	152.466	0.808	0.438
	ΔGDP	0.809	0.559	0.588
	INF	46.503	1.241	0.243
	IR	-22.525	-0.874	0.402
	R^2	0.426		
	Adj. R^2	0.254		
	S.D. dep. var	270.083		
	Durbin-Watson	1.026		
	S.E. of Regression	233.323		

Stationarity Test of Residual

Test variable	Null Hypothesis	Test statistics (τ)	p-value	Null hypothesis	Result
$\hat{u}$	Residual is not stationary	-5.429^{***}	0.0005	Rejected	Residual is stationary

(***) means significant at 1% critical level

The result in Table 32 indicates that unit root hypothesis of no stationarity (null hypothesis of no cointegration) is rejected for the residuals (uhat) at 1% level of significance since p-value is 0.0005. This shows that the null of a unit root corresponds to cointegration. This supports the alternative hypothesis of existence of cointegrating relationship at 1% Level. Since the residual is stationary, the variables are said to be cointegrated and therefore do not have the tendency to deviate in long-run from their linear relationship by an ever growing amount. This concludes that there exist cointegration between included macroeconomic variables and stock prices in the context of Nepal.

Error Correction Model (ECM)

The presence of a cointegrating relationship implies that there exists an error correction mechanism (ECM) that describes the short-run dynamics consistent with the long-run relationship between stock prices (NI) and the selected macroeconomic variables. Hence, it further necessitates to conduct the error correction model (ECM) which indicates the speed of adjustment if the variables are cointegrated. For the purpose, the first differences of all the variables have been taken and run the OLS with the inclusion of residual (û), where û and other independent variables have taken lag 1. The results of the ECM are presented in Table 33.

Table 33

Error Correction Model for Stock Prices in Nepal

Dependent variable	Independent variables	Coefficient	*t* - Statistics	Probability
ΔNI_t	Const	-175.680	-1.581	0.158
	$\Delta\Delta GDP_{t-1}$	-5.332	-3.728	0.007***
	ΔINF_{t-1}	-52.907	-2.165	0.067*
	ΔIR_{t-1}	19.545	1.568	0.161
	Residual $(\hat{u}_{t-1})$	-0.407	-2.533	0.039**
	R^2	0.708		
	Adj. R^2	0.499		
	F-statistics	6.982**		
	P-value (F)	0.012		
	Durbin-Watson	1.707		
	S.E. of Regression	155.294		

Note: ***, **, and * indicate that estimates are significant at 1%, 5%, and 10% respectively.

Table 33 provides long-run relationship between NEPSE Index (NI) and the selected economic variables. GDP and INF are statistically significant and impact adversely on NI. Interest rate impacts positively on NI though is not statistically significant. The result indicated that 1% increase in GDP and INF will lead to 5.33% and 52.90% decrease in NI respectively. The sign of economic variables do not

confirm the priori expectation. Given the value of R^2, it can be concluded that the independent variables explain over 70% of the systematic variations in stock market index. The F-statistic is significant at 5% level, showing a good fit of the model. The Durbin-Watson statistic shows absence of auto-correlation problem; hence the regression estimates seem unbiased.

The error correction term (û) has the expected negative sign and is statistically significant. The estimated coefficient of error correction term measures the speed of adjustment to restore equilibrium in the dynamic model. According to Table 33, the pace of short-run error correction toward equilibrium and long-run state is about -0.407. This clearly indicates that there is a considerable adjustment to the long-run equilibrium i.e. the speed of adjustment rate is about 40.70% for long-run equilibrium between macroeconomic variables and stock prices. This implies that once the deviation takes from the long-run equilibrium then the NI initiates all adjustments to reestablish the equilibrium condition by correcting disequilibrium at about 40 percent in the system. It would nearly take about 2.5 years for the adjustment to restore the long-run equilibrium. This means the macroeconomic variables and stock prices follow each other over time.

Selection of the Model and Diagnostic Checking

As explained in chapter three panel data analysis method has been used to analyse the secondary data. There are mainly three models in panel data analysis namely pooled OLS model, fixed effect model and random effect model. In order to confirm the appropriate model for this study joint significance of differing group intercepts (F statistics), Hausman test statistics, and Breusch-Pagan (BP) test statistics have been computed.

OLS is always a starting point, and it has been conducted in this study to have at least a baseline comparison model. Having panel data usually gives a convenient way to get rid of unobserved fixed effect. With pooled OLS the result will not get rid of fixed effects. The value of adjusted R^2 (0.698) and F –test statistics F (18, 131) = 20.12, p = 0.00***, also confirmed that the fixed effect model is adequate compared to OLS model.

The Hausman Test for Model Selection

As the study has used a true panel data having the same i's for each t, it is necessary to employ Fixed Effect or Random Effect Model. The Hausman specification test is performed to choose a better model in between fixed effect and random effect for data analysis purpose. The hypothesis for this test is given as:

H_1: Fixed effect model is superior to random effect model.

Table 34

Result of Hausman Test

Models	Chi-sq. (χ^2)	p-value	Null Hypothesis
Without macroeconomic variables	27.8001	0.0001***	Rejected
With including macroeconomic variables	28.3793	0.0004***	Rejected

Since the null hypothesis is rejected, it is concluded that fixed effect model is appropriate. Furthermore, as guided by the major objective of this study to identify bank specific effect on stock prices, one-way fixed effect model is selected.

Breusch-Pagan Test for Homoscedasticity

Breusch-Pagan test for homoscedasticity shows the absence of heteroscedasticity. The null hypothesis for the Breusch-Pagan test is homoscedasticity which can be summarized as:

H_1: There is presence of heteroskedasticity.

Table 35
Result of Breusch-Pagan (BP) Test

	Chi-square (χ^2)	p-value
Model: without macroeconomic variables	1.4009	0.2366
Model: with including macroeconomic variables	0.8832	0.3473

As shown in the Table, the p-values fail to reject null hypothesis suggesting that there is no presence of heteroskedsticity. Thus, based on these test results models used for the analysis have been found to be adequate in this study.

Furthermore, robust standard error (heteroscedasticity auto-correlated or HAC) was applied to overcome the problem of heteroscedasticity and autocorrelation. An important property of robust standard error is that the form of the heteroscedasticity and/or autocorrelation does not need to be specified (Croux, Dhaene, & Hoorelbeke, 2004). Thus, the problem of heteroscedasticity was resolved with the application of robust standard error.

Model Specification Test:

This study is based on the model proposed by different prior studies conducted in developed economies. There may be chance of specification error in the model due to addition and omission of some variables. Thus, a model specifications test is conducted to ensure the appropriate specification of the models used. The full specification of the fixed effect model is shown in Table 27. Given values of *F*-statistics (F=20.12 and p-value 0.000 < 1%) confirmed that the overall specification of the model is highly significant. Thus, based on above mentioned tests, the fitted model seems to be valid and there is no specification biased.

Test of Multicollinearity:

The diagnostic check of the model has been conducted using variance inflationary factor (VIF) of explanatory variables to detect the multicollinearity

problem, if any, associated with multiple regressions of specification VII through XIII. The values of VIF associated with several specifications of the model are reported in Appendix B. The result shows that VIF of explanatory variables across all the model specifications are significantly lower than 10. Therefore, there is no evidence of Multicollinearity in the regression model.

Analysis of Primary Data

This section reports the results of questionnaire survey conducted among the individual investors, executives and security businesspersons in Nepalese stock market. Questionnaire survey was primarily designed to understand the perceived view of the respondents in relation to their buying and selling preferences, frequency of trading, perception of informational content, along with their attitudes toward factors affecting stock prices in Nepal. The respondents profile along with their personal characteristics and results of the survey are presented in following sections.

Respondent's Profile

The survey was conducted in September, 2014 to February, 2015. The data analysis has been focused on self-administrated structure questionnaires (annexure). Out of the 160 questionnaires distributed to investors, executives, and security business persons 109 responses have been usable, i.e., approx.68 per cent of response rate. The questionnaire was divided into the following two key areas: (1) general questions relating to shareholders' perception for buying shares and market prices, and (2) specific questions relating to firm specific and macroeconomic information, and announcement of new public information and market reaction on share prices.

The respondents are classified as male and female categories. The classification of respondents on the basis of sex can help in analyzing the differences in their views regarding the impact of new information on share prices. With respect

to sex of the respondents, 83 percent of the respondents belong to the male category, and 17 percent are in female categories. Around 49% respondents are from 30 - 45 age groups. Around 22% are young investors below 30 years and around 29% are matured and above 45 years. The general profiles of the respondents whose responses are taken into consideration for the study are presented in Table 36.

Table 36

Profile of Respondents

	Characteristics	Number	Percentage
Gender	Female	18	16.51
	Male	91	83.48
	Total	109	100
Age group	Below 30 years	24	22.02
	30 to 45 years	53	48.62
	Above 45 years	32	29.36
	Total	109	100
Profession	Government Service	24	22.02
	Private Service	85	77.98
	Total	109	100
Experience	Below 5 years	49	44.95
	5 to 10 year	39	35.78
	Above 10 years	21	19.27
	Total	109	100
Education	Up to certificate	32	29.36
	Bachelors	45	41.28
	Masters	27	24.77
	Above Masters	5	4.59
	Total	109	100

Source: Self calculation based on the data on survey questionnaire in appendix-A

Note: This Table presents the details of respondents profile in terms of gender, age group, experience and education.

Table 36 also suggested that majority of the respondents (77.98%) work in private sector whereas 22.02% are employed in government service. Majority of the respondents i.e 44.95% have experience of below 5 years. Respondents are well educated. The table shows more than 70% of the respondents have bachelors or higher than bachelors degree.

Analysis of Respondent's Perception

Generally, it is believed that if more individuals participate in secondary market transaction continuously, the security's prices remain in continuous equilibrium, and facilitates toward liquidity of the market. So, the individual preferences toward types of market while buying and selling shares of common stock play an important role in determining the security prices. The total of ten questions was asked to examine the respondents' general perception on buying shares and influences of share price.

i. Market source to purchase equity share.

In an attempt to obtain the view of respondents about their preferences toward types of market for buying shares of common stock, all investors, executives, employees, and brokers and security businesspersons were asked to state as to primary or secondary or both markets they prefer for buying shares of common stock. The observed responses are shown in the Table 37.

Table 37

Market Preferences for Buying Shares

Market	Investors		Executives and Employees		Brokers/Security Businesspersons		Total	
	No.	%	No.	%	No.	%	No.	%
Primary Market	20	47.62	27	49.09	5	41.67	52	47.71
Secondary Market	5	11.90	7	12.73	3	25.00	15	13.76
Both	17	40.48	21	38.18	4	33.33	42	38.53
Total	42	100	55	100	12	100	109	100

Source: Responses on survey questionnaire in Appendix A

Note: This Table shows the number and percentage of investors, executive and employees, and brokers/security businesspersons expressing their views on preference toward market for buying shares of common stock in Nepal.

The majority of respondents 52 out of 109 (47.71 percent) purchased the shares from the primary markets. However, 42 out of 109 of the respondents (38.53 percent) used to purchase from both primary and secondary market and remaining 13.76 percent from secondary market. The disaggregated results for investors and

executives/securities businesspersons in Table 37 also show the same picture about preferences of market types. A vast majority of the respondents reported that they prefer either primary market or both for buying shares. The attraction toward primary market has been evidenced in recent years as there are significant oversubscriptions toward initial public offerings of the issuing companies in Nepal. The results indicating high preference of investors toward primary market indicate that the majority of the respondents are not actively participating in the share trading activities.

ii. Selection of investment opportunities

It has been asked to make the ranking on different investment opportunities from most important to least. Summary of the respondents' responses is presented in the table given below.

Table 38

Responses Regarding the Investment Opportunities

Investment Options	No of Responses	Percentage
Bank Deposit	45	41.28
Gold and Silver	20	18.35
Bonds	0	0.00
Shares	16	14.68
Real Estate	25	22.94
Others	3	2.75
Total	70	100.00

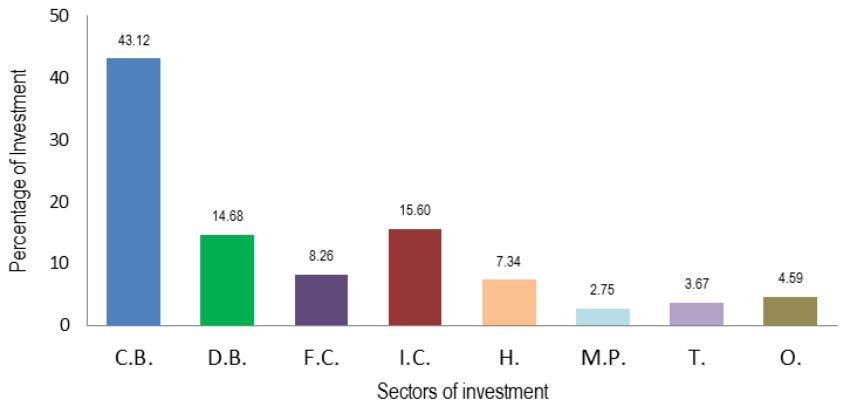
Table 38 shows the responses regarding the different investment opportunities. Respondents were asked to rank among the different investment options listed in the questions. Only first rank summary status is presented in this table. Around 41% of the respondents were ranked bank deposit as the major option for investment followed by real estate (22.94%), gold and silver (18.35%), and shares (14.68%). None of the respondents ranked bonds as a major option for investment.

iii. Sector-wise shareholding.

The respondents are asked about their sector-wise holding of the corporate firm's share. They were asked to illustrate their percentage of investment sectorwise among the different sectors listed in the questions. The sectors provided are commercial banks (C.B.), development banks (D.B.), finance companies (F.C.), insurance companies (I.C.), Hotels (H.), manufacturing and processing (M.P.), and others (O.). Number of respondents having the highest percentage of share investment is placed on ranking from high to low. The average percentage of sector-wise investment status is presented in figure 9.

Figure 9

Sector-wise Holdings of Share



The majority (43.12%) of the respondents were holding commercial bank's shares at their investment portfolio. The more investors are holding the securities of more than four companies. The shares of commercial banks followed by insurance companies, development banks, and finance companies are more popular among the Nepalese investors whereas manufacturing and processing, trading and others companies are less popular categories of shares in Nepalese stock market.

iv. Attendance of shareholders' annual general meeting.

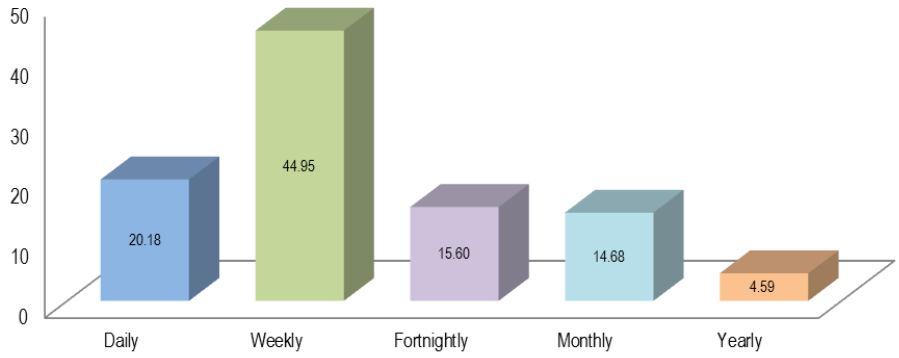
The majority of the respondents (54.13 percent) used to attend annual general meeting of corporate firms whose stocks they have. However, 45.87 percent of the respondents do not attend the annual general meeting. It indicates that the shareholders are found to be active to obtain the corporate information through attaining the annual general meeting of the corporate firm.

v. Trading frequency of shares

The respondents were asked about trading frequency of shares traded in the secondary market. The majority of the respondents (about 45 percent) have traded shares on weekly basis, followed by daily basis about 20 percent and fortnightly basis around 16 percent. It is indicated that more of the respondents are actively traded shares in the secondary market (see fig.10).

Figure 10

Trading Frequency of Shares



vi. Information dissemination to investors and influence on stock prices

The respondents were asked whether the corporate firms disseminate important information to investors/market on time, management protects shareholders' interest and legal provisions protect shareholders' interests or not. The details of the responses are presented in Table 39.

Table 39

Information Dissemination, Shareholders' Interest and Legal Provisions

	Corporate firms disseminate important information to investors/market on time		Stock index is affected by the different factors of information		Management protects shareholder's interest	
	No.	Percentage	No.	Percentage	No.	Percentage
Yes	60	55.05	81	74.31	36	33.03
No	46	42.20	11	10.09	71	65.14
Don't know	3	2.75	17	15.60	2	1.83
Total	109	100	109	100	109	100

Source: Self calculation based on the data on survey questionnaire in appendix-A

Note: This Table shows the responses on the given statements regarding information dissemination to the investors.

The majority of the respondents (55.05 percent) felt that the firms practiced to disseminate important information to investors/market on time. The majority of the respondents (74.31 percent) opined that the stock index is affected by the different factors of information. Similarly, the majority of the respondents (65.14) didn't believe that the management protects the shareholders' interest.

vii. Motive behind investing in the stocks

The respondents were asked to rank the different expectations behind the investment made on common stocks from most importance to least. Summary of the respondents' responses is presented in the Table given below.

Table 40

Responses Regarding the Motive behind Investing in the Stocks

Determinants	No of Responses	Percentage
Expectation of cash dividend	22	20.18
Expectation of increase in market price	56	51.38
Expectation of bonus/right shares	31	28.44
Because of no opportunities to invest in other field	0	0
Because of less risk compared to others	0	0
Total	109	100

Table 40 shows the responses regarding the motive behind investing in the stocks. Respondents were asked to rank among the different motives listed in the questions. Only first rank summary status is presented in this table. Around 51% of the respondents were ranked expectation of increase in market price of stocks (capital gain) is the major motive for investment followed by expectation of bonus/ right share (stock dividend) (28.44%), and expectation of cash dividend (20.18%) only. None of the respondents ranked no opportunities to invest in other fields and less risk in stocks as a major motive for investment in stock.

viii. Causes influencing stock prices

The respondents were asked to rank the different causes that influence the share prices from most importance to least. Table 41 shows the responses regarding the causes that influence market price of the stocks.

Table 41

Causes Influencing Stock Prices

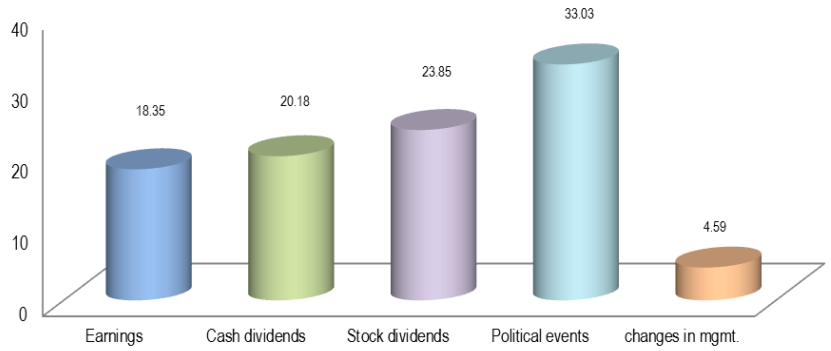
Determinants	No of Responses	Percentage
Announcement of earnings	20	18.35
Announcement of cash dividend	22	20.18
Announcement of stock dividend	26	23.85
Political- Economic events	36	33.03
Changes in management of the company	5	4.59
Total	109	100

Respondents were asked to rank among the different causes listed in the questions. Only first rank summary status is presented in this table. Table 41 indicates that the majority of the respondents (33.03%) felt the political-economic events are the major cause to influence market price of the share. Around 24% of the respondents were ranked stock dividend as the major factor for influencing stock

prices, and announcement of cash dividend was ranked by only 20.18% of respondents. This result shows the importance of political stability; one of the exogenous factor, responsible for the smooth operation of stock market.

Figure 11

Causes Influencing Stock Prices



Concerning to firm specific variables, the result is consistent with the findings of Pradhan (2003) showing the attractiveness of dividends among Nepalese investors. Further, as it is shown in the Fig. 11, stock dividend is more preferred than cash dividend among Nepalese investors when firm specific characteristics are considered.

Firm specific and macroeconomic factors and influence on stock prices

The respondents were provided with a list of 11 specific statements regarding announcement effect of firm specific and macroeconomic information and market reaction on share prices by using a five-point Likert Scale Questionnaire at the end of the questions. In order to highlight the significance of the selected statements of observations, mean value of responses for each statement of observation have been computed. The higher value of mean indicates that the statement is highly significance to majority of the respondents. Applying these criteria, the survey results are presented in Table 42 in order of their significance.

Table 42

Announcement of New Information and Market Reaction on Share Prices as Viewed by all Respondents

S. N.	Statements	Percentage of responses*					Mean	s.d.	Rank
		Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1			
1	*No. of responses*	*(42)*	*(26)*	*(30)*	*(9)*	*(2)*			
	Stock price is affected by the announcement of cash dividend.	38.53	23.85	27.52	8.26	1.83	3.89	0.759	**IV**
2	*No. of responses*	*(81)*	*(24)*	*(3)*	*(1)*	*(0)*			
	Market price of the stock is affected by the announcement of stock dividends.	74.31	22.02	2.75	0.92	0.00	4.70	1.595	**I**
3	*No. of responses*	*(59)*	*(40)*	*(7)*	*(2)*	*(1)*			
	Stock price is affected by the announcement of accounting information.	54.13	36.70	6.42	1.83	0.92	4.41	1.186	**III**
4	*No. of responses*	*(77)*	*(28)*	*(2)*	*(1)*	*(1)*			
	Stock price in market is affected by the announcement of rights share issuance.	70.64	25.69	1.83	0.92	0.92	4.64	1.519	**II**
5	*No. of responses*	*(24)*	*(39)*	*(26)*	*(19)*	*(1)*			
	Market price of the stock is affected by the announcement of new corporate management leader/team.	22.02	35.78	23.85	17.43	0.92	3.61	0.569	**V**
6	*No. of responses*	*(22)*	*(35)*	*(31)*	*(17)*	*(4)*			
	Share price is affected by the announcement of additional business expansion.	20.18	32.11	28.44	15.60	3.67	3.50	0.513	**VI**
7	*No. of responses*	*(15)*	*(37)*	*(35)*	*(17)*	*(5)*			
	Stock price is affected by the announcement of changes in corporate tax rates.	13.76	33.94	32.11	15.60	4.59	3.37	0.519	**IX**
8	*No. of responses*	*(17)*	*(36)*	*(40)*	*(13)*	*(3)*			
	Changes in capital gain tax affects share prices.	15.60	33.03	36.70	11.93	2.75	3.47	0.552	**VII**
9	*No. of responses*	*(9)*	*(32)*	*(40)*	*(23)*	*(5)*			
	Announcement of present macro-economic report by government affects share price.	8.26	29.36	36.70	21.10	4.59	3.16	0.487	**XI**
10	*No. of responses*	*(11)*	*(34)*	*(39)*	*(21)*	*(4)*			
	Market price of the stock is affected by the announcement of government's policies.	10.09	31.19	35.78	19.27	3.67	3.25	0.501	**X**
11	*No. of responses*	*(14)*	*(35)*	*(41)*	*(16)*	*(3)*			
	Announcement of changes in government affects market price of the stocks	12.84	32.11	37.61	14.68	2.75	3.38	0.535	**VIII**

Source: self-calculation based on the data on survey questionnaire in appendix- A.

Note: This Table reports mean weightage of the responses on the given statements. The mean values are calculated by assigning scores 1 through 5 for rankings from 'strongly disagree' to 'strongly agree' respectively and by multiplying each score by the fraction of responses within each rank. A score of 0 is assigned when a statement is not ranked. No. of observations are in parenthesis. *These estimates are based on 109 responses.

In table 42, the mean values derived from Likert scaling of statements varied from 3.16 to 4.70. The majority of the respondents identified that market price of the stock is mainly affected by the announcement of stock dividends followed by announcement of right share issuance and accounting information. Other statements

such as announcement of macro-economic report, changes in cabinet (government), and announcement of changes in corporate tax rates are considered as least influencing factors to determine market price of share. Therefore, the dividend related information i.e., stock dividend, bonus/right share, cash dividend and announcements of earnings have a significant impact on the stock prices. Announcement of government policies do have very little influence on the share price.

Concluding Remarks

The results documented in this study support to the priori hypothesis with respect to role of firm specific characteristics, earnings per share, book value per share, stock dividend per share but contradict with respect to cash dividend and price earnings ratio. The firm's earnings per share showed persistently a positive relation with stock prices when portfolios were formed on one-way sorts of earnings per share. In portfolio analysis, all the firm specific variables except the price earnings ratio maintain their priori expected relationship with stock prices. The correlational analysis also indicates that the variables used have maintained the relationship with stock prices as expected. In pooled OLS regression of stock prices, earnings per share, book value per share, stock dividend per share appeared to be positively significant with expected sign. The price earnings ratio and firm size possess positive sign contrary to expected though they are significant. The inclusion of macroeconomic variables holds the level of significance and direction of relationship with earnings per share, stock dividend per share and price earnings ratio but the variables; firm size changes its sign to opposite against priori expected. Similarly, all macroeconomic variables GDP, inflation and interest rate hold the priori expected relationship. However, only the variable inflation maintains statistically significant relationship with stock prices.

The time series analysis shows the cointegrating relationship between stock market prices and included macroeconomic variables. Further, it is documented that the pace of short-run error correction towards equilibrium and long-run state is about 40 percent. It concludes the existence of long-run equilibrium between stock prices and macroeconomic variables. The survey results obtained in this study added further positive results to that of secondary data analysis with respect to firm specific variables but contradict with the effect of macroeconomic variables which are seen less effective in primary data analysis. Most of the respondents have been found to have strong belief on impact of new information to price movement of the Nepalese stock market. The results also indicated that dividend and earnings position of the company are the most important firm specific factors that explain common stock prices in Nepal. Further, it is found that stock dividend is more preferred than cash dividend among Nepalese investors.

To sum up, most of the findings related to firm specific characteristics and cointegration result of macroeconomic variables illustrated in this study are consistent with many of the studies conducted in big and developed stock market around the globe. Therefore, it is worthwhile to note that the nature of data and the specification of the models used in this study support to restore the validation of results.

CHAPTER V

SUMMARY, DISCUSSION AND IMPLICATIONS

Summary

The pricing implication of common stock has always been a subject matter of controversial debate. It has attracted a considerable amount of research attention since the publication of seminal work of Markowitz (1952) - the mean variance portfolio theory. Much attention have been paid in past to explore the factors that determines common stock prices in the context of developed capital markets. However, little efforts have been made in the context of Nepalese stock market. In order to fill this gap, this study relates cross-sectional differences in stock prices of commercial banks in Nepal to the underlying behavior of firm specific and macroeconomic variables.

Stock market in Nepal has undergone a remarkable volatility during the study period than ever in the past. Unfavorable political environment, monopoly market structure, very less practice of financial analysis among investors, immature and uncompetitive broker services, poor regulation and governance structure, lack of investment awareness program, and unbalanced structure of market are some of the major characteristics of Nepalese stock market. As a result, there exists an anomaly as to what affects stock prices in Nepal. It further motivated to study both the impact of firm specific and macroeconomic variables.

The objective of this study was to examine the role of firm specific and macroeconomic variables that affect stock prices of commercial banks. Similarly, the study was also focused to examine the cointegrating relationship between stock prices and macroeconomic variables.

Based on the literature survey as mentioned in chapter two, the key variables were identified as the major determinants of common stock prices. The firm (bank) specific variables include earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), and firm size (SIZE). Similarly, the macroeconomic variables included in the study are gross domestic product (GDP), inflation (INF), and interest rate (IR).

This study has taken great care to apply alternative statistical specifications, and various estimation methods to comprehensive sets of data that extends from 2000 to 2014. This study relied on the use of both primary and secondary sources of data. The balanced panel data from ten commercial banks including 150 observations were used for the period of 15 years to analyze the cross-sectional relationship between financial variables and stock prices. Time series econometric method is used to examine the cointegrating relationship and long-run equilibrium between stock prices and macroeconomic variables. In contrast to prior studies this study attempts to analyze the evidences especially from commercial banks of Nepal and used the variables; cash dividend and sock dividend separately instead of the aggregated dividend per share. More uniquely, this study used both panel data analysis and time series models to examine the behavior of stock prices movement in Nepalese context.

Descriptive analysis was carried out to analyze the nature of the data. Bi-variate Pearson correlation and Spearman rank correlation analysis were conducted to understand the relationship among the identified variables. Portfolios were sorted by forming five equal percentiles portfolios based on one-way sorts of earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio, and firm size and comparative analysis was made to understand the relationship of the variables.

Panel data regression models were used to analyze the variables that affect stock prices of commercial banks. In order to examine cross sectional (bank) and time effect Pooled OLS and fixed effect models were applied. Validity of the models was tested and the fitted models were found to be significant. Model specification test was conducted using Hausman test and BP test. Both the test confirmed the appropriateness and adequacy of fixed effect model to analyze the cross-sectional relationship between firm specific variables and stock prices. However, pooled OLS was also applied as baseline model for comparative analysis of the empirical results.

The study also attempted to determine the dynamic relationship between macroeconomic variables and the stock market index (NEPSE; proxy of stock prices) of Nepal. It considered the yearly data of macroeconomic variables namely; gross domestic product (GDP), inflation (INF) and interest rate (IR) from 2000 to 2014; and tried to identify the relative influence of these variables on the Nepse index of the Nepalese capital market. In pursuance of this, cointegration test and modeling strategy was used based on the widely used Engle-Granger methodology. To indicate the speed of adjustment on cointegrating variables, the Error Correction Model (ECM) was used that examine the short-run dynamics as well as long-run relationship between the stock market index and the selected macroeconomic variables from the Nepalese economy.

Perceptual data collected from survey questionnaires were analyzed using qualitative analysis tools and techniques. Primary data analysis specially analyzed the views of market participants such as executives, employees, investors, brokers and security businesspersons in relation to preferences toward type of stock market choice, stock market efficiency, and factors affecting stock prices in Nepal. A total of 160 self-administered questionnaires were distributed to respondents. The response

rate being about 68%, a total of 109 respondents provided their responses on different aspects of stock market activities, buying and selling behavior, market type preferences, and factors affecting common stock prices in Nepal.

The study found a significant relationship between stock prices and the included firm specific and macroeconomic variables. The impact of bank specific characteristics (e. g., earnings per share, book value per share, and stock dividend per share) and macro-economic indicators (e.g. GDP, Inflation, and Interest rate) on stock prices of commercial banks found in line with the priori hypothesis. However, the impact of cash dividend per share, price earnings ratio, and firm size contradicted the priori hypotheses of common stock pricing in Nepali perspective.

The result of the study concludes that the earnings and stock dividend are the more significant determinants of stock prices of commercial banks in Nepal. The effects of these variables on stock prices are consistent and statistically significant across all the analyses and all the specifications of the model. The result associated with positive and statistically significant relationship between stock prices and earnings per share is consistent with the studies by Basu (1977), Jaffe, Keim, and Westerfield (1989), Easton and Haris (1991), Davis (1994), Kumar and Sehgal (2004), Ebrahim and Chadegani (2011), Mgbame and Ikhatua (2013), among others. This result also supports the finding of Pradhan and Balampaki (2004) and Basnet (2007) in the context of Nepal. The cash dividend per share shows the consistent and negatively significant relationship with stock prices in all cases. This result contradicts the priori expected sign of this study and also contradicts the findings of Adhikari (2009) in Nepalese context.

The performance of the stock dividend is especially noteworthy; this variable is statistically and economically the most important of the six firm specific variables

investigated. The importance of this variable persists if the tests are applied with the inclusion of macroeconomic variables as well.

The study indicated that macroeconomic variables influence stock prices in Nepal. Basically, GDP and inflation have positive relationship with stock prices whereas interest rate relates negatively. The result also documented the existence of cointegration between stock prices and included macroeconomic variables and therefore evidenced to exhibit long-run equilibrium relationship in the context of Nepal. This result is consistent with the findings by Maysami and Koh (2000), Maghayereh (2003), Abu-Libdeh and Harasheh (2011), Osamyoni and Osagie (2012), among others. It also supports the findings by G.C., and Neupane (2006) and Bhattarai and Joshi (2009) in Nepalese context.

The results of primary data analysis added further supports to that of secondary data analysis with respect to firm specific variables showing the attractiveness of stock dividend per share the most among the Nepalese investors. The summary of the results has been illustrated as below:

Table 43

Summary of Results

Hypothesis	Independent variable	Dependent variable	Hypothesized relationship	Finding
H_1	Earnings per share	Stock prices	Positive	Supported
H_2	Book value per share	Stock prices	Positive	Supported
H_3	Cash Dividend per share	Stock prices	Positive	Contradicted
H_4	Stock Dividend per share	Stock prices	Positive	Supported
H_5	Price earnings ratio	Stock prices	Negative	Non-conclusive
H_6	Firm size	Stock prices	Negative	Non-conclusive
H_7	GDP	Stock prices	Positive	Supported
H_8	Inflation	Stock prices	Positive	Supported
H_9	Interest rate	Stock prices	Negative	Supported
H_{10}	Microeconomic variables	Market index	Cointegration exist	Supported

Discussion

Based on the primary and secondary data analysis of present study, following discussions can be carried out with the existing research findings.

The observation on structure and pattern of stock prices for the sample banks illustrated that the banks which had established earlier do have higher stock prices. This may be due to the larger size of loan portfolio and deposit mobilization of the respective banks having early opportunity in the market. During the study period, the average earnings per share and stock prices of the sample banks were the highest for the year 2008. This fact was better explained by the growing market index when the Nepalese stock market was surged to the all-time high 1175.38 points. The results also documented strong fundamental supports by earnings to attain the all-time high Nepse index. The comparison between the Market index (NI) and commercial banks average stock price (P) over the study period as illustrated graphically has shown similar pattern and trends of movement. The movement pattern of NEPSE index and average stock prices of commercial banks indicated that the Nepalese capital market is dominated by the stocks of listed commercial banks.

The descriptive statistics of key financial variables revealed that the banks which have higher EPS, have also higher BPS, CD, SD, and P or vice versa. Likewise, banks paying higher dividend do have comparatively higher stock prices (P). In general, the banks having higher EPS have higher BPS, pay more dividend and ultimately resulted into better stock price than the low EPS banks and vice versa. The reason behind these results is related to higher profitability of the company. The higher profitability is related to better performance and market share of the business.

The correlation coefficients showed that market prices per share of common stocks are positively related to earning per share (0.7223), book value per share (0.5995), cash dividend per share (0.6157) and stock dividend per share (0.7446) and are negatively related to price earnings ratio (-0.0822) and size of the firm (-0.0808). Among given set of firm specific variables, the stock dividend documented significant and the most strong positive relation (r = 0.7446) with stock prices. This suggests that the information contents of stock dividend more significantly influence the stock prices. The result showed significant positive correlation between stock market index and inflation (0.593). It supports with the priori expectation where it was assumed that stock market moves in the direction to that of inflation. This result is consistent with Ibrahim and Aziz (2003), and Kandir (2008). Moreover, the observed positive relationship in this study gives a primary indication that stock investments in Nepal may offer a hedge against inflation. The correlation coefficient between market index and GDP was observed to be 0.519. The observed significant positive relationship between NEPSE index and GDP is consistent with priori expectation. This result is consistent with Adel (2004) and Pilinkus (2009), among others, who reported reliably positive relationship between stock market returns and real activity proxied by GDP. This result again gives an approximate indication that development in real sector activity may contribute positively to the stock market. The correlation coefficient between market index and interest rate was found to be -0.081. The result shows that relationship between interest rate and NEPSE index is negative as it was hypothesized though it is not statistically significant.

The portfolio analysis using one-way sorts of the used variables showed that banks with high earnings per share, book value, cash dividend, stock dividend per share, and high price earnings ratio- have higher market price per share. This result is

consistent with the postulates that stock prices are larger for the firms with larger earnings per share and confirms with prior studies by Easton and Harris (1991) and Davis (1994). However, the portfolio sorted by firm size reported negative relationship with stock prices. This result supported the priori expected direction of relationship between stock prices and firm specific variables. Earlier studies, for example Banz (1981), Chan, Hamao and Lakonishok (1991), and Gomes, Kogan and Zhang (2003), among others, have documented that stock returns vary inversely with firm size. The result supports these studies. Concerning to cash dividend and stock dividend, the results are consistent with the findings of Baker and Wurgler (2004b) which postulates that dividend paying firms are considered less risky than non-payer ones and investors are more willing to pay dearly to buy dividend paying stock.

The results of pooled OLS for firm specific variables established the economic and statistical significance of earnings per share, book value per share, and stock dividend per share in determining common stock prices while the performance of other variables were either poor or showed customary opposite sign of coefficients. This result is consistent with the studies by Basu (1977), Jaffe, Keim, and Westerfield (1989), Wong and Lye (1990), Fama and French (1992), Kumar and Sehgal (2004), and Mgbame & Ikhatua (2013). The negative sign of cash dividend suggested that its effects have been subsumed by other proxy variables of earnings. This result negated the priori expected hypothesis and contradicted the earlier studies including Adhikari (2009) in Nepalese context. This outcome may be due to the different sets of variables used in this study where the effect of cash dividend has been subsumed by other proxy variables of earnings and dividend. The direction and magnitude of relationship of stock prices with firm size became significant and negative as expected when macroeconomic variables were considered in the model. This finding indicated the

existence of a size effect; i.e., small banks in the sample tend to outperform larger banks. However, the economic and statistical significance of the firm size is sensitive to the specification of the model; indeed, in some cases it is not significant and shows customary opposite sign.

The priori expected signs of relationship were held true for macroeconomic variables. GDP and inflation related positively with stock prices whereas interest rate related negatively. This result presumed theoretical grounds i.e., higher GDP represents economic prosperity of the country and hence impacts positively on stock prices. As the worth of rupees gets reduced due to high money supply, increase in inflation leads to increase in stock prices. Similarly, reduction in interest rates reduces the cost of borrowing and serves as an incentive for investment that leads to higher stock prices.

The one-way fixed effect model considering the bank specific effect on stock prices showed that EPS, CD, SD and P/E are the significant variables in determining stock prices. Unlike in pooled OLS, the book value per share lost its statistical significance in determining stock prices though the expected direction of relationship was maintained. This implies that there was no bank specific impact of book value per share on stock market prices.

Of the six firm specific variables used, the performance of stock dividend was especially noteworthy. This variable was statistically and economically the most important across all the cases. The significance of this variable persists if the tests were applied with the inclusion of macroeconomic variables as well. This shows the attractiveness of stock dividend among the Nepalese investors. The regression results on dividend support the prior studies by Gordon and Shapiro (1956), Chawala and Srinivasan (1987), and Baker and Wurgler (2004b).

The reported F-statistic (20.12) was significant at 1 percent level and adjusted R^2 (0.698) meaning that the fixed effect model explains better the stock prices. This gives most of the findings consistent with many of the prior studies conducted in big and developed economies. Therefore, it is worthwhile to note that the nature of data and specification of the model in this study support to restore the validation of results.

The cointegrating relationship was found between stock market prices and included macroeconomic variables at 1% level of significance. This indicated that the economic variables generally do not have tendency to deviate in long-run from their linear relationship by an ever growing amount. In Nepalese stock market context, the stock prices and market index may drift or wander apart individually, but in long-run they will move in line with macroeconomic indicators together to restore equilibrium.

The Error Correction Model (ECM) indicated that the pace of short-run error correction towards equilibrium and long-run state is about 40 percent. This implies that once the deviation takes from the long-run equilibrium then the market index (NI) initiates all adjustments to reestablish the equilibrium condition by correcting disequilibrium at the rate of about 40 percent. It would nearly take about 2.5 years for the adjustment of stock prices to restore the long-run equilibrium. This means the macroeconomic variables and stock prices follow each other over time. This result of cointegration supports the findings by Bhattarai and Joshi (2009) in Nepalese context.

The survey results indicated that majority of respondents prefer to buy shares in primary market. The attraction toward primary market has been evidenced in recent years as there are significant oversubscriptions toward initial public offerings of the issuing companies in Nepal. Moreover, the results indicating high preference of investors toward primary market indicated that the majority of the respondents were not actively participating in the share trading activities.

The majorities of respondents were holding securities of commercial banks and were holding the securities of more than four companies. The best preferred stocks among were commercial banks followed by insurance companies, development banks, and finance companies. This shows the attractiveness of banking sector's stock among Nepalese investors. The major motives behind investing in the stocks were expectation of increase in market price of stock (capital gain) followed by Bonus/right share and cash dividend. The majority of the respondents felt the political-economic events as the major cause to influence market price of the share followed by announcement of stock dividend and cash dividend were the subsequent major causes to influence stock prices. This result indicated the importance of political stability; one of the exogenous factor, responsible for the smooth operation of stock market. Concerning to firm specific variables, the result is consistent with the findings of Pradhan (2003) showing the attractiveness of dividends among Nepalese investors.

In case of dividend, it was observed that stock dividend is more preferred than cash dividend among Nepalese investors and it is the most important determinant of stock prices in Nepal. The majority of the respondents identified that stock prices are mainly affected by the announcement of stock dividends followed by announcement of right share issuance and accounting information. Other statements such as announcement of macro-economic reports were considered as least influencing factors to determine market price of share. But, the results of primary data analysis added further supports to that of secondary data analysis with respect to firm specific variables showing the attractiveness of stock dividend among the Nepalese investors.

Implications

Based on the findings of this study, the following major implications have been proposed:

Research Implications

- This study used annual closing price of common stock and annual closing NEPSE index to represent stock prices. Annual closing prices and stock indexes may suffer from high deviations and thus may inflate the results. Therefore, future studies should be directed to consider weightage average values by computing prices from daily or weekly or monthly observations of closing prices.
- The emerging capital markets are characterized by less frequent transactions termed as thin trading. In such markets the relationship between stock prices and explanatory variables is expected to be non-linear. However, this study has assumed linear relationship between them. In order to incorporate these issues, the future studies are suggested to apply non-linear models to test the predictive power of explanatory variables.
- In this study, inclusion of some other variables, for example cash flow to price (Chan, Hamao & Lakonishok 1991), leverage (Fama & French, 1992), annual sales growth (Davis, 1994)), sales-to-price and debt-to-equity ratio (Barbee, Mukherji & Raines, 1996), may provide an important insight into the cross-sectional relationship of common stock prices in Nepal. Similarly, the inclusion of other macroeconomic variables such as unemployment rate (Gertler & Grinols, 1982), national saving and investment (Ewing, 2002), industrial production and money supply (Liu & Shrestha, 2008) also may provide important observations on the relationship between stock market prices and economic

development. Therefore, future studies should emphasis to include these variables as well.

- This study used the observations and evidences from banking sectors only. The results are thus not representative of all sectors of the economy. Hence, future studies are suggested to include observations from other sectors as well.
- To meet the basic purpose of primary sources of information analysis, this study has conducted the opinion survey among investors, executives, and securities businesspersons mostly concentrated in Kathmandu Valley. Future studies should focus to extend the survey around other places of the country including broad categories of respondents such as stock market analyst, independent practitioners, and policy makers for the purpose to assess the wider range of opinions.
- In common with prior studies in this area, the results do not enable us to determine unambiguously whether the predictability of stock pricing is a result of market inefficiency or deficiencies. As Fama and French (1980) state, "What one takes as comforting evidence for market rationality is, however, somewhat a matter of preferences. As always, the ultimate judgment must be left to the reader." Further research with different theoretical models might help to distinguish more confidently between the two competing explanations.

Practical Implications

- Common stocks are believed to be highly risky than the other types of securities and asset investments. Moreover, at the same time, it has also given high rate of return than the other type's assets. The study reveals that the cross-section of stock prices can be explained by the extent of earnings per share and dividend per share. Therefore, investors should focus to examine the fundamental factors

proxied by earnings and dividend before making stock investment choice in the context of Nepal.

- Since the stock dividend is considered as predominant determinant of stock prices, the companies issuing stock dividends do have higher market price of share. Increase in stock dividend increases the market price of shares. Hence, the companies wishing to maintain their market price should make efforts to pay higher stock dividend to shareholders.
- The analysis of write-in comments of the respondents indicates that unbalanced structure of market is also a major problem with stock market in Nepal because it is dominated by large numbers of firms from financial sector. Therefore, there is a need to create conducive environment to increase the participation of manufacturing sectors in Nepalese stock market.
- Because of market monopoly of Nepal Stock Exchange Ltd., it is difficult to establish competitive price discovery process and mechanism on stock trading. The survey results in write in comments also indicate the need to establish competitive stock exchanges at private sector to facilitate price discovery process, to create an environment for developing professional financial analysis services, to make broker service matured and more competitive, and to extensively conduct the investor awareness program in stock market.
- The list of explanatory variables employed in this study, of course, is non-exhaustive; the results provide practical implications for portfolio formation and performance evaluation by investors whose primary concern is long-term returns and capital gain.
- The cointegration and long-run equilibrium between stock prices and macroeconomic variables imply that the changes in macroeconomic variables can

explain stock market movement in Nepal. Therefore, investors in Nepalese stock market should analyze the economic and real sector activities while making stock investment decision.

In conclusion, the need to understand the possible factors that could predict the stock prices movement in Nepal is vital because the increased efficiency in stock market will consequently boost Nepalese economy.

Critique of the Study

The most of the findings reported in this study are consistent with many of the studies conducted in big and developed stock market around the globe. Therefore, it is worthwhile to note that the nature of data and the specification of the models used in this study support to restore the validation of results. However, the variables used in this study are based on prior studies. It has not been possible to incorporate all the explanatory variables available in the literature due to limitations of availability of data. As such, potentially important explanatory variables may have been omitted. So, in general, such statistical inferences should be made with caution since the correct specification is unknown.

In this study, the sample banks were selected on the basis of availability of required information and data as per the criterion set for selection. Hence, the conclusions drawn from the results should be interpreted within the limitations imposed by purposive sampling.

As the number of observations limited to 15 years, the time series analysis that employed Engle and Granger (1987) test for cointegration may not as appropriate as with large number of observations which may impacts on the findings of this study.

REFERENCES

Abu-Libdeh, H. & Harasheh, M. (2011). Testing for correlation and causality relationships between stock prices and macroeconomic variables: The case of Palestine Securities Exchange. *International Review of Business Research Papers, 7*(*5*), 141-154.

Adel, A. S. (2004). The dynamic relationship between macroeconomic factors and the Jordanian stock market. *International Journal of Applied Econometrics and Quantitative Studies*, *1*(1), 97- 114.

Adhikari, N. (2009). Dividend policy in Nepalese enterprises: Case studies. *SEBON Journal, 3*, 49-79.

Adjasi, C.K.D. (2009). Do stock market matters in investment growth in Africa?, *Journal of Developing Areas, 43*(1), 109 – 120.

Aggarwal, R., Rao, R. & Hiraki, H. (1986). The nature of risk adjusted returns on the Tokyo Stock Exchange: P/E, size and seasonal influences. *Journal of Financial Research*, 13, 249-263.

Alagidede, P. & Panagiotidis T. (2010). Can common stocks provide a hedge against inflation? Evidence from African countries. *Review of Financial Economics,* 19, 91-100.

Alie, H.I. (1984). The Nigerian stock exchange: Historical perspectives, operations and contributions to economic development. *Central Bank of Nigerian Bullion*, 2, 65-69.

Avadhani, V. A. (1996). *Investment management*. Bombay: Himalaya Publishing House.

Bachelier, L. (1900). *Theory la speculation*. Gauthiers-Villars.

Baker, M. & Wurgler, J.(2004a). A catering theory of dividends. *Journal of Finance*, 59, 1125-65.

Baker, M. & Wurgler, J. (2004b). Appearing and disappearing dividends: The link to catering incentives. *Journal of Financial Economics,* 73, 271-288.

Ball, R. (1978). Anomalies in relationships between securities' yields and yield-surrogates. *Journal of Financial Economics, 6*, 103-126.

Banz, R. (1981). The relationship between returns and market value of common stocks. *Journal of Financial Economics*, 9, 3-18.

Baskota, N.P. (2007). Stock price volatility in Nepal [*Unpublished M. Phil. Thesis*], FOM, Tribhuwan University.

Basnet, S. K. (2007). Stock price volatility in Nepal [*Unpublished M. Phil. Thesis*]. FOM, Tribhuwan University.

Basu, S. (1977). Investment performance of common stocks in relation to their price-earnings ratios: A test of the efficient market hypothesis. *Journal of Finance,* 32, 663-682.

Basu, S. (1983). The relationship between earnings yield, market value, and return for NYSE common stocks: Further evidence. *Journal of Financial Economics,* 12, 129-156.

Beaver, W. (1968). The information content of annual earnings announcements. *Journal of Accounting Research,* 35, 67–92.

Bernanke, B. S. & Gertler, M. (2001). Should central banks respond to movements in asset prices?. *The American Economic Review, 91*(2), 253-257.

Bhattarai, R.C. & Joshi, N.K. (2009). Dynamic relationship among the stock market and macroeconomic factors: Evidence from Nepal. *South Asia Economic Journal, 10*(2), 451-469.

Bilson, C. M., Timothy, J.B. & Vincent, J. H. (2001). Selecting macroeconomic variables as explanatory factors of emerging stock market returns. *Pacific-Basin Finance J.*, 9, 401-426.

Chan, L.K., Hamao, Y. & Lakonishok, J. (1991). Fundamentals and stock returns in Japan. *Journal of Finance, 46*, 1739-1789.

Chaudhary, T. (1996). Stock market volatility and the crash of 1987: Evidence from six emerging markets. *Journal of International Money and Finance,*15, 969-981.

Chawla, D. & Srinivasan, G. (1987). Impact of dividend and retention on share price-An econometric study. *Decision, 14*(3), 137-140.

Chen, N.F. (1991). Financial investment opportunities and the macroeconomy. *The Journal of Finance, 46*(2), 529-554.

Chen, N., Roll, R. & Ross, S.A. (1986). Economic forces and the stock market. *Journal of Business,* 56, 383-403.

Coleman, A.K., & Tettey, K.F.A. (2008). Impact of macroeconomic indicators on stock market performance: The case of Ghana stock exchange. *Journal of Risk Finance, 9*(4), 365-378.

Cook, T. & Michael, R. (1984). Size and earnings/price ratio anomalies: One effect or two?, *Journal of Financial and Quantitative Analysis*,19, 449-466.

Davis, J. L. (1994). The cross-section of stock returns and survivorship bias: Evidence from delisted stocks [*Working paper]*. Kansas State University.

Daniel, K., Titman, S. & Wei, K.C.J. (2001). Explaining the cross-Section of stock returns in Japan: Factors or Characteristics?. *Journal of Finance, 56*(2), 743-766.

Dickey, D. & Fuller, W.A. (1981). Likelihood ration statistics for autoregressive time series with a unit root. *Econometrica,* 49, 1057-1072.

Easton, P.D. & Harris T.S. (1991). Earning as explanatory variable for returns. *Journal of Accounting Research*, 19-36.

Ebrahimi, M. & Chadegani, A. A. (2011). The relationship between earning, dividend, stock price and stock return: Evidence from Iranian companies. *International Conference on Humanities, Society and Culture, IPEDR,* 20, 318-323.

Elton, E.J. & Gruber, M. J. (1991). *Modern portfolio theory and investment analysis.* New York: Wiley.

Enders, W. (2004). *Applied econometric time series* (2nd ed.). New Jersey: John Wiley & Sons.

Engle, R. F. & Granger, C.W.J. (1987). Cointegration and error correction: Representation estimation and testing. *Econometrica,* 55, 251-276.

Ewing, B.T. (2002). Macroeconomic news and returns of financial companies. *Managerial and Decision Economics, 23*(8), 439-446.

Fama, E.F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383-417

Fama, E.F. (1981). Stock returns, real activity, inflation, and money. *The American Economic Review*, *71*(4), 545-565.

Fama, E.F. & Schwert, G.W. (1977). Asset returns and inflation. *Journal of Financial Economics, 5*(2), 115-146.

Fama, E.F. & French, K.R. (1992). The cross-section of expected stock returns. *Journal of Finance* 47, 427-465.

Fama, E. F. & French, K.R. (1995). Size and book-to-market factors in earnings and returns. *Journal of Finance,* 50, 131-155.

Fama, E. F. & French, K.R. (1996). The CAPM is wanted, Dead or Alive. *Journal of Finance, 53*(5), 1947-1958.

Fama, E. F. & French, K. R. (2008). Dissecting anomalies. *Journal of Finance,* 63, 1653–78.

Fisher, I. (1930). *The theory of interest*. MacMillan: New York.

Flannery, M. J. & Protopapadakis, A. A. (1988). From T-Bills to common stocks: Investigating the generality of intra-week return seasonality. *Journal of Finance, 43*(2), 431-50.

Flannery, M.J. & Protopapadakis, A. A. (2002). Macroeconomic factors do influence aggregate stock returns. *Review of Financial Study,* 15, 751-782.

Foresti, P. (2006). Testing for Granger causality between stock prices and economic growth. *MPRA* [*Paper no*. 2962], 2-8.

Friend, I. & Puckett, M. (1964). Dividend and stock prices. *The American Economic Review,* 54, 656-682.

Fung, H. G. & Lie, C. J. (1990). Stock market and economic activities: A causal analysis. *Pacific-Basin Capital Markets Research*.

Gan, C., Lee, M., Yong, H. & Jhang, J. (2006). Macroeconomic variables and stock market interactions: Newzealand evidence. *Investment Management and Financial Innovations*, 3, 89-101.

GC, S.B. & Neupane, S. (2006). Stock market and economic development: A causality test. *The Journal of Nepalese Business Studies, 3*(1), 36-44.

Geyser, J.M. & Lowies, G. A. (2001). The impact of inflation and stock prices in two SADC countries. *Meditari Accountancy Research,* 9, 109-122.

Gjerde, O. & Saettem, F. (1999). Causal relations among stock returns and macroeconomic variables in a small, open economy. *Journal of International Financial Mart*, 9, 61-74.

Gomes, J., Kogan, L. & Zhang, L. (2003). Equilibrium cross-section of returns. *Journal of Political Economy,* 111, 693–732.

Gonedes, N. J. (1972). Efficient capital markets and external accounting. *The Accounting Review*, *47*(1), 11-21

Gordon, M. J. (1962). *The investment, financing, and valuation of the corporation.* Illinois: Irwin Publishers.

Gordon, M. & Shapiro, E. (1956). Capital equipment analysis: The required rate of profit. *Management Science,* 3, 102-112.

Graham, B. & Dodd, D. (1940). *Security analysis: Principles and technique*. New York: McGraw-Hill.

Grauer, R. R. (1999). On the cross-sectional relation between expected returns, betas, and size. *Journal of Finance*, 54, 773-789.

Gretler, M. & Grinols, E.L. (1982). Unemployment, inflation, and common stock returns. *Journal of Money Credit and Banking,* 14, 216-33.

Hasan, Md. B., Alam, Md. N., Amin, Md. R. & Rahaman, Md. A. (2014). The size and value effect to explain cross-section of expected stock returns in Dhaka stock exchange. *International Journal of Economics and Finance, 7*(1).

Ibrahim, M.H. & Aziz, H. (2003). Macroeconomic variables and the Malaysian equity market: A view through rolling subsamples. *J. Econ. Stud., 30*(1), 6-27.

Jaffe, F. & Mandelker, G. (1976). The Fisher effect for risky assets: An empirical investigation. *The Journal of Finance, 31*(2), 447-458.

Jaffe, J., Keim, D. & Westerfield, R. (1989). Earnings yields, market values and stock returns. *Journal of Finance,* 44, 135-148.

Johansen, S. (1988). Statistical analysis of cointegrating vectors. *Journal of Economic Dynamics Control,* 12, 231-254.

Joshi, R. (2012). Effects of dividends on stock prices in Nepal. *NRB Economic Review, 24*(2), 61-75.

KC, F. B. & Joshi, N. K. (2005). The Nepalese stock market: Efficient and calendar anomalies. *Economic Review*, 17

KC, I. D. (2009). The cross section of stock market returns. *Quantitative Analysis,* 32, 463-489.

Knez, P. J. & Ready, M. J. (1997). On the Robustness of size and book-to-market in cross-sectional regressions. *The Journal of Finance, 52*(4), 1355-1382.

Kothari, S.P., Shanken, J. & Sloan, R.G. (1995). Another look at the cross-section of expected returns [*Working paper]*. University of Rochester.

Kumar, M. & Sehgal, S. (2004). Company characteristics and common returns: The Indian experience. *Vision,* 34-45.

Lakonishok, J. & Shapiro, A. (1986). Systematic risk, total risk and size as determinants of stock market returns. *Journal of Banking and Finance,* 10, 115-132.

Kandir, S. (2008). Macroeconomic variables, firm characteristics and stock returns: Evidence from Turkey. *International Research Journal of Finance and Economics*, 16, 35-44.

Karki, D (2012). Economic impact of tourism in Nepal's economy using cointegration and error correction model. *Researchgate,* 1-12. Retrieved from https://www.researchgate.net/publication/276027809, http://dx.doi.org/10.13140/RG.2.1.4839.5684

Kim, D. (1997). A reexamination of firm size, book-to-market, and earning price in the cross-section of expected stock returns. *Journal of Finance.* 50, 1605-1634.

Lakonishok, J., Shleifer, A. & Vishny, R.W. (1993). *Contrarian investment, extrapolation and risk* [Working paper]. University of Illinois.

La Porta, R. (1996). Expectations and the cross-section of stock returns. *Journal of Finance, 51*(5), 1715-1742.

Liu, M.-H. & Shrestha, K.M. (2008). Analysis of the long-term relationship between macroeconomic variables and the Chinese stock market using heteroscedastic cointegration. *Managerial Finance*, *34*(11), 744-755.

Mackay, C. (1841). *Extraordinary popular delusions and the madness of crowds*. New York: Harmony Books.

Maghayreh, A. (2003). Causal relations among stock prices and macroeconomic variables in the small, open economy of Jordan. *Journal of King Abdul Aziz University, 17*(2), 4-10.

Manandhar, K. D. (1998). A study of dividend policy and value of the firm in small stock market: A case of Nepal. *Management Dynamics, 8*(1).

Marian, V. (2009). *Does high price earnings ratio predict future falls of stock price?*. Prague: University of Economics.

Markowitz, H. (1952). Portfolio selection. *Journal of Finance, 7,* 77-91.

Maysami, R.C., Howe, L.C. & Hamaz, M.A. (2004). Relationship between macroeconomic variables and stock market indices: Cointegration evidence from stock exchange of Singapore's All-S sector indices, *Jurnal Penguruson*, 24, 47-77.

Maysami, R. & Koh, T. S. (2000). A vector error correction model of Singapore stock market. *Int. Review of Econ. Finance,* 9, 79-96.

McMillan, D. G. (2005). Time variation in the cointegrating relationship between stock prices and economic activity. *International Review of Applied Economics,* 19, 359-368.

Mgbame, C.O. & Ikhatua, O.J. (2013). Accounting information and stock volatility in the Nigerian capital market: A Garch analysis approach. *International Review of Management and Business Research, 2*(1), 265-281.

Miller, M. & Modigliani, F. (1961). Dividend policy, growth, and the valuation of shares. *The Journal of Business, 34*(4), 411- 433.

Mukherjee, T. & Naka, A. (1995). Dynamic linkage between macroeconomic variables and the Japanese stock market: An application of a vector error correction model. *Journal of Financial Research,* 18, 223-37.

Nasseh, A. & Strauss J. (2000). Stock prices and domestic and international macroeconomic activity: A cointegration approach. *The Quarterly Review of Economics and Finance,* 40, 229-245.

Nelson, C. (1976). Inflation and rates of return on common stocks. *The Journal of Finance, 31*(2), 471-487.

Nichols, D. C. & James, W.M. (2004). How do earnings numbers relate to stock returns. *Accounting Horizons, 18*(4), 263–286.

Nicholson, S.F. (1960). Price-earnings ratios. *Financial Analysts Journal,* 16, 43-45.

Osamwonyi, I.O. & Osagie, E.I.E. (2012). The relationship between macroeconomic variables and stock market index in Nigeria. *J Economics, 3*(1), 55-63.

Pilinkus, D. (2009). Stock markets and macroeconomic variables: Evidences from Lithuania. *Journal of Economics and Management.* 14, 884-893.

Pradhan, R.S. (1993). Stock market behavior in small capital market: A case of Nepal. *The Nepalese Management Review*, 20-32.

Pradhan, R.S. (2003). *Fundamental of stock returns in Nepal: Research in Nepalese finance.* Kathmandu: Buddha Academic Publishers.

Pradhan, R.S. & Balampaki, S.B. (2004). Fundamental of stock returns in Nepal. *SEBON Journal, 1*(1), 8-24.

Reilly, F. & Brown, K. (2000). *Investment analysis and portfolio management* (6th ed.). London: The Dryden Press.

Reinganum, M. (1981). Mis-specification of capital asset pricing: Empirical anomalies based on earnings yields and market values, 9, 19-46.

Reinganum, M. (1990). Market microstructure and asset pricing: An empirical investigation of NYSE and NASDAQ securities. *Journal of Financial Economics*, 28, 127- 148

Rosenberg, B., Reid, K. & Lanstein, R. (1985). Persuasive evidence of market inefficiency. *Journal of Portfolio Management*, 11, 9-17.

Schwert, G. W. (1981). The adjustment of stock prices to information about inflation. *The Journal of Finance, 36*(1), 15-29.

Schwert, G. W. (1989). Why does stock market volatility change over time?. *Journal of Finance,* 44, 1115-1145.

Shafana, M., Rimziya, A. & Jariya, A. I. (2013). Relationship between stock returns and firm size, and book-to-market equity: Empirical evidence from selected companies listed on milanka price index in Colombo stock exchange. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS), 4*(2), 217-225.

Shrestha, P.K. & Subedi, B.R. (2014). Determinants of stock market performance in Nepal. *NRB-Economic Review, 26*(2), 25-40.

Simlai, P. (2009). Do common risk factors always capture strong variation in stock returns? *Journal of Applied Business and Economics*, 9(1), 41–61.

Stattman, D. (1980). Book values and stock returns. *The Chicago MBA: A Journal of Selected Papers,* 4, 25-45.

Thorbecke, W. (1997). On stock market returns and monetary policy. *Journal of Finance,* 52, 635-54.

Wong, K.A. (1989). The firm size effect on stock returns in a developing stock market. *Economic Letters,* 30, 61-65.

Wong, K.A. & Lye, M.S. (1990). Market values, earnings yields and stock returns. *Journal of Banking and Finance,* 14, 311-326

Wong, K.A., Tan, R.S.K. & Liu, W. (2006). The cross-section of stock returns on the Shanghai stock exchange. *Quantitative Finance and Accounting*, 26, 23-39.

Wonngbangpo, P. & Subhash, C.S. (2002). Stock market and macroeconomic fundamental dynamic interactions: ASEAN-5 Countries. *J. Asian Econ.,* 13, 27-51.

APPENDICES

Appendix A: Survey Questionnaires

Survey Questionnaire on the firm specific and macroeconomic determinants of common stock prices

Dear Respondents,
I am a research scholar of Master of Philosophy (MPhil) Program of Kathmandu University. I am conducting a study on the "*Firm Specific and Macroeconomic Determinants of Common Stock Prices: Evidence from Commercial Banks of Nepal"* as a partial fulfillment of my MPhil degree. The purpose of this study is to examine how the various firm specific and macroeconomic variables affect the stock market prices of commercial banks in Nepal. You are, therefore, humbly requested to complete this survey questionnaire. Your co-operation is highly appreciated. Your response will be quite confidential and will be used at aggregate level only. If you would like to have a copy of findings, please indicate the same.

Thanking you,

Sincerely,

Dipendra Karki

September, 2014

* Required

A. Respondent's profile

a. Name (Optional): ……..

b. Sex*: ☐ Male ☐ Female

c. Age*: (Please make a tick-mark)
☐ below 30 years ☐ 30 to 45 years ☐ above 45 years

d. Profession*: ☐ Government service ☐ Private service

e. Experience*: (Please make a tick-mark)
☐ below 5 years ☐ 5-10 years ☐ above 10 years

f. Education*: (Please make a tick-mark)
☐ Up to certificate level ☐ Bachelors ☐ Masters ☐ above Masters

g. Institution: …… Address:……

Contact No.:…… Email……..…….……

B. General questions:

(Relating to shareholder's perception for buying common stocks and market price)

1. Which market do you prefer to purchase the stocks?* (Please check below)

- ☐ Primary market
- ☐ Secondary market
- ☐ Both

2. How do you priorities the following investment opportunities?* (Please rank the following in order of your priority of investment by assigning 1 to most important one and so on).

Bank deposit	
Gold and silver	
Bonds	
Shares	
Real estate	
Others (please specify)	

3. What is the percentage of sector-wise investment in your total portfolio? (Please check as many as applicable)

Tick	%
☐ Commercial banks	
☐ Development banks	
☐ Finance companies	
☐ Insurance companies	
☐ Hotels	
☐ Trading	
☐ Others	
☐ Manufacturing & Processing	

4. Have you attended any annual general meeting of corporate firms of which you hold shares?*

(Please choose one).

☐ Yes ☐ No

5. How frequently do you buy or sell shares in secondary market?* (Please tick appropriate box).

- ☐ Daily
- ☐ Weekly
- ☐ Fortnightly
- ☐ Monthly
- ☐ Yearly

6. Do you think that corporate firms disseminate important information to investors market on time?*

☐ Yes ☐ No ☐ Don't know

7. Do you think that the stock index is affected by the different factors of information?*

(Please make a tick mark)

☐ Yes ☐ No ☐ Don't know

8. Do you feel the management protects shareholder's interest?*

☐ Yes ☐ No ☐ Don't know

9. What is your major motive behind investing in the stocks?* (Please rank in order of importance)

Causes of interest	*Lowest 1*	*2*	*3*	*4*	*5 Highest*
Expectation of cash dividend	○	○	○	○	○
Expectation of increase in market price	○	○	○	○	○
Expectation of bonus/right shares	○	○	○	○	○
Because of no opportunities to invest	○	○	○	○	○
Because of less risk compared to other	○	○	○	○	○

10. What do you think are the factors affecting the share prices? (Please rank in order of importance)

Causes affecting share prices	*Lowest 1*	*2*	*3*	*4*	*5 Highest*
Announcement of earnings	○	○	○	○	○
Announcement of cash dividend	○	○	○	○	○
Announcement of stock dividend	○	○	○	○	○
Political-economic events	○	○	○	○	○
Changes in mgmt. of the company	○	○	○	○	○

C. Specific questions: Relating to firm specific and macroeconomic variables and market reaction on stock prices. Please mark (√) on your choice.

1 = Strongly disagree **2** = Disagree **3** = Neutral **4** = Agree **5** = Strongly agree

S.No.	Statements	5	4	3	2	1
1	Stock price is affected by the announcement of cash dividend.					
2	Market price of the stock is affected by the announcement of stock dividends.					
3	Stock price in market is affected by the announcement of accounting information					
4	Stock price is affected by the announcement of right share issuance.					
5	Market price of the stock is affected by the announcement of new corporate management leader/team.					
6	Share price is affected by the announcement of additional business expansion					
7	Stock price is affected by the announcement of changes in corporate tax rates					
8	Changes in capital gain tax affects share prices					
9	Announcement of present macro-economic report by government affect share price					
10	Market price of the stock is affected by the announcement of government policies.					
11	Announcement of changes in cabinet (government) affects market price of the stocks.					

D. Any other suggestions and comments on different variables responsible for movement of common stock prices in Nepalese stock market?

... ... ……………………………… ………………………….. ………………...

... ... ……………………………… ………………………….. ………………...

Thank you

Appendix B: Tables of Different Analysis and Regression Models

Table 1: Descriptive Statistics of Macroeconomic Variables

This table shows the descriptive statistics of stock market prices and selected macroeconomic variables over the study period from 1999/00 to 2013/14. The variables are stock prices proxied by NEPSE Index (NI), rate of inflation (INF), interest rate (IR) defined as the 91 days treasury bills rate and the nominal gross domestic product (GDP) Rs. in billion

Statistics	NEPSE Index (NI)	Inflation (INF)	Interest Rate (IR)	Nominal GDP *N' b* (GDP)
Mean	481.205	6.886	3.958	919.528
Median	386.800	6.920	3.780	727.827
Std. Deviation	262.385	2.986	2.544	503.749
Coeff. of variation	0.545	0.434	0.643	0.545
Skewness	0.987	-0.337	0.327	0.731
Kurtosis	-0.215	-1.343	-0.787	-0.824
Minimum	204.90	2.479	0.020	379.488
Maximum	1036.11	11.078	8.520	1928.518
KS Statistic	0.915	0.880	0.398	0.704
***p*- value**	0.372	0.421	0.997	0.705

Table 2: Pooled OLS Regression or Constant Coefficient Model

Regression results of stock prices on six firm specific variables and three macro-economic variables based on panel data of 10 commercial banks with 150 observations for period 2000-2014. The regression models include pooled OLS model. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error, t-value and p-value. Dependent variable is the stock price (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (SIZE), gross domestic product (GDP), inflation (INF), and interest rate (IR).

$$P_{it} = \alpha + b_{1t}\, EPS_{it} + b_{2t}\, BPS_{it} + b_{3t}\, CD_{it} + b_{4t}\, SD_{it} + b_{5t}\, P/E_{it} + b_{6t}\, SIZE_{it} + b_{7t}\, GDP_{it} + b_{8t}\, INF_{it} + b_{9t}\, IR_{it} + \varepsilon_{it}$$

Panel (P_{it} = Stock Price)				
	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	751.934	567.375	1.3253	0.18724
EPS	6.27305**	3.07862	2.0376	0.04347
BPS	1.5289**	0.75554	2.0236	0.04492
CD	-2.51084	4.15084	-0.6049	0.54623
SD	17.5141***	3.69011	4.7462	<0.00001
P_E	2.25226***	0.739045	3.0475	0.00276
LnSIZE	-466.767**	183.267	-2.5469	0.01195
GDP	0.129603	0.294292	0.4404	0.66033
INF	192.123***	38.9164	4.9368	<0.00001
IR	-36.1235	27.1482	-1.3306	0.18548
R^2	68.25%			
F-statistics	33.43			

Significance codes: * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 3: The Two-Way Fixed Effect Model (Banks and Years as Dummys)

Regression results of stock prices on six firm specific variables and three macro-economic variables based on panel data of 10 commercial banks with 150 observations for period 2000-2014. The regression models include two-way fixed effect model. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error, t-value, and p-value. Dependent variable is the market prices of stock (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (SIZE), gross domestic product (GDP), inflation (INF), and interest rate (IR).

The applied equation: $P_{it} = \alpha_{it} + b_{1t}\, EPS_{it} + b_{2t}\, BPS_{it} + b_{3t}\, CD_{it} + b_{4t}\, SD_{it} + b_{5t}\, P/E_{it} + b_{6t}\, SIZE_{it} + b_{7t}\, GDP_{it} + b_{8t}\, INF_{it} + b_{9t}\, IR_{it} + \delta_i B_i + \delta_t T_t + \varepsilon_{it}$

Panel (P_{it} = Stock Price)				
	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	1042.36	2740.07	0.3804	0.70431
EPS	-4.16103	2.94612	-1.4124	0.16043
BPS	2.45118***	0.673168	3.6413	0.00040
CD	-7.1941*	4.12418	-1.7444	0.08365
SD	15.0741***	3.31742	4.5439	0.00001
P_E	1.16503**	0.562307	2.0719	0.04042
LnSIZE	-454.673**	177.127	-2.5669	0.01149
GDP	2.80388**	1.3121	2.1370	0.03463
INF	-240.552**	107.145	-2.2451	0.02659
IR	178.991	405.313	0.4416	0.65957
BankNIB	-878.81***	213.08	-4.1243	0.00007
BankSCB	448.896**	204.393	2.1962	0.03000
BankHBL	-1027.3***	212.552	-4.8332	<0.00001
BankNSBI	-948.083***	240.19	-3.9472	0.00013
BankNBB	-1100.46***	246.627	-4.4620	0.00002
BankEBL	-559.378**	242.677	-2.3050	0.02288
BankBOK	-1212.13***	230.296	-5.2634	<0.00001
BankNCC	-1314.24***	257.97	-5.0946	<0.00001
BankNICA	-1143.4***	232.528	-4.9173	<0.00001
factor(Year)2001	153.131	232.407	0.6589	0.51123
factor(Year)2002	77.0055	558.436	0.1379	0.89055
factor(Year)2003	871.361	772.712	1.1277	0.26171
factor(Year)2004	444.292	1385.24	0.3207	0.74897
factor(Year)2005	1032.9***	391.3	2.6397	0.00940
factor(Year)2006	1394.59***	488.089	2.8573	0.00504
factor(Year)2007	1826.62***	547.942	3.3336	0.00114
factor(Year)2008	2852.15***	876.131	3.2554	0.00147
factor(Year)2009	2025.66	1722.89	1.1757	0.24203
factor(Year)2010	0.389912	2377.03	0.0002	0.99987
factor(Year)2011	-828.992	2734.38	-0.3032	0.76228
R^2	85.83%			
F-statistics	25.066			

Year dummies omitted due to exact collinearity: dt_12, dt_13, dt_14 & dt_15

Significance codes: * Significant at 10%, ** Significant at 5%, *** Significant at 1%

Table 4: Random Effect Model (REM)

Regression results of stock prices on six firm specific variables and three macro-economic variables based on panel data of 10 commercial banks with 150 observations for period 2000-2014. The regression models include Random Effect Model. The reported values are intercepts and slope coefficients of respective explanatory variables with standard error, t-value, and p-value. Dependent variable is the stock price (P), and independent variables are earnings per share (EPS), book value per share (BPS), cash dividend per share (CD), stock dividend per share (SD), price earnings ratio (P/E), firm size (SIZE) per capita gross domestic product (GDP), inflation (INF), and interest rate (IR).

$P_{it} = \alpha_i + b_1 EPS_{it} + b_2 BPS_{it} + b_3 CD_{it} + b_4 SD_{it} + b_5 P/E_{it} + + b_{6t} SIZE_{it} + b_{7t} GDP_{it} + b_{8t} INF_{it} + b_{9t} IR_{it} + \delta_i B_i + \delta_t T_t + \omega_{it}$

Panel (P_{it} = Stock Price)				
	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-582.332***	222.077	-2.6222	0.00970
EPS	7.7697**	3.08026	2.5224	0.01277
BPS	1.91885**	0.754122	2.5445	0.01202
CD	-4.69873	4.13924	-1.1352	0.25823
SD	17.4373***	3.7611	4.6362	<0.00001
P_E	2.25814***	0.753284	2.9977	0.00322
GDP	-0.396044*	0.213835	-1.8521	0.06610
INF	150.083***	35.9217	4.1781	0.00005
IR	-40.0521	27.6266	-1.4498	0.14935

Significance codes: * Significant at 10%, ** Significant at 5%, *** Significant at 1%

#To overcome the problem of degree of freedom for being 10 cross-sectional units and 9 explanatory variables in Random effect model including all variables, one of the least significant variable LnSIZE, has been dropped in the full model regression.

Breusch-Pagan test -

Null hypothesis: Variance of the unit-specific error = 0
Asymptotic test statistic: Chi-square(1) = 0.883157
with p-value = 0.347338

Hausman test -

Null hypothesis: GLS estimates are consistent
Asymptotic test statistic: Chi-square(8) = 28.3793
with p-value = 0.000407246

Table 5 **Variance Inflationary Factors of the Pooled OLS Model Specifications I through XIII**
This table shows values of variance inflationary factors (VIF) to diagnose the problems of multicollinearity associated with model specifications I through XIII.

Specification	Explanatory Variables	VIF
I	*EPS*	1.000
II	*BPS*	1.000
III	*CD*	1.000
IV	*SD*	1.000
V	*PE*	1.000
VI	*LnSIZE*	1.000
VII	*EPS*	2.167
	BPS	2.167
VIII	*BPS*	1.886
	SD	1.886
IX	*EPS*	3.777
	CD	3.823
	SD	3.972
X	*BPS*	2.124
	SD	1.932
	PE	1.185
	LnSIZE	1.073
XI	*EPS*	3.981
	CD	3.868
	SD	4.225
	PE	1.099
	LnSIZE	1.092
XII	*EPS*	4.497
	BPS	2.491
	CD	3.874
	SD	4.347
	PE	1.196
	LnSIZE	1.113
XIII	*EPS*	4.952
	BPS	2.788
	CD	4.396
	SD	4.895
	PE	1.221
	LnSIZE	7.215
	GDP	6.560
	INF	4.031
	IR	1.423

Appendix C: Data on Firm Specific Variables

1. NABIL Bank Limited (NABIL)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1400	84	251	55	55	16.67	39.28
Y01	1500	59	216	40	60.11	25.42	49.17
Y02	700	55	233	30	30	12.73	49.17
Y03	740	85	267	50	50	8.71	49.17
Y04	1000	93	301	65	65	10.75	49.17
Y05	1505	105	337	70	70	14.33	49.17
Y06	2240	129	381	85	85	17.36	49.17
Y07	5050	137	418	100	140	36.86	49.17
Y08	5275	116	354	60	100	45.47	68.92
Y09	4899	113	324	35	85	43.35	96.57
Y10	2384	84	265	30	70	28.38	144.91
Y11	1252	71	225	30	30	17.63	202.98
Y12	1355	84	269	40	60	16.13	202.98
Y13	1815	95.14	275	40	25	19.08	243.68
Y14	2535	83.68	251	45	20	30.29	304.72

2. Nepal Investment Bank Limited (NIB)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1401	54	303	25	50	25.94	13.54
Y01	1150	33	276	0	0	34.85	17.00
Y02	760	34	308	0	30	22.35	17.00
Y03	795	40	216	20	20	19.88	29.53
Y04	940	52	247	15	15	18.08	29.53
Y05	800	40	201	12.5	12.5	20.00	58.77
Y06	1260	59	240	20	55.46	21.36	59.06
Y07	1729	63	235	5	30	27.44	80.14
Y08	2450	58	223	7.5	40.83	42.24	120.39
Y09	1388	37	162	20	20	37.51	240.71
Y10	705	53	190	25	25	13.30	240.91
Y11	515	39	171	25	50	13.21	301.14
Y12	511	28	161	5	30	18.25	376.62
Y13	784	46.2	151	25	10	16.97	414.48
Y14	960	40.7	141	25	15	23.59	476.87

3. Standard Chartered Bank Nepal Limited (SCB)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1985	116	299	100	100	17.11	33.95
Y01	2144	127	328	100	100	16.88	33.95
Y02	1575	141	364	100	100	11.17	33.95
Y03	1640	149	403	110	120	11.01	33.95
Y04	1745	144	399	110	110	12.12	37.46
Y05	2345	143	422	120	120	16.40	37.46
Y06	3775	176	468	130	140	21.45	37.46
Y07	5900	167	512	80	130	35.33	41.33
Y08	6830	132	402	80	130	51.74	62.08
Y09	6010	110	328	50	100	54.64	93.20
Y10	3279	78	241	55	70	42.04	139.85
Y11	1800	70	228	50	50	25.71	161.02
Y12	1799	73	256	45	60	24.64	161.02
Y13	1820	65.7	249	40	10	27.70	185.39
Y14	2799	65.47	249	41.5	10	42.75	204.17

4. Himalayan Bank Limited (HBL)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1700	83	363	50	75	20.48	24.00
Y01	1500	94	399	27.5	57.5	15.96	30.00
Y02	1000	60	393	25	35	16.67	39.00
Y03	836	49	444	1.32	25	17.06	42.90
Y04	840	49	247	0	20	17.14	53.63
Y05	920	48	240	11.58	31.58	19.17	64.35
Y06	1100	59	229	30	35	18.64	77.22
Y07	1740	61	265	15	40	28.52	81.08
Y08	1980	63	248	25	45	31.43	101.35
Y09	1760	62	257	12	43.56	28.39	121.62
Y10	816	32	227	11.84	36.84	25.50	160.00
Y11	575	45	200	16.84	36.84	12.78	200.00
Y12	653	40	193	13.42	28.42	16.33	240.00
Y13	700	34.19	192.02	10	5	20.47	276.00
Y14	941	33.1	209.92	6.05	15	28.43	289.80

5. Nepal SBI Bank Limited (NSBI)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1165	42	188	15	0	27.74	14.39
Y01	1500	9	148	0	20	166.67	14.39
Y02	401	10	195	0	0	40.10	42.49
Y03	255	11	100	8	8	23.18	42.52
Y04	307	14	91	0	0	21.93	42.69
Y05	335	13	111	0	0	25.77	43.19
Y06	612	18	121	5	5	34.00	64.02
Y07	1176	39	132	12.59	17.59	30.15	64.78
Y08	1511	28	161	0	0	53.96	87.45
Y09	1900	36	195	2.11	42.11	52.78	87.45
Y10	741	24	148	5	17.5	30.88	165.36
Y11	565	25	154	5	17.5	22.60	186.93
Y12	635	23	153	5	17.5	27.61	209.40
Y13	850	32.75	161.26	7.5	12.5	25.95	235.57
Y14	1280	34.83	171.15	7.02	15.05	36.75	265.02

6. Nepal Bangladesh Bank Limited (NBB)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	1502	116	330	0	100	12.95	12.00
Y01	1100	83	206	5	55	13.25	24.00
Y02	490	18	174	0	0	27.22	36.00
Y03	360	20	190	0	0	18.00	36.00
Y04	354	1	182	0	0	354.00	36.00
Y05	265	1	33	0	0	265.00	72.00
Y06	199	1	-217	0	0	199.00	72.00
Y07	550	1	-364	0	0	550.00	72.00
Y08	1001	80	-295	0	0	12.51	74.41
Y09	280	116	60	0	0	2.41	186.03
Y10	265	55	115	0	0	4.82	186.03
Y11	266	10	112	0	0	26.60	200.94
Y12	121	40	147	0	0	3.03	200.94
Y13	300	38.75	162	7.89	10	7.74	221.03
Y14	700	39	169	12	10	17.95	243.14

7. Everest Bank Limited (EBL)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	995	35	171	0	20	28.43	11.84
Y01	650	32	145	5	0	20.31	22.09
Y02	405	33	151	0	20	12.27	25.93
Y03	445	26	150	20	0	17.12	31.50
Y04	680	46	172	20	0	14.78	31.50
Y05	870	54	93	0	20	16.11	31.50
Y06	1379	63	218	25	0	21.89	37.80
Y07	2430	78	293	10	30	31.15	37.80
Y08	3132	92	322	20	30	34.04	49.14
Y09	2455	100	345	30	30	24.55	63.88
Y10	1630	100	332	30	30	16.30	83.05
Y11	1094	83	264	50	10	13.18	111.96
Y12	1033	89	326	1.58	30	11.61	123.16
Y13	1591	91.88	342.06	50	10	17.32	160.11
Y14	2631	86.04	346.94	50	12	30.58	180.12

8. Bank of Kathmandu Limited (BOK)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	998	39	195	0	31.58	25.59	18.00
Y01	850	28	208	0	0	30.36	23.40
Y02	254	2	172	10	10	127.00	46.36
Y03	198	18	193	5	5	11.00	46.36
Y04	295	28	218	10	10	10.54	46.36
Y05	430	30	214	15	15	14.33	46.36
Y06	850	44	231	18	48	19.32	46.36
Y07	1375	44	165	20	20	31.25	60.31
Y08	2350	60	223	2.11	42.11	39.17	60.31
Y09	1825	55	206	7.37	47.37	33.18	84.44
Y10	840	43	175	15	30	19.53	118.22
Y11	570	45	179	16.75	34.75	12.67	135.95
Y12	628	38	168	21.32	26.32	16.53	160.42
Y13	553	36.64	196.19	0.74	14	15.09	168.44
Y14	564	13.25	184.8	10.41	0.55	42.57	192.02

9. Nepal Credit and Commerce Bank Limited (NCC)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	105	0.16	67	0	0	656.25	35.00
Y01	110	0.59	73	0	0	186.44	35.00
Y02	110	-11.35	-41	0	0	-9.69	35.00
Y03	108	1.67	16	0	0	64.67	49.00
Y04	115	0.49	27	0	0	234.69	70.00
Y05	120	-0.74	37	0	0	-162.16	70.00
Y06	94	-84.77	-44	0	0	-1.11	70.00
Y07	316	-16.56	-73	0	0	-19.08	70.00
Y08	457	35.63	49	0	0	12.83	140.00
Y09	335	29.35	78	0	0	11.41	140.00
Y10	275	30.28	109	0	0	9.08	140.00
Y11	167	15.78	125	0	0	10.58	140.00
Y12	126	12.69	131	0.26	5	9.93	140.00
Y13	223	25.23	156.03	0	0	8.84	147.00
Y14	642	25.07	178.95	0	0	25.61	147.00

10. NIC Asia Bank Limited (NICA)

Year	P	EPS	BPS	CD	SD	P/E	SIZE
Y00	550	5	104	0	0	110.00	49.15
Y01	399	10	104	10	10	39.90	49.97
Y02	245	1	105	0	0	245.00	49.99
Y03	220	5	110	0	0	44.00	50.00
Y04	218	14	124	0	0	15.57	50.00
Y05	366	23	137	10	30	15.91	50.00
Y06	496	16	116	0.53	10.53	31.00	66.00
Y07	950	24	139	1.05	21.05	39.58	66.00
Y08	1284	26	138	1.05	21.05	49.38	94.39
Y09	1126	28	146	0.79	15.79	40.21	114.05
Y10	626	34	135	26.32	26.32	18.41	131.16
Y11	520	38	152	20	20	13.68	131.16
Y12	468	30	157	25	25	15.60	131.16
Y13	554	47.41	190	20	0	11.69	231.16
Y14	970	35.98	211	15	15	26.96	231.16

Appendix D: Data on Macroeconomic Variables

Year	Nepse Index (NI)	Nominal GDP (GDP) *in billion*	Inflation Rate (INF) %	Interest Rate (IR) *91 days T.Bill rate*
2000	360.7	379.49	2.48	5.3
2001	348.4	441.52	2.69	4.94
2002	227.5	459.44	3.03	3.78
2003	204.9	492.23	5.71	2.98
2004	222	536.75	2.84	1.47
2005	286.7	589.41	6.84	3.94
2006	386.8	654.08	6.92	3.25
2007	683.9	727.83	5.75	2.77
2008	963.4	815.66	9.88	5.13
2009	749.1	988.27	11.08	6.80
2010	477.7	1192.77	9.32	8.13
2011	362.9	1366.95	9.27	8.52
2012	389.7	1527.34	9.45	1.15
2013	518.27	1692.64	9.04	1.19
2014	1036.11	1928.52	9.00	0.02