Fluctuations in Exchange Rate and its Impact on Macroeconomic Performance of Pakistan

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Abstract

The present study was conducted to examine the extent and direction of exchange rate volatility and its impact on macroeconomic performance of Pakistan. It is implied that exchange rate volatility has direct bearings on macroeconomic variables and thus on macroeconomic performance. This study also investigates the effect of exchange rate (independent variable) of Pak Rupee to US Dollar on selected three dependent variables i.e. inflation rate, import and export balance of Pakistan. The annual observations from 2000-2010 are considered for analysis, which are collected from different secondary sources. A significant association between the exchange rate and inflation rate as well as annual imports is observed. On the other hand no significant association is recorded between the exchange rate, and annual exports. Overall, the results suggest that the explanatory variables and dependant variable are highly correlated and thus the policy makers in Pakistan should consider both the existence and the degree of the exchange rate volatility and notice the likely impact of volatility on each macro-economic variable in implementation of the trade policies, so that the external value of our currency be stabilized.

Keywords: Exchange rate, Inflation rate, Imports, Exports.

Introduction

Depreciation of currency means, to officially reduce the value of home currency in relation to gold or the foreign currency. Usually countries commence depreciation to reduce the gap of deficit external balance, because economist considers currency depreciation could actually be beneficial for the economy. Since a weaker currency will boost exports, which in turn will increase employment and this, as a result, will improve the economic growth.

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The International Monetary Fund and the Central Bank sometimes propose the same on the grounds that it improves external competitiveness, increases exports, reduces imports and thus improves trade and current account balances. It is also argued that devaluation initially worsens but eventually improves balance of payments.

Has Pakistan achieved these objectives? Have exports increased, and imports reduced? Has external payment situation improved as a result of depreciation? The scenario of Pakistan is different and unfortunately from past few years' Pakistan economy is in threat as major sectors of the economy are showing negative growth. Although the exports were increased during FY11 but imports were also increased. According to the Federal Bureau of Statistics (FBS) the overall imports during FY11 were $40.414 billion as compared to$34.710 billion during FY10, which is an increase of 16.43 per cent. Increase in imports is mainly due to import of petroleum & its related products in the midst of fast-depreciating exchange rate. In other words, contrary to the theory, a negative relationship between devaluation and external balance is observed.

On the other hand, the exchange rate depreciation has alone added Rs.1,125 billion in public debt. At present it amounts to $13 billion. The rise in public debt would increase interest payment, reduce fiscal space for development spending and put enormous pressure on budget. Higher budget deficit would lead to even more accumulation of public debt.

Recently Pakistani rupee depreciated to an all-time low Rs 106 against per dollar due to high demand for import payments. Depreciation of the rupee further inflates import bill as well as increases domestic price level, thus reducing the purchasing power of people and causing inflation in the country. It may be realized that for whatever reason our currency is depreciated, it results to weaken the economy as compared to the other countries. Further, excessive depreciation of the past has adversely affected our credit ranking in the international market.

Summarizing the above discussion it can be said that depreciation is not a long-term solution to cobble together the economy. Unless the Government revises its economic policies and execution of plans, devaluation will not stabilize the external value of our currency. We must give highest precedence to the consolidation of our economy along with expansion.

Review of Literature

The topic of exchange rate has gained much more importance in Pakistan since the floating exchange rate patterns has been adopted. Recently the studies are conducted to find whether changes in exchange rate affect the macroeconomic variables of any country or not. This article identifies any such relationship between exchange rate volatility and some of the macroeconomic variables like exports, imports and inflation in Pakistan. Theoretical relationship between exchange rate volatility and macroeconomic variables of any country is described in many studies, but empirical investigation shows no such consensus about it because of mixed pattern of results found in those studies.

Aurangzaib et al. investigated the relationship among economic performance, growth and exchange rate uncertainty in Pakistan.[1] Auggir et al. evaluated the growth effects of real exchange rate fluctuations and their volatility.[2] Egert et al. analyzed the direct and indirect impact of exchange rate volatility via changes in exchange rate regimes on the export performance.[3] Lourenco analyzed the global picture of exchange rate regimes of 33 advanced and emerging economics.[4] Hussain et al. investigated the durability and performance of alternative exchange rate regimes of all IMF member countries.[5] Avellan evaluated the relationship between parallel exchange rates.[6] Hoffman compared fixed exchange rate with floating exchange rate.[7] Vuletin analyzed the influence of exchange rate policies on fiscal performance, focusing on the difference between fixed & floating exchange rate.[8] Zhang reviewed China's foreign exchange reforms and analyzed their impact on the balance of trade and inflation.[9] Larrain et al. put light on the question of which exchange rate policy is suitable for middle income countries.[10] Kawai et al. discussed conceptual and empirical issues relevant to exchange rate policies.[11] Bleany et al. used a model to explain that inflationary expectations in developing countries may be abridged if exchange rate of developing countries is pegged to exchange rate of developed countries.[12] Frey investigated the impact of short run volatility of exchange rates on the volume of exports.[13]

Research Methods

The present study was conducted among the exchange rate (Y) consider as dependent variable by taking the Pak rupee to US-dollar on the selected three independent variables i.e., inflation rate (X_1), import (X_2), and export balance (X_3).

Secondary data was utilized to obtain the required

objectives. The data was collected through the secondary sources, various issues of Economic Survey of Pakistan and Quarterly reports of State Bank of Pakistan were used, covering all the information needed for the study.

In the given study, the response variable was considered as binary depending whether the respondent is a yes or no. The response variable takes the value 1 for yes and 0 otherwise. In addition, the following 3 variables/factors are considered as independent variables affecting (or not) the response which are (i) (X1) (ii) (X2) (iii) (X3). All these variables were measured in their respective units (qualitatively or quantitatively) and then transformed to binary variables according to the following criteria: X1 = 1 if yes and 0 otherwise, X2 = 1 if yes and 0 otherwise, and X3 = 1 if yes and 0 otherwise.

Results and Discussions

Simple counts and percentages were obtained to know the frequency of each of the selected variables. In order to test the association between the exchange rate (1 or 0) and the selected variables, regression analysis was applied with 5% level of probability. In addition, some other statistical techniques were also applied.

Table-01: Exchange rate and Inflation rate

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	b_0	Std. Error	b_1		
(Constant)	-	7.233		-2.597	0.029
Pak-USD Exchange Rate	18.782 0.430	0.115	0.780	3.740	0.005

In the table values b_0 is the intercept term, which gives the average effect on Y of all the independent variables excluded from the model. The estimated regression co-efficient, b_1= 0.780 which indicates that the inflation rate increases by 0.780 units for a unit increase in exchange rates and vice versa. Similarly both the estimated values (b_0 and b_1) are significant at 5% level of significance.

Table-02: Co-efficient of determination

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.780[a]	.608	.565	3.570948	1.455

The co-efficient of determination R2 = 0.608 shows that almost 61% of variation in inflation rate is due to changes in the exchange rate of Pak USD.

Table-03: Comparison through co-efficient of correlation

Model		Pak-USD Excha Rate	Inflation Rat Pakistan
Pak-USD Exchange Rate	Pearson Correlation	1	0.870
	Sig. (2-tailed)		0.005
	N	11	11
Inflation Rate of Pakistan	Pearson Correlation	0.870	1
	Sig. (2-tailed)	0.005	
	N	11	11

The correlation co-efficient, r = 0.780 shows there is a highly positive correlation between the two variables, i.e., Pak UD exchange rate and inflation rate of Pakistan. Correlation shows how the two variables vary together. Similarly, p-value= 0.005 shows that both the variables are highly significant at 5% and 1% level of confidence.

Table-04: Hypothetical results through ANOVA

Model	Sum square	Df	Mean Squa	F	Sig.
Regression	178.372	1	178.372	13.988	0.005
Residual	114.765	9	12.752		
Total	293.137	10			

The above result shows that Pak-USD is significantly influenced by the inflation rate at 5% and 1% level of confidence.

Table-05: Some results through t-test

Model	Test Value = 20					
					95% Confidence Interval of the Difference	
	T	df	Sig. (2 tailed)	Mean Difference	Lower	Upper
Pak-USD Exchange Rate	14.255	10	.000	42.234636	35.63321	48.83607
Inflation Rate of Pakistan	-7.371	10	.000	-12.032818	-15.67013	-8.39550

The p-value = 0.000 shows that the variables are highly significant.

Table-06: Results of co-efficient for the said model

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		b_0	Std. Error	b_1		
1	(Constant)	57.150	11.619		4.919	.003
	Inflation Rate of Pakistan	1.229	.675	.696	1.820	.119
	Annual exports of Pakistan	-1.139	1.839	-.583	-.619	.559
	Annual imports of Pakistan	.623	.843	.681	.739	.488

The values of b1 show that exchange rate affects inflation rate and annual imports positively while it affects annual exports negatively. An increase of 1 % in the exchange rate will cause an increase of almost 70% in the inflation rates of Pakistan and vice versa. Moreover, an increase of 1% in the exchange rate will cause an increase of 68% in the annual imports of Pakistan and vive versa. On the other hand, a 1% increase in the exchange rate will cause a decrease of almost 62% in the annual exports of Pakistan.

Table-07: Results of R and R^2

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	0.784	0.614	0.422	7.379343

The co-efficient of determination R2 = 0.614 shows that almost 61% of the variation in inflation rate annual exports and annual imports is due to the variation in the exchange rate between PAK Rupee and US dollar.

Table-08: Results through correlations

		Pak-USD Exchange Rate	Inflation Rate of Pakistan	Annual exports of Pakistan	Annual imports of Pakistan
Pearson Correlation	Pak-USD Exchange Rate	1.000	.760	.591	.631
	Inflation Rate of Pakistan	.760	1.000	.747	.733
	Annual exports of Pakistan	.591	.747	1.000	.961
	Annual imports of Pakistan	.631	.733	.961	1.000
Sig. (1-tailed)	Pak-USD Exchange Rate	.	.005	.036	.025
	Inflation Rate of Pakistan	.005	.	.007	.008
	Annual exports of Pakistan	.036	.007	.	.000
	Annual imports of Pakistan	.025	.008	.000	.
N	Pak-USD Exchange Rate	10	10	10	10
	Inflation Rate of Pakistan	10	10	10	10
	Annual exports of Pakistan	10	10	10	10
	Annual imports of Pakistan	10	10	10	10

Pearson correlation co-efficient shows that Pak-USD Exchange rate and inflation rate are highly correlated (0.760), Pak-USD Exchange rate, imports and exports and moderately co-related. Moreover the p-values (0.005, 0.036, 0.025) shows that the three variables are significant.

Conclusions and Recommendations

The present study aim to establish a relationship among the exchange rate volatility on the macro-economic variables, i.e., inflation rate, annual exports and imports of Pakistan, has been analyzed through the application of regression techniques. Based on the results, obtained from the analysis of given secondary data, the following conclusion are drawn:

The regression shows as the value of Pak-Rupee against the US dollar decreases, it has a positive impact on the exports of the country. This helps to temporarily boost up the exports of the country. While due to the decrease in the value of Pak-rupee, the imports become dearer and expensive for the country which adversely affects the balance of payment position of the country.

In the history of Pakistan, there is only one occasion when the rupee appreciated against US dollar, for the remaining years it is devalued or depreciated against the US Dollar. This caused a temporary boost up of the exports because on the other hand, the price

level in the country is increased which takes away the temporary benefits from the boost up of exports.

It may be realized thus, that for whatever reason the currency is devalued, it results in weakening of the economy as compared to the other countries. Moreover, foreign investors become more conscious for making any investment in the country.

Summarizing the above discussion, it can be said that depreciation or devaluation is not a long lasting approach to improve the economy. The findings suggest that the explanatory variables and dependant variables are highly correlated and thus it is recommended that the policy makers in Pakistan should consider both the existence and the degree of the exchange rate volatility and notice the likely impact of volatility on each macro-economic variable in implementation of the trade policies, so that higher volumes of trade and direct foreign investment may be attracted. Unless the government revises its economic planning and execution of plans, no amount of devaluation or depreciation will stabilize the external value of our currency.

Notes & References

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