

Factors Affecting NEPSE Index in Nepal

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Abstract

The aim of this study was to investigate how macroeconomic factors affect NEPSE index. In this study, descriptive and causal comparative research design have been used to examine the macroeconomic factors such as money supply, inflation, interest rates, exchange rates, and industrial production and its effect on NEPSE index. In this study, ten years of data from the NEPSE index and economic was used. Data for the study were secondary sources such as NEPSE, SEBON, economic surveys, and national periodicals of the NRB. The analysis of the collected secondary data, spanning from 2014 to 2023. The study utilized, descriptive analysis, correlation analysis, and multiple regression analysis. The findings show that the exchange rate and money supply have a statistically significant impact on the NEPSE Index. Specifically, a decrease in the exchange rate and an increase in money supply are associated with changes in the NEPSE Index, while the effects of inflation, interest rates, and industrial production are not statistically significant in this study. The results suggest that changes in these variables are not reliably associated with the NEPSE Index.

Keywords: *NEPSE Index, Money Supply, Inflation, Interest Rates, Exchange Rates, Industrial Production*

Background

The financial and economic sectors shows that macroeconomic variables impact stock market prices and financial markets have an impact on the economy (Masood et al., 2019). On the relationship's trajectory, the results have been conflicting. In a similar vein, it was discovered that the price of gold, the rate of inflation, and the exchange rate had a significant effect on stock return, whereas the price of oil and liquidity had no effect (Devkota & Dhungana, 2019).

Investors and government entities that enact policy share regarding the relationship between macroeconomic factors and the stock market. Furthermore, the causes of stock market are of interest to scholars and the general public. Efficiency of the stock market and economic growth are frequently linked. In Nepal, the sole secondary market for the purchase and sale of capital market instruments is the stock market. It serves as a financial middleman that connects the economy's surplus and deficit units. Furthermore, throughout the past 30 years, the stock market has been extreme volatility. Therefore, the study's impetus came from the stock market's significance to the economy and its unexpected volatility (Poudel, 2019).

Nepalese economy has expanded and developed significantly in the last few years, accompanied by a number of laws and regulations designed to create an atmosphere that is favorable to financial and investment activity. The Nepal Stock Exchange (NEPSE), which is the representative of the nation's stock market, is an important conduit for wealth generation and capital mobilization. It is crucial for investors, policymakers, and academics to comprehend the correlation between macroeconomic

conditions and stock market returns in Nepal, as this knowledge aids in making well-informed decisions and formulating policies. The global financial landscape is characterized by increasing interconnectedness, and Nepal, despite being a small and emerging economy, is not immune to the impact of external economic forces. The study of macro-economic factors and their influence on stock market returns is essential to comprehend the dynamics at play within Nepal's financial markets (Maharjan & Bhattacharya, 2024).

The goal of this study is to address the unique requirements and difficulties of the Nepalese setting while making a significant contribution to the expanding body of knowledge in financial economics through thorough research and empirical analysis. The objective of this study is to offer useful insights to stakeholders so they may make well-informed financial decisions in this dynamic and changing economic environment by illuminating the complex relationship between macroeconomic conditions and stock market returns in Nepal. Additionally, given Nepal's economic differences from the previously researched countries, research in a contextually distinct nation like Nepal is necessary. Therefore, the following research questions are addressed in this study: How do the money supply, inflation, interest rates, exchange rates, and industrial production have relationship with the NEPSE index? How do the money supply, inflation, interest rates, exchange rates, and industrial production affect the NEPSE index?

Research framework

NEPSE index is considered a dependent variable, while money supply, inflation, interest rates, exchange rates, industrial production are considered independent variables. Figure displays the research framework, which explains the independent and dependent variables employed in the study.

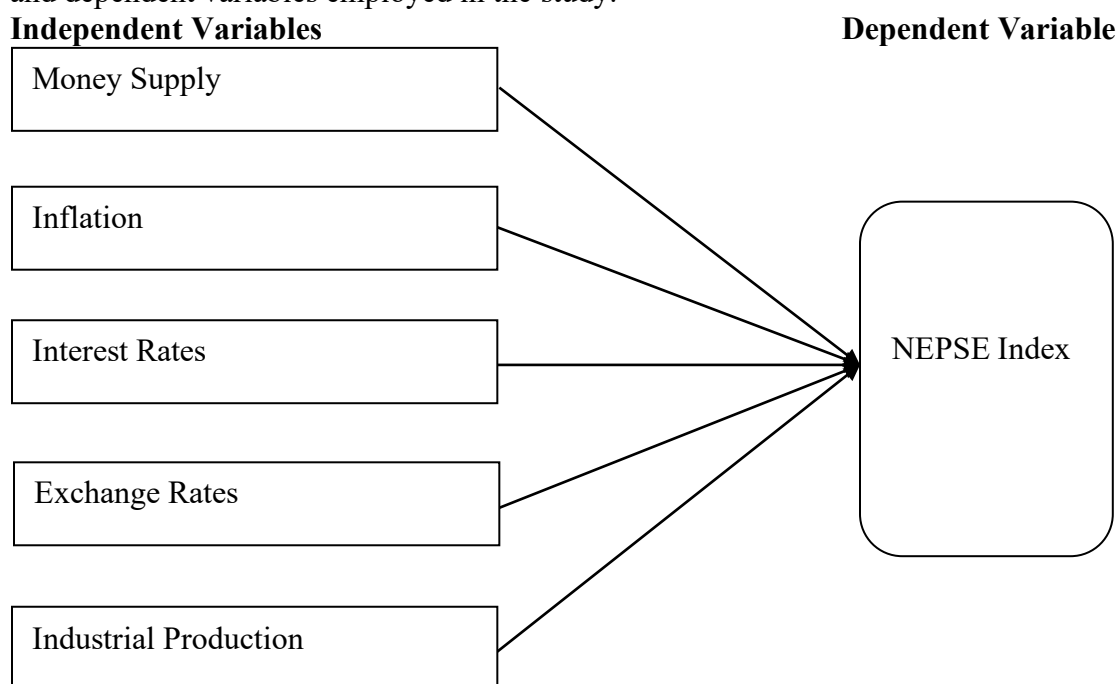


Figure 1 Conceptual Framework

Money Supply

Money supply refers to the total amount of monetary assets available in an economy at a specific time. It includes various forms of money, such as cash, coins, and balances held in checking and savings accounts. According to the Federal Reserve, the main measures of money supply include M1 (currency and liquid deposits) and

M2 (M1 plus savings deposits, small-time deposits, and money market mutual funds) (Poudel, 2019).

Inflation

Inflation is the rate at which the general level of prices for goods and services rises, eroding purchasing power. Central banks aim to control inflation to maintain economic stability. Inflation can be measured using various indices, such as the Consumer Price Index (CPI) and the Producer Price Index (PPI). The International Monetary Fund (IMF) emphasizes that controlling inflation is vital for economic health and can be managed through monetary policy and fiscal measures (Panta, 2020).

Interest Rates

Interest rates are the cost of borrowing money, expressed as a percentage of the amount borrowed, or the return on invested capital. Central banks set benchmark interest rates, which influence other interest rates across the economy, including those for mortgages, loans, and savings. Changes in interest rates can affect consumer spending, business investment, and inflation. For instance, lower interest rates can stimulate borrowing and spending, while higher rates can help contain inflation by reducing spending and investment (Balagobei, 2017).

Exchange Rates

Exchange rates determine how much one currency is worth in terms of another currency. They are crucial in international trade and investment, influencing the cost of exporting and importing goods and services. Exchange rates can be floating, determined by market forces, or fixed, pegged to another currency or a basket of currencies. Factors such as interest rates, inflation, and economic stability influence exchange rates (John, 2019).

Industrial Production

Industrial production measures the output of the industrial sector of the economy, which includes manufacturing, mining, and utilities. It is a significant indicator of economic health, reflecting the level of activity and production capacity in these sectors. Changes in industrial production can signal shifts in economic trends, influencing employment, income, and overall economic growth (Kalam, 2020).

NEPSE Index

The NEPSE Index is the stock market index of the Nepal Stock Exchange, representing the performance of listed companies in Nepal. It is a barometer of the overall health of the stock market and the economy. Changes in the NEPSE Index reflect investor sentiment, economic conditions, and the financial health of companies. A rising NEPSE Index indicates investor confidence and economic growth, while a declining index may signal economic challenges (Maharjan & Bhattacharya, 2024).

Literature Review

Subedi (2024) investigated the factors influencing stock prices in Nepal's secondary market through the Nepal Stock Exchange (NEPSE). The research focused on microfinance industry and found that market price per share is negatively connected with floating share size in Nepalese capital markets. However, earnings per share, price-earnings ratio, and floating shares are positively associated with these factors. Maharjan and Bhattacharya (2024) examined factors influencing individual investing decisions in the Nepal's stock market, finding that interest rates, political

unpredictability, herd mentality, financial success of the organization, and security and banking laws significantly influence investment selections.

Lama and Bhattacharya (2023) conducted a quantitative analysis on the impact of selected macroeconomic variables on the Nepal Stock Exchange (NEPSE) index. They found that NEPSE and FR, NEPSE and CE have a favorable connection, while NEPSE and IR and NEPSE and EGR have negative correlations. Capital expenditure has a positive and considerable influence on the stock market, while other factors have minor effects. Niraula (2021) studied the effects of government policy on stock price, finding that CRR, export, interest rate, and inflation are favorably correlated with stock price movement, but GDP and imports are adversely related. Shrestha and Lamichhane (2021) investigated the co-integrating connection between macroeconomic determinants and stock market performance using the Autoregressive Distributed Lag (ARDL) bounds testing approach. The findings showed that the stock market's functionality and macro-economic variables are co-integrated, and short-term imbalances in stock market functionality are addressed by GDP, M2, and IR.

Panta (2020) examined the relationship between stock market prices and five macroeconomic variables using an autoregressive distributed lag (ARDL) model. Pandey (2020) studied the macro-economic factors influencing Nepal's stock index using a 22-year sample size. Granger-causality tests revealed unidirectional causality from broad money supply to NEPSE index, bidirectional causality between capital mobilization and NEPSE index, and bidirectional causality between GNI and NEPSE index. In the short run, all variables except exchange rate were significant. In the long run, broad money supply, political stability index, and capital mobilization showed a positive correlation with the NEPSE index, while inflation rate had an insignificant negative relationship.

The study by Widagdo et al. (2020) examined the impact of financial ratios and macroeconomics on the returns of Islamic stocks listed on the Jakarta Islamic Index (JII). The results showed that only financial measures have an impact on investment risk and sharia stock returns. The mediation test revealed no mediating relationship between financial ratios, macroeconomic conditions, and Islamic stock returns. Kalam (2020) investigated the effects of macroeconomic variables on stock market returns using multiple regression analysis over 20 years. The analysis showed a notable influence on the Malaysian stock market's return, which may also affect the long- and short-term coefficients. The study suggested that regulators should refrain from taking arbitrary actions, maintain interest rates at a reasonable level, and implement rule-based exchange rate policies to enhance the external economic environment.

Huy et al. (2020) investigated the impact of selected factors on stock price in Vietnam, finding that growth in loan rates, risk-free rates, and GDP growth had the biggest influence on share price increases. Masood et al. (2019) studied the impact of oil prices on stock return in G7 countries, finding that industrial production is positively correlated with real stock return in Germany, Italy, Japan, the United Kingdom, and France. Chang et al. (2019) investigated the dynamic analysis of the relationship between stock prices and macroeconomic variables in Pakistan's stock exchange, finding that CPI and industrial output have a positive long-term impact on stock prices. Celebi and Honig (2019) investigated the impact of macro-economic factors on the German stock market during the crisis, finding that a greater variety of economic events and indicators had a substantial influence on stock returns.

Research Methodology

The research employs a descriptive and causal comparative research design to explore potential relationships between the NEPSE index and selected macroeconomic factors, such as money supply, inflation, interest rates, exchange rates, and industrial production. In this study, ten years of data from the NEPSE index and economic factors has used. Data for the study were secondary sources such as NEPSE, SEBON, economic surveys, and national periodicals of the NRB. The analysis of the collected secondary data, spanning from 2014 to 2023, was conducted using SPSS 26 software. The study utilized multiple regression analysis, correlation analysis, and descriptive analysis.

The linear regression model that follows is given based on the body of existing literature. It shows that the money supply, inflation, interest rates, exchange rates and industrial production all affect the NEPSE index of Nepal.

$$\text{NEPSE}_{it} = \beta_0 + \beta_1 \text{MS}_{it} + \beta_2 \text{IN}_{it} + \beta_3 \text{IR}_{it} + \beta_4 \text{ER}_{it} + \beta_5 \text{IP}_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

Where, NEPSE_{it} = NEPSE Index of Nepal i in year t , MS_{it} = Money supply of Nepal i in year t , IN_{it} = Inflation of Nepal i in year t , IR_{it} = Interest rates of Nepal i in year t , ER_{it} = Exchange rates of Nepal i in year t , IP_{it} = Industrial production of Nepal i in year t β_0 = the intercept (constant term), The regression coefficients for each variable are represented by the values of β_1 , β_2 , β_3 , β_4 , and β_5 , which indicate the degree of change in NEPSE index with each unit variable change in the independent variable, ε = Error terms

Analysis and Results

Table 1 *Descriptive statistics*

	Mean	S.D.
NEPSE	1597.7830	577.60786
INF	6.3900	2.33116
IR	6.6000	1.04881
ER	111.3130	10.23893
MS	3597.8100	1600.79732
IP	1587.8140	309.00122

Table 1 presents statistical data on Nepal's economic indicators, including the stock market, inflation rate, interest rates, exchange rates, money supply, and industrial production. The stock market's average value is 1597.78, while inflation rates range from 2.71 to 10.44. Interest rates affect borrowing, saving, and investment decisions. Exchange rates range from 98.21 to 130.60 Nepalese Rupees per unit of foreign currency. The money supply measures the total amount of money circulating in the economy, with values ranging from 1566.00 to 6130.50 million. Industrial production measures the output of the industrial sector, with an average of 1587.81 million, with fluctuations ranging from 1198.78 to 2124.74 million.

The bivariate Pearson's correlation coefficients between the various research variables are shown in Table 2. Based on data with ten /observations from 2013/14 to 2022–23, the correlation coefficients were calculated. NEPSE index is the dependent variable, while the money supply, inflation, interest rates, exchange rates and industrial production are the independent factors.

Table 2 *Correlation Analysis*

	NEPSE	INF	IR	ER	MS	IP
NEPSE	1					

INF	-.142	1				
IR	-.174	.520	1			
ER	.649*	-.056	-.072	1		
MS	.700*	-.147	-.083	.967**	1	
IP	.532	-.136	.103	.878**	.929**	1

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

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis of the Nepal Stock Exchange Index (NEPSE) shows a negative correlation with inflation, indicating a slight decrease in the index as inflation increases. The correlation with interest rates is negative, suggesting an inverse relationship. The correlation with exchange rates is positive, indicating a strong positive relationship. The correlation with money supply is positive, indicating a strong positive relationship. The correlation with industrial production is moderately positive, indicating a moderate positive relationship. The correlation with exchange rates is strong, indicating a significant increase in the index. However, the correlation with inflation and interest rates is insignificant, suggesting a potential random variation rather than a meaningful relationship.

The results of model summary, analysis of variance (ANOVA) and beta coefficients analyzed the impact of independent variables on interest on NEPSE index of Nepal.

Table 3 *Model summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.794 ^a	.630	.168	526.85680

a. Predictors: (Constant), IP, IR, INF, ER, MS

Table 3 presents an R square value of .630 means that 63% of the variance in the NEPSE Index can be explained by the independent variables in the model. This is a modified version of R square that adjusts for the number of predictors in the model. It penalizes the inclusion of unnecessary predictors that do not contribute much to explaining the variance in the dependent variable. In this model, the adjusted R square value is .168.

Table 4 *ANOVA*

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1892365.212	5	31.892	141.258	.000 ^b
	Residual	1110312.359	4	.234		
	Total	3002677.571	9			

a. Dependent Variable: NEPSE

b. Predictors: (Constant), IP, IR, INF, ER, MS

Table 5 presents significance level (Sig.) indicates the probability that the observed F-value occurred by chance alone. A significance level below a certain threshold (0.05) suggests that the regression model is statistically significant.

Table 6 *Coefficient*

Model		Unstandardized Coefficients	Standardized Coefficients	t	Sig.
1	(Constant)	6064.598		.878	.430
	INF	-6.938	-.028	-.070	.948
	IR	56.410	.102	.236	.825

ER	-.108	.038	-.135	-2.860	.004
MS	.387	.053	.390	7.327	.000
IP	-2.055	1.883	-1.099	-1.092	.336

a. Dependent Variable: NEPSE

Table 6 presents the coefficients from a regression analysis examining the relationship between the NEPSE Index and several independent variables. The coefficients indicate that for every unit increase in inflation, the NEPSE Index decreases by approximately 6.938 units. The regression analysis results also show that among the economic factors considered, only money supply (MS) and exchange rates (ER) have a statistically significant impact on the NEPSE Index. Specifically, an increase in money supply positively influences the NEPSE Index, while an increase in exchange rates negatively affects it. Other factors like inflation (INF), interest rates (IR), and industrial production (IP) do not show significant effects on the NEPSE Index, suggesting that their influence is not substantial in this study.

Conclusion and Recommendation

The analyses conducted on the relationship between the NEPSE Index and various economic indicators in Nepal offer several noteworthy conclusions. Firstly, the NEPSE Index demonstrates significant associations with certain key economic variables, particularly exchange rates and money supply. These findings suggest that fluctuations in exchange rates, which signify changes in the strength of the Nepali Rupee relative to other currencies, as well as shifts in the money supply within the economy, play substantial roles in influencing the performance of the stock market represented by the NEPSE Index. Conversely, while inflation, interest rates, and industrial production also play crucial roles in economic dynamics, the analyses reveal that their relationships with the NEPSE Index are not statistically significant. This suggests that movements in inflation rates, interest rates, and industrial production levels may not reliably predict or influence fluctuations in the Nepali stock market, as represented by the NEPSE Index. However, it's important to note that despite the lack of statistical significance, these factors still warrant consideration in comprehensive analyses of Nepal's economic landscape due to their broader impacts on the economy.

Moreover, the regression analysis indicates that the collective influence of the independent variables significantly explains a notable portion of the variance in the NEPSE Index. This underscores the importance of considering multiple economic indicators together rather than in isolation when assessing the performance and dynamics of the Nepali stock market. However, further refinement of the regression model may be necessary to better understand which specific variables contribute most substantially to explaining fluctuations in the NEPSE Index. Lastly, these conclusions highlight the intricate interplay between various economic factors and the NEPSE Index in Nepal. While certain variables exhibit clear associations with the stock market's performance, others may not exert significant influence in the context of this analysis. Continued research and analysis in this area can contribute to a deeper understanding of Nepal's economic landscape and assist stakeholders in making informed decisions regarding investment, policy formulation, and economic management.

This study offers the following recommendation based on the findings from the empirical analysis are as follows:

- Understanding the significant influence of exchange rates and money supply on the NEPSE Index can help investors develop effective investment

strategies. By closely monitoring these variables, investors can adjust their portfolios to seize potential opportunities or mitigate risks.

- The insights from the analysis can aid policymakers in constructing targeted economic policies to stabilize or stimulate the Nepali stock market. For example, policies aimed at managing exchange rate volatility or controlling the money supply could positively influence investor confidence and market performance.
- Businesses in Nepal can use the findings to enhance their risk management strategies. By understanding the key variables that affect the NEPSE Index, firms can better identify and mitigate risks related to market volatility, currency fluctuations, and changes in monetary policy.
- Due to time limitation, this study has used descriptive statistics, correlation analysis and regression analysis. For the further research to explore the economic indicators and the NEPSE Index. Future studies could investigate additional factors or employ additional statistical tools and techniques to gain deeper insights into the complexities of the Nepali stock market.

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