Impact of Macroeconomic Variables on Stock Market Capitalization in Nepal

Ashish Ghimire[1] Rahim Miya[2] Sadhana Guragain*[3] Sajita Upreti[4]
Shankar Poudel[5] Shyam Bahadur Okheda[6]

[1] Department of economics, Ratna Rajya Laxmi Campus, Nepal
ashishg5577@gmail.com
[2] Department of economics, Ratna Rajya Laxmi Campus, Nepal
rmiya65@gmail.com
[3] Corresponding Author, Department of economics, Ratna Rajya Laxmi Campus, Nepal
sadhanaguragain@gmail.com
[4] Department of economics, Ratna Rajya Laxmi Campus, Nepal
sajitaupreti40@gmail.com
[5] Department of economics, Ratna Rajya Laxmi Campus, Nepal
poudelshankar06@gmail.com
[6] Department of economics, Ratna Rajya Laxmi Campus, Nepal
shyam.okhedatuk@gmail.com

Received: June 5, 2025
Revised: June 19, 2025
Accepted: June 22, 2025

How to Cite: Ghimire, A., Miya, R., Guragain, S., Upreti, S., Poudel, S., & Okheda, S. B. (2025). Impact of macroeconomic variables on stock market capitalization in Nepal. *Economic Review of Nepal*, *8*(1), 82–101. https://doi.org/10.3126/ern.v8i1.80746

Abstract

The current research focuses on how some major macroeconomic factors affect the stock market capitalization in Nepal based on the annual observed data between 2000 and 2023. Using the Autoregressive Distributed Lag (ARDL) model, short-run and long-run relationships show the total stock market value performance in relation to six macroeconomic indicators which are the GDP, inflation, money supply, the private sector credit, remittance inflows, and the interest rate. The findings indicate that private sector credit and remittance significantly and positively influence the stock market capitalization in the long-run, indicating that financial deepening and external financial flows are conducive to the growth of Nepal capital market. Interest rate was discovered to be affected negatively in the short run whereas surprisingly the GDP had negative relation in the long run which means there is poor connection between the stock market and real economic growth. Inflation and money supply were statistically not supportive for stock market capitalization in Nepal. Those results put emphasis on the need to enhance the structural relationship between financial markets and essentials in the economy in Nepal.

Keywords: Stock market capitalization, macroeconomic variables, ARDL, remittance, private sector credit, Nepal

JEL classification: G1, E44, C32, O53, E31

Introduction

Macroeconomic conditions have long been recognized as fundamental drivers of economic stability and growth. Indicators such as inflation, interest rates, exchange rates, gross domestic product (GDP)and money supply offer critical insights into the health of an economy and the environment in which businesses operate (Mishkin, 2007). These variables collectively shape investment behavior, corporate earnings, and consumption patterns, thereby influencing financial markets worldwide. In particular, fluctuations in macroeconomic fundamentals often trigger shifts in investor sentiment, impacting stock market performance in both developed and emerging economies (Fama, 1970; Chen, Roll, & Ross, 1986).

The relationship between macroeconomic variables and stock markets has been extensively studied across various contexts. In emerging markets like Nepal, this relationship is particularly dynamic and complex. Nepal's stock market, represented by the Nepal Stock Exchange (NEPSE), has experienced substantial growth over the past two decades, reflecting broader financial sector reforms and increased investor participation (Shrestha & Subedi, 2014). However, NEPSE remains relatively underdeveloped compared to regional counterparts, characterized by lower market capitalization, limited liquidity, and heightened sensitivity to policy shifts (Sapkota, 2011). Given the market's evolving nature, understanding how macroeconomic factors influence NEPSE is crucial for investors, regulators, and policymakers seeking to enhance market efficiency and promote sustainable economic development.

The Nepal Stock Exchange (NEPSE) was established in 1993 with the aim of facilitating the trading of securities and promoting capital market development in Nepal. Initially evolving from the Securities Exchange Center (founded in 1976), NEPSE has gradually expanded its operations, though it remains relatively small and less liquid compared to regional markets (NEPSE, 2024). Over the years, NEPSE has introduced reforms such as automated trading systems and regulatory improvements to enhance transparency and attract wider investor participation.

For the country's economy, stock market is generally considered the growth indicator (Levine & Zervos, 1998). Stock market performance influence the decision to invest funds in the stock market. And, Stock market performance is affected by various macroeconomic variables (Mukherjee & Atsuyuki, 1995; Agrawalla & Tuteja, 2008). As a result, an impact analysis is very essential to both the investors and industries since it might affect their viability adversely and directly affect the market price of stocks. The rate of growth of the gross domestic product (GDP), fiscal position, the rate of inflation, the debt level, the rate of exchange and supply of money are all key parameters in the development of the economic growth (Pal & Mittal, 2011).

Several studies have attempted to empirically examine the linkage between macroeconomic performance and stock market development, employing both panel data and time series analyses. Globally, studies by Levine and Zervos (1998) and Bekaert, Harvey, and Lundblad (2005) highlight a strong association between macroeconomic stability and stock market growth, suggesting that well-functioning stock markets can foster economic development. Using time series approaches, Mukherjee and Naka (1995) found significant long-run relationships between macroeconomic variables and stock prices in Japan. In the South Asian context, studies by Bilal et al. (2012) for Pakistan and Pradhan and KC (2010) for Nepal demonstrate similar trends, albeit with varying magnitudes and directions depending on country-specific factors.

Despite these valuable contributions, notable gaps persist in the existing literature. For Nepal, most studies have focused either on short-term fluctuations or have employed limited datasets, often failing to capture the evolving nature of macroeconomic influences over time. Moreover, many analyses lack a comprehensive exploration of both short-run and long-run dynamics within a unified framework. This context raises the central question: how do macroeconomic factors like GDP growth, inflation, interest rates, remittance, public service

credit and money supply influence stock returns in Nepal? Understanding these linkages can offer critical insights for both investors and policymakers.

Stock market has been unpredictable since the dawn of its time. Several research has been done to predict its behaviors and dependency with macro-economic variables. This research focuses on the recent time frame between 2000 and 2024 which is subject to vast change in performance and promising events. Addressing these time frames, the present study aims to systematically analyze the impact of selected macroeconomic variables in Nepal; which are interest rate, money supply (M2), GDP, remittance, public service credit, and inflation on total market value in Nepal, considering both short-term and long-term relationships. Using time series econometric techniques suited for small-sample settings, this research seeks to fill the methodological and contextual gaps identified in previous studies. The motivation behind this inquiry lies in providing a deeper understanding of how economic fundamentals shape stock market dynamics in an emerging, relatively volatile market like NEPSE. By establishing clearer linkages, the study hopes to contribute meaningfully to investment decision-making, policy formulation, and the broader discourse on financial market development in Nepal. The findings are expected to offer practical implications for investors seeking to align their strategies with macroeconomic trends, and for regulators aiming to foster a more resilient and efficient capital market.

Literature Review

Theoretical Foundation

The study of stock market value in relation to macroeconomic factors is anchored in several important economic theories. According to EMH as posited by Fama (1965), financial markets digest all available information that can be known publicly so fast that no investor has any chance to earn a chance on all investments all the time. The CAPM in version Sharpe (1964) goes one step further and considers the expected value of a security as rational by its systematic risk that is commonly compared to the overall market by the coefficient of beta. In the meantime, Ross s APT (1972) admits a possibility that not only market risk may affect the returns of various assets. These theories provide the basis upon which various factors like interest rates, inflation or GDP growth may affect the actions of the investors and the equality of the stocks. As part of the Nepali specifications in the financial environment, how do these theories relate to management in the global modality of global implementation while considering the local one? Despite these firmly-established theories, the macroeconomic indicators and stock returns are still complicated and can be investigated further.

Review of Empirical Studies

Gross Domestic Product (GDP) and Stock Market Capitalization

Numerous studies have found a positive correlation between GDP and stock market returns. Reddy (2012) highlighted that economic growth generally boosts market performance. Similarly, Cole, Moshirian, and Wu (2008) found a significant link between bank stock returns and anticipated GDP growth. Studies by Singh, Mehta, and Varsha (2011) also confirmed this relationship, emphasizing that healthier economies tend to support stronger stock markets. In Nepal, Ghimire (2022) identified a positive connection between GDP and NEPSE index levels. Setiawan (2020) further argued that the influence of GDP on stock returns can persist over the

long run. Based on the reviewed literature, the study assumed the following hypothetical proposition:

H1: Gross domestic product significantly influences the stock market capitalization.

Money Supply (M2) and Stock Market Capitalization

Multiple researchers have explored how the broad money supply impacts Nepal's stock market. Panta (2020) found a strong and positive relationship between money supply and the NEPSE index, suggesting that higher liquidity boosts market performance. Karki (2018) and Paul and Pokharel (2020) came to similar conclusions. Studies by Shrestha and Pokhrel (2019), and Tsai, Chang, and Tzang (2022), also supported the idea that monetary policy and liquidity conditions significantly influence investor confidence and stock prices in Nepal. Based on reviewed literature, the study assumed following hypothetical proposition:

H2: Money Supply significantly influences the stock market capitalization.

Inflation Rate and Stock Market Capitalization

The link between inflation and stock returns has yielded mixed results across countries. Naik and Padhi (2012), analyzing India, found that inflation's impact on stock prices is complex and dependent on various economic conditions. In Indonesia, Amtiran et al. (2017) used the APT model to show that inflation, GDP, and exchange rates all play significant roles. In Nepal, Shrestha and Subedi (2014) analyzed data from 2000 to 2014 and found that inflation positively affects the NEPSE index, while interest rates have a negative impact. Their study included variables such as CPI, GDP, treasury bill rates, and political factors. Likewise, Hsing (2011), in the context of Hungary, found that inflation and interest rates negatively affected stock prices, while GDP and exchange rates had a positive impact. Based on reviewed literature, the study assumed following hypothetical proposition:

H3: Inflation rate significantly influences the stock market capitalization.

Interest Rate and Stock Market Capitalization

A strong body of research has examined the effect of interest rates on stock returns. Alam and Uddin (2009) found a clear negative relationship between rising interest rates and falling share prices. Amarasinghe (2015), focusing on Sri Lanka, used regression analysis to confirm that interest rates significantly and negatively influence stock indices. Studies by Hamrita and Trifi (2011), and Ahmad, Rehman and Raoof (2010), also backed this negative correlation. In Nepal, Devkota (2018) analyzed data from 1994 to 2016 and found that NEPSE is highly sensitive to changes in interest rates, reinforcing the need to closely monitor monetary policy decisions. In addition, Dangal and Gajurel (2021) give evidence of volatility clustering and a positive correlation between expected returns and market return volatility in the NEPSE index with empirical data. The principle that investors in Nepal are willing to pay a premium because of the risk they face is supported by their GARCH family model. It is important to note the perception that Nepalese market players react to the perceptions of uncertainty and changes in interest rates by shifting their investments in the short-term. Based on reviewed literature, the study assumed following hypothetical proposition:

H4: Interest rate significantly influences the stock market capitalization.

Remittance and Stock Market Capitalization

A number of studies have examined the impact of remittance inflows on stock market capitalization, particularly in emerging economies like Nepal. Barajas et al. (2009) argued that remittances promote financial sector development by increasing liquidity, which indirectly supports stock market growth. In Nepal, Adhikari and Ghimire (2018) found that remittance inflows increase disposable income and bank deposits, facilitating greater stock market participation, especially in banking and insurance sectors. Pradhan and Upadhyay (2020) confirmed a positive correlation between remittance flows and NEPSE index movements, attributing this to enhanced domestic investment capacity. However, Sapkota (2019) noted that much of the remittance income in Nepal is directed toward consumption and real estate rather than financial markets, potentially limiting its direct impact on stock market capitalization. Despite this, the overall evidence suggests that remittances positively influence stock market development by enhancing financial system liquidity. Based on reviewed literature, the study assumed following hypothetical proposition:

H5: Remittance significantly influences the stock market capitalization.

Public Sector Credit and Stock Market Capitalization

Public sector credit is widely recognized as a crucial factor influencing stock market capitalization. Increased credit to the public sector can enhance market liquidity and support economic growth, but excessive borrowing may crowd out private investment and negatively affect stock market performance. Bhattarai (2020) found that moderate expansion of public sector credit supports market liquidity and capitalization, while excessive public sector borrowing may crowd out private investment and negatively affect the stock market. KC and Sharma (2021) observed that fluctuations in public sector credit significantly impact banking stocks, which dominate Nepal's NEPSE index. Demirgüç-Kunt and Levine (1996) emphasized that efficient credit allocation to productive sectors is essential for financial market development in emerging economies. These findings collectively suggest that public service credit plays a significant role in driving stock market capitalization. Based on reviewed literature, the study assumed following hypothetical proposition:

H6: Public Sector Credit significantly influences the stock market capitalization.

This study investigates the relationship between stock market returns and selected macroeconomic variables in Nepal. A quantitative research approach is used to ensure objective analysis and to meet the study's core objectives.

Data and Method

Data and Variables Descriptions

The research covers the period from 2010 to 2023, a time marked by significant economic changes in Nepal. Secondary data is used for the analysis, collected from credible and official sources such as Nepal Rastra Bank (NRB),

Variable descriptions

The key macroeconomic variables selected for this study include:

Table 1

Description of Variables

Name of Variable	Proxy	Measurements	Source
Gross Domestic Product	GDP	Nominal GDP (in million NRS.)	NRB
Money Supply	M2	In million NRS.	NRB
Inflation rate	Inf	Percentage of GDP	NRB
Interest rate	Interest	Percentage	NRB
Remittance	Rem	In million	NRB
Public Service Credit	PSC	In million	NRB

The stock market capitalization is used as a proxy for stock market performance. In cases where binary data is stationary but not of order 2, ARDL can be instrumental in explaining both short term and long term dynamics between two variables as well as cause and effect relationship. To establish the fact that the series is stationary augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests with ADF (Dickey and Fuller, 1979) and PP unit root test (Phillips and Perron, 1988) are used. PP tests make no adjustments to any serial correlation in the test regression whereas ADF tests are based on parametric autoregressions of the test regression to approximate ARMA structure of the errors. The ADF and PP test of regression can be given by the following equation:

ADF test: $\Delta Yt = \beta' D_t + \xi Y_{t-1} + \sum^{k}_{i=1} \Omega_i \Delta Y_{t-1} + \varepsilon_t$

Where, Yt is time series, Dt is deterministic terms such as constant, trend, etc. or $\beta_0 + \beta_1 t$, k is lagged terms, ε_t is error term. In ADF test, t-statistics for $\xi = 0$ using for testing the series with null hypothesis of not stationary or has a unit root. The same hypothesis is applied to PP test with the test with regression as

PP test: $\Delta Yt = \beta' Dt + \xi Yt\text{-}1 + \varepsilon_t$

To fulfil the objective of the study, the estimated general log linear model can be stated as:

$\ln CAP_t = \alpha_0 + \alpha_1 \ln GDPt + \alpha_2 \ln INFLt + \alpha_3 \ln INTt + \alpha_4 \ln M_2 t + \alpha_5 \ln PSCt + \alpha_6 \ln REMt + \varepsilon_t$

The ARDL model is employed after the test of stationarity of data sets. As shown in Pesaran et al. (2001), the ARDL model can be expressed as follows:

$\Delta Y_t = \Phi_0 + \sum^{p}_{i=1} \Phi_i \Delta Y_{t-i} + \sum^{q} i=1 \Phi_j \Delta X_{t-i} + \delta_i Y_{t-i} + \delta_j X_{t-i} + \varepsilon_t$

This model is constituted of short run as well as long run parameters. The parameters Φ_i and Φ_j are the short run and δ_i and δ_j are long run coefficients. On the same note, Y_t is a series of dependent variables and X_t is a series of explanatory and control variables Similarly, p and q are the lagged criteria for the dependent variable and regressors respectively. To check long-run cointegration in this paper, bound tests were relied upon by estimating the ARDL error correction model (ECM). The error correction model ARDL could be written as

$\Delta Y_t = \Phi_0 + \sum^{p}_{i=1} \Phi_i \Delta Y_{t-i} + \sum^{q} i=1 \Phi_j \Delta X_{t-i} + \xi ECT_{t-i} + \varepsilon_t$

Here, ECT_{t-1} is the error correction term. The negative and statistically significant ECT coefficient, ξ explains that the disequilibrium over time will cause the dependent variables and independent variables to converge back to equilibrium (Gajurel & Dangal, 2023).

Results

Descriptive Analysis

Descriptive analysis involves organizing and summarizing data using statical measure such as mean, median, standard deviation, Jarque-Bera, Kurtosis and Skewness before conducting a thorough analysis. Descriptive analysis helps researchers to provide a clear overview of data's central tendencies, variability, and distribution. Results corresponding to this research are presented Table 2 below and illustrated in Figure 1.

Table 2

Results of Descriptive Analysis

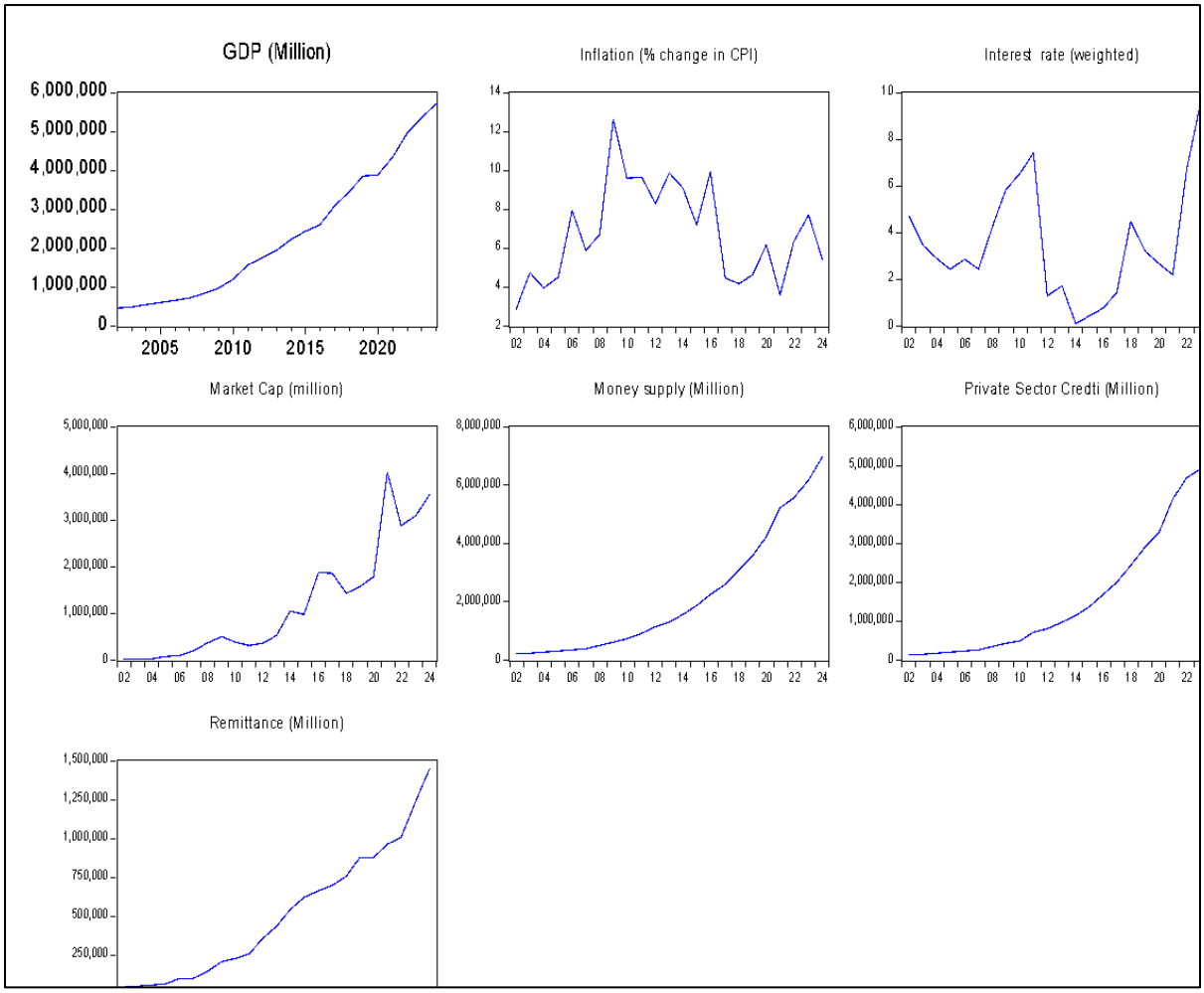
	LNCAP	LNGDP	LNINFL	LNINTEREST	LNM2	LNPSC	LNREM
Mean	13.18049	14.35780	1.841285	0.948298	14.04412	13.72334	12.67614
Median	13.15094	14.48298	1.843719	1.074862	14.08963	13.78817	12.98214
Maximum	15.20454	15.55683	2.536126	2.252648	15.75626	15.46465	14.18384
Minimum	10.45461	13.03777	1.061160	-2.019087	12.31935	11.80047	10.76925
Std. Dev.	1.536212	0.845482	0.388381	0.974209	1.145199	1.228259	1.113834
Skewness	-0.499064	-0.178204	-0.150131	-1.405014	-0.043150	-0.087081	-0.421916
Kurtosis	2.050842	1.626874	2.082428	5.097777	1.638339	1.659059	1.770167
Jarque-Bera	1.818111	1.928648	0.893257	11.78456	1.784002	1.752270	2.131852
Probability	0.402905	0.381241	0.639781	0.002761	0.409835	0.416389	0.344409
Observations	23	23	23	23	23	23	23

The descriptive statistics show that all variables have 23 observations and exhibit fairly consistent central tendencies, with means and medians closely aligned—suggesting symmetrical distributions. LNGDP has the highest mean (14.36), while LNINTEREST has the lowest (0.95). LNCAP, LNM2, and LNPSC display higher variability with standard deviations above 1, whereas LNINFL and LNINTEREST are less volatile. All the values of skewness have negative values implying that the variables are skewed to the left and LNINTEREST is the most skewed (-1.41). The majority of the variables are platykurtic apart from LNINTEREST that is leptokurtic with kurtosis of 5.10. Jarque-Bera test shows that all of the variables are normally distributed, with an exception of LNINTEREST, that is very non-normal ($p = 0.0028$). This indicates that except interest rates data, all other variables could be behaved statistically well, and no additional attention might be required.

Figure 1 illustrates the pattern of the change in Market Capitalization (in millions), Money supply, Private Sector Credit (in millions), and Remittance (in millions) with respect to the time frame from 2002 to 2024. As per the graphs, we can see nearly an exponential relationship between GDP, Money Supply, Private Sector Credit, and Remittance with time indicated by the way it starts off slowly and then rises more steeply as it moves to the right. In contrast, Market Capitalization has an exponential relationship with some trends of ups and downs. Nevertheless, the Inflation and Interest Rates pattern is seen as nonlinear & irregularly oscillating around the mean value.

Figure 1

Graphical Representation of Data



Unit Root Test

The ADF and PP unit root tests are employed to confirm the time series' stationarity. The variables with the mixed order of integration at level I(0) and at first difference, I(1) allow the use of the ARDL. Table 2 and Table 3 show the results of ADF and PP unit root tests.

Table 3

Results of ADF test at level constant and trend

	LNCAP	LNGDP	LNINFL	LNINTEREST	LNM2	LNPSC	LNREM
Constant	-1.3844	-0.9303	-3.0866**	-2.2305	-0.1882	-1.0357	-1.4925
Constant & Trend	-1.7926	-0.6315	-2.9577	-2.1548	-1.4563	-0.7107	-0.9015

Table 4

Results of ADF test at First Difference constant and trend

	LNCAP	LNGDP	LNINFL	LNINTEREST	LNM2	LNPSC	LNREM
Constant	-4.1285*	3.0426**	-6.5582*	-5.1812*	-3.4719**	-4.6264*	-4.3858*
Constant & Trend	-4.3082*	-3.1795	-6.5545*	-5.0774*	-3.3929	-4.8398*	-3.7749**

The Augmented Dickey-Fuller (ADF) test in this particular work was also used in the discussion to determine the stationarity characteristics of the 7 macroeconomic variables that were chosen in this paper that include: LNCAP, LNGDP, LNINFL, LNINTEREST, LNM2, LNPSC and LNREM. The test used level and first difference under models' specifications means constant and constant and trend. At the level form, most variables failed to reject the null hypothesis of a unit root, indicating non-stationarity. However, upon first differencing, all variables became stationary at either 1% or 5% significance levels, confirming that they are integrated of order one, I (1). For instance, LNCAP, LNINTEREST, LNINFL, LNPSC, and LNREM showed strong rejection of the null hypothesis at the first difference, implying stationarity. These results indicate the appropriateness of employing further econometric techniques such as the ARDL test.

Table 5

Results of PP test at level

	LNCAP	LNGDP	LNINFL	LNINTEREST	LNM2	LNPSC	LNREM
Constant	-1.3818	-0.8296	-3.0633*	-2.3577	-0.1955	-1.0925	-1.5918
Constant & Trend	-1.7926	-1.0696	-2.9102	-2.2729	-1.8618	-0.8691	-0.8696

Table 6

Results of PP test at first difference

	LNCAP	LNGDP	LNINFL	LNINTEREST	LNM2	LNPSC	LNREM
Constant	-4.1285*	-3.0426*	-6.8904*	-5.1739*	-3.4719*	-4.6265*	-4.3858*
Constant & Trend	-4.3058*	-3.1218	-8.4672*	-5.0718*	-3.3286	-4.8457*	-4.8402*

The same set of variables was also used to apply the Phillips-Perron (PP) test to ascertain robustness of the stationarity findings. Similar to the ADF test, the PP test explores the likelihood of the existence of a unit root however it involves a non-parametric correction method in consideration of the serial correlation and heteroskedasticity within the error terms.(Phillips & Perron, 1988). This was in line with the ADF test in that according to the PP test, the majority of the variables proved to be non-stationary at level but stationary within the first difference. Based on the results of the rejection of the null hypothesis in the first differences of the variables like LNINTEREST, LNINFL, LNPSC, and LNREM at the 1 or 5 percent level, it can be inferred that all the variables are integrated with an order of one.

ARDL Bound Test for Long run Cointegration

A cointegration test that investigates the long term equilibrium relationship among the time series variables The paper adopted lag 1 as the best lag to be used to achieve a bound test. The maximum likelihood estimates of the analysis model are ARDL(1,0,1,1,0,0,0). Table 7 shows the approximate findings of ARDL long run form and bound test.

ARDL Bounds test was used to determine the long-run relationship between stock market returns and major macroeconomic variables in Nepal; which are interest rate, money supply (M2), GDP, remittance, public service credit, and inflation. As shown in Table 7, the calculated F-statistic value 8.1685 is greater than the upper bound value of critical level of 1, 2.5%, 5%, and 10%. In calculating the F-statistic, the finite sample adjustment of the critical

levels of small samples is done. This is evidence of a good existence of a cointegrating relationship between the variables. Thus, further analysis can be done with the help of the ARDL model. The results satisfy the main goal of the examination of the study to determine whether there is a long-run relationship which enables us to move on to the determination of the most powerful macroeconomic factors that influence the returns of stock markets value in Nepal.

Table 7

Results of ARDL Bound test for long run cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	8.168548	10%	2.12	3.23
k	6	5%	2.45	3.61
		2.5%	2.75	3.99
		1%	3.15	4.43

Long-Run Relationship

A long run relationship entails a statistically significant and steady summary between variables that hangs on steadily, in spite of short run variations. The estimated model ARDL (1,0,1,1,0,0,0) is now used in assessing the size of long- run relationship between the proxy variables under the investigation. The Table 8 is the estimated results of levels equation.

Table 8

Results of Long Run Relationship Test Between Dependent and Independent Variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGDP	-12.15885	4.130670	-2.943555	0.0123
LNINFL	0.488559	0.448367	1.089641	0.2973
LNINTEREST	-0.192720	0.160183	-1.203124	0.2521
LNM2	-2.951151	2.352492	-1.254479	0.2336
LNPSC	10.07688	3.860995	2.609919	0.0228
LNREM	2.425560	0.962998	2.518759	0.0270
EC = LNCAP - (-12.1589*LNGDP + 0.4886*LNINFL -0.1927*LNINTEREST				
-2.9512*LNM2 + 10.0769*LNPSC + 2.4256*LNREM)				

The estimated model is:

$$ln(CAPt) = -12.1589 \cdot ln(GDPt) + 0.4886 \cdot ln(INFLt) - 0.1927 \cdot ln(INTERESTt) - 2.9512 \cdot ln(M2t) + 10.0769 \cdot ln(PSCt) + 2.4256 \cdot ln(REMt) + ECt$$

The long-run estimation in the ARDL model leads to the finding that stock market returns (expressed in total market value) and the variables of selected macroeconomic factors were in a statistically significant cointegrating relationship in Nepal. Out of the six examined independent variables, GDP, public service credit (PSC) and remittance have significant long-run influence on stock market returns. In particular, there is a negative and significant effect of GDP on the return of the stock market at the 5% level (coefficient = -12.1589; p = 0.0123). This means that, when real GDP goes up by 1%, the returns of the stock market will decline by about 12.16percent, all other factors held constant. The relationship can be inversely oriented due to capital flows between financial sectors and productive sectors in an increasing

economy or underlying inefficiencies in the process of converting economic growth into stock markets. Conversely there is a positive (3.8) but significant impact (p = 0.0228) of public service credit (PSC) implying that the use of more credit by the private sector facilitates market transactions and increases the confidence of investors. There is also a positive long-run effect of the remittance (p = 0.0270), which means that remitted funds inflows lead to the capital market growth, probably, due to the liquidity and the household investment increase. Nevertheless, long-run impacts of inflation, interest rates, and the supply of money have no significant effects at standard levels of significance, and this implies that their interaction with the stock market could be a short-term or an indirect relationship in Nepal. The above findings can aid in the answer to the second goal of the study, which is to determine the most influential macroeconomic factors, because it points out that the GDP, PSC, and remittance are the major long-term determinants of the stock market performance in Nepal.

Short Run Dynamics: Error Correction Model

The error correction analyzes the multiple relationship between time series variables that are co-integrated . The short-run dynamics is determined by the error correction regression with optimal lags. The selected model ARDL(1,0,1,1,0,0,0) is employed to determine the magnitude of the short-run relationship between proxy variables under the study.

Table 9

Results of Short Run: ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31.00570	3.325628	9.323262	0.0000
D(LNINFL)	-0.123166	0.087499	-1.407631	0.1846
D(LNINTEREST)	-0.175957	0.036407	-4.833018	0.0004
CointEq(-1)*	-0.519931	0.056141	-9.261196	0.0000
R-squared	0.850688	Mean dependent var		0.210404
Adjusted R-squared	0.825802	S.D. dependent var		0.343740
S.E. of regression	0.143467	Akaike info criterion		-0.882459
Sum squared resid	0.370490	Schwarz criterion		-0.684087
Log likelihood	13.70705	Hannan-Quinn criter.		-0.835728
F-statistic	34.18419	Durbin-Watson stat		2.538549
Prob(F-statistic)	0.000000			
* p-value incompatible with t-Bounds distribution.				

The estimated model is:

$$\Delta ln(CAPt) = 31.0057 - 0.1232\Delta ln(INFLt) - 0.1760\Delta ln(INTERESTt) - 0.5199EC_{t-1} + \varepsilon t$$

A dynamic analysis of the short run of the stock market capitalization in Nepal was estimated over the period of the year 2002-2024 with the help of an ARDL error correction model (ARDL(1,0,1,1,0,0,0)). The error correction term is large, very negative and significant (-0.520, p < 0.01), meaning that virtually half the deviations of any point to the long run equilibrating point is corrected each year. This is affirmative that there exists a stable long-run association amid the stock market capitalization and the chosen macroeconomic variables. The shift in interest rate in the short run is a critical and negative influence on the stock market's capitalization (-0.176, p < 0.01) indicating that an increase in the interest rate reduces the overall market capitalization of the stock markets. Inflation changes indicate that it has a

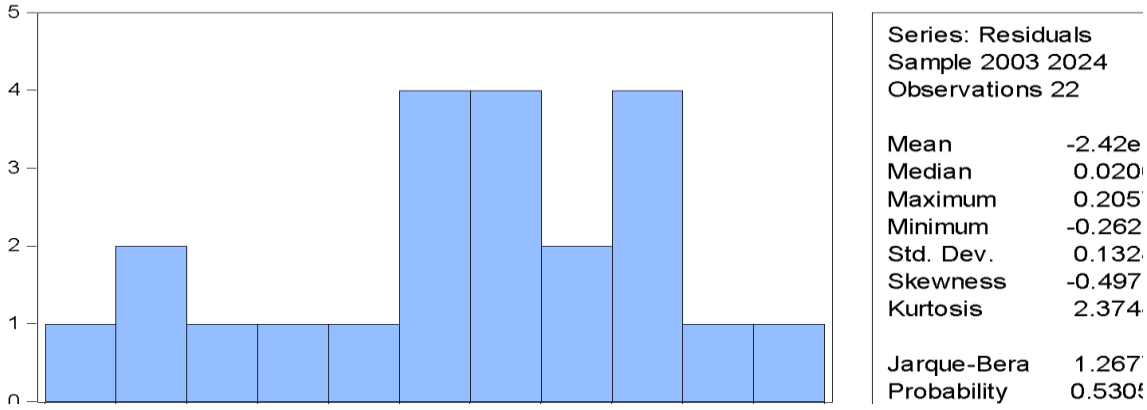
negative yet insignificant influence. In general, the model explains 85 percent of the short-run variations in the capitalization in the stock market which depicts the vitality of the macroeconomic factors particularly interest rates to have influence in the stock market of Nepal to a large extent in line with the purpose of the study to determine key determinants of the performance of the stock market.

Diagnostic and Stability Tests

To the statistically and robustness the model fit different statistical procedures tests are employed to check whether a regression model satisfies essential assumptions such as homoskedasticity ,normality, absence of autocorrelation, and structural stability. The result of Diagnostic and stability test is presented in Figure 2.

Figure 2

Results of the Normality Test



The distribution of the residuals is almost normal with little left-sk (-0.497) and little tail (kurtosis = 2.374). Jarque-Bera (p=0.530) indicates the normality, which means that the residuals of the model are normally distributed. To ensure the robustness of the estimated ARDL model, several diagnostic checks were performed.

Breusch-Godfrey Serial Correlation LM Test:

To detect the presence of serial correlation in the residuals of a regression model, particularly of order higher than one, identifying autocorrelation is important. If it violates the classical OLS assumption of independent errors, then it can lead to biased standard errors and unreliable statistical inference. The obtained result of Breusch-Godfrey serial correlation LM Test is presented in Table 10.

Table 10

Results of Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.819105	Prob. F(1,11)	0.2045
Obs*R-squared	3.121926	Prob. Chi-Square(1)	0.0772

Breusch-Godfrey Serial Correlation LM was done to determine whether there is an autocorrelation in ARDL error correction model estimate residuals. According to the test results obtained, there is no statistically significant serially correlation with F-statistic of 1.82

(p = 0.2045) and a chi -square statistic of 3.12 (p = 0.0772). These outcomes indicate that there is no serial correlation to the model residuals implying the reliability of the estimate.

Heteroskedasticity Test: Breusch-Pagan-Godfrey

The result of heteroskedasticity test: Breusch-pagan-godfrey is presented in table 11 below to detect heteroskedasticity by examining whether the variance of the errors from a regression model depends on the values of the explanatory variables or not.

Table 11

Results of Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.915904	Prob. F(9,12)	0.5427
Obs*R-squared	8.958541	Prob. Chi-Square(9)	0.4411
Scaled explained SS	1.831641	Prob. Chi-Square(9)	0.9939

Breusch-Pagan-Godfrey test was to be carried out to reveal the occurrence of heteroskedasticity in ARDL model residuals. The test statistics does not show signs of heteroskedasticity as F-statistic value has been obtained to be 0.92 (pure 0.5427) and the Chi-square statistics also show non-significant values (Obs*R-squared = 8.96, p = 0.4411; and Scaled explained SS = 2.83, p = 0.9939). These findings substantiate that the residual variance is homogeneity thus making the model robust.

Ramsey RESET Test

To check for model misspecification by testing whether non-linear combinations of the fitted values help explain the explanatory variable to detect incorrect functional form, ensuring the regression model is correctly specified for reliable and accurate results. The results of Ramsey reset are presented in Table 12 and Figure 3.

Table 12

Results of RAMSEY Reset Test

	Value	df	Probability
t-statistic	0.198238	11	0.8465
F-statistic	0.039298	(1, 11)	0.8465
F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.001319	1	0.001319
Restricted SSR	0.370490	12	0.030874
Unrestricted SSR	0.369171	11	0.033561

Finally, the Ramsey RESET test was conducted to check for model specification errors, specifically to detect omitted variable bias. The test results show a t-statistic of 0.198 (p = 0.8465) and an F-statistic of 0.039 (p = 0.8465), both of which are statistically insignificant. This indicates that there is no evidence of omitted variables or functional form misspecification in the model, suggesting that the model is correctly specified.

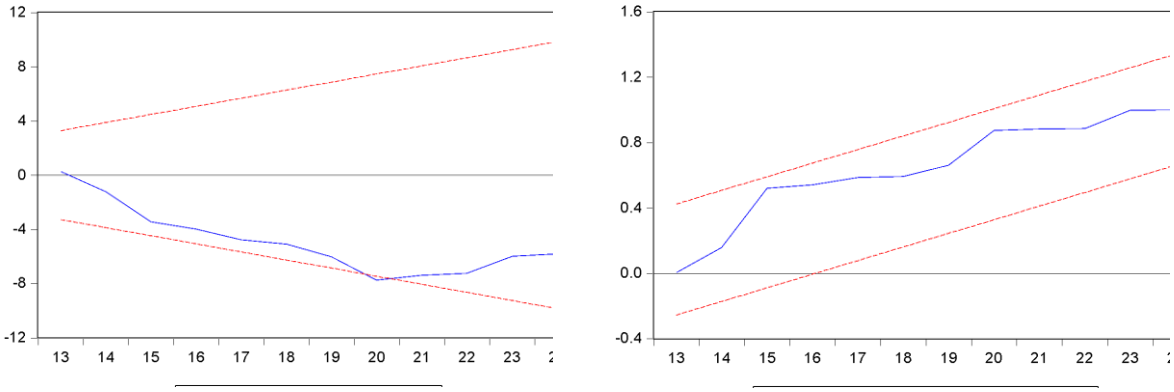
Stability Test

The results of the CUSUM and CUSUM of Squares tests reveal important insights into the stability of the model. The CUSUM test (top panel) indicates a clear structural break, as the

cumulative sum of residuals deviates beyond the 5% significance boundaries. This suggests that the model parameters experienced a significant shift during the observed period.

Figure 3

Graph of CUSUM and CUSUMSQ Test



In contrast, the CUSUM of Squares test (right side plot) shows that the residual variance remained stable, with the test statistic staying well within the significance bounds. The observed structural break can be attributed to the COVID-19 pandemic, which caused widespread economic and behavioral disruptions. These abrupt changes likely altered the underlying relationships captured by the model, thereby affecting its stability and performance during the pandemic period.

Discussion

The findings of the research provide a number of indications of the mechanism of the macroeconomic factors and their impact on the capitalization of the Nepal stock market. The ARDL long-run estimates indicate that all the three independent variables are significant with market capitalization having a negative significant effect on GDP. Nevertheless, the inflow of remittance and the credit effect on the public sector have a positive and statistically significant effect on market capitalization. A total of six hypotheses (H1 to H6) were tested in the study to judge whether the chosen macroeconomic variables had any effect on stock market capitalization in Nepal.

Hypothesis H1 was accepted and thus, role of GDP was found to be supported, and the long-run relationship between real economic growth and stock markets was found to be statistically significant with negative coefficient. Analysis indicates that there was a structural mismatch between the growth of the real economic growth and the development of the stock markets- this can be because of the predominance of the informal sectors, as well as partnering with low securities market integration.

Hypotheses H2 and H3 were not accepted; therefore, the effect of money supply and inflation respectively were not supported since both did not have statistically significant effects in the short run and long run. Similarly, hypothesis H4 was partially confirmed that it was not significant in the long-run but caused a significant negative impact during the short-run. It signifies the fact that investors react fast to the changes of the interest rates, and they usually make shifts to other safer investment options.

Regarding hypothesis H5, which was accepted, and the effect of remittance was seen to be positive and also significant in the long-run on market capitalization. The remittance plays a role in enhancing liquidity and household level stock markets. Additionally, hypothesis H6 was accepted, meaning that the effect of public (most probably private sector) sector credit was supported as well since it had a positive and significant long run effect. The accessibility of credit raises investor participation and the general market capitalization.

In a nutshell, four of the six hypotheses (H1, H4, H5, and H6) were confirmed with support of the data, in some cases partially, which highlights that the variables related to the financial flow, e.g. credit and remittance exert clearer and more consistent impact on the capital market in Nepal in comparison with the more conventional measures such as money supply or inflation.

The negative correlation between GDP and the capitalization of stock markets is opposed to most of the available literature which shows a positive correlation shown between the GDP and stock market by both Ghimire (2022) and Reddy (2012). This deviation can be due to the fact that the capital market structure in Nepal is peculiar as in many cases productive investments and economic expansions do not go through formal capital markets. Instead, resources may be channeled into the informal economy or sectors like real estate and agriculture.

The significant and positive influence of remittance flows aligns with findings by Adhikari and Ghimire (2018) and Pradhan and Upadhyay (2020), who also noted that remittance boosts liquidity and investor participation in Nepal's stock market. This consistency highlights the growing role of household-level investment patterns influenced by overseas earnings. Similarly, public sector credit appears to support market capitalization, confirming results from KC and Sharma (2021), who emphasized the role of directed credit in boosting the performance of banking stocks, a dominant sector in NEPSE.

On the other hand, variables such as money supply, inflation, and interest rate were statistically insignificant in the long run. These results differ from studies like Shrestha & Subedi (2014) and Yadav et al. (2021), who found interest rate and inflation to be influential. This can be attributed by the fact that, the depth of the financial markets in Nepal and lack of institutional involvement is rather flat in the state and thus the impact of the macro signals is dated on the stock market.

It was observed that interest rate variations have a negative and significant impact on market capitalization in the short run-an observation earlier made by Devkota (2018) and Amarasinghe (2015). This would mean that the orientation of short-term investors is sensitive to a variation in changes in the cost of capital by opting for safer returns in times when interest rates would be on the increase. Findings of this study confirmed that the calculated F-statistic value 8.1685 is greater than the upper bound value of critical level of 1, 2.5%, 5%, and 10% which shows that alternative hypothesis ,H1 , H2, H3, H4, H5 accepted which means explanatory variables significantly influence targeted variable which shown in ARDL Bound test.

On the whole, the results substantiate the fact that the Nepalese stock market is more susceptible to the external and liquidity-related elements, than the traditional macroeconomic

fundamentals. This is a sign that there is a deeper call to financial integration and policy to increase both confidence and mobilization of capital by investors.

Conclusion and Implications

This paper aimed at learning the impacts that various macroeconomic variables have on the size and performance of the stock market in Nepal with special emphasis on the capitalization of the stock market. The results make it apparent that the activities of the private sector are credit and remittance inflows that have the strongest influence in the long run on market growth. This implies that the larger the amount the banks lend to the business and individuals, or the higher the amount that households get in terms of inward remittances, the higher the chances of them putting money in the stock market, which widens the stock market.

Interest rates are very important in the short run. Increases in interest rates make investors retreat their money in favor of safer investments in fixed deposits or government bonds that take place at the expense of an increase in the amount invested in the stock market. Conversely, the negative association between the GDP growth and capitalization of the stock market in long run indicates structural discrepancy between the capital market and the real economy of Nepal. This could mean that even if the economy grows, people or businesses may not necessarily turn to the stock market as a place for investment or financing. Interestingly, inflation and money supply did not show a consistent or strong influence on stock market performance in either the short or long run. This may suggest that investors in Nepal are less sensitive when it comes to the fluctuation in general price levels or money quantity circulating in the economy in relation to stock investment.

In general, consequences point out that the stock market of Nepal is yet to mature and responds more to the particular financial flows, such as credit and remittances, rather than to general financial indicators. To reinforce financial literacy, increase investment vehicles of remittances and enhance investor confidence would ensure better connecting the capital market with the economics of Nepal. Moreover, this study excludes external shocks in the economic system which might have significant impact in over market capitalization.

Reference

Adhikari, B., & Ghimire, P. (2018). Remittance inflows and stock market development in Nepal. *Nepal Economic Journal*, *11*(1), 30–45.

Ahmad, F., Rehman, W., & Raoof, A. (2010). Do interest rate, exchange rate affect stock returns? A Pakistani perspective. *International Research Journal of Finance and Economics, (50)*, 146–150.

Alam, M. M., & Uddin, M. G. S. (2009). Relationship between interest rate and stock price: Empirical evidence from developed and developing countries. *International Journal of Business and Management*, *4*(3), 43–51. https://doi.org/10.5539/ijbm.v4n3p43

Amarasinghe, A. A. T. (2015). Dynamic relationship between stock market performance and short term interest rate—Empirical evidence from Sri Lanka. *International Journal of Business and Social Science*, *6*(5), 92–100.

Amtiran, P. Y., Indiastuti, R., Nidar, S. R., & Hartono, B. (2017). Macroeconomic factors and stock returns in ASEAN-5 economies: A panel data approach. *International Journal of Economics and Financial Issues*, *7*(1), 199–207.

Barajas, A., Chami, R., Fullenkamp, C., Gapen, M., & Montiel, P. (2009). *Do workers' remittances promote economic growth?* (IMF Working Paper No. 09/153). International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Do-Workers-Remittances-Promote-Economic-Growth-23146

Bekaert, G., Harvey, C. R., & Lundblad, C. (2005). Does financial liberalization spur growth? *Journal of Financial Economics*, *77*(1), 3–55. https://doi.org/10.1016/j.jfineco.2004.05.007

Bhattarai, Y. R. (2018). Impact of macroeconomic variables on stock market prices in Nepal: An ARDL approach. *Journal of Business and Social Sciences Research*, *3*(1), 1–16.

Bhattarai, Y. R. (2020). Impact of public sector credit on stock market performance: Evidence from Nepal. *Journal of Nepalese Business Studies*, *12*(1), 45–60.

Bilal, A. R., Talib, N. B. A., Haq, I. U., Khan, M. N. A., & Naveed, A. (2012). How macroeconomic indicators affect stock exchange: A comparative study of Pakistan and India. *Universal Journal of Management and Social Sciences*, *2*(5), 59–69.

Chen, N. F., Roll, R., & Ross, S. A. (1986). Economic forces and the stock market. *Journal of Business*, *59*(3), 383–403. https://doi.org/10.1086/296344

Cole, R. A., Moshirian, F., & Wu, Q. (2008). Bank stock returns and economic growth. *Journal of Financial Services Research*, *34*(3), 245–263. https://doi.org/10.1007/s10693-008-0038-9

Dangal, D. N., & Gajurel, R. P. (2021). Volatility of daily Nepal Stock Exchange (NEPSE) index return: A GARCH family models. *Tribhuvan University Journal*, 36(1), 31–44. https://doi.org/10.3126/tuj.v36i01.43514

Demirgüç-Kunt, A., & Levine, R. (1996). Stock market development and financial intermediaries: Stylized facts. *The World Bank Economic Review*, *10*(2), 291–321.

Devkota, N. (2018). Impact of macroeconomic variables on stock market of Nepal. *International Journal of Business and Management Invention*, *7*(3), 60–66.

Fama, E. F. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34–105. https://doi.org/10.1086/294743

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

Gajurel, R. P., & Dangal, D. N. (2023). *Does fiscal deficit cause economic growth? Evidence from Nepal*. Gyanjyoti, 3(1), 40–57. https://doi.org/10.3126/gyanjyoti.v3i1.53034

Ghimire, B. (2022). The impact of macroeconomic variables on stock market in Nepal. *Journal of Economics and Management*, *3*(1), 12–25.

Hamrita, M. E., & Trifi, A. (2011). The relationship between interest rate, exchange rate, and stock price: A wavelet analysis. *International Journal of Economics and Financial Issues*, *1*(4), 220–228.

Hsing, Y. (2011). Effects of macroeconomic variables on the stock market in Hungary and policy implications. *International Journal of Economics and Financial Issues*, *1*(1), 1–9.

Karki, S. (2018). Impact of money supply on stock market development: Empirical evidence from Nepal. *Journal of Business and Social Sciences Research*, *3*(1–2), 1–9. https://doi.org/10.3126/jbssr.v3i1-2.20905

KC, S., & Sharma, R. (2021). Government debt and stock market dynamics in Nepal. *Economic Review of Nepal*, *15*(2), 78–92.

Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, *88*(3), 537–558.

Mishkin, F. S. (2007). The economics of money, banking, and financial markets. Pearson Education.

Mukherjee, T. K., & Naka, A. (1995). Dynamic relations between macroeconomic variables and the Japanese stock market: An application of a vector error correction model. *Journal of Financial Research*, *18*(2), 223–237.

Naik, P. K., & Padhi, P. (2012). The impact of macroeconomic fundamentals on stock prices revisited: Evidence from Indian data. *Eurasian Journal of Business and Economics*, *5*(10), 25–44.

NEPSE. (2024). *About NEPSE*. Nepal Stock Exchange. https://www.nepalstock.com/

Panta, S. R. (2020). Macroeconomic determinants of stock market development in Nepal. *The Lumbini Journal of Business and Economics*, *8*(1), 86–99. https://doi.org/10.3126/ljbe.v8i1.36115

Paul, B. K., & Pokharel, S. (2020). Relationship between macroeconomic variables and stock market performance in Nepal. *The Lumbini Journal of Business and Economics*, *8*(1), 51–62. https://doi.org/10.3126/ljbe.v8i1.36113

Phillips, P. C. B., & Perron, P. (1988). *Testing for a unit root in time series regression*. Biometrika, 75(2), 335–346. https://doi.org/10.1093/biomet/75.2.335

Pradhan, G., & Upadhyay, M. (2020). Do remittances boost stock market participation? Evidence from Nepal. *South Asian Journal of Finance*, *8*(2), 112–128.

Pradhan, R. S., & KC, S. (2010). Stock market and economic development: An empirical analysis in the Nepalese context. *NRB Economic Review*, *22*(2), 1–17.

Reddy, K. S. (2012). Do investors herd in stock markets—A systematic review (2000–2011). *Qualitative Research in Financial Markets*, *4*(2/3), 163–210. https://doi.org/10.1108/17554171211252586

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, *13*(3), 341–360. https://doi.org/10.1016/0022-0531(76)90046-6

Sapkota, C. (2019). Remittances and financial market development in Nepal: A critical analysis. *Journal of Development Economics*, *14*(3), 205–220.

Sapkota, N. (2011). Nepal stock exchange and its impact on economic development. *Journal of Business and Management*, *1*(1), 1–12.

Setiawan, R. (2020). The impact of GDP and inflation on stock market returns: Evidence from Indonesia. *Jurnal Ekonomi Pembangunan*, *18*(1), 1–10. https://doi.org/10.29259/jep.v18i1.10391

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The Journal of Finance*, *19*(3), 425–442. https://doi.org/10.2307/2977928

Shrestha, M. B., & Pokhrel, B. (2019). Money supply and stock prices in Nepal: An empirical analysis. *The Lumbini Journal of Business and Economics*, *7*(1), 1–11. https://doi.org/10.3126/ljbe.v7i1.25799

Shrestha, M. B., & Subedi, P. (2014). Determinants of stock market performance in Nepal. *NRB Economic Review*, *26*(2), 32–44.

Shrestha, P. K., & Subedi, B. P. (2014). Macroeconomic variables and stock market: Evidence from Nepal. *NRB Economic Review*, *26*(2), 35–48.

Singh, G., Mehta, S., & Varsha, M. (2011). Macroeconomic factors and stock returns: A study of the Indian stock market. *International Journal of Research in Commerce, IT & Management*, *1*(3), 48–54.

Tsai, I. C., Chang, Y. H., & Tzang, D. S. (2022). The role of money supply in asset price bubbles: Evidence from Asia-Pacific markets. *Pacific-Basin Finance Journal*, *73*, 101705. https://doi.org/10.1016/j.pacfin.2022.101705

Appendix

Compiled Data Set

Year	lnGdp	lnrem	lnm2	lnpsc	lninfl	lninterest	lnCap
2002	13.03776919	10.76924891	12.3193491	11.80047228	1.061159638	1.549449194	10.45461023
2003	13.10670295	10.90049707	12.41272577	11.92474964	1.558005739	1.247439521	10.46994843
2004	13.19328595	10.97827835	12.53287723	12.05824816	1.377015509	1.074861717	10.63163501
2005	13.28688015	11.09043423	12.61300335	12.19104479	1.512672952	0.899213594	11.02461121
2006	13.39099126	11.48953912	12.75657301	12.4031613	2.074743668	1.044754305	11.48001997
2007	13.49781862	11.51437242	12.88795213	12.51897426	1.774952351	0.884442278	12.13511356
2008	13.61175067	11.86837856	13.11307457	12.73621313	1.902769717	1.439835128	12.81106598
2009	13.80371276	12.25342606	13.35430201	12.9907829	2.536125571	1.763017	13.14791235
2010	13.99179189	12.3533079	13.48644956	13.12366365	2.261763098	1.871802177	12.83965921
2011	14.26191348	12.44332263	13.73356285	13.49712512	2.266237397	2.002830439	12.68690598
2012	14.37990302	12.79262077	13.93799567	13.6045745	2.11676996	0.270027137	12.81655027
2013	14.48297823	12.98213924	14.08963332	13.78816616	2.292534757	0.553885113	13.15093554
2014	14.61864392	13.20540607	14.26401418	13.9559893	2.208274414	-2.01908672	13.87110214
2015	14.70078047	13.33307606	14.44561225	14.13319682	1.975468951	-0.84397007	13.80485798

Year	lnGdp	lnrem	lnm2	lnpsc	lninfl	lninterest	lnCap
2016	14.77416492	13.40763908	14.62402834	14.34160269	2.294552921	-0.240782058	14.45215617
2017	14.93951275	13.45231785	14.76782536	14.50723673	1.497388409	0.371563556	14.43438096
2018	15.05560774	13.53455062	14.94512611	14.70864893	1.423108334	1.498819152	14.17677134
2019	15.16590061	13.68695778	15.09147029	14.88375846	1.534714366	1.163145685	14.26499216
2020	15.17358641	13.68200997	15.25794179	15.00240597	1.816452082	0.990007972	14.39926838
2021	15.28627249	13.77578648	15.46242319	15.23609895	1.280933845	0.782959564	15.20454063
2022	15.42024898	13.82279087	15.52829405	15.36072967	1.843719208	1.897416579	14.86959405
2023	15.49233187	14.03117534	15.63436028	15.40542896	2.046401688	2.252647885	14.94125786
2024	15.55682626	14.18383791	15.75625922	15.46464882	1.693779061	1.356574361	15.08349347