

# Effects of Exchange Rate Variations on Imports and Exports: A Case Study of Pakistan

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## Abstract

*This study examines the impact of exchange rate fluctuation on Pakistan's exports and imports throughout 2000 to 2019. The current study uses a non-probabilistic approach for the sample selection. Descriptive statistics are used in order to assess the data based on mean, medium, and standard deviation; however, regression analysis is used to analyze the relationship between variables. The purpose of this study is to investigate whether trade flows are influenced by exchange rate volatility symmetrically or asymmetrically, as the exchange rate variations have shown an empathic impact on the economies of developing nations in the past years. The existing study investigates the effect of currency fluctuation in the context of Pakistan. It is generally recommended that policymakers in Pakistan consider the existence and degree of exchange rate volatility as well as the predicted impact of this volatility on specific macroeconomic variables when implementing trade strategies. This will allow for increased trade and foreign direct investment potential. The results of the study show that there is a substantial correlation between exports and exchange rates, with a *t*-statistics value of 2.01 for the independent variable of currency rates. We find that the exchange rate significantly affects the exports and imports of Pakistan. As the results show, currency fluctuation does affect the imports and exports, so automatically, the economic growth of the country is concerned. Inflation and interest rates are taken as control variables in the existing article.*

**Keywords:** Imports and Exports, Inflation in Pakistan, Interest Rate Volatility.

## Introduction

Arguably, the most contentious aspect of macroeconomic policy is the selection of the exchange rate regime (Calvo & Reinhart, 2002). Interest rates and exchange rate policies continue to be essential concerns in both international finance and developing nations (Obansa et al., 2013). Exchange rate fluctuations in emerging markets have increased significantly during the past 20 years, significantly impacting the economies of the affected countries. Empirical evidence suggests that aggregate shocks in the financial and real worlds also increase the volatility of exchange rates (Calvo & Reinhart, 2002). Adam (2002) posits that the primary causes of these shocks are:

- The worldwide decline in commodity prices.
- A decline in foreign loans.

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- An increase in the cost of borrowing external funds.

Financial systems now dominate the worldwide exchange market as a result of global economic trends. Foreign exchange rate policies affect the business community's investment decisions; they are among the most important macroeconomic indicators in open economies. Changes in exchange rates may theoretically have an impact on the exports of an economy. Hooper and Kohlhagen (1978) contend that if exchange rate uncertainty rises, it will have a negative effect on risk-averse traders in trading. Since trade volatility is based on people's risk aversion, and further reported in his analysis that exchange rate volatility can, therefore, have beneficial consequences on the export of goods and services. Using new technology and simplifying their organizational structures may be discouraged by high import duties, which could lower domestic producers' competitiveness in global markets.

As a result, imports constitute an essential part of a country's foreign trade. Pakistan's imports are more than its exports, resulting in a significant trade deficit. Exports, imports, and the trade deficit grew at different rates during the period from 2007 to 2008. 11.7%, 18.36%, and 69.56%, respectively (GOP, 2007-2008). Both increased import volumes and improved export movement were noted in 2011. According to the Federal Board of Statistics, imports rose from \$34.710 billion in 2010 to \$40.414 billion in 2011, a 16.43% rise. Alongside the decline in the value of the currency has been an increase in the importation of fuel and manufactured products. Because imports have such a big impact on the economy, a real effort must be made to look at how they are performing. Global trade and the economy have changed over time, making it more challenging for nations to handle the changing dynamics brought on by the increased level of exchange rate volatility and avert possible crises. The actual exchange rate affects many different economic issues, which makes it essential. The Pakistan Bureau of Statistics states that for the fiscal year 2016–17, imports into Pakistan were valued at \$52,910 million, while exports were valued at \$20,422 million. Similarly, the Pakistan Bureau of Statistics (2024) reports that, for the fiscal year 2023–2024, there was a trade deficit of \$ -3760173 total imports of \$8841967, and exports of \$5081794. These trade flows are significantly affected by the massive and expanding trade deficit as well as the volatile exchange rate. Furthermore, Pakistan's economy is adversely affected by the large fluctuations in currency rates that arise from its external debt.

Pakistan, a small open economy with a poor export base that is made up primarily of primary agricultural items and a high import dependency, needs to pay attention to the significance of these policies. Pakistan needs a monetary policy that works in the modern world today when the majority of central banks have moved from focusing on monetary aggregates to implementing specific policy rules. When there is a balance of payments issue, the IMF usually recommends devaluing the currency. When this happens, domestic goods become more affordable for outside consumers, which boosts exports from the nation. On the other hand, currency devaluation raises import costs, which causes a decrease in imports—consequently, the nation's balance of payments bridges. Pakistan is currently dealing with a significant imbalance in its payments. Pakistan needs funding to cover this gap, and the IMF suggested devaluing the currency as a solution. Pakistan's devaluation of its currency has traditionally been a successful tactic to boost exports and reduce imports. Thus, the purpose of this study is to investigate whether trade flows are influenced by exchange rate volatility symmetrically or asymmetrically.

## Literature Review

The issue of the possible impact of exchange rates on trade is intensively studied in the literature. Previous studies on the effects of exchange rate volatility on imports and exports have yielded

inconsistent results. Some studies, such as those conducted by McKenzie (1999) and Bahmani and Hegerty (2007), found no correlation, whereas other studies argued that there was a detrimental effect. Adeniran et al. (2014) examined the impact of exchange rate fluctuations on Nigerian economic growth. The effects of currency rates on economic development were examined in this inquiry between 1986 and 2013. Secondary data was used, which was obtained from the Nigerian State Banks' official country statistics on a wide range of subjects. From 1986 to 2013, the year in which the financial powers switched from the fixed exchange rate system to the adjustable exchange rate system, is recognized as this. The information was divided using correlations and regression analyses using ordinary least squares (O.L.S). The study's results, which showed that exchange rates had a positive but non-dangerous influence ( $\beta = 0.014$  and  $t = 1.783$ ), confirm earlier findings indicating producing nations have made moderate progress in selecting flexible exchange rate management strategies. Similar to this, the results showed that, although not significantly, conspiracy rates and rate of expansions have an adverse effect on economic growth ( $\beta = -0.002$ ,  $t = -0.015$ , and  $\beta = -0.023$ ,  $t = -0.716$ , respectively). Accordingly, the study suggested that management direct export development policies with an eye toward maintaining a surplus of exchanges while also providing full environments, sufficient security, feasible financial and monetary requirements, and other infrastructures that organizations need to provide in order to attract independent entrepreneurs to invest in Nigeria.

Exchange rate fluctuations and economic activity in developing countries were examined by Magda (2004) using both theory and empirical data. Using 22 manufacturing nations as an example, the current study examines the impact of exchange rates on price inflation and actual output growth. These studies uncover a theoretical goal that aims to establish that breaks down as exchange rates advance into both predicted and unexpected regions. The models show how supply and demand networks affect prices, as well as how output reactions affect exchange rates. In general, both anticipated and unanticipated depreciation of currency rates lowers real growth and raises inflationary prices. The support validates worries regarding the detrimental impact of currency depreciation on the financial results of developing nations.

Aftab et al. (2012) indicate that the currency rate risk has a negative impact on exports, and there has also been a long-term negative impact reported in the relationship between exports and foreign income. According to Chowdhury's (2012) findings, the key components of Australia's long-term exchange rates include government spending, terms of trade, interest rate differentials, and trade openness. This study adds to the literature by focusing on the macroeconomic factors influencing the exchange rates of rising Asian economies. Since liberalization, Asian economies have seen several alterations in their exchange rate measurement.

Using data collected from 83 different nations between the years 2000 and 1960, Aghion et al. (2006) examined the fluctuations in exchange rates and efficiency growth as they are related to financial improvements. They verified that fluctuations in exchange rates have a noteworthy impact on the effectiveness of advancements in the extended pull. In addition, influence is strongly influenced by the financial development levels of the nation. Exchange rate variations mostly have a negative impact on economic development in less developed countries, but they have little effect on advanced countries in terms of economic growth.

In order to improve the efficiency of the information, scholars proposed using information technology infrastructures to provide the general public with information on exchange rates. However, academic research relies on secondary data that might need to be more reliable because it was used to make other decisions, such as the undeniable external stakeholders that the enterprises perform very well.

Suleiman and Aamer (2007) examined the relationship between economic advancements and financial expansions in Egypt by using vector auto-regression techniques on a subset of data spanning from 1960 to 2001. The findings of their investigation indicated that Egypt's financial and economic expansions share a typical relationship. Shaheen (2013) investigated the exchange rate volatility and its impact on Pakistan's macroeconomic outcomes. Her study focused on how much and how volatile exchange rates are, as well as how they affect Pakistan's macroeconomic variables' results. It is contingent upon the exchange rate's ability to impact macroeconomic parameters directly and, in turn, the macroeconomic implementations. This study also determines the impact of the exchange rates (independent variables) between the US dollar and the Pakistani rupee on the following selected variables: inflation rates and the country's import and export levels. The annual observations from 2000 to 2010 are taken into consideration for the examinations, which are gathered from several potential sources.

There is a significant correlation found between the annual imports, the inflation rate, and the exchange rates. Once more, no significant correlation has been observed between the annual exports and the exchange rates. Overall, the results indicated that the divisional and rational factors are highly correlated. As a result, the organization's founders in Pakistan need to take into account the presence and degree of exchange rate variability as well as the practical effects of volatility on all full-scale financial variables when implementing exchange methodologies. This will enable a stable and straightforward external evaluation of our currency.

According to Aliyu (2011), exchange rate hikes result in more imports and lower exports, while depreciation might enhance the nation's exports while simultaneously lowering imports. Furthermore, a shift from overseas to domestic goods and services is likely to result from exchange rate deflation. As a result, it leads to changes in trade specifics that affect the revenues that importers and exporters receive from other nations, which are intended to affect the economic growth of both importers and exporters.

By using quarter data that spans the years 2003 to 2010 and the destined analysis techniques of Pesaran et al. (2001), Aftab et al. (2012) examined the effects of currency rate volatility on sectoral levels of exports in Pakistan. The results show that uncertainty has a detrimental impact on exports across all twenty export categories. Olayungbo (2011) conducted an additional study using panel data that examines the effects of inconsistent exchange rates on the trade flows of forty African countries using data gathered between 1986 and 2005. In addition to the G.M.M. approach, POLS (pooled least squares regression analysis) is used in gravity models and analysis. The results demonstrate how fluctuations in exchange rates have a favorable impact on trade flows. Byrne et al. (2008) employ sector-level data to examine the effects of exchange rate variations on two-sided US transactions and confirm that the volatility of exchange rates had an adverse impact on trade flows that were negative. They report higher coefficients for exports of notable products in particular.

Huchet and Korinek (2011) use autoregressive distributive lags models (ARDL) to investigate the effects of exchange rates on the imports and exports of two industries (the mining and agriculture sectors) of two countries, namely China and the United States. The results show that while levels have a more significant influence on trade streams between the two countries, instability has a minor impact on commerce. The data also show that, for entire industries and models, the effect of volatility on exports is more significant than that on imports.

Based on the above literature, this study hypothesizes that

- Changes in exchange rates have little effect on Pakistan's exports.
- Exchange rate swings have a significant impact on Pakistan's exports.

- Currency changes have no noticeable effect on imports from Pakistan.
- Currency changes have a considerable impact on Pakistan's imports.

## Research Methodology

According to Sekaran and Bougie (2013), research design is a technique that may be used to gather and assess the data required to identify a solution for the issues raised by the research study. In order to obtain a clear picture of the effects of currency fluctuations on economic variables, particularly economic growth, which includes Pakistan's exports and imports, the current study used a descriptive research design. For this reason, time series data is employed in the present investigation. In order to determine its impact on one of the chosen independent variables, this study uses four distinct variables, each of which consists of two dependent variables.

## Model

This study uses the following models:

$$\text{Import} = \alpha + \beta_1\text{ER} + \beta_2\text{INF} + \beta_3\text{INT} + \varepsilon \quad (1)$$

$$\text{Export} = \alpha + \beta_1\text{ER} + \beta_2\text{INF} + \beta_3\text{INT} + \varepsilon \quad (2)$$

Where, ER is exchange rate, INF is inflation rate and INT represents interest rate.

## Data and Analysis

The current study employed a non-probabilistic sampling technique; this approach was chosen because no random data selection was used in the research. The authors use the data from 2000 to 2019. The main sources of data are the States Bank of Pakistan and the World Bank.

While regression analysis is used to analyze the relationships between variables, means and standard deviations are used in descriptive statistics. Dickey Fullers test is used to determine the stationary and non-stationary of a subset of data. Results of the dickey fuller test are given as under in table 1.

**Table 1: ADF tests for stationarity of data**

Variable	At level	At first difference
EXC	3.55	-2.952*
EXP	2.69	-3.634*
IMP	2.23	-3.421*

\*EXC=Exchange Rate      \*EXP=Export      \*IMP=Import

## Results and Discussion

The outcomes of the regression model are presented in table 2. Exchange rates (EXC) is selected as the in-dependent variable, and import (IMP) is selected as the dependent variable. On the other hand, the study's control variables are inflation (INF) and interest rates (INTR). The t-statistics value of 2.76 for the exchange rates in the preceding table shows a significant association between the dependent variable Import (IMP) and the independent variable Exchange Rate. We can infer from the t-statistics value that there is not enough evidence to support the study's selected null hypotheses because it is larger than the standard value of 2. Consequently, the alternative hypothesis is accepted, allowing us to determine if imports and exchange rates have a meaningful relationship. The study's null hypotheses cannot be accepted since the p-test's significance value of 0.014 is less than 5% and the probability values will provide identical conclusions. The



coefficient of independent variable exchange rates of 1.28 suggests that there is a direct and/or positive link between imports and currency rates. It shows that a one unit change in exchange rates will result in 1.28 units of variation in the selected variable import, assuming all other variables remain constant. Moreover, the exchange rate in the current model explains sixty-four percent of the variations in the selected dependent variable, imports, according to the preceding table's R2 value of 64.12%. The 64.12 result shows that the model fits the selected variables effectively. Furthermore, the overall significance is calculated using the F-statistics value, which gave us information on the overall significance of the study's selected model. Using the standard rule of thumb, we can reject the null hypotheses, as indicated by the number in the above table

**Table 2: Regression results**

Variable	Coefficient of Model DV(Imports)	P> t	Coefficient of Model 2 DV(Export)	P> t
EX	2.76	0.014	2.01	0.022
INF	3.98	0.001	3.85	0.001
INT	2.61	0.019	2.27	0.037
Constant	-2.43	0.027	-1.46	0.163
Model 1 R- squared	0.6412			
Model 2 R -squared	0.5667			

The last column of table 2 presents the findings from the regression model 2. Exchange rates (EXC) are selected as the independent variable, and export (EXP) is chosen as the dependent variable. On the other hand, the study's control variables are inflation (INF) and interest rates (INTR).

Using the thumb guidelines, we can determine that there is not enough evidence to support the study's chosen null hypotheses because the t-statistics value is more significant than the standard value of 2. Consequently, the alternative hypothesis is accepted, allowing us to determine if exchange rates and exports have a meaningful relationship. Given that the p-test's significance value of 0.22 is less than 5% and the study's null hypotheses cannot be accepted, the probability values will produce identical findings. A positive and linear link between exports and exchange rates can be shown from the 4.44 coefficient of exchange rates, which is the independent variable in the existing variable. It indicates that 1-unit changes in exchange rates will translate into 4.4-unit fluctuations in the selected variable export when all other variables are held constant.

Moreover, the exchange rate in the current model explains 56% of the variations in the designated dependent variable export, according to the preceding table's R2 value of 56.67%. The value of 56.67 shows that the model fits the selected variables effectively. Furthermore, the study's selected model's overall significance is ascertained using the F-statistics value, which gives us insight into the models' respective significances. Using the standard rule of thumb, we can reject the null hypotheses, as indicated by the number in the above table.

## Conclusion

This study examines the impact of the exchange rate on Pakistan's exports and imports from 2000 to 2019. We use the regression analysis to analyze the relationships between variables. The purpose of this study is to investigate whether trade flows are influenced by exchange rate volatility symmetrically or asymmetrically. The results also show that there is a substantial correlation between exports and exchange rates, with a t-statistics value of 2.01 for the independent variable

of currency rates. We find that the exchange rate significantly affects the exports and imports of Pakistan. It is generally recommended that policymakers in Pakistan consider the existence and degree of exchange rate volatility as well as the predicted impact of this volatility on specific macroeconomic variables when implementing trade strategies. This will allow for increased trade and foreign direct investment potential. Pakistan's exports are primarily reliant on imports. Therefore, the government's best course of action for this objective is to locate new markets for its imports and exports. In particular, the trade agreements with the surrounding nations will reduce transportation costs and open up new export markets. Another significant reason that has contributed to the depreciation of the Pakistani rupee is the country's worsening trade balance. The government must also take action to reduce the trade deficit if it hopes to stabilize the rupee's exchange rate. The nation's governments can monitor appropriate monetary and fiscal policies during periods of positive and negative volatility in the foreign exchange markets, focusing on boosting domestic investment and productivity.

## References

- Adam, K., Jappelli, T., Menichini, A., Padula, M., & Pagano, M. (2002). Analyze, compare, and apply alternative indicators and monitoring methodologies to measure the evolution of capital market integration in the European Union. *Report to the European Commission, 2002*, 1-95.
- Adeniran, J. O., Yusuf, S. A., & Adeyemi, O. A. (2014). The impact of exchange rate fluctuation on the Nigerian economic growth: An empirical investigation. *International journal of Academic Research in Business and Social sciences*, 4(8), 224.
- Aftab, M., Abbas, Z., & Kayani, F. N. (2012). Impact of exchange rate volatility on sectoral exports of Pakistan: an ARDL investigation. *Journal of Chinese Economic and Foreign Trade Studies*.
- Aliyu, S. U. (2011). Oil price shocks and the macroeconomy of Nigeria: a nonlinear approach. *Journal for International Business and Entrepreneurship Development*, 5(3), 179-198.
- Bahmani-Oskooee, M., & Hegerty, S. W. (2007). Exchange rate volatility and trade flows: a review article. *Journal of Economic studies*.
- Byrne, J. P., Darby, J., & MacDonald, R. (2008). US trade and exchange rate volatility: A real sectoral bilateral analysis. *Journal of macroeconomics*, 30(1), 238-259.
- Calvo, G. A., & Reinhart, C. M. (2002). Fear of floating. *The Quarterly journal of economics*, 117(2), 379-408.
- Chowdhury, K. (2012). Modelling the dynamics, structural breaks and the determinants of the real exchange rate of Australia. *Journal of International Financial Markets, Institutions and Money*, 22(2), 343-358.
- Hooper, P., & Kohlhagen, S. W. (1978). The effect of exchange rate uncertainty on the prices and volume of international trade. *Journal of international Economics*, 8(4), 483-511.
- Huchet-Bourdon, M., & Korinek, J. (2011). To what extent do exchange rates and their volatility affect trade?.
- Kandil, M. (2004). Exchange rate fluctuations and economic activity in developing countries: Theory and evidence. *Journal of Economic Development*, 29, 85-108.
- McKenzie, M. D. (1999). The impact of exchange rate volatility on international trade flows. *Journal of economic Surveys*, 13(1), 71-106.

- Olayungbo, D., Yinusa, O., & Akinlo, A. (2011). Effects of exchange rate volatility on trade in some selected Sub-Saharan African countries. *Modern Economy*, 2(04), 538.
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analyses of level relationships. *Journal of Applied Econometrics*, 16, pp. 289-326.
- Sekaran, U. & Bougie, R. (2010). *Research Methods for Business*. United Kingdom. WILEY
- Shaheen, F. (2013). Fluctuations in exchange rate and its impact on macroeconomic performance of Pakistan. *The Dialogue*, 8(4), 410-418.
- Suleiman, A.B. & Aamer, A. (2007). Financial development and economic growth: The Egyptian experience. *Journal of Policy Modeling*, Article in Press.