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Stock Prices in Nepal: Macroeconomic Determinants

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ABSTRACT

The article attempts to identify the relationship between major determinants and its impact of stock market of Nepal. On employing, Regression Analysis on data set for the period of 1994-2020, it is found that there is significant relation between determinants of stock market and stock price. The findings imply that stock market price fluctuations are closely related to broad money supply, interest rate, inflation, and exchange rate in the long run. The fluctuation of stock market prices in relation to interest rates is in the opposite direction. In the short run, GDP, money supply, and exchange rate all have positive relationships, but only the money supply has a positive relationship in the long run. Stock market prices rise as the money supply expands. This implies that an increase in money supply leads to economic expansion through increasing cash flows, and that an expansionary monetary policy would help stock values. Capital market development strategies should be coordinated with macroeconomic fundamental policies.

1. INTRODUCTION

Capital market consists of equity market as well as debt market. It is the center or arrangement that provides facilities for buying and selling of long-term financial claims. It is the market where transactions are made in long term securities such as stocks and bonds. The participants of this market include various financial institutions, mutual funds, agents, brokers, dealers

and other borrowers and lenders of long-term debt and equity capital. Capital market is not a compact unit but consists of two major parts: Primary Market and Secondary market.

The primary market or otherwise called as new issue market is one in which long term capital is raised by corporate directly from the public. The secondary market or popularly called as the stock market refers to the market where these long-term financial instruments which are already issued in the primary market are traded. The initial emergence of stock markets in the world can be traced back over hundreds of years to when industrialization and innovation took hold in Europe. The rapid economic growth in the past one hundred years gave rise to the explosive development of stock markets. At the same time the enhancement of stock markets has played an important role in promoting the growth of the world economy. The modern market economy depends to a greater extent on a soundly operated stock market. Stock market provides liquidity to the financial instruments which are issued in the primary market. Capital market is broadly divided into three categories: Companies issuing securities and includes new companies, existing unlisted companies and the existing listed companies.

Stock prices are affected by different factors, which may be company specific, sector specific or environment specific (macroeconomic or political). Stock price movements are influenced by macroeconomic factors, social or political events, market sentiments/expectations about future economic growth trajectory, monetary and fiscal policy announcements, among others. There is no one-size-fit situation; scholars have considered different variables to explain the movement of stock indexes. Based on the various domestic and global literature reviews the factors are classified into economic growth, financial intermediary development, macroeconomic stability and external factors.

In general, the stock market development is represented either by stock market size or the stock market liquidity. The stock market size is represented by the value of total market capitalization, which means the value of shares floated in the stock market at a particular time. The stock market liquidity is measured in terms of value traded in the stock market. Based on the size and liquidity in stock market, there are three stock market development indicators. They are: Market Capitalization Ratio (MCR), Total Value of Shares Traded Ratio (VTR), and Turnover Ratio (TR).

Theoretically, there exists causative relationship between the stock market development and macroeconomic variables identified. In general, when there is economic progress as represented by GDP growth, it may boost up the savings and investment in the economy, which may augment the stock market activities. Higher volume of income enhances the financial intermediation through stock market which may further boost up the economic growth and stock market development.

Remittances and growth rates of remittances measure the economic activities made by domestic people outside the country. Generally, higher volume of remittances indicates that most of the domestic people are engaged in foreign employment as well economic activities

more than inside the country. However, the increase in flow of remittances has positive significant impact in an economy as well as capital market.

Money supply refers to total flow of money in economy. Broad money consists of narrow money supply as well other form of money in economy. Broad money in Nepalese economy consists of currency held by public and demand deposit such as current account, saving account, fixed deposits and call account and foreign currency, gold, net domestic assets etc. Normally, an increase in broad money supply which is not consistent with the growth of the economy over the time also becomes the source of inflation.

Inflation rate is generally rising in price level. Generally, consumer' price index is used to measure the inflation rate of an economy. Certain level of inflation rate of economy is growth promoting factors of an economy. However, beyond full employment level inflation has adverse effect in economy. Inflation can be used to proxy macroeconomic instability. It is expected that higher the volatility of the underlying economic situation, the less incentive for economic agents to participate in the market. However, the impact of inflation on stock market volume depends on its varying impacts on other segments and financial instruments in the economy.

The interest's rates of an economy indicate invest activities as well demand for money. Higher the interest rate indicates lower the investment and vice versa. The interest rate on Treasury bill is used for bench mark for interest rate of commercial banks as well uses for risk analysis. There is inverse relationship between interest rate and stock market price.

Nepali stock market has a relatively short history. The history of stock market is not long in Nepal. Securities Exchange Centre (SEC) was established in 1976 with an objective of facilitating and promoting the growth of capital market. However, it opened its floor for secondary trading of shares only in 1981, which was only for government bonds (NRB, 1996). With enactment of Securities Exchange Act 1984, SEC opened its floor for corporate share trading also, but it was very limited. The organized and fully fledged stock market began with the conversion of Securities Exchange Centre into Nepal Stock Exchange (NEPSE) Limited in 1993. The NEPSE opened its trading floor in the beginning of 1994. Till now, it is the only stock exchange in Nepal. Hence, the stock market in Nepal is still in evolving stage but of special interest as it has grown significantly since its establishment. It was established in order to mobilize capital alternative to traditional banking sector for promoting economic growth and development in the country (Shrestha 2014).

The general objective of this study is to examine major determinants and its impact on stock market of Nepal. However, Specific objectives of the study are to examine the trend of stock market price, GDP, CPI, money supply & Interest rate, in Nepal, and to analyze the impact of GDP, CPI, money supply & Interest rate on stock market price in Nepal

Hsing (2011) study examined the relationship between the stock market index of Hungary consisting time period 2000 to 2010. It applied GARCH model in its empirical work. The dependent variable is stock market whereas independent variables are GDP, exchange rate and government debt. The study found that the positive relationship of stock market with GDP, government debt and effective exchange rate and negative relationship of German stock market with real interest rate, inflation rate, bond yield and quadratic relationship with money supply. Study suggested that excess money supply promotes inflation and it will have negative impact on stock price.

Naik and Padhi (2012) investigated the relationship between Indian stock market and macroeconomic variables. This paper includes time series data from the year 1994 to 2011 and applied Johnsen's co integration and vector error correlation model to show the relationship between stock market index and macroeconomic variables. It is found that there is positive relationship between money supply and industrial production and negative relationship with inflation. The two factors exchange rate and short -term interest rate are not significant role on stock price.

Eita (2012) investigated macroeconomic determinants of stock price market in Namibia. Study consists of time series data from the year 1998 to 2009 with dependent variable stock market price and independent variables money supply, price level, income, exchange rate and interest rate. It is found that there is positive relationship between stock market, money supply and income level and negative relationship with interest rate and inflation rate. They applied multiple regression models. It is recommended that equities are not hedge against inflation in Namibia and contra dictionary monetary policy depresses stock price. It also suggested that economic activities promote stock market price development.

Malaolu & Orji (2013) investigated that study done on determinants of stock price movement in Nigeria is theoretically based lacking empirical evidence. This study is done to provide support for other previous research work. Study consists of time series data from 1985 to 2010 by using Engle Granger two step co-integration test. The dependent variable is stock price of Nigeria whereas exchange rate, money supply, interest rate, inflation rate and political instability are taken as independent variable. The relationships between those variables are analyzed. The study depicts those monetary variables are not determinants of stock price movement in Nigeria but inflation rate is main reason behind it. Study recommended that Central bank of Nigeria to pay attention towards money supply and its effect towards stock price movement in Nigeria.

Kemboi and Taurus (2012) examine the macro-economic determinants of stock market development in Kenya for the period from 2000 to 2009 using the autoregressive distributed lag (ARDL) approach in the examination of a Granger type test of causality with an error correction. The study uses stock market capitalization for measuring stock market development. The effect of income, macroeconomic stability, stock market liquidity and banking sector development on stock market development was examined. Income level is

measured using log GDP per capita in US dollars. Macroeconomic stability is measured using real interest rate and current inflation rate. Stock market liquidity is measured using total value traded ratio and turnover ratio. Banking sector development is measured using M2 relative to GDP. The results of the study indicate that macro-economic factors such as income level, banking sector development and stock market liquidity are important determinants of the development of the Nairobi Stock market. The results also show that macro-economic stability is not a significant predictor of the development of the securities market.

Khan and Tariq (2012) examined the relationship between stock market development and economic growth of two countries Pakistan and Bangladesh. The main dependent variables are GDP and independent variables are size (market capitalization), liquidity (total value of stocks traded and stock turnover ratio) and volume (total number of companies listed in the stock exchange of each of the country). Regression analysis, f-test, t-test, D W- test has been used for the statistical analysis. The study of comparative analysis was done between the variables with the help of tables and charts. The econometric results of the study showed that Pakistan stock markets contribute to the economic growth in terms of the large size of its stock market whereas Bangladesh stock market contributes to the economic growth in terms of the liquidity of its stock market. Bangladesh economic growth was found to be comparatively better than economic growth of Pakistan. The study revealed that the stock markets in Pakistan and Bangladesh do not play a major role in the economic growth but rather, these financial institutions are the driving forces for the economic growth of the country.

Venkatraja (2014) examines the comparative study of the relationship between the Indian stock market performance (BSE Sensex) and macroeconomic variables, namely, index of industrial production, wholesale price index, gold price, foreign institutional investment and real effective exchange rate. The data has been used for the period of April 2010- June 2014. Multiple regression technique is used for this study and D-W test is also applied. The findings of the study are, it appears that 82 per cent of variation in Sensex is explained by the above selected macroeconomic factors. Wholesale price index, index of industrial production, foreign institutional investment and real effective exchange rate have positive influence on Sensex. It is also found that Sensex is inversely influenced by changes in gold price. All the variables except index of industrial production are statistically significant. The summary of the study is that inflation, inflow of foreign institutional investment, exchange rate and gold price significantly impact the Indian stock market performance.

Altinbas and Biskin (2015) tried to find which macro-economic factors influence stock markets and by doing so to predict market returns. The study has tried to decide which factors has influence on predicting the movements of stock markets. It has used sequential forward selection algorithm on Turkish stock market: picked interest rate, exchange rate, industry production index, oil price, gold price as candidate indicators (including one and two month lagged values of each) along with stock market's one and two period lagged index values. The finding of the study is that, one month lagged stock market indicator index values are enough to predict market indicator index's future values. Thus, financial decision

makers, investors and risk analysts can work much more efficiently without dealing with large amount of data, troubling with collecting and storing costs and completing analysis in a in a short span of time.

Shrestha and Subedi (2014) examined the determinants of the stock market performance in Nepal using monthly data for the period of mid-August 2000 to mid-July 2014. The impact of major changes in politics and Nepal Rastra Bank's policy on lending against share collateral has also been assessed. Empirical results obtained from OLS estimations of behavioral equations reveal that the performance of stock market is found to respond positively to inflation and broad money growth, and negatively to interest rate. This suggests that in Nepal, share investors seem to take equity as a hedge against inflation and consider stock as an alternative financial instrument. Further, availability of liquidity and the low interest rates stimulate the performance of the Nepalese stock market. More importantly, stock market has been found to respond significantly to changes in political environment and the policy of Nepal Rastra Bank. These findings help to design policies to stabilize or stimulate the share market in Nepal.

Soti (2015) observed in the relationship between Nepalese stock market and macroeconomic variables taking the monthly data for January 2005 to December 2014. The researcher used ADF and ARDL model. This study concludes that there is a long run relationship between NEPSE index and CPI, Money supply and Interest rate variable despite some short-term fluctuations.

Phuyal (2016) studied on the relationship between macroeconomic variable and long-term market movements in Nepalese capital market. The researcher used monthly data from January 2003 to December 2012.The researcher used vector Auto regression (VAR) as well as vector error correction model (VECM) to examine the relation of these variables. The study found the results that the Nepali stock market had a long run equilibrium relationship with a set of macroeconomic variables, like inflation rate, interest rate and remittance flow with the short-term disequilibrium corrected by 1.79% on monthly basis. It further showed that there was Granger causality between them. In the short run, the stock market index was affected by the lag values of NEPSE index up to six levels and remittance income, as shown by Wald test. These findings hold practical implications for policy makers, stock market regulators, investors and stock market analysts.

Shrestha & Subedi (2014) examined empirical analysis of stock price and its macroeconomic determinants. Study consists of time series data from the year 2000 to 2014 and applied OLS (Ordinary Least Square) multiple regression model. The dependent variable is stock price and independent variables are consumer price index (CPI), broad money supply and interest rates. The study also analyzed NRB policies. The study found that inflation and money supply increases stock price and there is inverse relationship between stock price and interest rate. Study suggested that stock price of Nepal is also influenced by political and other factors.

Amtiran et al. (2017) conveyed about the true relationship between macroeconomic factors, economic growth, inflation rate and the exchange rate on stock return in Indonesian capital market. study conducted by taking the data from the year 2007 to 2014 by using arbitrage pricing theory. Stock return is a dependent variable and independent variables are economic growth, inflation rate interest rate and exchange rate. Study applied OLS (Ordinary Least Square) regression model and showed that there is positive relationship between exchange rate interest rate with stock return and negative relationship with inflation rate.

2. METHODOLOGY

2.1 Nature and Source of Data

The study uses annual data of different variables from FY 1994/95 to FY 2019/20 comprising 26 observations of each the data will be taken from Quarterly Economic Bulletin (NRB); Banking and Financial Statistics (NRB); Annual Report of NRB; Government Finance Statistics (NRB); Economic Survey Reports (MOF); Annual Report of SEBON; Journal of SEBON.

2.2 Model Specification

The regression analysis shows the cause-and-effect relationship between dependent and independent variables. Under this study stock price is dependent variable and broad money supply, gross domestic product, interest rate and consumer price index are independent variables. The study purposes following models to explore relationship between dependent and independent variables.

$$\ln SP = \beta_{0+} \beta_1 \, lnM_2 + \beta_2 \, lnGDP + \beta_3 \ln IN + \beta_4 \ln \mathrm{CPI} + \varepsilon_t \quad \ldots\ldots\ldots (1)$$

where lnSP denotes log of stock price, lnM_2 denotes log of broad money supply, lngdp denotes log of gross domestic product, lnin denotes log of interest rate (364 days treasury bill), lncpi denotes log of consumer price index, ε_t denotes error terms and t denotes time subscript's

the degree of relationship existing between dependent and independent variables is shown by the coefficient of determination (R^2). Hence, in each case, the coefficient of determination (R^2) has been calculated in order to test the explanatory power of independent variables.

After estimating the regression parameters, R^2 is used for judging the explanatory power, which measures the dispersion of observations to the line, the better explanatory of the variations of Y (dependent variable) by the change in the explanatory variables. Thus, in overall, R^2 has been computed to show the percentage of the total variation of the dependent variable that is explained by the independent variables.

3. RESULT AND DISCUSSION

The result of the study is presented in the following sections.

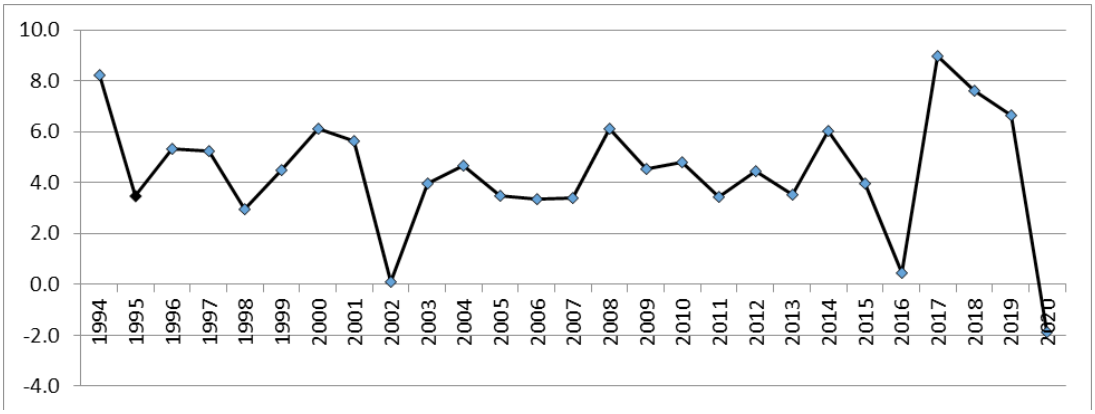

Figure 1: Trend of Real GDP Growth Rates of Nepal from 1994 to 2020

Figure 1 shows the trend line of growth rates real gross domestic product. the growth rates are ups and down during the study period. The maximum growth rates of real GDP were in 2017 and minimum in 2020, 2002 and 2016.

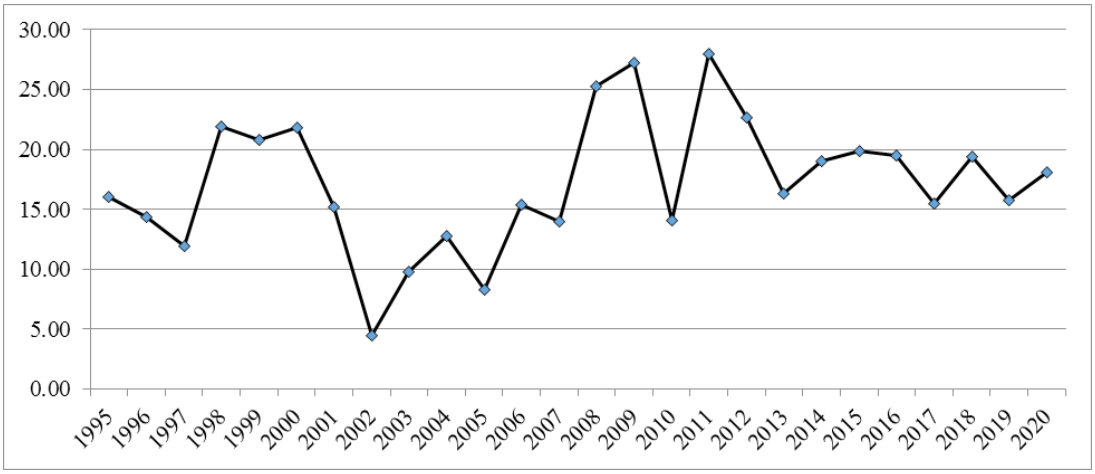

Figure 2: Performance of broad money supply and its growth rate from 1995 to 2020

Figure 2 shows the trend line of growth arte of broad money supply. The trend line is ups and down during the study period. The growth rates of stock price were minimum in 2002 and maximum in 2011.

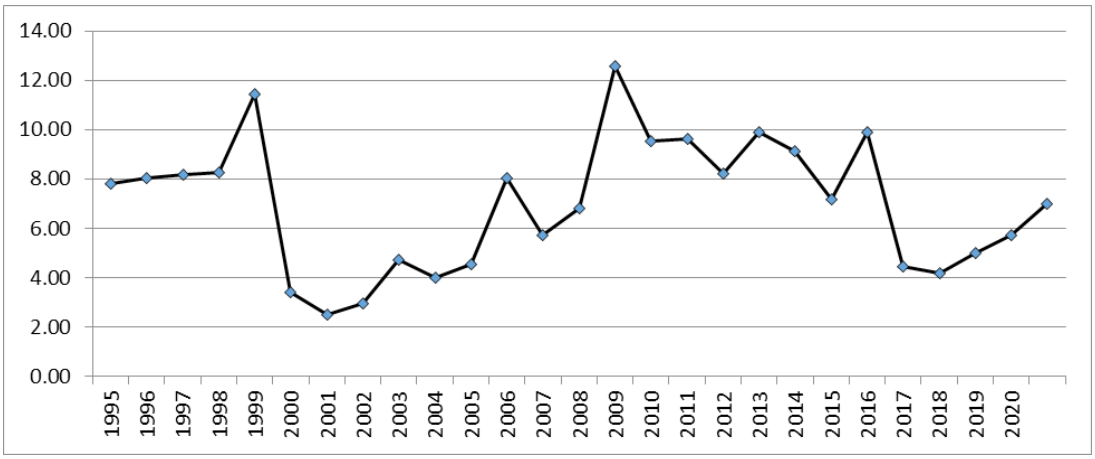

Figure 3: Performance of consumer price index and its growth rate from 1995 to 2020

Figure 4.3 shows the trend line of growth rate of consumer price index. The trend line is ups and down during the study period. The growth rates of stock price were minimum in 2001 and maximum in 2009. The growth rates were constant from 1995 to 1998.

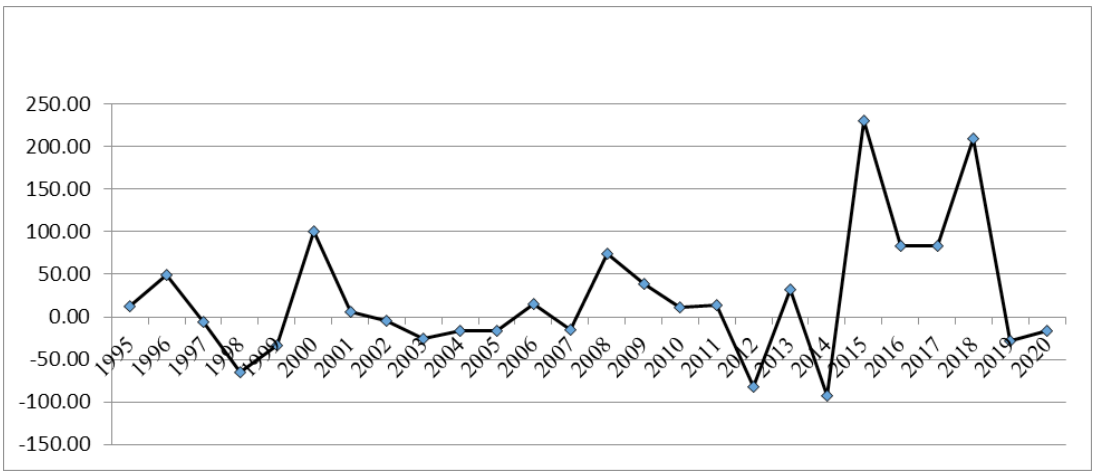

Figure 4: Performance of interest rates and its growth rate from 1995 to 2020

Figure 4 shows the trend line of growth rates of interest from 1995 to 2020. The trend line is ups and down during the study period. The growth rates of interest were minimum in 1998, 2012, 2014 and maximum in 2015.

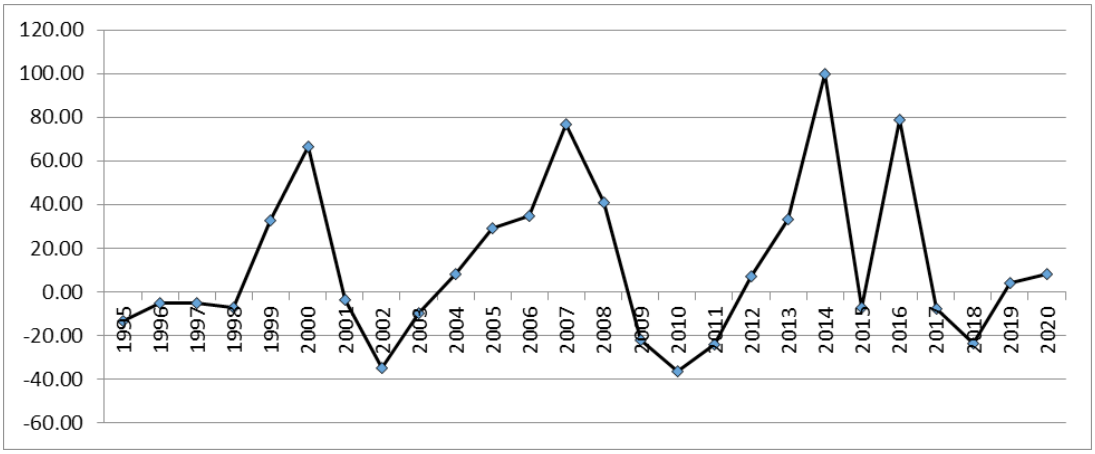

Figure 5: Performance of stock price and its growth rate from 1995 to 2020

Figure 5 shows the trend line of growth rates of stock price from 1995 to 2020. The trend line is ups and down during the study period. The growth rates of stock price were minimum in 2002, 2010, 2015 and 2018 and maximum in 2014.

Table 1

Regression Outputs

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNM2	0.602285	0.08775	4.388878	0.0011
LNGDP	0.765238	0.04297	7.505342	0.0083
LNIN	-0.078783	0.07180	-8.735058	0.0001
LNCPI	-1.493638	0.00949	-6.466187	0.0057
C	-6.211079	8.00539	-4.699403	0.0016
R-squared	0.803953	N=27		
Adjusted R-squared	0.768308			

The coefficient of lnM2, lnGDP, lnIN and lnCPI are significant at 1 percent. The value of adjusted R squared is 0.80. It means that dependent variable stock price is explained 80 percent by independent variables. The value of adjusted R squared is very high indicate that model is relatively good it.

The coefficient of LNM2 is 0.60 means that one percent increase in money supply leads to 0.60 percent increase in stock price in Nepal. There is positive relationship between money supply and stock price. The coefficient of LNGDP is 0.76 means that one percent increase in gross domestic product leads to 0.76 percent increase in stock price. There is positive relationship between stock price and gross domestic product. The coefficient of LNIN is - 0.078 means that one percent increase in interest rate leads to 0.078 percent decrease in stock price. There

is negative relationship between stock price and interest rate. The coefficient of LNCPI is -1.49 means that one percent increase in consumer price index leads to 1.49 percent decrease in stock price. There is negative relationship between stock price and consumer price index.

4. CONCLUSION

The Nepalese stock market is still in its initial phase. There is no long history of stock market in Nepal. Many practices, strategies and policies have to be done in this sector. The study addressed macroeconomic determinants of stock market price in Nepal. The result suggests that the fluctuation of stock market prices in long run is strongly related to broad money supply, interest rate, inflation and exchange rate. It is clear that interest rate is the determining variable of the stock market in Nepal. The direction of movement to stock market prices with interest rate is opposite. The interest rate holds same movement in same direction in short run as well long run. Low interest rate makes stocks more attractive because of low cost of credit and low opportunity cost foregone by holding bank deposits. The GDP, money supply and exchange rate can positively define in short run while only money supply holds positive relationship in long run. An increase in money supply causes stock market prices to increase. This suggests that an increase in money supply leads to economic expansion through increased cash flows and stock prices would benefit by expansionary monetary policy. Hence, money supply has significant impact on stock market in Nepal. Therefore, in conclusion, Nepalese stock market is highly determined by macro- economic variables in long run. It is confirmed that broad money supply, interest rate, inflation and exchange rate can explain the stock market price in Nepal. Policymakers should take into consideration of various macro-economic indicators while formulating economic as well as financial policies. Furthermore, it is recommended that capital market development policies should be aligned with the macro- economic fundamental policies.

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