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Firm Fundamentals and Stock Return in Nepal

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ABSTRACT: This paper examines effect of firm fundamentals on stock return of Nepalese firms for the period 2006/07-2015/16 using descriptive and causal comparative research design. The return on stock is dependent variable and firm fundamentals such as size of market value of equity, book to market equity, earning yield and cash flow yield are considered as explanatory variables. The regression result reveals that stock return is positively related with size of market value of equity and earning yield which implies that higher market value of equity and earning yield increases stock return of Nepalese firms. Further, regression result shows book to market equity and cash flow yield have negative effect but cash flow yield has no significant relationship with stock return. Finally, result of this paper concludes the size of market value of equity, earning yields and book to market equity have strong explaining power of stock return of Nepalese firms.

KEYWORDS: Stock return, size of market value of equity, book to market equity, earning yield, and cash flow yield.

I. INTRODUCTION

Common stock returns and pricing of common stocks are immensely concerned in the finance and economics literature. Markowitz (1952) developed the portfolio theory to create portfolios of individual investments to trade-off risk and return. Markowitz argued a single asset or portfolio of assets offers higher expected return with the same or lower risk, and lower risk with the same or higher expected return. Sharpe (1964), Lintner (1965) and Mossin (1966) introduced and accepted Capital Asset Pricing Model (CAPM). The CAPM predicts a positive relation between stock return and systematic risk (beta). The beta determines expected return on a stock and it assumes that security markets are efficient. Ross (1976) formulated Arbitrage Pricing Theory (APT) and examined that expected return of an asset is affected by unidentified risk factors such as interest rate, inflation rate etc.

The empirical studies of early 1980's have documented the presence of persistent cross-sectional patterns in stock returns and attempted to identify company characteristics which explain differences in common stock returns. Amongst these various firm characteristics book equity to market equity ratio (Stattman, 1980), size (Banz, 1981), earning to price ratio (Basu, 1983), leverage (Bhandari, 1988), and joint role of book to market equity, size, beta, earning to price, and leverage (Fama and French, 1992) in the cross-section of average stock returns were examined. Average returns on small (low market equity) stocks are too high given their beta (β) estimates, and average returns on large stocks are too low. Bhandari (1988) argued that positive relation between leverage and average return and leverage is associated with risk and expected return. Stattman (1980) examined and found average returns on stocks are positively related to the ratio of a firm's book value of common equity to its market value of common stock. Basu (1983) applied earnings-price ratios to explain the cross section of average returns on stocks including size and market beta. Moreover, Davis, Fama, and French (2000) confirmed the controversial findings of Rosenberg, Reid, and Lanstein (1985) that firms with high ratios of book value of common equity to market value of common equity have higher returns than firms with low book value to market value of common equity ratios and they confirmed strength of multifactor model of Fama and French (1993, 1996) which uses the market portfolio and mimicking portfolios for factors related to size and book value of equity to market value of equity in explaining stock returns.

The most of prior empirical studies on fundamentals and stock return and their issues are based on developed countries. Minimal similar research studies has been done on developing countries, and these studies are mainly focused on risk and

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return of stocks. Due to dynamic and globalization of business and environmental factors, Nepalese firms are facing tremendous challenges for their survival, growth and profitability which affect stock return of Nepalese firms. The preponderance of prior empirical studies on firm's fundamental and stock return carried out in developed and developing countries but a very few studies have been administered in developing countries and there is lacking in-depth studies in under-developing countries like Nepal. Hence, this paper is an attempt to analyze relationship of firm fundamentals with stock return and examine the effect of firm fundamentals on stock returns of Nepalese firms.

Objective of the Study: The major objective of this study is to examine the relationship between firm's fundamentals (size of market value of equity, book to market value of equity, earning yield, and cash flow yield) and stock return of Nepalese firms. The specific objectives of this paper are as follows:

- a. To analyze the relationship between firm fundamentals (size of market value of equity, book to market value of equity, earning yield, and cash flow yield) and stock return of Nepalese firms.
- b. To examine the effect of firm fundamentals such as size of market value of equity, book to market value of equity, earning yield, and cash flow yield on stock return of Nepalese firms.

The remaining part of the paper has been divided into four sections. Section two is for brief literature review of stock returns. Section three deals with research methodology. Section four covers discussion and findings of the study. Finally, section five concludes the study with findings and suggestions for future research.

II. LITERATURE REVIEW

The book to market equity ratio shows the value of stock. Firms which may have high book to market equity ratio indicates poor performer in the past while low book to market equity characterizes growth stocks that are supposed to have done well historically (Stattman, 1980). The author examined average risk-adjusted portfolio returns for 1964-1979 and revealed a positive relationship between book-to-market equity ratio and stock returns. Banz (1981) examined the relationship between average returns and market values as portfolios sorted by market value and estimated betas and concluded that CAPM is mis-specified, but fails to give an economic explanation why size is a factor in stock returns or whether it is just a proxy for a risk factor not captured in securities' betas. Roll (1981) argued risk measures are biased downward due to autocorrelation in the returns of small firms which are infrequently traded. The size effect is distinct from the earning to price effect and small firms tend to have higher returns, even after controlling for earning to price (Basu, 1983).

The high ratios of book to market equity have significantly higher returns than stocks with low book-to-market equity (Rosenberg et al., 1985). Bhandari (1988) proposed to use a firm's debt to equity ratio to explain stock returns and argued that average stock returns are positively related to the debt to equity ratio after controlling for both beta and firm size. Chan, Hamao and Lakonishock (1991) examined the prediction of fundamentals in Japanese stock return using monthly data on all stocks of the first and second section of Tokyo stock Exchange for the period 1971-1988 and revealed a significant relation between returns and four fundamental variables size, book to market equity, earnings yield, and cash flow yield. The result of the study concluded that book-to-market equity has a strong role in explaining cross-section of average returns on Japanese stocks.

Fama and French (1992) revealed book to market equity consistently has the greatest power for explaining stock returns, a stock's beta does not have significant explanatory power. The combination of book to market equity and market value of equity absorbs the roles of leverage and earning to price ratio in explaining stock returns. In a subsequent study, authors argued market equity and book to market equity are proxies for firm risk. Their economic rationale for this finding is that companies that are smaller or have a relatively high book to market equity tend to have weaker economic and financial performance than companies with opposite characteristics. Hence, higher returns on

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stocks of such companies are essentially compensation for the assumption of greater risk. High book to market stocks are less profitable than low book to market stocks. At the opposite side, low book to market stock is typical of firms with high average returns on capital whereas high book to market stock is typical of firms that are relatively distressed. Controlling for book to market stock, small stocks seem to have lower earnings on capital than that of big stocks. However, book to market is a stronger indicator of profitability (return) than size (Fama & French, 1996).

In an attempt to analyze cross section of common stock returns, Davis (1994) used data of 1940-1963 applying regression model with respect to beta, book-to-market equity, earning to price during Pre-COMPUSTAT era and reported significant explanatory power of natural log of book to market equity with respect to subsequent stock returns in cross-sectional regressions. Earnings to price displayed significant explanatory power in regression analysis. Barber and Lyon (1997) examined relationship between firm size, book-to-market ratio and security returns of financial and non-financial firms for the period 1973-1994. Result of study revealed similar relation between size, book-to-market, and security returns for the financial and non-financial firms. Kim (1997) examined explanatory power of beta, firm size, book-to-market equity, and earnings-to-price for average stock returns and argued firm size being marginally significant in explaining stock returns when monthly returns were used, but insignificant when quarterly returns were used. These results supported market betas more strongly. Earnings-to-price was also found significant when betas were included. However, book-to-market equity was still found to have significant explanatory power to stock returns, even though error in variables bias was corrected.

Davis et al. (2000) distinguished risk model from characteristics model to find independent variation in characteristics and risk loading unrelated to book-to-market equity for the period 1929-1997 using all NYSE industrial firms as sample. The study revealed a robustness of value premium in stock returns and a smaller size effect. Three-factor risk premium model was found to explain value premium better than characteristics model. However, when portfolios were formed from independent sorts of stocks on size and book-to-market equity, three-factor model was rejected. Finally, result concluded that three-factor model was just a model and thus, an incomplete description of expected returns and model's shortcomings were just not those predicted by characteristics model.

In study of fundamentals of stock return in Nepal, Pradhan (2003) has examined relation of dividend yield, capital gain yield, and total yield related to earnings yield, size, book to market equity ratio and cash flow yield. The result of the study revealed that earnings yield and size have significant positive impact on dividend yield and total yield. Similarly, positive relationship exists among earnings yield, book to market equity and cash flow yield in Nepalese firms.

In the evaluation of explanatory power of size and book-to-market equity in explaining cross-section of common stock returns, Chou, Chou, and Wang (2004) study for the period 1963-2001 and empirical results showed a significant negative relation between size and stock returns, whereas a significant positive relation between book-to-market equity and stock returns. The relationship between beta and stock returns was found to be flat. The study revealed diminishing coefficient of size for the sample period 1982-2001. The results over sub-period indicated a significant positive relation of book-to-market equity with stock return for the period 1963-1989 but insignificant for the post sample 1990-2001. The authors noted that explanatory power of these two characteristics disappeared after papers highlighting them were published. However, results for the month of January indicated that beta significantly could account cross-sectional variation in stock returns in January. The coefficients of size were significantly negative for every period, suggesting the existence of a significant January size effect. The results showed a significant size effect for non-January months, but book-to-market equity effect was always significantly positive. Thus, authors concluded size effect as being January effect, and book-to-market equity as non-January effect.

Guan, Hansen, Leikam, and Shaw (2007) analyzed whether idiosyncratic variables such as firm size, book-to-market equity, and price-to-earnings ratio could explain average cross-sectional variation in stock returns and documented

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evidence supportive to the validity of CAPM. The presence of size, book-to-market, and price-earnings effects for average cross-sectional returns were found not inconsistent with a valid CAPM. The study also revealed a negative relation of expected returns with size and positive relation with book-to-market, and earnings to price ratio. The performance of common stock returns with respect to size and book-to-market equity was analyzed by Simlai (2009). The study used all NYSE, AMEX and NASDAQ stocks for the period 1926-2007 applying various versions of simple Fama-French model and reported two risk factors based on 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 common risk factors' impact in explaining time series variation in size and book-to-market sorted portfolios.

In the study of Nepal, Prasai (2010) stated a significant and positive impact of size on stock return. The book to market ratio and returns are negatively and significantly related. Earnings yield and cash flow yield do not have explanatory power to explain stock return. Moreover, it contradicts with CAPM in Nepalese stock market that there is a positive linear relationship between beta and stock return.

Shafana, Rimziya, and Jariya (2013) investigated behavior of stock return with firm size and book to market equity for the period of 2005-2010 and revealed book to market equity has significant negative effect on return while size has no significant behavior on stock return. Farooq, Hasan, and Muddassir (2015) analyzed relationship between financial variables and stock returns of 26 pharmaceutical and chemical companies for the period 2000-2009 using regression model and documented that book to market equity is the best indicator of stock return in Pakistan. Ltaifa and Khoufi (2016) examined determinants of stock return of banks using CAPM and three factors model of Fama and French for the period 2004-2014 and documented that firms with big size and high book to market have higher stock returns. The results show that size, book to market equity and market risk premium have significant power to explain volatility of stock returns.

The above mentioned prior studies have been carried out in developed capital market to examine relationship between firm fundamentals and stock returns. In this regard, limited and no depth studies have been carried out in developing capital market like Nepal. The limited number of listed firms, lack of professionalism, few number of investors, small volume of transactions, lacking of relevant stock market information are characteristics of Nepalese stock market because it is still in early phase of development of stock market. Hence, it is essential to examine the relationship between firm's fundamentals and stock return to explain the effect of size market value of equity, book to market equity, earnings yield, and cash flow yield on stock returns of Nepalese firms. Thus, this paper is an attempt to examine the effect of firm fundamentals on stock returns of Nepalese firms.

III. RESEARCH METHODOLOGY

Research Design: This paper has applied descriptive and causal comparative research design to address research questions and objectives. The descriptive research design has been used various descriptive measures such as mean, median, standard deviation, minimum, and maximum values to understand and explain the nature of variables. Similarly, correlation analysis has been used to see the strength and direction of relationship between firm fundamentals and stock return variables. Causal comparative research design is used to examine the cause and effect relationship between stock return and explanatory variables.

Nature and Sources of Data: This paper uses secondary sources of data. The necessary information were collected from periodical reports published by Security Board of Nepal (SEBON), Nepal Stock Exchange (NEPSE) and financial statements of respective firms covering the period of ten years from fiscal year 2006/07 through 2015/16.

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Population and Sample: In this paper, total listed companies 229 in the NEPSE till Mid-July 2016 are considered as population. Out of population, 47 listed firms are selected as sample which includes 12 commercial banks, eight development banks, 16 finance companies, one trading company, two manufacturing, one hydropower, one hotel and six insurance companies. Thus, sample size is 20.52 percent of total population. Total 294 observations are used to examine relationship between firm fundamentals and stock returns in Nepal.

Analytical Tools: The collected data are processed and analyzed based on software SPSS (version 20), and MS-Excel. In this study, different descriptive statistics (mean, median, standard deviation, minimum, and maximum values), correlation analysis, regression analysis along with t-test, F-test, Adjusted R² are used for the analysis data.

Variables: In this paper, stock returns considered as independent variable. The stock return is computed annual return based on monthly returns. The monthly stock return is calculated monthly closing price minus beginning price divided by beginning price of the stock. The prior theoretical and empirical studies have observed several factors that affect stock return. In this study, firm fundamentals such as natural logarithm of firm size of market value of equity (number of shares outstanding times closing price of stock), book to market equity (book value of firm's equity divided by market value of equity at the end of year), earning yield ratio (net income of firm divided by market value of equity at the end of year), and cash flow yield ratio (net income after tax plus depreciation divided by market value of equity at the end of year t-1) which are considered as explanatory variables.

Model Specification: The regression model of equation (1) is used to examine the effect of explanatory variables on stock return of Nepalese firms.

$$\text{Stock return (R)} = \beta_0 + \beta_1 \ln \text{ME} + \beta_2 \text{BME} + \beta_3 \text{EY} + \beta_4 \text{CFY} + \epsilon_t \quad \dots (1)$$

R is stock return, lnME represents natural logarithm of size of market value of equity, BME indicates book to market equity ratio, EY is earning yield ratio, CFY indicates cash flow yield ratio, β_0 is coefficient of constant, β_1 , β_2 , β_3 , & β_4 are coefficient of explanatory variables and ϵ_t is error (residual) term.

IV. DISCUSSION AND FINDINGS

This section of paper attempts to analyze data associated with firm fundamentals and stock returns. The various financial and statistical tools such as descriptive statistics, correlation analysis and regression analysis under descriptive and causal comparative research design are applied to analyze and examine the effect of firm fundamental factors on stock return in Nepal.

Descriptive Statistics: The paper has applied descriptive statistics to describe firm fundamentals affecting stock return. Table 1 presents summary statistics of stock return and its explanatory variables.

Table 1: Descriptive Statistics of Variables

S. N.	Variables	Mean	Median	Standard Deviation	Minimum	Maximum
1	R	0.1465	0.0875	0.4563	-0.8696	3.9145
2	lnME	6.609	5.724	1.961	2.074	10.592
3	BME	0.619	0.580	0.502	-0.835	3.147
4	EY	0.073	0.061	0.196	-1.720	0.990
5	CFY	0.125	0.103	0.291	-1.927	3.830

Source: SEBON & NEPSE (2006/07-2015/16).

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Table 1 shows the result of descriptive statistics of all variables. The R, lnME, BME, EY, and CFY all have positive mean values. The highest stock return (R) is 391.45 percent, the least is -86.96 percent and average is 14.65 percent. The result implies that stock returns of Nepalese firm is positive. Mean value of lnME is 6.609 with minimum and maximum of 2.074 and 10.592 respectively. Mean BME is 0.619 with minimum -0.835 and maximum of 3.147. Further, result of Table 1 indicates that mean values of EY and CFY are 0.073 and 0.125 respectively. The standard deviation of R is 0.4563 which shows variation of stock return of Nepalese firms is 45.63 percent. The result indicates that EY has the least standard deviation (0.196) whereas lnME has the highest standard deviation (1.961) which implies that earning yield of Nepalese firms has less variation but size of market value of equity has more variation. Finally, descriptive result of Table 1 also presents median, minimum and maximum values of stock return and explanatory variables.

Correlation Analysis: This paper has used various firm fundamentals affecting stock return such as size of market value of equity, book to market equity, earning yield and cash flow yield to analyze firm's stock return. In this study, Pearson's correlation coefficient is used as measure of linear association in explaining direction and magnitude of relationship between different pairs of firm fundamentals and stock return. Table 2 presents correlation coefficient of variables to explain relationship among stock return and its explanatory variables.

Table 2: Correlation Coefficients of Stock Return and Explanatory Variables

Variables	R	lnME	BME	EY	CFY
R	1	0.317*	-0.572**	0.146	-0.158*
lnME	-	1	-0.431**	0.346*	-0.326*
BME	-	-	1	0.365*	0.296*
EY	-	-	-	1	0.426**
CFY	-	-	-	-	1

Source: Author's own calculation based on data of SEBON & NEPSE (2006/07-2015/16).

Note: Asterisk sign '*' indicates statistical significance at 5 percent level and '**' indicates statistical significance at 1 percent level (two tailed).

Table 2 shows correlation coefficient between variables which indicates stock return (R) is positively related with lnME and EY. lnME is significantly and positively related with stock return but EY has no significant association. Stock return is negatively related with BME and CFY but BME has strong and negative association with stock return. Among given set of explanatory variables, lnME has positive and significant relation with R which implies that stock return is positively related with size of equity capital employed in Nepal. The result of correlation analysis also shows the relationship between two explanatory variables.

Regression Analysis: In this paper, regression models have been used to explain relationship between stock return and explanatory variables. Table 3 presents regression results of univariate and multivariate regression models under previous specified equations to examine effect of various firm fundamentals on stock return in Nepal.

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Table 3: Regression Relationship of Stock Return with Explanatory Variables

Model: $R = \beta_0 + \beta_1 \lnME + \beta_2 BME + \beta_3 EY + \beta_4 CFY + \epsilon_t$

Models	Constant	lnME	BME	EY	CFY	Adj. R2	F
I	0.253 (0.317*)	0.245 (0.528*)	-	-	-	0.108	8.309**
II	0.827 (0.103**)	-	-0.637 (-0.981**)	-	-	0.247	15.416**
III	0.619 (0.745**)	-	-	0.584 (0.683*)	-	0.105	7.962**
IV	0.748 (0.867**)	-	-	-	-0.378 (-0.561*)	0.179	6.949*
V	0.283 (0.975**)	0.235 (0.476*)	-0.525 (-0.728**)	0.469 (0.518*)	-0.305 (-0.497)	0.614	12.195**

Source: Author's own calculation based on data of SEBON & NEPSE (2006/07-2015/16).

Note: The figures in the parentheses are t-value and asterisk sign indicates that result is significant level. '' Indicates statistical significance at 5 percent level and '**' indicates statistical significance at 1 percent level (two tailed). Also reported are the F-statistics and Adjusted R².*

The first regression model (I) in Table 3 shows positive relationship between lnME and stock return (R) of Nepalese firms. The regression result indicates relationship between size of market value of equity and stock return of firms seems positive and statistically significant at 5 percent level. The second model (II) exhibited in Table 3 depicts relationship between BME and R of Nepalese firms. The regression result shows negative relationship of BME with R. The result of regression analysis implies that book to market equity has strong negative and statistically significant impact on stock return at 1 percent level. Similarly, regression results of the third model (III) shown in Table 3 indicates EY is positively related with R at 5 percent level of significant which implies earning yields also has positive and significant impact on stock return. The model four (IV) shows negative impact of CFY on stock return and statistically is significant at 5 percent level of significant.

Finally, Table 3 presents multivariate regression models that show combined effect of explanatory variables on stock return. The regression model five (V) indicates lnME and EY are positively and significantly related with R whereas BME and CFY are negatively related with R. Size of market value of equity and earning yield have positive and statistically significant impact on stock return at 5 percent level. Book to market equity and cash flow yield have negative impact on stock return whereas book to market equity has strong negative impact but cash flow yield has insignificant effect on stock return. The adjusted coefficient of determinants (Adj. R²) of various models (I through V) show the predicting and explanatory power of stock return by firm's fundamentals. The coefficient of determinants (Adj. R²) of the model V is 0.614. Thus, predicting power of the model V is 61.4 percent to explain stock return by its explanatory variables in Nepal. The F-values of models I through V are statistically significant at 1 percent level which implies that all the regression models used in this paper are statistically significant and indicates the regression models used in this estimation of stock return with its explanatory variables are fitness of test of the overall models. The computed values of Durbin Watson statistics for entire models' specifications of R fall in between d_U and 4-d_U. Therefore, there is no evidence of serious problem of autocorrelation. With regards to multicollinearity, variance inflation factor (VIF) of explanatory variables across all model specifications of stock return are significantly lower than ten. Thus, there is no evidence of multicollinearity in the regression models used in this paper.

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V. CONCLUSION

In the modern competitive and globalized business age, economic and financial activities are growing up. The success of business, economic activities and economic growth depend on stock market development. The stock return of firms are affected by firm fundamentals and development of stock market of the nation. This paper has been attempted to analyze firm fundamentals influencing stock return of Nepalese firms using descriptive and causal comparative research design for the study period 2006/07-2015/16. The result of study reveals that stock return of Nepalese firms are positively related with size of market value of equity and earning yields which implies that higher the size of market value of equity capital employed and higher level of earning yield ratio of firms lead to increase stock returns of Nepalese firms. Further, result of this paper has found that book to market equity ratio and cash flow yield ratio have negative effect on stock return. Finally, result of this study concludes that size of market value of equity capital employed, book to market equity and earning yield have strong and cash flow yield has weak explaining power of stock return of Nepalese firms.

This paper has used few firm fundamentals such as size of market value of equity capital, book to market equity, earning yield ratio and cash flow yield ratio to analyze stock return of Nepalese firms. Some other variables such as sales growth, leverage, dividend yield, beta, sales to stock price ratio and macroeconomic variables such as gross domestic product growth rate, inflation rate, exchange rate etc. can be considered in future studies. Further, this study has used over 85 percent observations from financial institutions and the results may not be representative of all sectors of the economy. Hence, future studies are suggested to include significant number of observations from non-financial sectors using more sample and longer period data to examine the relationship between firm fundamentals and stock returns.

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