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Market Risk and Cross-section of Expected Stock Returns

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Abstract

The major objective of the study is to examine the impact of market risk on cross-section of expected stock returns from Nepali capital market. In doing so, stock beta is considered as the proxy of market risk. The research design adopted in this study consists of descriptive and casual comparative research design to ascertain and understand the directions, magnitudes, and forms of observed relationship between the dependent and independent variables by using the data set of 576 observations for the period of 2010/11 to 2021/22 from the 48 sample firms. Furthermore, this study has applied different statistical as well as econometrics tools such as portfolio analysis, descriptive statistics, correlation matrix, and multiple regression analysis. The findings reveal that market risk has the significant positive impact on cross-section of common stock returns in Nepali capital market.

Keywords: Market risk, Common stock returns, BETA, Capital gain yield, Dividend yield, Total yield

Background

An important question among the investors before investing in any financial asset is which asset or portfolio of assets is the best for investment in terms of the asset's fundamental characteristics – risk and return. This question is as relevant today as it was in any point of time in the long history of capital market. Future returns are uncertain, there are chances of losses due to the negative movements in the prices of financial assets. Such fluctuating nature in the prices of the financial assets is one of the important features of the capital market itself. But investors invest in securities with the expectation that the risk will be compensated by the risk premium in the long run. These features of the capital market make the risk-return trade-off a complex phenomenon.

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However, researchers have been constantly involved in solving this complexity. The empirical work 'Portfolio Selection' of Markowitz (1952) has erected the foundation for modern portfolio theory. It offers a mathematical framework for constructing portfolios that maximize expected returns for given level of market risk. Other ground breaking works explaining the risk-return relationship are Capital Asset Pricing Model (CAPM) of Sharpe (1964), Lintner (1965), and Black (1972). The central prediction of the CAPM is that the rate of return associated with common stock investment is determined by the extent to which the common stock returns are correlated with the return on market portfolio. CAPM asserts that the market risk of a security can be measured by beta an it can capture the significant variation in common stock returns. CAPM usually expresses the expected return of an asset as a linear combination of factors that are related to the prices of capital asset and whose influence cannot be avoided by the diversification. The covariance of the asset return with changes in the values of these factors is then interpreted as a measure of how much the expected return of the asset is likely to change when the conditions affecting the values of the factors change.

Fama and French (1992) examined the significant positive role of market risk to determine the cross-section of common stock returns. Wang and Khan (2017) examine the risk-return trade off is strongly time-varying with the state of the market and the average of the time-varying tradeoff. The lagged market return was found to be the best indicator of market states. Blume and Friend (1973) and Amihud et al. (1992) found a positive and highly significant risk-return relationship in the capital market. Similarly, the recent evidence such as Ghysels et al. (2016) also found that the risk return trade off implies that a riskier investment should demand a higher expected return relative to the risk-free returns. Ghysels et al. (2005) found that there is a significantly positive relation between risk and return in the stock market.

These pieces of empirical evidence mostly conducted in developed capital market by using various methods of data analysis - motivated to examine the risk return relationship in emerging capital market Nepal. Thus, this study focusses on fulfilling such a research gap by examining the issue of how far the common stock returns from Nepali capital market is being affected by the market risk from the data set of 576 observations from 48 sample firms for 12 years. The major data analysis tools adopted for the study consist of portfolio analysis, correlation analysis, and the regression analysis. The findings confirmed that the market risk plays the significant positive role in predicting cross-section of expected stock returns in Nepali capital market.

The remaining section of the study consists of the research methodology followed by the data analysis and concussions drawn from the study.

Research Methodology

The research design adopted in this study consists of descriptive and casual comparative research design to deal with the fundamental issues associated with the market risk and cross-section of expected stock returns in Nepali capital market. The major purpose of descriptive research is to describe the state of affairs as it exists at present regarding risk return trade off. In addition, the casual comparative research design is used to identify the relationship between the dependent and independent variables. Basically, this design has been adopted to ascertain and understand the directions, magnitudes, and forms of observed relationship between market risk and cross-section of expected stock returns in Nepali capital market.

The study is based on the balanced dataset of 48 sample firms listed in Nepal stock exchange (NEPSE) covering data period of 12 years from mid-July 2011 to mid-July 2022 with 576 observations. The reason for using balanced panel dataset is to minimize the estimation bias that may occur from the use of unbalanced panel. Furthermore, all the sample firms were re-classified into three types of industries groups for analysis purpose based on the nature of their function such as banking and financial institutions (BFIs), insurance companies, and other companies as shown in Table – 1.

Table 1

Population and Sample Firms

SN	Industry/Sample Groups	Sample Firms	Study Periods	No. of Observations
1	Banking and Financial Institutions (BFIs)	28	2010/11-2021/22	336
2	Insurance Companies Sample	14	2010/11-2021/22	168
3	Other Companies Sample	6	2010/11-2021/22	72
	Total number of Companies	**48**	**2010/11-2021/22**	**576**

The data analysis tools include portfolio analysis on one-way sorts, descriptive statistics, correlation analysis, and regressions analysis. Additionally, different statistical tests of significance have also been conducted for validation of model such as t-test, F-test, Durbin-Watson (DW) test, and goodness of fit of the model (Adjusted R^2). The data analysis is conducted by using the SPSS-26 software package. The model used for this analysis is as follows:

$$Y_{it} = \beta_1 + \beta' \boldsymbol{X}_{it} + \varepsilon_{it} \quad \ldots (1)$$

Where,

Y_{it}= Dependent variable (capital gain yield, dividend yield, and total yield) for firm '*i'* at time '*t'*

β_1 = Constant term, assumed to be constant over time for all firms

β'= Coefficient of explanatory variables

$\boldsymbol{X}_{it}$ = Vector of explanatory variables

ε_{it}= Stochastic error term assumed to be normally distributed with zero mean, and constant variance

This model can be expressed in detail as:

$$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it} \quad \ldots (1.a)$$

$$DY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it} \quad \ldots (1.b)$$

$$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it} \quad \ldots (1.c)$$

Where,

CGY_{it} = Capital Gain Yield from common stock of firm 'i' for time 't'

DY_{it} = Dividend Yield from common stock of firm 'i' for time 't'

TY_{it} = Total Yield from common stock of firm 'i' for time 't'

$BETA_{it}$ = Stock BETA of the 'i' for time 't'

This study considers common stock returns as a dependent variable and market risk as proxied by stock beta as the independent variable. The definition of the variables and the expected relationship between dependent and independent variables are as follows:

Common Stock Returns

The dependent variable used in the study is common stock returns. The total rate of returns from common stocks are defined as the stock returns which consists of returns from the market and the dividend yield. Firstly, the study aimed to identify the impact on capital gain yield and the result is compared with dividend yield and total yield.

Therefore, all capital gain yield, dividend yield, and total yield are used as the dependent variable for the study.

Capital Gain Yield (CGY)

One of the dependent variables used in the study is capital gain yield. The capital gain yield is the annual rate of earning of an investor from the market. More clearly, the capital gain yield is defined as the rate of change in market price of common stock of a firm during the period 't' over the period 't-1'. Symbolically:

$$CGY_{it} = [P_{it}-P_{i(t-1)}] / P_{i(t-1)} \quad \ldots (2)$$

Where,

CGY_{it} = Annual market returns from common stocks of firm 'i' for the year 't'

P_{it} = Market price per share of firm 'i' for the year 't'

$P_{i(t-1)}$ = Market price per share of firm 'i' for the year 't-1'

Dividend Yield (DY)

The second dependent variable of the study is dividend yield. Dividend yield is the annual rate of dividend provided by the company to the shareholders.

Symbolically:

$$DY_{it} = D_{it} / P_{i(t-1)} \quad \ldots (3)$$

Where,

DY_{it} = Annual dividend yield from common stocks of firm 'i' for the year 't'

D_{it} = Dividend per share of firm 'i' for the year 't'

$P_{i(t-1)}$ = Market price per share of firm 'I' for the year 't-1'

Total Yield (TY)

The third dependent variable used in the study is total yield. Total yield is the combined yield from the market and the returns from the stock in terms of dividend. Symbolically:

$$TY_{it} = [D_{it} + P_{it} - P_{i(t-1)}] / P_{i(t-1)} \quad \ldots (4)$$

Where,

TY_{it} = Annual total returns from common stocks of firm 'i' for the year 't'

D_{it} = Dividend per share of firm 'i' for the year 't'

P_{it} = Market price per share of firm 'i' for the year 't'

$P_{i(t-1)}$ = Market price per share of firm 'i' for the year 't-1'

Market Risk (BETA)

The independent variable used for the study is BETA. BETA is the stock beta measured as an indicator of market risk or systematic risk associated with the common stock returns. Stock beta is measured as a ratio between covariance of the stock returns with the market returns and the variance of the market returns over a predefined periods of firm 'i' at time 't'. The monthly data of each asset has been used to calculate the variance of the assets. The Bata is calculated as:

$$BETA_{it} = Covariance\ (RJ_{it}, RM_t)/Variance\ (RM_t) \quad \ldots (5)$$

Where,

$BETA_{it}$ = Stock beta of firm 'i' for the time 't'

RJ_{it} = Returns from stock of firm 'i' for time 't'

RM_t = Returns from market for time 't'

The traditional asset pricing theory also known as CAPM of Sharpe (1964), Lintner (1965), and Black (1972) asserts that the market risk factors are proxied by beta can capture significant variation in common stock returns. More specifically, the rate of return from the common stocks is determined by the extent to which the returns are correlated with market portfolio. Lakonishok and Shapiro (1984), Fletcher (2000), Pettengill et al. (1995), and Huang and Hueng (2008) empirically examined that high beta stocks perform better in up markets and worse in down markets than low beta stocks. Therefore, the research hypothesis for the study is proposed as follows:

Research Hypothesis (H_1): Higher the market risk, higher would be the stock returns.

Results

The results obtained from the analysis for the impact of market risk on common stock returns are presented and analyzed. The results of impact of market risk on common stock returns are presented in following four sections. Firstly, the properties of one - way portfolios formed based on market risk are presented and analyzed. In the second section, descriptive statistics of the variables are presented. In the third section, the correlation among the dependent and independent variables are presented and

analyzed. In the fourth section, the results from the regression analysis to examine the magnitude of impact of market risk on common stock returns in Nepali capital market are presented and analyzed.

Portfolio Analysis

In this section of the study, different portfolios are formed and analyzed based on the stock beta. The motive of forming portfolios is to gain insight into the impact of market risk variable on cross section of expected stock returns across the different portfolios.

Using the one-way portfolio analysis, the relationship of market risk (systematic risk) and common stock returns are examined across the different portfolios of stock beta. In doing so, all the stock beta are classified into five quintiles (1 = low to 5 = high) and the descriptive statistics such as mean, standard deviation (in parenthesis), and number of observations (n) of corresponding returns are presented as follows.

Table 2

Properties of Portfolios Sorted by Stock BETA

Table 2 presents the summary statistics (mean and standard deviation) for the properties of portfolios sorted into five quintiles of stock BETA for all three measures of common stock returns from all 48 sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 576 observations. The variables are Capital Gain Yield (CGY), Dividend Yield (DY), Total Yield (TY), and BETA. 'n'' denotes the number of observations in each portfolio. The reported values are the mean values of each portfolio calculated in fraction of percentage. Figures in the parentheses are the standard deviations.

		Portfolios Sorted by Stock BETA				
		1 (Low)	2	3	4	5 (High)
Variables	All	≤ 0.088	> 0.0880 ≤ 0.512	> 0.512 ≤ 0.918	> 0.918 ≤ 1.410	> 1.410
BETA	0.867	-0.146	0.325	0.705	1.130	1.960

(Times)	(0.723)	(0.291)	(0.121)	(0.129)	(0.149)	(0.496)
CGY	0.225	0.110	0.143	0.340	0.368	0.391
	(0.991)	(0.650)	(0.671)	(1.304)	(0.770)	(1.206)
DY	0.043	0.051	0.049	0.054	0.040	0.045
	(0.049)	(0.068)	(0.053)	(0.048)	(0.042)	(0,046)
TY	0.268	0.160	0.191	0.390	0.419	0.436
	(1.003)	(0.672)	(0.691)	(1.304)	(0.789)	(1.226)
n	576	115	115	116	115	115

Table 2 shows that two measures of common stock returns (CGY and TY) are increasing with the increase in the stock beta. The average stock returns for lowest stock beta portfolio are 11% (CGY) and 16% (TY) which are increased to 39.1% (CGY) and 43.6% (TY) for highest stock beta portfolio. In contrast to the CGY and TY, the results for dividend yield do not have the clear direction with an increase in stock beta. However, the mean dividend yield in higher portfolio beta is higher (4.5%) as compared to the lowest portfolio beta (4.3%). Thus, the results reveal that the stocks with higher stock beta earn higher rate of returns as compared to the stocks with lower stock beta. More clearly, the higher the beta, the higher is the common stock returns in Nepali capital market.

The results further reveal that the standard deviation of common stock returns for lowest beta portfolio are 65% (CGY), 4.9% (DY), and 67.2% (TY) which are increased to 120.6% (CGY), 4.6% (DY), and 122.6% (TY) for highest beta portfolio. The large variations of standard deviation in higher stock beta portfolio further suggest that stocks with higher stock beta are more volatile and riskier than the stocks with lower stock beta.

Descriptive Statistics of the Variables

As the descriptive research design has been employed for the study, descriptive statistics have been used to describe the characteristics of market risk as proxied by stock beta and the all three measures of expected stock returns. The descriptive statistics used in this study consists of mean, median, standard deviation, minimum and maximum values and number of observations associated with variables under consideration.

Table 3

Descriptive Statistics of the Variables

Table 3 presents the decriptive statistics (minimum, maximum, mean, and standard deviations) of stock beta and all three measures of common stock returns from all 48 sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 576 observations. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). The independent variable is BETA.

Descriptive Statistics

Variables	Measures	Minimum	Maximum	Mean	SD
CGY	Fraction of %	-0.694	10.421	0.225	0.991
DY	Fraction of %	0.000	0.432	0.043	0.049
TY	Fraction of %	-0.689	10.421	0.268	1.003
BETA	Times	-1.29	4.36	0.87	0.72

Table 3 shows that the capital gain yield ranges from minimum of -69.4% to maximum of 1042.1% with mean 22.5% and standard deviation of 99.1%. Similarly, dividend yield ranges from minimum 0% to maximum 43.2% with the mean 4.3% and standard deviation 4.9%. Likewise, total yield ranges from minimum of -68.9% to 1042.1% with mean 26.8% and standard deviation of 100.3%. The wider range of capital gain yield and the higher standard deviation further suggests that there is a high fluctuation on return of investors in Nepali capital market.

Furthermore, market risk as proxied by beta ranges from minimum of -1.29 to maximum of 4.36 with mean 0.87 and standard deviation 0.72.

Correlation Analysis

In this section of the study, the correlation coefficients between the variables under study have been presented. Therefore, this section is devoted to explain the direction of relationship among explained and explanatory variables such as common stock returns, market risk as proxied by stock beta and different pairs of the firm specific fundamental variables.

Table 4

Correlation between Market Risk and Common Stock Returns

Table 4 presents the bi-variate Pearson correlation coefficients between the different pairs of stock beta and all three measures of common stock returns from all 48 sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 576 observations. The variables are Capital Gain Yield (CGY), Dividend Yield (DY), Total Yield (TY), and BETA.

Correlations Coefficients				
	CGY	DY	TY	BETA
CGY	1			
DY	.213**	1		
TY	.999**	.259**	1	
BETA	.142**	.128**	.135**	1

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

Table – 4 presents the value of bivariate Pearson correlation coefficients between the market risk and common stock returns. The results reveal that the correlation coefficients of stock beta are positive and significant at 1% level of significance with all three measures of common stock returns (CGY = 0.142**, DY = 0.128**, & TY = 0.135**). The positive and significant coefficients further suggest that there is a significant positive relationship between the stock beta and common stock returns.

Regression Analysis

Ordinary Least Square (OLS) model has been used to identify and analyze the magnitude of impact of explanatory variable on explained variables in Nepali capital market. The explained variables are the three measures of common stock returns [capital gain yield (CGY), dividend yield (DY), and total yield (TY)]. The explanatory variable is stock beta. The overall analysis of this section has been classified into four sections.

In the first section, the regression results for market risk on common stock returns from all samples firms are presented and analyzed. The second section summarizes the

regression results from the samples of banking and financial institutions (BFIs). Similarly, the third section shows the regression results of the samples from insurance companies, and finally, regression results from the samples of other companies other than BFIs and insurance companies are summarized in the fourth subsection.

The regression results from the ordinary least square (OLS) model of data analysis by using SPSS-26 software for all three measures of the common stock returns are presented and analyzed in the following sections for all and stratified sample groups in Table – 5 to 9. The overall significance of the model is tested by the F-statistics and the significance of individual variable is examined by the t-statistics. The overall goodness of the fit is tested by adjusted R^2. The autocorrelation between the variables is also examined by using the Durbin-Watson (DW) test.

Table 5

Regression Results of Market Risk on Common Stock Returns (All Samples)

Table 5 presents the regression result of market risk on all three measures of common stock returns from all 48 sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 576 observations. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported values are intercepts and slope coefficients of respective explanatory variables with standard errors in parentheses. Also, reported are t-statistics, P-values, F-statistics, coefficients of determination (R^2 & Adjusted R^2), standard error of estimates (SEE), and the values of Durbin Watson (DW) test.

$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$DY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

Regression Coefficients			
All Samples (n = 576)			
Variable	Capital Gain Yield (CGY)	Dividend Gain Yield (DY)	Total Yield (TY)

	Coefficients	t	P		Coefficients	t	P		Coefficients	t	P	
Constant	0.055 (0.064)	0.863	0.388		0.051 (0.003)	16.161	0.000		0.106 (0.065)	1.637	0.102	
BETA	0.195 (0.057)	3.447	0.001		0.009 (0.003)	3.089	0.002		0.187 (0.057)	3.254	0.001	
Model Summary	F	11.881	P	0.001	F	9.543	P	0.002	F	10.586	P	0.001
	R^2	0.020	SE	0.982	R^2	0.016	SE	0.048	R^2	0.018	SE	0.995
	Adjusted R^2	0.019	DW	2.232	Adjusted R^2	0.015	DW	1.590	Adjusted R^2	0.016	DW	2.224

The results reveal that the F-statistics are significant at 1% level of significance for all three measures of the common stock returns (CGY, DY, & TY). The adjusted R^2 shows the overall goodness of fit of the model which shows 0.019, 0.015, and 0.016 for CGY, DY, and TY respectively. More clearly, only 1.9%, 1.5%, and 1.6% of the variations on capital gain yield, dividend yield, and total yield are explained by the market risk variable on common stock returns. The low rates of overall goodness of the model fit further suggest that there are other variables not covered by this model. Therefore, additional variables are added and analyzed in subsequent chapters. The observed values of DW test are (CGY = 2.232, DY = 1.590, & TY = 2.224) also less than 2 which suggest that there is no any problem of autocorrelation.

Table – 5 further reveals that regression coefficients of stock beta on common stock returns are positive (CGY = 0.195, DY = 0.009, & TY = 0.187) and statistically significant at 1% significance level. However, the regression coefficient of dividend yield (0.009) is very small which suggest that the magnitude of impact of stock beta on dividend yield is negligible. The significant positive coefficients of stock beta confirm that market risk has the significant positive impact on common stock returns. It means,

the higher the market risk, the higher would be the common stock returns in Nepali capital market.

Table 6

Regression Results of Market Risk on Common Stock Returns (BFIs Sample)

Table 6 presents the regression result of market risk on all three measures of common stock returns from all 28 BFIs sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 336 observations. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported values are intercepts and slope coefficients of respective explanatory variables with standard errors in parentheses. Also, reported are t-statistics, P-values, F-statistics, coefficients of determination (R^2 & Adjusted R^2), standard error of estimates (SEE), and the values of Durbin Watson (DW) test.

$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$DY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

Regression Coefficients												
BFIs Sample (n = 336)												
Variable	Capital Gain Yield (CGY)				Capital Gain Yield (CGY)				Capital Gain Yield (CGY)			
	Coefficients	t	P		Coefficients	t	P		Coefficients	t	P	
Constant	0.008 (0.060)	0.141	0.888		0.054 (0.004)	13.789	0.000		0.062 (0.061)	1.008	0.314	
BETA	0.145 (0.055)	2.622	0.009		0.005 (0.004)	1.457	0.146		0.140 (0.057)	2.454	0.015	
Model	F	6.877	P	0.009	F	2.122	P	0.146	F	6.024	P	0.015

Summary	R^2	0.020	SEE	0.699	R^2	0.006	SEE	0.045	R^2	0.018	SEE	0.719
	Adjusted R^2	0.017	DW	2.085	Adjusted R^2	0.003	DW	1.527	Adjusted R^2	0.015	DW	2.068

The results reveal that the F-statistics are significant at 5% level of significance in both (CGY and TY) of the models used. Whereas, the F-static of DY is insignificant (P = 0.0.146) at 5% level of significance. Therefore, no further analysis is done for DY model. The adjusted R^2 shows the overall goodness of fit of the model which shows 0.017 and 0.015 for CGY and TY respectively and confirm that only 1.7% and 1.5% of the variation on common stock returns is explained by the explanatory variable used for BFIs in Nepali capital market. The observed values of DW test are (CGY = 2.085 & TY = 2.068) also less than 2 which suggest that there is no any problem of autocorrelation.

The regression coefficients of stock beta on common stock returns are positive (CGY = 0.145 & TY = 0. 140) and statistically significant at 5% significance level. The significant positive beta coefficients further confirmed that market risk has the significant positive impact on common stock returns. More clearly, the higher the market risk, the higher would be the stock returns in Nepali banking and financial institutions.

Table 7

Regression Results of Market Risk on Common Stock Returns (Insurance Companies Sample)

Table 7 presents the regression result of market risk on all three measures of common stock returns from all 14 insurance companies' sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 168 observations. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported values are intercepts and slope coefficients of respective explanatory variables with standard errors in parentheses. Also, reported are t-statistics, P-values, F-statistics, coefficients of determination (R^2 & Adjusted R^2), standard error of estimates (SEE), and the values of Durbin Watson (DW) test.

$$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$$

$$DY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$$

$$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$$

Insurance Companies Sample (n = 168)

Variable	Capital Gain Yield (CGY)				Dividend Yield (DY)				Total Yield (TY)			
	Coefficients	t	P		Coefficients	t	P		Coefficients	t	P	
Constant	0.109 (0.161)	0.681	0.497		0.036 (0.006)	5.993	0.000		-0.312 (0.160)	-1.951	0.055	
BETA	0.290 (0.127)	2.289	0.023		-0.006 (0.005)	-1.206			0.304 (0.148)	2.050	0.044	
Model Summary	F	5.240	P	0.023	F	1.454	P	0.229	F	4.201	P	0.044
	R^2	0.028	SE	1.381	R^2	0.008	SE	0.051	R^2	0.058	SE	1.33
	Adjusted R^2	0.023	DW	2.351	Adjusted R^2	0.003	DW	1.700	Adjusted R^2	0.044	DW	1.992

The results shown in model summary of the regression model reveal that the F-statistics are significant at 5% level of significance in both CGY (0.023) and TY (0.044) of the models used. The F-static is insignificant at 5% level of significance for DY (0.229). Hence, no additional explanation of this model is needed. The adjusted R^2 shows the overall goodness of fit of the model which shows 2.3% and 4.4% for CGY and TY respectively and confirm that only the 2.3% and 4.4% of the variations on common stock returns are explained by the explanatory variables used for insurance companies in Nepali capital market. The observed values of DW test are (CGY = 2.351 & TY = 1.992) also near 2 which suggest that there is no any problem of autocorrelation.

The results reveal that the regression coefficients of stock beta are positive (CGY = 0.127 & TY = 0.148) and statistically significant at 5% level of significance. The significant positive beta coefficients further confirm that market risk has the significant positive impact on common stock returns. It means, the higher the market risk, the higher would be the stock returns can be obtained from the insurance companies operated in Nepali capital market.

Table 8

Regression Results of Market Risk on Common Stock Returns (Other Companies Sample)

Table 8 presents the regression result of market risk on all three measures of common stock returns from all 6 other companies' samples listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 72 observations. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported values are intercepts and slope coefficients of respective explanatory variables with standard errors in parentheses. Also, reported are t-statistics, P-values, F-statistics, coefficients of determination (R^2 & Adjusted R^2), standard error of estimates (SEE), and the values of Durbin Watson (DW) test.

$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$DY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

Regression Coefficients

Other Companies Sample (n = 72)

Variable	Capital Gain Yield (CGY)			Dividend Yield (DY)			Total Yield (TY)		
	Coefficients	t	P	Coefficients	t	P	Coefficients	t	P
Constant	0.212 (0.130)	1.625	0.109	0.055 (0.008)	6.741	0.000	0.267 (0.130)	2.056	0.044
BETA	-0.051 (0.154)	-0.331	0.741	-0.019 (0.010)	-1.961	0.540	-0.070 (0.153)	-0.456	0.650
Model	F	0.110	P	0.741	F	3.844	P	0.054	F	0.208	P	0.650

Summary	R^2	0.002	SEE	0.746	R^2	0.052	SEE	0.047	R^2	0.003	SEE	0.743
	Adjusted R^2	-0.013	DW	2.211	Adjusted R^2	0.039	DW	1.596	Adjusted R^2	-0.011	DW	2.166

The results shown in model summary of the regression model reveal that the F-statistics are insignificant at 5% level of significance in all three measures of common stock returns (CGY = 0.741, DY = 0.054, & TY = 0.654) of the models used. Therefore, no further explanations of these models are done.

Table 9

Portfolio Based Regression Results of Market Risk on Common Stock Returns (All Samples)

Table 9 presents the regression result of market risk on all three measures of common stock returns from all 48 sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022 with 576 observations. The dependent variables are Capital Gain Yield (CGY) and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported values are intercepts and slope coefficients of respective explanatory variables with standard errors in parentheses. Also, reported are t-statistics, P-values, F-statistics, coefficients of determination (R^2 & Adjusted R^2), standard error of estimates (SEE), and the values of Durbin Watson (DW) test.

$CGY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

$TY_{it} = \beta_1 + \beta_2 BETA_{it} + \varepsilon_{it}$

Panel - A: Capital Gain Yield (CGY)

BETA	Coefficients	t	P	Adj. R2	SEE	F	P of F	DW
1 (low)	-0.426 (0.213)	-1.997	0.048	0.027	0.641	3.988	0.048	1.961
2	0.129 (0.561)	-0.239	0.812	-0.009	0.674	0.057	0.812	2.009

3	2.642 (0.947)	2.791	0.006	0.060	1.265	7.787	0.006	1.694
4	0.068 (0.497)	1.360	0.177	0.008	0.767	1.849	0.177	1.897
5 (high)	1.176 (0.207)	5.692	0.000	0.227	1.061	32.396	0.000	2.431

Panel: Total Yield (TY)

BETA	Coefficients	t	P	Adj. R2	SEE	F	P of F	DW
1 (low)	-0.449 (0.220)	-2.041	0.044	0.029	0.662	4.164	0.044	1.957
2	-0.119 (0.557)	-0.213	0.832	-0.009	0.694	0.045	0.832	2.011
3	2.650 (0.946)	2.800	0.006	0.060	1.264	7.839	0.006	1.703
4	0.068 (0.510)	1.323	0.189	0.007	0.787	1.750	0.189	1.918
5 (high)	1.184 (0.211)	5.619	0.000	0.222	1.081	31.567	0.000	2.431

In order to test the robustness on the impact of stock beta on common stock returns, the portfolio-based regression analysis is conducted for all 48 sample firms associated with 576 observations. In doing so, all the stock beta are classified into five quintiles (1 = low to 5 = high) and the regression analysis is conducted based on the portfolio data. The results obtained from the portfolio-based regression analysis is summarized in Table – 9. Panel – A summarizes the regression results for capital gain yield (CGY) and Panel – B summarizes the regression results for total yield (TY). The portfolio-based regression for dividend yield is not conducted because the regression result of beta on dividend yield for all samples was very low (0.009) which indicates that the impact of stock beta on

dividend yield is negligible. Similarly, the results from the portfolio analysis also suggested that the unclear direction of impact of beta on dividend yield.

The regression coefficients of higher stock beta are positive for both of the measures of common stock returns (CGY = 1.176 and TY = 1.184). The statistics further confirmed that the coefficients are statistically significant at 1% level of significance. In addition, the regression coefficients for highest portfolio stock beta are strong as compared to the results of other lower-level portfolios. More clearly, the higher the stock beta, the higher would be the stock returns is observed in Nepali capital market.

Discussion and Conclusion

The summarized view of the test results obtained from the analysis on impact of market risk on common stock returns for all samples and stratified sample groups are presented with the prior expectation (hypothesis) in Table - 10 and the obtained results are compared with the existing body of literature.

Table 10

Comparison of Expected and Observed Relationship

Table 10 presents summary results of market risk variable on all three measures of common stock returns with All samples, BFIs, insurance, and other sample firms listed in the NEPSE for the study period of mid-July 2011 through mid-July 2022. The dependent variables are Capital Gain Yield (CGY), Dividend Yield (DY), and Total Yield (TY). Independent variable is BETA. BETA is the stock beta representing market risk. The reported signs are expected and observed relationship between the dependent and independent variables.

Variables	Expected Sign	Capital Gain Yield (CGY)				Dividend Yield (DY)				Total Yield (TY)			
		All	BFIs	Insurance	Other	All	BFIs	Insurance	Other	All	BFIs	Insurance	Other
BETA	+	+*	+*	+*	NA	+*	NA	NA	NA	+*	+*	+*	NA

Where, '+' = Positive Impact, '*' = Statistically Significant, and 'NA' = Model is Not Applicable

Table 10 shows the comparison of expected and observed relationship and the impact of market risk on common stock returns from the all samples and sub sample estimations. The results confirm that stock beta still retains its significant positive predictive power on all three measures of common stock returns for all samples. However, the stock beta has significant positive impact on CGY and TY for BFIs and Insurance sample, the model is insignificant for other companies' sample.

Market risk as proxied by stock beta has the significant positive regression in all the estimations used. Therefore, the significant positive coefficients of stock beta further confirm that market risk has the significant positive impact on common stock returns. More clearly, the higher the market risk, the higher would be the common stock returns in Nepali capital market. This finding clearly supports the large body of existing theoretical literatures such as CAPM of Sharpe (1964), Lintner (1965), and Black (1972) and some of the existing empirical literatures such as Lakonishok and Shapiro (1984), Fletcher (2000), Pettengill et al. (1995), and Huang and Hueng (2008). Yes, obviously the aim of the secondary market players is getting higher rate of returns from the fluctuation of the market which directly match with the market risk factor as proxied by stock beta. The slogan of risk returns tradeoff theory "higher the risk, higher would be the returns" is also fully supported by the finding of this study. Thus, there is the sufficient evidences in favour of the research hypothesis that market risk has the significant positive impact on common stock returns in Nepali capital market.

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