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Macroeconomic Variables and Common Stock Returns in Nepalese Capital Market

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Abstract

Background: Capital Assets Pricing Model (CAPM) advocates the single predictive power of stock beta and argued that stock beta is only the factor which measure common stock returns to the extent on which the asset is corelated. However, Arbitrage Pricing Theory (APT) confirmed the multifactor effect on common stock returns. Therefore, the expected returns from the market can be the product of firm performance and the overall economy of the country.

Objectives: The primary goal of the study is to examine how macroeconomic variables effect on the cross-section of expected stock returns in Nepali capital market.

Methods: The study is based on data collected from 48 firms listed on the Nepal Stock Exchange (NEPSE), covering a 12-year period from 2010/11 to 2021/22, with total 576 observations. The dependent variables considered are capital gain yield, dividend yield, and total yield. Likewise, the explanatory variables are macro-economic variables such as GDP growth rate, consumer price index, money supply, Government Treasury bills and the lending rate. The analysis tools consist of descriptive statistics, correlation, and regression analysis.

Results: The findings confirm that GDP growth, consumer price index, and money supply positively affect stock returns. In contrast, Treasury bills and lending rate have significant negative impact on common stock returns in Nepali stock market. The results obtained from the all-samples group were re-examined by stratified sample groups and confirmed the consistent results in almost all of the models applied.

Conclusion: Macroeconomic variables are the key factors in predicting stock returns in Nepali capital market. Therefore, all the policy makers and investors practicing in Nepali capital market must analyze the economic condition of the country while taking important decisions.

Keywords: Common stock returns, consumer price index, GDP growth, macroeconomic variables, money supply

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Introduction

Since the seminal publication of Portfolio Selection Theory (Markowitz, 1952), many discussions and empirical studies have been conducted to determine the common stock returns. In CAPM, Sharpe (1964), Lintner (1965), and Black (1972) advocate on the single predictive power of stock beta. Stock beta is only the factor which can measure the common stock return to the extent on which the asset is corelated. However, some of the major empirical studies confirmed the multifactor relationship of common stock returns. For example, Arbitrage Pricing Theory (APT) of Rose (1976), earning effect of Ball (1978), size effect of Banz (1981), three factors effect of Fama and French (1993), five factor effect of Fama and French (2015), and assets growth effect of Cooper et al. (2008).

Apart from the stock beta and fundamental variables, Chen et al. (1986) investigated the macroeconomic effect of explaining portfolio returns. The macroeconomic variables are risks that are rewarded in the stock market returns. In addition, Campbell (1987), Hamao (1988), Harvey (1989), Chen (1991), Ibrahim and Aziz (2003), and Rapach et al. (2005) examined that the macroeconomic factors such as industrial production growth rate, inflation rate, growth rate of money supply, and long-term and short-term interest rates do have significant impact in predicting portfolio returns. However, Ferson and Harvey (1999) examined the effect of macroeconomic variation on stock returns and rejected the claim of significant role of factor model of Fama and French (1993 & 2015), Treasury bills (Campbell, 1987 & Harvey, 1989) in predicting portfolio returns. Balci (2025) examined a negative impact of macro-economic risk factors and the stock returns.

Based on the literature discussions, it is confirmed that like the stock beta and firm specific fundamental variables, macroeconomic variables can also play a significant role in predicting common stock returns. However, there is still a gap in literature that shows how these macroeconomic variables affect the return from the assets of different industries group. In addition, most of these conclusions were drawn the huge capital market such as S & P 500 and Tokiyo stock exchange. Therefore, this study tries to fulfill the issues how do macro-economic variables effect on stock returns from the small capital market like Nepal.

Thus, this paper examines the casual impact of macro-economic variables on cross-sectional returns from the market to provide empirical evidence from the small capital market. This effort attempts to link and compare the findings with the existing body of literature between huge and small capital markets. Consequently, this study uses the dataset of 48 firms from the NEPSE including 576 observations covering 12 years study periods from mid-July 2011 to mid-July 2022. The impact of macro-economic variable on common stock returns is examined by using the regression analysis. Firstly, the analysis is conducted for all sample firms and the robustness of the results were examined by using the cross-sectional sample units stratified as banking, insurance, and other companies' groups.

The findings reveal that the GDP growth, money supply, consumer price index show the positive effect on the returns in most of the models used. In contrast, long-term and short-term interest rates as measured by lending rate and Government Treasury bills have the negative impact on returns in Nepali stock market.

The remaining section of the study consists of literature review, research methodology, results and discussion and finally the conclusions.

Review of Literature

Macro-economic variables are independent variables. Among them, GDP growth, consumer price index, money supply, Treasury bills rate and interest rate are taken as the macro-economic variables. The detail description and the theoretical backing for selecting these variables as independent variables for

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the study are described as follows:

Gross Domestic Product Growth (GDPG)

GDPG represents the gross domestic product growth rate. Sum of outputs of the economy is GDP. One of the major determinants of the macro-economic factor on common stock return is GDP growth. Fama (1981), Chen et al. (1986), Dhungana (2013) and Giri and Joshi (2017) documented a positive role of GDP growth on common market returns. Therefore, based on the existing body of literature, the hypothesis is:

H1: *GDP growth has a significant positive impact on stock returns.*

Consumer Price Index (CPI)

CPI is an annual percentage change in consumer price measured in terms of the purchasing power of the currency. It is also considered as the proxy of the rate of inflation. Symbolically:

$CPIt = (CPIt - CPI(t-1) / CPI(t-1)$ . . . (5)

Where,

CPIt= Weighted national urban consumer price index of period t.

CPIt-1= Weighted national urban consumer price index of period t-1

Schwert (1981) examined the negative role of CPI to the market return. However, the magnitude of the impact was small. Likewise, Gertler and Grinols (1982) and Hsing (2013) empirically examined the negative role of inflation in predicting stock returns. Based on empirical support, the hypothesis is:

H2: *Rate of inflation has a negative role in predicting market returns.*

Money Supply (MS)

MS is the currency in circulation and total demand deposits in the economy (M1). Percentage change in the money supply for the period t over the period t-1 is considered as the growth in money supply. Ouma and Muriu (2014) examined the positive role of money supply in determining stock returns. Hence, the hypothesis is:

H3: *Money supply has a significant positive impact on common stock returns.*

Treasury Bill Rate (T-Bill)

Treasury bill rate is the risk-free rate of return. Treasury bill rate is calculated based on the weighted average of 364 days calculated and published by the NRB. Campbell (1987), Harvey (1989), and Mutoko (2006) confirmed that the increase in the T-Bill rate has a greater impact on the market than a decrease in the T-Bill rate. Thus, based on the theoretical backing of Campbell (1987), Harvey (1989), and Mutoko (2006), the research hypothesis for the study is as follows:

H4: *T-Bill has a significant negative impact on common stock returns.*

Lending Rate (LR)

LR is the lending interest rate used for the analysis. The weighted average lending interest rate as calculated and published by the NRB is used for the analysis as one of the macro-economic variables. Adaramola (2011) and Alam and Uddin (2009) reported that negative impact of long-term interest rate on stock return. Thus, the hypothesis is:

H5: Lending rate has a negative role in predicting stock returns.

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Table 1 shows the expected impact of macro-economic variables and the common stock returns.

Table 1

Hypothesis and theoretical evidence

Variables	Expected Impact (Hypothesis)	Evidence
GDP Growth	+	Fama (1981), Chen et al. (1986), and Giri and Joshi (2017)
Consumer Price Index	-	Schwert (1981) and Gertler and Grinols (1982)
Money Supply	+	Ouma and Muriu (2014)
T-Bill	-	Campbell (1987), Harvey (1989), and Mutoko (2006)
Lending Rate	-	Adaramola (2011) and Alam and Uddin (2009)

Table 1 shows the hypothesis and theoretical evidence. The evidence shows that that GDP growth and money supply have a significant positive impact on common stock returns. in contrast, consumer price index, Government Treasury bills, and the lending rate have the significant negative effect on stock return in Nepali stock market.

Materials and Methods

To describe the different aspects of macro-economic variables and the common stock returns, descriptive research design was used. In addition, to describe the case and effect of macro-economic variables on stock returns, casual comparative research design has been used. The study is completely based on secondary data. All the data of macro-economic factors were extracted from the stock of Nepal Rastra Bank (NRB). Data set of stock prices were extracted from the database of NEPSE. A balance panel dataset has been used from 48 sample firms for 12 years from 2010/11 to 2021/22 with 576 observations. Table 2 shows the sampling details.

Table 2

Population and sample firms

SN	Industry/Sample Groups	Sample Firms
1	Banking and Financial Institutions (BFIs)	28
2	Insurance Companies Sample	14
3	Other Companies Sample	6
	Total Sample Firms	48

Firstly, descriptive analysis has been conducted to describe the different phenomenon of the macroeconomic variables and the common stock returns. Secondly, the relationship between the macro-economic variables and the stock returns have been examined by using the correlation analysis. And, finally, the case and effect of macro-economic variables on common stock returns have been examined by using the regression analysis. In addition. This process is further classified into four sub sections. Firstly, the impact of macro-economic variables on stock returns is examined from the data set of all samples. The robustness of the result is tested by using the subsample groups individually for BFIs, insurance companies, and other companies. The Ordinary Least Square (OLS) regression model employed for the study is given in equation 1.

$$CGYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t \quad \ldots (1.a)$$

$$DYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t \ldots (1.b)$$

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$TYit = \beta 1 + \beta 2GDPGt + \beta 3CPIt + \beta 4MSt + \beta 5T\text{-}Billt + \beta 6LRt + \varepsilon t$ . . . (1.c)

Where,

CGYit = Capital Gain Yield of sample i for period t.

DYit = Dividend Yield of sample i for period t.

TYit = Total Yield of sample i for period t.

GDPGt = GDP Growth Rate for period t.

CPIt = Annual growth rate of consumer price index for time 't'

MSt = Annual growth rate of money supply for time 't'

T-Billt = Weighted average rate of Treasury bills for time 't'

LRt = Rate of interest for time 't'

Dependent Variables

The study considers common stock returns as the dependent variable. Stock returns represent the overall rate of return from common stocks, comprising both market-driven gains and dividend income. Initially, the study examines the effect on returns from the market, which is then compared with return from dividend and total returns. Hence, return from the market, returns from the dividend, and the total returns combinedly from the market and dividend were considered as the dependent variables. Symbolically:

$CGYit = [Pit-Pi(t-1)] / Pi(t-1)$ . . . (2)

$DYit = Dit / Pi(t-1)$ . . . (3)

$TYit = [Dit + Pit - Pi(t-1)]/Pi(t-1)$ . . . (4)

Where,

CGYit = Annual capital gain of sample i for period t.

Pit = Market price per share of sample i for period t.

Pi(t-1) = Market price per share of sample i for period t.

DYit = Dividend yield of sample i for period t.

Dit = Dividend per share of sample i for period t.

TYit = Total yield of sample i for period t.

Results and Discussion

Descriptive Statistics

The descriptive analysis has been conducted to describe the characteristics of expected macro-economic variables during the study period of 2010/11 to 2021/22. It shows the data range of variables with mean and standard deviation.

Table 3 shows the descriptive statistics of the variables used. It includes minimum and maximum values with mean and standard deviations for all the variables used for the from 2010/ 2011 to 2021/2022. CGY is capital gain yield, DY is dividend yield, TY is total yield, GDPG is the GDP growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills rate. LR is the weighted average lending rate. The values presented are in

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fraction of percentage.

Table 3

Descriptive analysis of the data used

Descriptive Statistics				
Variables	**Minimum**	**Maximum**	**Mean**	**SD**
CGY	-0.694	10.421	0.225	0.991
DY	0.000	0.432	0.043	0.049
TY	-0.689	10.421	0.268	1.003
GDPG	0.06	0.187	0.121	0.038
CPI	0.036	0.099	0.070	0.024
MS	-0.097	0.226	0.143	0.087
T-Bill	0.008	0.084	0.036	0.025
LA	0.080	0.125	0.106	0.016

The findings indicate that capital gain yield varies significantly ranging from a lowest -69.4% to a highest 1042.1%, with an average of 22.5% and a standard deviation 99.1%. Similarly, dividend yield spans from 0% to 43.2%, averaging 4.3% with a standard deviation of 4.9%. Similarly, total yield ranges from -68.9% to 1042.1%, with a mean value of 26.8% and a standard deviation of 100.3%. The substantial spread and high standard deviation in capital gain yield highlight the considerable volatility in investor returns within the Nepali capital market.

Among the macroeconomic variables, GDP growth rate lies in between 6% to 18.7% with mean 12.0% and standard deviation of 3.7%. Likewise, the consumer price index (CPI) growth rate lies between a minimum of 3.6% to maximum 9.9 % with mean 6.9% and standard deviation 2.3%.

Likewise, the minimum growth rate of money supply is -9.7% and maximum 22.6% having mean 14.2% and standard deviation 8.7%. Moreover, the rate of weighted average Treasury bills lies in between a minimum 0.7% and maximum 8.3% with a mean 3.5% and standard deviation 2.5%. Regarding the weighted average lending rate of financial institutions, it ranges from minimum 8% to maximum 12.4% with mean 10.6% and standard deviation 1.6%.

Correlation Analysis

The results from the correlation analysis between the macro-economic variables and the stock return have been presented and analyzed.

Table 4 shows the Pearson correlation coefficients between macro-economic variables and stock return for all the variables used for the from 2010/ 2011 to 2021/2022. CGY is capital gain yield, DY is dividend yield, TY is total yield, GDPG is the GDP growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills rate. LR is the weighted average lending rate.

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Table 4

Correlation between macro-economic variables and stock returns

Pearson Correlation Coefficients								
Variables	CGY	DY	TY	GDPG	CPI	MS	T-Bill	LR
CGY	1							
DY	0.213**	1						
TY	0.999**	0.259**	1					
GDPG	0.108**	0.032	0.108**	1				
CPI	0.160**	0.227**	0.169**	-0.219**	1			
MS	0.286**	0.170**	0.291**	-0.364**	-0.105*	1		
T-Bill	-0.353**	-0.162**	-0.357**	0.321**	-0.117**	-0.793**	1	
LR	-0.249**	0.047	-0.244**	0.330**	-0.215**	-0.104*	-0.021	1

Table 4 shows that the correlation coefficients of GDP growth rate are positive with CGY (0.108**) & TY (0.108**) and significant at 1% significant level. The significant positive correlation coefficients suggest that GDP growth has a significant relationship with the stock return. More clearly, the higher the GDP growth rate, the higher the stock return would be. Similarly, the correlation coefficients of CPI are also positive and significant for all three measures of stock returns. The significant positive correlation coefficients further indicate that CPI has a significant positive relationship with the stock return. In the same way, the correlation coefficients of money supply on stock returns are also positive and significant at 1% level. Therefore, it is examined that the money supply has a significant positive relationship with stock returns.

In contrast, the correlation coefficients of Treasury bills rate are negative significant on all three measures of common stock returns. The significant negative correlation coefficients suggest that T-Bill has a significant negative relationship with stock returns. In the same way, the correlation coefficients of lending rate are also negative on two measures of common stock returns (CGY= -0.249** & TY = -0.244**) and statistically significant at 1% level of significance. Therefore, it is examined that lending rate has the significant negative relationship with stock returns in Nepali capital market.

Regression Analysis

In order to examine the magnitude of the impact of macro-economic variables on stock returns, the Ordinary Least Square (OLS) model has been used. The macro-economic variables include GDP growth, inflation rate, money supply, T-Bill, and lending rate. This section of data analysis is divided into four subsections. Firstly, the results from all sample firms have been presented and analyzed. The following subsection presents the results from the banking and financial institutions (BFIs) sample. The third subsection presents the results from the insurance companies' samples, and finally, results from the others sample companies' samples are presented and summarized. The results are shown in Table 5 to 8 respectively.

Table 5 reveals the regression result of macro-economic variables on stock returns from all 48 sample firms for 2010/2011 to 20212022. The explained variables are CGY, DY, and TY. CGY is Capital Gain Yield. DY is Dividend Yield, TY is Total Yield. GDPG is the growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills. LR is the weighted average lending rate. The reported values are regression coefficients and standard errors in parentheses.

$$CGYit = \beta 1 + \beta 2GDPGt + \beta 3CPIt + \beta 4MSt + \beta 5T\text{-}Billt + \beta 6LRt + \varepsilon t$$

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$DYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$TYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

Table 5

Regression results of macro-economic variables on common stock returns (all samples)

All Samples (n = 576)												
Variables	**Dividend Yield (DY)**				**Capital Gain Yield (CYG)**				**Total Yield (TY)**			
	Coefficients	t	P	VIF	Coefficients	t	P	VIF	Coefficients	t	P	VIF
Constant	2.000 (0.469)	4.264	0.000		-0.100 (0.024)	-4.099	0.000		1.901 (0.474)	4.010	0.000	
GDPG	3.536 (1.187)	2.980	0.003	1.349	0.112 (0.061)	1.820	0.069	1.349	3.648 (1.199)	3.042	0.002	1.349
CPI	3.662 (1.850)	1.979	0.048	1.302	0.693 (0.096)	7.228	0.000	1.302	4.355 (1.870)	2.329	0.020	1.302
MS	0.108 (0.817)	0.133	0.895	3.429	0.203 (0.042)	4.795	0.000	3.429	0.312 (0.826)	0.377	0.706	3.429
T-Bill	-15.676 (2.753)	-5.695	0.000	3.258	0.259 (0.143)	1.813	0.070	3.258	-15.417 (2.781)	-5.543	0.000	3.258
LR	-17.992 (2.664)	-6.753	0.000	1.238	-0.405 (0.138)	-2.935	0.003	1.238	-17.587 (2.692)	-6.532	0.000	1.238
Model Summary	F	29.818	P	0.000	F	14.898	P	0.000	F	30.151	P	0.000
	R2	0.207	SEE	0.887	R2	0.116	SEE	0.046	R2	0.209	SEE	0.896
	Adjusted R2	0.200	DW	2.218	Adjusted R2	0.108	DW	1.579	Adjusted R2	0.202	DW	2.211

Table 5 reveals that the regression results of GDP growth on stock return are positive with 1% significant level for (CGY = 0.003 & TY = 0.002). The significant positive coefficients of GDP growth indicate that stock return is positively affected by GDP growth. In simple terms, an increase in GDP growth leads to higher stock returns. Hence, the findings provide strong support for the research hypothesis that GDP growth positively and significantly influences common stock returns in the context of Nepal.

Similarly, the beta coefficients of CPI are also positive for stock returns (CGY = 3.662, DY = 0.693, & TY = 4.355) and significant at the 5% level. The regression results suggest that an increase in inflation leads to an increase in the investors' returns from the market. Simply speaking, as the inflation rate increases, stock returns also tend to rise. Therefore, the current findings do not provide any evidence to support the research hypothesis that inflation has a significant negative effect on investors' returns.

Likewise, the regression results show that the impact of money supply is positive and significant at the 1% level, but only for dividend yield (P = 0.000). This significant coefficient indicates that the money supply has a strong positive effect exclusively on dividend yield only.

On the other hand, the results of Treasury bills on stock return are negative for CGY (-15.676) and TY (-15.417) with significant P value at 1% level. The result indicates that T-Bill rates have a strong negative influence on stock returns. In other words, as T-Bill rates increase, stock returns tend to decrease. Thus, the evidence strongly supports the research hypothesis that T-Bill rates negatively and significantly affect stock returns.

Similarly, the regression results of lending rate are negative for CGY (-17.992), DY (-0.405), & TY (-17.587) and significant at 1% level. These negative results provide additional confirmation that lending interest rates adversely affect stock returns. In other words, an increase in lending rates is associated with a decrease in returns from stocks. These results offer ample evidence in support of the research hypothesis that lending interest rates have a significant negative influence on stock returns.

Table 6 reveals the regression result of macro-economic variables on stock returns from BFIs sample firms for 2010/2011 to 20212022. The explained variables are CGY, DY, and TY. CGY is Capital Gain

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Yield. DY is Dividend Yield, TY is Total Yield. GDPG is the growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills. LR is the weighted average lending rate. The reported values are regression coefficients and standard errors in parentheses.

$CGYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$DYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRit + \varepsilon t$

$TYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

Table 6

Regression results of macro-economic variables on stock returns (BFIS samples)

BFIs Sample (n = 336)												
Variables	**Capital Gain Yield (CYG)**				**Dividend Yield (DY)**				**Total Yield (TY)**			
	Coefficients	t	P	VIF	Coefficients	t	P	VIF	Coefficients	t	P	VIF
Constant	1.516 (0.429)	3.534	0.000		-0.053 (0.030)	-1.782	0.076		1.463 (0.441)	3.316	0.001	
GDPG	4.012 (0.535)	7.498	0.000	1.349	0.213 (0.075)	2.833	0.005	1.349	3.661 (0.533)	6.870	0.000	1.349
CPI	4.197 (0.726)	5.780	0.000	1.302	0.575 (0.117)	4.909	0.000	1.302	3.374 (0.700)	4.820	0.000	1.302
MS	4.330 (0.958)	4.521	0.000	3.429	0.162 (0.052)	3.134	0.002	3.429	3.220 (0.984)	3.273	0.001	3.429
T-Bill	-9.116 (2.518)	-3.621	0.000	3.258	-0.018 (0.174)	-0.102	0.919	3.258	-9.134 (2.590)	-3.527	0.000	3.258
LR	-13.877 (2.437)	-5.695	0.000	1.238	0.131 (0.169)	0.777	0.438	1.238	-13.746 (2.507)	-5.483	0.000	1.238
Model	F	20.747	P	0.000	F	9.625	P	0.000	F	20.712	P	0.000
	R2	0.239	SEE	0.619	R2	0.127	SEE	0.043	R2	0.239	SEE	0.637
Summary	Adjusted R2	0.228	DW	1.941	Adjusted R2	0.114	DW	1.488	Adjusted R2	0.227	DW	1.924

Table 6 reveals that regression coefficients of GDP growth on CGY (4.012), DY (0.213), and TY (3.661) are positive and significant at 1% level. The significant positive regression results suggest that GDP growth has a significant positive impact on BFIs stock returns. Simply speaking, stock returns are positively affected by GDP growth for BFIs firms. Similarly, the results of CPI are also positive (CGY = 4.197, DY = 0.575, & TY = 3.374), and significant at 1% level. These results indicate that stock returns from BFIs are positively influenced by CPI. Which means an increase in the rate of CPI leads to an increase in investors' returns. Likewise, the regression results of money supply are also significantly positive (CGY = 4.330, DY = 0.162, & TY = 3.220). The significant regression results further validate that money supply has a strong positive influence on BFIs firm's stock returns.

Contrarily, the beta coefficients of Treasury bills are negative on CGY (-9.116), DY (-0.018), and TY (-9.138) and significant at 1% level (P = 0.000) for CGY and TY. The significant negative coefficients further confirm that the rate of T-Bills negatively affects stock returns from BFIs firms. Similarly, the regression coefficients of lending rate are also negative (CGY = -13.877 & TY = -13.746) with the significant P-values (0.000) in 1% level. The negative coefficients further confirm that lending interest rate has the significant negative impact on stock return in Nepali BFIs. It means that the higher lending rate tends to have lower market returns for BFIs. The results of T-Bill and LR are statistically insignificant to DY (T-Bill = 0.919 & LR = 0.438). The insignificant regression coefficients further confirm that T-Bill and LR both have an insignificant impact on dividend yield.

In contrast, Treasury bills and lending rate have significant negative impact on common stock returns in banking and financial institutions operated in Nepali stock market.

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Table 7 reveals the regression result of macro-economic variables on stock returns from insurance companies' sample for 2010/2011 to 20212022. The explained variables are CGY, DY, and TY. CGY is Capital Gain Yield. DY is Dividend Yield, TY is Total Yield. GDPG is the growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills. LR is the weighted average lending rate. The reported values are regression coefficients and standard errors in parentheses.

$CGYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$DYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$TYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

Table 7

Regression results of macro-economic variables on stock returns (insurance companies' samples)

Insurance Companies Sample (n = 168)												
Variables	**Capital Gain Yield (CYG)**				**Dividend Yield (DY)**				**Total Yield (TY)**			
	Coefficients	t	P	VIF	Coefficients	t	P	VIF	Coefficients	t	P	VIF
Constant	3.210 (1.198)	2.680	0.008		-0.200 (0.047)	-4.234	0.000		3.010 (1.206)	2.495	0.014	
GDPG	8.303 (3.030)	2.740	0.007	1.349	-0.023 (0.120)	-0.191	0.849	1.349	8.281 (3.052)	2.713	0.007	1.349
CPI	11.002 (4.723)	2.329	0.021	1.302	0.990 (0.186)	5.310	0.000	1.302	11.992 (4.759)	2.520	0.013	1.302
MS	-2.209 (2.087)	-1.058	0.291	3.429	0.271 (0.082)	3.285	0.001	3.429	-1.938 (2.102)	-0.922	0.358	3.429
T-Bill	-33.470 (7.027)	-4.763	0.000	3.258	-0.553 (0.277)	-1.995	0.048	3.258	-32.916 (7.079)	-4.650	0.000	3.258
LR	-28.511 (6.802)	-4.192	0.000	1.238	-1.011 (0.269)	-3.765	0.000	1.238	-27.500 (6.852)	-4.013	0.000	1.238
Model Summary	F	14.345	P	0.000	F	8.054	P	0.000	F	14.315	P	0.000
	R2	0.307	SEE	2.555	R2	0.199	SEE	0.048	R2	0.306	SEE	1.231
	Adjusted R2	0.285	DW	2.500	Adjusted R2	0.174	DW	1.885	Adjusted R2	0.285	DW	2.500

Table 7 indicates that the beta coefficients of GDP growth on stock returns are positive for CGY (8.303) and TY (8.281) at 1% level. These significant positive values provide strong evidence that GDP growth has a positive effect on both CGY and TY within the Nepali insurance industry. In simpler terms, as GDP growth increases, common stock returns in this sector tend to rise accordingly.

Similarly, the regression results of CPI are also positive for stock returns (CGY = 11.002, DY = 0.990, & TY = 11.992) and significant (CGY = 0.021, DY = 0.000, & TY = 0.013) at 5% level. The significant coefficients of CPI further confirm that stock return from the insurance firms positively affected by CPI. Likewise, beta coefficient of money supply is also positive for dividend yield (0.271), and significant at 1% level (P = 0.001). This result indicates that returns from the insurance firms are positively affected by money supply.

Contrarily, the regression coefficients of Treasury bills on stock returns are negative and significant at the 5% level. These significant negative coefficients further indicate that T-Bill rates have a notable adverse effect on stock returns. In simple terms, as the T-Bill rate increases, stock returns in Nepali insurance companies tend to decline.

In the same way, the regression results of lending rate are also negative (CGY = -28.511, DY = -1.011,

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& TY = -27.5) with the significant P-value in 1% level. The result indicates that stock returns are negatively affected by lending rate in Nepali insurance industry.

Table 8 reveals the regression result of macro-economic variables on stock returns from other companies' sample for 2010/2011 to 20212022. The explained variables are CGY, DY, and TY. CGY is Capital Gain Yield. DY is Dividend Yield, TY is Total Yield. GDPG is the growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills. LR is the weighted average lending rate. The reported values are regression coefficients and standard errors in parentheses.

$CGYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$DYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

$TYit = \beta1 + \beta2GDPGt + \beta3CPIt + \beta4MSt + \beta5T\text{-}Billt + \beta6LRt + \varepsilon t$

Table 8

Regression results of macro-economic variables on common stock returns (other companies samples)

Other Companies Sample (n = 72)												
Variables	Capital Gain Yield (CYG)				Dividend Yield (DY)				Total Yield (TY)			
	Coefficients	t	P	VIF	Coefficients	t	P	VIF	Coefficients	t	P	VIF
Constant	3.906 (2.590)	1.508	0.137		0.323 (0.188)	1.722	0.090		4.229 (2.574)	1.643	0.106	
GDPG	1.475 (0.464)	3.181	0.002	3.570	0.008 (0.034)	0.240	0.811	3.570	1.483 (0.461)	3.218	0.002	3.570
CPI	1.171 (0.427)	2.740	0.008	3.636	0.052 (0.031)	1.694	0.095	3.636	1.223 (0.425)	2.880	0.006	3.636
MS	2.264 (0.577)	3.924	0.000	7.707	0.035 (0.042)	0.833	0.408	7.707	2.299 (0.573)	4.010	0.000	7.707
T-Bill	-0.443 (0.214)	-2.076	0.042	3.578	0.028 (0.015)	1.824	0.073	3.578	-0.472 (0.212)	-2.222	0.030	3.578
LR	-3.788 (0.861)	-4.400	0.000	2.614	-0.023 (0.062)	-0.364	0.717	2.614	-3.810 (0.856)	-4.454	0.000	2.614
Model Summary	F	4.873	P	0.001	F	1.270	P	0.289	F	4.927	P	0.001
	R2	0.289	SEE	0.669	R2	0.096	SEE	0.048	R2	0.291	SEE	0.665
	Adjusted R2	0.230	DW	2.165	Adjusted R2	0.020	DW	1.476	Adjusted R2	0.232	DW	2.097

Table 8 reveals that the beta coefficients of GDP growth rate are positive (CGY = 3.906 & TY = 4.229) and significant at 1% level. The significant positive coefficients indicate that GDP growth exerts a strong positive influence on stock returns in Nepali other companies' sample firms. In other words, as the GDP growth rate rises, stock returns are also likely to increase. Similarly, the regression coefficients of CPI are also positive (CGY = 1.171 & TY = 1.223) and significant at 1% level. The significant positive regression coefficients indicate that CPI has a significant positive effect on stock returns. In simpler terms, as CPI increases, stock returns for other companies' sample firms also tend to rise. Likewise, the beta coefficients of money supply are also positive (CGY = 2.264 & TY = 2.299) and significant at 1% level. The results examined that money supply has a significant positive effect on stock returns. In other words, an increase in money supply leads to higher stock returns for the other companies' sample firms in Nepal.

On the other hand, the regression results of the treasury bills rate and lending rate on stock returns are negative and significant at the 5% level. Therefore, the results suggest that Treasury bill rates and

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lending rate have a significant negative effect on stock returns. This implies that as both long-term as well as short-term interest rates rise, stock returns from the other companies' firms tend to decrease.

Table 9 presents a consolidated overview of the test results derived from the analysis of the impact of macroeconomic variables on stock returns across both the overall sample and the stratified sample groups. These results are displayed alongside the initial hypotheses (prior expectations) and are compared with findings from existing literature. The dependent variables are CGY, DY, and TY. CGY is Capital Gain Yield. DY is Dividend Yield, TY is Total Yield. GDPG is the growth rate. CPI is inflation rate. MS is the annual growth rate in money supply. T-Bill is the 364 days weighted average government Treasury bills. LR is the weighted average lending rate. The reported values are regression coefficients and standard errors in parentheses.

Table 9

Comparison of expected and observed relationship

Variables Expected													
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
GDPG	+	+*	+*	+*	+*	+	+*	-	NA	+*	+*	+*	+*
CPI	-	+*	+*	+*	+*	+*	+*	+*	NA	+*	+*	+*	+*
MS	+	+	+*	-	+*	+*	+*	+*	NA	+	+*	-	+*
T-Bill	-	-*	-*	-*	-*	+	-	-*	NA	-*	-*	-*	-*
LR	-	-*	-*	-*	-*	-*	+	-*	NA	-*	-*	-*	-*

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

The explanatory power of GDP growth on stock returns is captured by regression coefficients are positive and statistically significant. The statistically significant positive coefficients of GDP growth provide strong evidence that GDP growth positively influences common stock returns in the Nepali capital market. In essence, when GDP grows at a higher rate, stock returns also tend to increase, indicating a direct and favorable relationship. This result aligns with the findings of numerous prior empirical studies, including those by Fama (1981), Chen et al. (1986), Dhungana (2023) and Giri and Joshi (2017), all of whom documented a significant positive association between GDP growth and stock returns. Therefore, the current analysis offers compelling support for the research hypothesis, affirming that GDP growth has a meaningful and positive impact on the performance of common stocks in Nepal's capital market.

The analysis reveals that the Consumer Price Index (CPI) exerts a statistically significant positive influence on stock returns, indicating that higher inflation rates are associated with increased stock returns. This outcome stands in contrast to several earlier studies such as those by Schwert (1981), Gertler and Grinols (1982), and Hsing (2013) which documented a significant negative relationship between inflation and common stock returns. On the other hand, the findings align with research conducted by Ibrahim and Aziz (2003) and Maysami et al. (2004), who also observed a positive effect of inflation on stock returns. Consequently, based on the present results, there is insufficient evidence to support the research hypothesis that the consumer price index has a significant negative impact on stock returns within the Nepali capital market.

The impact of money supply on dividend yield is found to be both positive and statistically significant for BFIs as well as for other companies' sample firms. This result confirms that an increase in money supply substantially enhances stock returns. This outcome aligns with prior research, including the study by Ouma and Muriu (2014), which also identified a significant positive relationship between money supply growth and common stock returns. Consequently, the evidence strongly supports the research

hypothesis that money supply plays a crucial and positive role in influencing common stock returns.

The findings clearly demonstrate that Treasury bill rates exert a statistically significant negative effect on stock returns in the Nepali stock market. In other words, as Treasury bill rates rise, stock returns tend to decline, indicating an inverse relationship between these variables. This outcome is consistent with previous studies conducted by Campbell (1987), Harvey (1989), and Mutoko (2006), all of which similarly identified a detrimental impact of Treasury bill rates on stock performance. Therefore, the current evidence provides robust support for the research hypothesis asserting that Treasury bills negatively and significantly influence stock returns in Nepal's stock market.

The statistically significant negative results related to the lending rate confirm that it adversely affects stock returns in the Nepali stock market. This implies that as lending interest rates increase, the returns on stocks in Nepal's capital market tend to decrease. Similar negative relationships have been documented in previous studies by Adaramola (2011) and Alam and Uddin (2009), who also found lending rates to have a significant detrimental effect on common stock returns. Consequently, there is ample evidence supporting the research hypothesis that higher lending rates significantly reduce stock returns in the Nepali market.

Conclusion and Suggestions

The study concludes that GDP growth, consumer price index (CPI), and money supply exert a statistically significant positive influence on common stock returns in the Nepali stock market. Conversely, Treasury bills and lending rates are found to have a significant negative impact on stock returns. This pattern holds consistently across different segments of the market: for banking and financial institutions (BFIs), insurance companies, and other sampled firms, GDP growth, CPI, and money supply positively affect stock returns, while Treasury bills and lending rates negatively influence them. These findings underscore the robust and differentiated effects of key macroeconomic variables on stock performance within Nepal's diverse market sectors. The findings of this study have important implications for future research, investment strategies, and economic policy in Nepal. The clear relationships identified between macroeconomic variables and stock returns open pathways for more advanced modeling, forecasting, and sector-specific analysis in emerging markets. Investors can use these insights to develop more informed and adaptive investment strategies by aligning their decisions with macroeconomic trends such as GDP growth, inflation, and monetary expansion. For policymakers, the results highlight the need for stable macroeconomic management, as shifts in interest rates and government securities directly affect market confidence and capital flow. In the context of Nepal's small and developing capital market, integrating macroeconomic indicators into regulatory, fiscal, and monetary decision-making could enhance market stability and foster long-term investment growth.

Author contribution statement

The author solely conducted conceptualization, data collection, analysis, writing tasks, addressing the comments of reviewers, and finalizing the manuscript.

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