SOCIAL SCIENCE AND HUMANITIES

IMPACT OF INTEREST RATE AND INFLATION RATE ON EXCHANGE RATE OF PAKISTAN

Sobia Naseem[1]
PhD Scholar Liaoning Technical University, China
Sobiasalamat4@gmail.com
Muhammad Mohsin[2]
PhD Scholar Department of Business Administration
Liaoning Technical University, China
mohsinlatifntu@gmail.com
Shazia Salamat[3]
College of Business Administration
Liaoning Technical University, China
Shaziameher08@gmail.com

Abstract: Exchange rate is one of the most imperativeindicatorsof economic growth of acountry and itsprecariousnesshasa significant impact on international trade. The present study inspectedtheimpact of inflation and interest rate on the volatility of the exchange rate in Pakistan. To estimatethe relationship,among variables annual data used for the period ranging from2012 to 2016 have beenanalyzed by applying multiple regression model. The results of this study divulge exchange rate has a significant negative relation with inflation and interest rate, if interest rate and inflation rate increase so the exchange rate decrease and vice versa. High-interest rate raises the inflation rate which leads to exchange rate volatility.

Keywords: Interest rate, Inflation rate, Exchange rate volatility, Multiple Regression Model

Introduction

Exchange rate is influenced by the close relation of inflation and interest rate but foreign investments attracted by the high interest rate. The demand of a country's currency is likely to increase due to the high interest rate. From the last decade exchange rate become a significant area of interest for the Pakistani economy. Pakistani currency (Rupee) depreciated against the currency of developed countries like as Dollar, Euro, Pond and Yen etc. Consumer price index (CPI) measures the change in Purchasing

Power Parity (PPP). Globalization of the world economy both (Developed & Developing) countries cannot overlook the interaction of the remaining parts of the world. Exchange rate plays a vital and decisive role in the free economy level of trade of underdeveloped countries. Inflation has converted the currency of a country into weak domestic currency. International Fisher Effect (IFE) and Purchasing Power Parity (PPP) theories intimately connected to interest rate and inflation rate but IFE theory suggested that currency of any country with a high-interest rate which depreciates the currency because of that high-interest rate indicates toward inflation (Shalishali, et al,. 2002).

Literature Review

The volatility of the exchange rate has always been an area of interest for researchers, economist and students over the entire world. This subject matter explored by many researchers. Berument (2003)'s empirical research investigates real depreciation conflicting when external factors controlled. This studies appealing to explore the causes of exchange rate fluctuations in Pakistan by investigating the interest rate and inflation rate. By using Granger Causality Test, Lado (2015) reveals that Exchange rate and Consumer Price Index have a unidirectional causality. Applying Johansen Co-integration Tests (trace test & eigenvalue) and Vector Error Correction Model (VECM) results divulge that exchange rate and

inflation are related to each other short as well as long-run. Increase in money supply and interest rate becomes the grounds of inflation which escort in exchange rate volatility (Bashir, et al., 2015; Senadza& Diaba, 2017). Naseem et al., (2018) and Abdurehman (2016) an indirect relationship observed between interest rate, inflation and exchange rate. Version (2009) observed that a short-run negative relationship between Spot exchange rate and nominal interest rate and positive relation for along period. Okoth (2012) 's investigation leads to a significant negativerelationship between interest rate, exchange rate and inflation by using data from 2007 to 2012 of Kenya. Chow (2004) and Kumar &Dhawan (1991) by using the by constructing a bivariate VAR-GARCH model on four countries i.e. Indonesia, Korea, Philippines and Thailand series data and concluded that exchange rate volatility directed to the stable interest rate. Basedon the exceeding theoretical and empirical literature, we investigate the relationship between interest rate, inflation and exchange rate in Pakistan.

Data

To find the relationship between inflation rates, interest rate and Exchange rate secondary data is used. The annual data span of 2012 to 2016 used found the relationship between selected variables. Data obtain from different sitesi.e. Business Recorder, State Bank of Pakistan, World Bank,official research journals site and financial reports.

Analysis Tool

The SPSS statistical software has used for obtaining results.

Methodology

In this study multiple regression models have used. This model is used to found the relationship between the dependent variable (EXR) and independent variable INR and IR. This model has also used by Antwi (2013). The theoretical model is as followed

EXR= f {INR, IR}

The econometric is as followed

$$Y = \beta_0 + \beta_1 C_{X1} + \beta_{2X2} + \varepsilon_{ij}$$

Y= exchange rate (EXR)
X_1= inflation rate (INR)
X_2= interest rate (IR)

The β_0, β_1 and β_2 are the regression coefficient of the sample data and the ε_{ij} is the random error.

Empirical Result

Descriptive Statistics

	Mean	Std. Deviation	N
exchange rate	86.173238	6.2797411	60
interest rate	12.516667	1.5649949	60
inflation rate	13.169167	4.8378708	60

Interpretation:

The average change rate of the exchange rate is 86% and the standard deviation is 6%. The average change rate of the interest rate is 12.51% with a standard deviation of 1.56%. Inflation average change rate is 13.16% and standard deviation of 4.83%.

Interpretation:

This second table gives details of the correlation between each pair of variables. We do not want strong correlations between the criterion and the predictor variables. The values here are acceptable.

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	The inflationrate, interest rate	.	Enter

a. All requested variables entered.

Interpretation:

This third table tells us about the predictor variables and the Enter methodused. Here we can seethat all of our predictorvariables entered simultaneously (because selected the EnterMethod).

This third table tells us about the predictor variables and the Enter method used. Here we can see that all of our predictor variables were entered simultaneously (because we selected the Enter method).

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.892a	.795	.788	2.8899373

a. Predictors: (Constant), inflation rate, interest rate

Interpretation:

A value of 89.2% indicates a good level of prediction and indicates that there is astrong relationship between dependent and independent variables.

In the above model the value of R2 is 79.5% which means that 79.5% of the dependent variable - the exchange rate explained through independent variables which are interest rate and inflation rate.

ANOVAb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1850.625	2	925.312	110.793	.000a
	Residual	476.049	57	8.352		
	Total	2326.674	59			

a. Predictors: (Constant), inflation rate, interest rate
b. Dependent Variable: exchange rate

Interpretation:

Table ANOVA shows that the F-statistics of the model is 110.793 and p-value is lower than the level of confidence (.000 < .05) which conclude the econometric model is significant. The individual significance of the variables is determined by their t values. Coefficient analysis of the variables undertaken by the values of the coefficients of the respective variables

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	119.941	3.318		36.145	.000
	interest rate	-2.071	.325	-.516	-6.379	.000
	inflation rate	-.596	.105	-.459	-5.672	.000

a. Dependent Variable: exchange rate

Interpretation:

The t value of interest rate, was found -6.379 and p-value is (.000 < .05) which shows a significant impact of interest rate on the exchange rate, hence H1 accepted. The t value of inflation rate, was found -5.672 and p-value (.000 < .05) which shows a significant impact of inflation rate on the exchange rate, hence H4also accepted.

Analysis of the coefficient of interest rate tells us that there is a negative relationship between the interest rate and exchange rate. It further reveals that 1% change in interest rate will bring 51.6% change in the exchange rate of Pakistan.

Analysis of coefficient of inflation rate tells us that there is a negative relationship between inflation rate and exchange rate. It further reveals that 1% change in inflation rate will bring 45.9% change in the exchange rate of Pakistan.

Conclusion

Empirical evidence of this research concluded that interest rate and inflation rate are positively related to each other and have a negative impact on exchange rate volatility. According to economic laws and theories, ceteris paribus increasing in interest rate lead to an increase in foreign investment, goods market supply, aftermath price level increased. Inflation depended on the interest rate's regarding information. Interest rate influenced on exchange rate through inflation, therefore these both determinants (interest rate & inflation) have a direct and positive relationship and affected exchange rate negatively.

Bibliography

Abdurehman, A. A., & Hacilar, S. (2016). The Relationship between Exchange Rate and Inflation: An Empirical Study of Turkey. International Journal of Economics and Financial Issues 6(4), 1454-1459.

Ali, T. M., Mahmood, M. T., & Bashir, T. (2015). Impact of Interest Rate, Inflation and Money Supply on Exchange Rate Volatility in Pakistan. World Applied Sciences Journal 33 (4), 620-630.

CHOW, H. K., & KIM, Y. (2004). The Empirical Relationship Between Exchange Rates and Interest Rates in Post-Crisis Asia. School of Economics and Social Sciences, 1-19.

Dornbusch. (1976). Expectations and exchange rate dynamics. Journal of Political Economics,84(6), 1161-1176.

G., B., & Lauterbach, B. (2007). Policy factors and exchange rate volatility: Panel data versus a specific country analyses. . Journal of Finance and Economics, 452-487.

Lado, E. P. (2015). Test of the relationship between Exchange Rate and Inflation in South Sudan: Granger-Causality Approach. Economics 4(2), 34-40.

Robert, F., & Granger, C. (1986). Error Correction: Representation, Estimation and Testing. Econometrica, 55(2), 251-276.

Shalishali, M. K., & Ho, J. C. (2002). INFLATION, INTEREST RATE, AND EXCHANGE RATE: WHAT IS THE RELATIONSHIP? . Journal of Economics and Economic Education Research, Volume 3, Number 1, , 107-117.

BIBLIOGRAPHY Kumar, R., & Dhawan, R. (1991). Exchange rate volatility and Pakistan's exports to the developed world, 1974-85. Elsevier, 1225-1240.

Naseem, S., fu, G. l., Mohsin, M., Baig, S., & Zia-ur-Rehman, M. (2018). The volatility of Pakistan stock market: A comparison of Garch type models with five distribution. Revista Amazonia Investiga, 486-504.

Senadza, B., & Diaba, D. D. (2017). Effect of exchange rate volatility on trade in Sub-Saharan Africa. Journal of African Trade, 20-36.