GSJ: Volume 9, Issue 10, October 2021, Online: ISSN 2320-9186
www.globalscientificjournal.com

Impact of exchange rate on economic growth of Nepal

Sijan Reshmi

Lumbini Banijya Campus, Tribhuwan University,Nepal

Abstract: *This article is designed to assess the impact of exchange rate on economic growth of Nepal. The study uses annual time series data for the period of 1973 to 2018. Linear regression model has been used to identify the relationship between explanatory and response variable. Explanatory variable used in this study is NPR- US dollar exchange rate and Inflation as control variable whereas GDP is taken as response variable as a proxy of economic growth. The result of the study reveals that exchange rate has positive impact and significant relationship with GDP whereas inflation has positive but statistically insignificant relationship with GDP. Moreover, Nepal must use the exchange rate as one of the macroeconomic policies.*

Keywords: Exchange rate, NPR-US dollar exchange rate, Inflation, economic growth

I. Introduction

The Exchange rate is the value of one nation's currency versus another nation's currency. Exchange rates are determined in the FOREX market which is open to wide range of different types of buyers and sellers where currency trading is continuous: 24 hours a day except weekends, the spot exchange rate refers to the current exchange rate and the forward exchange rate refers to an exchange rate that is quoted and traded today but for delivery and payment on specific future date but the government has the authority to change the exchange rate according to their plan, policies and need.

According to Bank for international settlements ''Foreign exchange market has a daily trading volume of around 6.6 trillion US Dollar per day"

The exchange rate has become a burning focus in recent policy debate in developing countries because of mainly two reasons. First, increased emphasis on export led growth and second, liberalization of tariff and non-tariff barriers. The role of the exchange rate in growth and development has gained valuable importance.

An exchange rate regime refers to the way a monetary authority of a nation or currency union manages the currency in relation to other currencies and the FOREX market. It is closely related to monetary policy of a nation. There are two major regimes: fixed exchange rate and floating exchange rate system. Fixed exchange rate system refers to exchange rate which is set by government and which is not determined by market forces. Whereas floating exchange rate system refers to exchange rate which is determined by demand and supply of the currency.

Currently, Nepal is adopting dual exchange rate arrangement. Nepal has been following fixed pegged rate system with Indian rupee since 1960 i.e.1INR = 1.60 NPR. Whereas it has been floating with other convertible currencies e.g. US dollar, Pound sterling, Japanese yen, Renminbi etc. which means market forces i.e. demand and supply of currency determine the exchange rate between the currencies. Current exchange rate between NPR and US dollar is 1 USD= 120.89 NPR (as of May, 2020).

Currency appreciation is an increase in the value of home currency in relation to another foreign currency, demand of the currency decides the appreciation of the currency. One of the most demanded foreign currency is US Dollar. Whereas Depreciation of currency refers to fall in the value of currency in floating exchange rate system.The Depreciation of currency can help to accelerate the export as price of goods and services become cheaper. The conventional sources of foreign exchange earnings are tourism and export which are both at progressive stage. Tourism helps to earns foreign earnings as tourists' exchange

their home currency to Nepalese currency due to which demand of Nepalese currency goes up. Whereas export refers to selling of goods and services to foreign countries in return for foreign currency. As every aspect has pros and cons, depreciation of currency plays a vital role in export as goods get cheaper and more is demanded but too much of depreciation will weaken the value of Nepalese currency. This is not only essential from economic perspective but also from the point of view of maintaining the confidence of Nepalese on Nepalese currency.

Exchange rate plays a vital role in foreign trade and economic development. It is apparent that changes in exchange rates (either appreciation or depreciation) have wider and far reaching economic effects. It is therefore very important to understand how change in exchange rates affects economic growth and development in Nepal. One of the macroeconomic objectives of developing nation is to achieve sustainable economic growth and development. High level of economic growth helps to maintain an adequate level of foreign reserves and to maintain a sustainable development internationally a competitive exporting sector is vital which will contribute to job creation and high income.

The outline of this paper is as follows. First section is introductory section, Second section enlist Literature review focusing on exchange rate and economic growth and development. Third section deals with data and methodology. Fourth section deals with results and discussion. Fifth section deals with the conclusion of the study and Sixth section enlists references of the study.

II. Literature Review

Before moving to the empirical analysis it is useful to review the literature on the nexus between real exchange rates and economic growth, both theoretical and empirical. (Eichengreen, 2008) Offers an excellent review of the debate including the role of exchange rate regimes and exchange rate volatility.

Most previous researches about the behaviour of exchange rates have been devoted to explain and forecast exchange rate levels and not their volatility. Several structural models have been suggested to capture the pattern of exchange rates, such as monetary exchange rate models and portfolio balance models. However, none of these models was able to outperform a naive random walk model in forecasting in sample exchange rate (see, for instance, (Meese & Rogoff, 1983)).

In (Rodrik, 2008) a weak real exchange rate compensates for institutional weaknesses and market failures (e.g. knowledge spill-overs, credit market imperfections, etc.) which lead to underinvestment in the traded goods sector in developing countries.

A different channel is proposed by (Gluzmann, Yeyati, & Sturzenegger, 2012) where a weak exchange rate leads to higher saving and investment through lower labour costs and income re-distribution. By shifting resources from consumers to financially-constrained firms, real devaluation boosts savings and investment.

Most empirical work tends to confirm a positive relation between weak real exchange rates and growth. Dollar (1992) shows that overvaluation harms growth, whereas (Razin & Collins, 1997) and (Aguirre & Calderor, 2005) find that large over- and under- valuation hurt growth, while modest undervaluation enhances growth.

(Di Nino, 2011) also conclude that there is a positive relationship between undervaluation and economic growth for a panel dataset covering the period 1861-2011. In addition, the authors show that undervaluation supported growth by increasing exports, especially from high-productivity sectors, in Italy in 1861-2011.

(Taylor, 2001) discusses the failure of liberalised policies in Argentina. He says that Argentina has failed in maintaining the liberalised policies about capital flows and a firm currency. Argentina had anti-inflation program based on freezing the exchange rate in the early 1990s. This means that the money supply within the country and the supply of credit to firms are tied directly to international reserves. So if the country gets capital inflows, the supply of money and credit increases, leading to a substantial increase in domestic prices.

(Dua & Sen, 2006) examine the interactions between the real exchange rate, level of capital flows, volatility of flows, fiscal and monetary policy indicators and the current account surplus for Indian economy for the period 1993Q2 to 2004Q1. The estimations indicate that the variables are cointegrated and each Granger causes to the real exchange rate.

(Husain, 2004) found in their study that little access to international capital is available for the weaker and less developed countries, so low rate of inflation and higher level of durability is associated with fixed exchange rate regime in those countries. However, they found no robust relationship between economic performance and exchange rate regime in

the developing economies. They also found that advanced economies may experience durable and slightly higher level of growth rate without higher level of inflation in flexible exchange rate regime.

(Edwards, 2001) investigated the dynamic association between exchange rate regimes, capital flows and currency crises in emerging economies. The study draws on lessons learned during the 1990s, and deals with some of the most important policy controversies that emerged after the Mexican, East Asian, Russian and Brazilian crises. He concludes that under the appropriate conditions and policies, floating exchange rates can be effective and efficient.

Exchange rate fluctuations have an effect on most macroeconomic indicators like exports (Wang & Barrett, 2007) trade (Doyle, 2001); (Clark, Dollar, & Micco, 2004); inflation (Danjuma et al., 2013); employment growth (Tenreyro, 2007) and economic activity (Adewuyi, 2013).

III. Data and Methodology

The topic which is under consideration is impact of exchange rate on GDP in Nepal. The study takes inflation as the control variable. The study uses time series data over the period from 1973 to 2018. The data figure for all the variables is retrieved from FRED Economic Research, St. Louise and theglobaleconomy.com combined. GDP is the dependent variable (Y). Whereas, Exchange rate(EXCRATE) is the independent variable provided with the control variable as inflation (INF). The study uses ordinary least square (OLS) technique for estimation.

The model for this study can be developed as:

$$Y = \beta_0 + \beta_1 EXCRATE + \beta_2 INF + \varepsilon \quad (1)$$

To obtain elasticity coefficients and remove the effect of outliers, the variables must be transformed to logarithm. In log linear form, the functions becomes:

$$Log Y = \beta o + \beta 1 log EXCRATE + \beta 2 log INF + \varepsilon \quad (2)$$

*Log*Y is the natural log of GDP, *log*EXCRATE is the natural logarithm of exchange rate, *log*INF is the natural logarithm of inflation.

The error term (ε) is included to represents omitted variables in the specification of the model. The error term (ε) is also included to capture all errors of measurements, parameter variations, and errors of the functional approximation and sampling variability.

IV. Results and Discussion

Descriptive Statistics

Before evaluating the empirical impact of exchange rate on GDP, the summary statistics provided in table no.1will serve as a preliminary overview of the data in order to get a proper insight at some of their basic characteristics.

The Jarque-Bera test significantly accept the null hypothesis of normality in distribution for all variables, therefore confirming the normal distribution of all variables used in the study. The kurtosis for all the variables remain under three so there is no fat tailed kurtosis. All the variables except GDP are negatively skewed still remaining below one.

Table no. 1: Summary of Descriptive Statistics

	LGDP	LEXCRATE	LINF
Mean	1.650672	3.689000	2.040736
Median	1.508954	4.037633	2.116256
Maximum	3.368674	4.690705	3.049273
Minimum	-0.028295	2.351375	0.875469
Std. Dev.	0.910324	0.799922	0.528240
Skewness	0.248413	-0.471888	-0.404467
Kurtosis	2.092377	1.646933	2.493105
Jarque-Bera	2.007403	5.102822	1.708721
Probability	0.366520	0.077972	0.425555
Sum	74.28024	166.0050	91.83313
Sum Sq. Dev	36.46238	28.15454	12.27763
Observations	45	45	45

Source: Eviews 11, Author's computation

Unit Root Test

Owing to the fact that the study employs a time-series data, the first step to begin with, is to test for stationarity. This requires the testing of the order of integration in the data set (unit root test). A time-series is said to be integrated of order I(0), and a variable that must be differenced once to become stationary is said to be integrated of order I(1).

The Augmented Dickey-Fuller (ADF) is employed to assess the presence of unit root in the variables. The results for the Augmented Dicky-Fuller are presented in table no. 2.

Table no. 2: Stationarity results of the Augmented Dickey-Fuller test

	Level	First Difference
GDP	0.9560	0.0000
EXCRATE	0.6527	0.0006

INF	0.0009	0.0000

Source: Eviews 11, Author's computation

Table no. 2 shows the Augmented Dicky-Fuller results. The test has a null hypothesis of unit root. The decision rule of thumb for unit root tests is that, if the calculated t-statistic is greater than critical value we do not reject null hypothesis that series contains a unit root, thus confirming that series are stationary. Alternatively, we can also examine the P-value at level or at first and second difference. The rule of thumb is that, if the probability value is less than 0.05 (5%), then in that case we can reject the null hypothesis of series has a unit root and claim that the series is stationary. Only inflation is stationary at level, while GDP and Exchange rate is stationary at first difference.

Table no. 3: Regression results

Regressor	Coefficient	Standard Error	T-Statistic	Probability
C	-2.541868	0.438533	-5.796297	0.0000
LEXCRATE	1.060267	0.078243	13.55090	0.0000
LINF	0.137801	0.118485	1.163019	0.2514
R-squared	0.824104			
Adjusted R-squared	0.815728			
S.E. of regression	0.390774			

Source: Eviews 11, Author's computation

The equation that shows the relationship between the dependent variable and independent variable along with the control variable is given below:

$$GDP = -2.541868+1.060267EXCRATE+0.137801INF$$

This equation shows that Exchange rate (EXCRATE) and Inflation (INF) have a positive result with GDP. Exchange rate is statistically significant, whereas Inflation is statistically insignificant. The obtained result indicates that a unit increase in inflation (INF) will render a increase of approximately 0.137801 in GDP because inflation tends to increase the general price level of goods and services in the market, leading to increased value of GDP. Similarly, a unit increase in Exchange rate (EXCRATE), which is depreciation of Nepalese rupees against the USD will render an increase of approximately 1.060267 in GDP as currency depreciation will encourage foreign export leading to increases production of goods and services.

V. Conclusion

It has been argued by some empirical researchers that exchange rate volatility has a positive effect on the level of GDP. However, while some empirical researchers have been able to argue for the negative effects of volatility to GDP, others have been able to argue for positive or no effects at all. Our examination has focused on the effects of exchange rate volatility to aggregate GDP in case of Nepal. Study uses linear regression model on the basis of OLS technique in order to examine the degree and magnitude of relationship between the variables under consideration. The study begun with a hypothesis that, Exchange rate significantly impact GDP. Nepal currently has flexible exchange rate regime with the U.S. Dollar. From the empirical analysis, the study found that exchange rate has a significant positive relationship with the GDP.

References

Adewuyi, A. O. (2013). Exchange Rate Volatility and Economic Activities of Africa's Sub-Groups. *The International Trade Journal, 27(4), 349–384.*

Aguirre, A., & Calderor, C. (2005). Real exchange rate Misalignments and economic performance. *Central Bank of chile working papers* .

Di Nino, V. E. (2011). “Real exchange rates, trade, and growth: Italy 1861–2011”. *Bank of Italy Economic History working paper*.

Doyle, E. (2001). Exchange rate volatility and Irish-UK trade. *Applied Economics, 33:2*, 249-265.

Dua, P., & Sen, P. (2006). CAPITAL FLOW VOLATILITY AND EXCHANGE RATES: THE CASE OF INDIA . *Centre for Development Economics Department of Economics, Delhi School of Economics* .

Edwards, S. (2001). “Exchange Rate Regimes, Capital Inflows and Crisis Prevention”. *NBER and University of California (Working Paper).* .

Eichengreen, B. (2008). The Real Exchange Rate and Economic Growth. *Commission on Growth and Development Working Paper;No. 4. World Bank, Washington, DC. © World Bank.*

fedreal reserve economic data . (2020, april). Retrieved from fedreal reserve economic data : https://fred.stlouisfed.org/

Gluzmann, p., Yeyati, E., & Sturzenegger, F. (2012). Exchange rate undervalutaion and economic growth. *Economics letters 117(3)*, 666-672.

Husain, A. M. (2004). “Exchange Rate Regime Durability and Performance in Developing Versus Advanced Economies”,. *Journal of Monetary Economics, 52(1)*, 35-64.

Meese, R., & Rogoff, K. (1983). Empirical Exchange Rate Models of the Seventies: Do They Fit Out of Sample?”. *Journal of International Economics 14*, 3-24.

Razin, O., & Collins, S. (1997). Real Exchange rate Misalignments and Growth. *NBER working paper NO.6174*.

Rodrik, D. (2008). The real exchange rate and economic growth. *Brooking papers on economic activites* , 365-412.

Taylor, L. (2001). Argentina: A Poster Child for the Failure of Liberalized Policies?

Theglobaleconomy.(2020,April): https://www.theglobaleconomy.com/

Wang, k., & Barrett, C. (2007). Estimating the Effects of Exchange Rate Volatility on Export Volumes. *Journal of Agricultural and Resource Economics,vol. 32, issue 2*, 31.