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EFFECTS OF EXCHANGE RATE VARIATIONS ON ECONOMIC GROWTH: TIME SERIES EVIDENCE FROM PAKISTAN

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ABSTRACT

This study examines the relationship between key economic variables and currency fluctuations in Pakistan from 2000 to 2019, utilizing data from the Pakistan Bureau of Statistics, World Bank, and State Bank of Pakistan. Economic variables such as Gross Domestic Product (GDP), Pakistani exports and imports, and exchange rates are analyzed using the Augmented Dickey-Fuller (ADF) test for data stationarity. Results indicate non-stationarity at levels but stationarity at initial differences. Regression analysis reveals a significant correlation between imports and exchange rates (t-statistics = 2.76), but no significant correlation between GDP and exchange rates (t-statistics = 0.54). Lack of clear positive correlations suggests the need for further studies incorporating diverse variables. The study highlights the importance of exchange rate policies aligned with actual economic conditions over strategies focused solely on export competitiveness, which may have adverse effects on the economy.

INTRODUCTION

The majority of large economies use a floating exchange rate system, which naturally leads to currency swings. The best exchange rate strategy for developing nations has been a topic of continuous discussion. The rate at which one unit of one country's currency can be exchanged for one unit of another country's currency is known as the exchange rate. It establishes the strength of the external sector's involvement in international trade as well as the relative costs of domestic and foreign commodities (Adeniran et al., 2014).

The worldwide exchange systems have had many ups and downs in recent years, which has affected the economic structures of several countries. Different exchange schemes show how the exchange rate is determined in an economy. Over time, there have been significant fluctuations in the currency rate, especially after the breakdown of the Bretton Woods system, which had a fixed exchange rate (Ehsani et al., 2009). Furthermore, since World War II, one of the biggest issues facing developing countries has been the expansion of their economies. It has been determined that one of the major factors affecting economic growth is exchange rate volatility.

Today's national economies are influenced by global economic trends, labor, capital, and commodity and service movements across international borders, and currency conversion is usually required for commercial activities spanning various areas. In 1982, Pakistan employed variable exchange rate strategies. During the official period of exchange rate instability and stability, there were no issues in the interim. Pakistan's import pattern worldwide has not altered much over the past few decades, suggesting that stable exchange rates have led to an increase in imports. Nonetheless, variations in the exchange rate lead to variations in the export pattern. The hypothesis that there is no correlation at all between foreign commerce and exchange rate fluctuations is supported by a number of experimental research; nevertheless, Asseery & Peel (1991), Bailey et al. (1987), and Gotur (1985) found a positive correlation.

Many contend that the volatility of exchange rates in developing countries is one of the main factors

contributing to the instability of the global economy (Adeoye and Atanda, 2012). On the other hand, the authors further argue that shifts in the value of the currencies of big economic powers like the United States have a huge impact on how the global economy affects developing countries like Nigeria. In recent years, these fluctuations have been enormous, unpredictable, and occasionally divorced from underlying economic fundamentals. An economy's ability to remain stable is largely dependent on its export sector. Economic efficiency and prosperity, which primarily impact the GDP of developing and small countries, can lead to an increase in exports. Exports would be impacted by a currency rate decline, but since 1973, there has been a possibility that this pattern will emerge and persist in international trade across the industrialized world. Researchers and authorities were warned about the erratic and lively fluctuations in exchange rates in 1973, according to Cushman (1983), Hooper & Kohlhagen (1978), and Bailey et al. (1987). These studies emphasized how these shifts affected the volume of trade.

The main macroeconomic variables of the country's economic growth are impacted in different ways by fluctuations in exchange rates. Proper exchange rate decisions will bring the country's economy back to balance, confirming the claims of numerous economists that this is one of the elements of positive economic developments (Saqib, 2013).

A nation can finance its imports primarily through exports, foreign direct investments, international aid, and foreign loans. Imports have an impact on the trade balance and have the potential to reduce employment and displace domestic output. The government can raise more money by taxing imports. Additionally, it offers the researcher the chance to apply theoretical knowledge to a practical situation by employing rigorous and critical methodologies—discussed by Iqbal, Khalid & Rafiq (2011) and Bhattarai (2011).

Establishing the proper exchange rate policies that would allow their countries to fully benefit on their trade potential has proven to be difficult for developing and emerging economies. When analyzing the nature of the relationship between the import and export sectors and currency rates, this must be taken into account initially. It is critical to look into any potential effects that exchange rate volatility may have on these businesses, as well as whether currency rates have a long-term impact on imports and exports. Different factors related to a country's position in the global market affect the demand for its indigenous commodities. It is anticipated that it will send signals to the economy's economic agents, impacting savings and investment decisions. Policymakers can make sure that the actual exchange rate is not sending the wrong signals to economic actors by having information on how far it deviates from its equilibrium rate. Erroneous signals have the capacity to lower national well-being and result in an ineffective use of resources. The unpredictable swings in exchange rates between the time of the agreement and final payments enhance uncertainty for both importers and exporters (Bhattarai, 2011). The value of the Pakistani rupee has fluctuated greatly as a result of recent changes to the nation's financial and political policies. In addition, the trade balance, the budget deficit, and the state bank's inadequate foreign reserve holdings all contribute to the continuous devaluation of the Pakistani rupee.

This study aims to carry out an empirical analysis of the connection between Pakistani imports and fluctuations in exchange rates. Further, this study conducts an empirical study to determine how Pakistani exports and exchange rate volatility are related. Moreover, this study carries out an empirical analysis of the connection between variations in exchange rates and Pakistan's GDP.

Pakistan is a rising market, and import and export trends are changing as a result of its growing integration with trading partners, particularly China. Pakistan is facing severe problems with its trade balance and currency depreciation at the moment. The deficit is growing and driving Pakistan closer to debt, which has caused instability in the Pakistani rupee, especially recently.

To address such issues, one of two strategies might be used: increasing exports or improving imports. There is a significant correlation between imports, exports, and currencies. Therefore, the government must enact long-term policies and regulate exchange rate volatility in the short term in order to effectively manage trade flows.

Pakistan has one of the most fascinating exchange rate regimes and real devaluations among emerging nations. The persistent depreciation of the rupee and the unsatisfactory macroeconomic outcomes of the nation during the research period indicate that the State Bank of Pakistan (SBP) was utterly failed in

carrying out its monetary and exchange rate policies in an appropriate manner.

1. Literature Review

The linage between exchange rate and economic growth is considered an important issue in the literature of international trade Adam et al(2002) conducted a study on the effects of fluctuations in currency rates on economic growth, taking into account the degree of development of the foreign exchange markets in the chosen developing countries. Their study aims to determine how fluctuations in exchange rates affect economic growth by examining the pace at which money markets have improved in developing countries between 1986 and 2010. The impact of independent variables, such as exchange volumes, extensions, and past period creation, on economic growth has also been examined. As a result of the breaking down of boards evidence in eighteen nations, it has been determined that the effects of cash associated enhancement on economic growth and the variations in exchange rates on economic growth are both harmful and detrimental. On the other hand, while the overall impacts of changes in exchange rates and budgetary advances on economic growth are undeniable, their influence in the countries under inspection is less pronounced and not very noteworthy. Magda Kandil, Hakan Berent b, and N. Aftab et al(2012) looked into how fluctuations in currency rates affected Turkey's economic growth. The study looks at how changes in exchange rates affect real yields, principle levels, and real estimates of sections of whole interests in Turkey. Exchange rate expansions are divided into anticipated and unexpected parts by the empirical models. Unexpected currency fluctuations highlight overall interests through the nation's imports, exports, and interest for local money as well as overall stocks through the purchase of moderately priced imports and the producer statistics of relative concentration.

According to Adam et al(2002) one of the mysteries of global macroeconomics is the little effect that notable and substantial changes in exchange rates have on imports and exports. They concluded that there is a very tiny yet considerable impact of huge exchange rate policy movement in their study on international finance elements and growth in emerging countries. Changes in a nation's exchange rates can be used to determine changes in its exchange rate policy. Exchange rates and foreign products (imports and exports) are significantly disconnected. Nonetheless, as noted by Darva (2012) and Darvas & Jean (2010), major exporters frequently also happen to be major importers. It is anticipated that there will be a co-integrated relationship between exchange rates and exports-imports based on a variety of research that have found a good co-integration association between exchange rates and international commerce. Nonetheless, a number of studies—including Genc (2009)—indicate that exports and exchange rates are negatively correlated.

Morrison & Labonte (2013) go on to say that a foreign exporter may lower his local currency export price to stabilize the prices in the importing country if an importer's currency depreciates, increasing the cost of imports. That being said, this program is a long-term approach meant to preserve market share. Markup exchange rates, however, vary by industry and are dependent on the exporter's familiarity with the demand curve in a particular nation. De-Paoli (2009) shows that exporters typically encounter a very irregular and elastic demand curve, which is consistent with these conclusions and observations. It is obvious that exchange rate policy and imports-exports are related.

As a result, the literature by authors like De-Paoli (2009), Obstfeld (2009), Nicita, Shirotori & Klok (2013), Nicita, Ognivtsev & Shirotori (2013), and Morrison & Labonte (2013) has greatly influenced this research. In order to examine the effects of fluctuating foreign exchange rates on the financial results of Kenya's traditional banking system, Mutwiri (2013) oversaw a study. According to the research, Kenya's forex markets are ineffective in their weaker versions, which are linked to seasonal fluctuations in forex income and unpredictability. The groups that experience variations emerge from the random walks and are likely to persist in the markets, suggesting that new information in the markets be taken into account gradually rather than being instantly incorporated into exchange values. They also confirmed that improvements in finances, as a result of growing venture capital and rising assumption efficacy, drive financial developments in this nation. They recommended quickening the financial variations that started in Egypt in 1991 with the specific goal of encouraging assumption and investment resources and, as a result, long-term monetary developments.

Wanja (2013) oversaw an investigation to examine the relationship between currency hedging strategies and the financial statements of companies listed on the Nairobi Securities Exchange. Forex has a positive and significant impact on import charges and A/payables, which has a net effect on MNEs' net incomes. Researchers have found that there are significant proportion variations in imports and exports for organizations registered in the Nairobi stock exchanges. He encouraged the employment of the Forex risks management strategies, which clearly outline the procedures for valuing currency risks and the ways in which foreign exchange threats are managed. However, because of the possibility of responder misunderstanding of the questions, using questionnaires for data collecting has several drawbacks in scholarly research. The study's sample results could not accurately reflect how the entire population performed.

Yarmukhamedov (2007) indicates that there is no discernible relationship that anyone can make between exchange rate uncertainty and exchange rates. results of exploration that are dependent on certain presumptions and only accept under certain conditions. Primarily, the fluctuations in exchange rates have an impact on the movements of inspected imports and exports, which in turn leads to exceptional conclusions among the countries involved.

It is a widely held belief that an increase in the volatility of currency rates will likewise have a negative impact on exchange rates and, by extension, global economic conditions. Otherwise, neither theoretical approaches nor observational methods give us a complete picture, showing us with a confusing and conflicting situation (Baum and Caglayan, 2006). In three industries—vegetables or animal flabs, lubricants, and waxes; automobiles, airplanes, containers, and related transport apparatus; and, finally, weapons, ammunition, and tools—the coefficients of instability have negligible values; however, the coefficients' methods are proven to be unfavorable for all of those export sectors that were chosen. Therefore, the necessity for currency rate stability is focused on the rise in Pakistani exports.

Habib, Mileva, and Stracca (2016) claim that while real exchange rates are important for the growth of developing markets, they are much less important than for innovative economies. In a similar vein, Berg and Miao (2010) discover the benefits of money under valuations on growth, particularly in emerging nations.

According to Rodrik (2008), managing real exchange rates is crucial for economic growth. He also found that low money valuations stimulate economic growth in emerging nations by fostering a shift towards advanced efficiency and employment growth.

Presuming that the manufacturing sector operates at a highly advanced efficiency level, Eichengreen (2008) asserted that undervalued real exchange rates will also facilitate changes in the manufacturing sector by driving up the value of tradable goods, boosting output across the economy, and positively influencing growth.

Razin and Susan's (1997) analysis found that the only steady economic growths that may be linked to extremely high overvaluations. However, there seems to be a correlation between small to extremely large undervaluations and faster economic development. Basirat et al (2014)addressed the issue of deviations from the "Laws of the One Prices" in a number of works.

2. Research Methodology

2.1. Reseaerch Design

According to Sekaran and Bougie (2013), research design refers to a process for gathering and assessing the data necessary to determine a solution for the issues raised by the results of the research. According to Cooper and Schindler (2008), the targeted populations is the entire group of people groups or entities that the study investigates in order to draw its conclusions. Pakistan, a rising nation, holds the most significant position among Islamic nations, particularly those in the south Asian region. The current study is related to the economy of Pakistan and focuses on the fluctuations in the Pakistani currency and how they affect certain economic metrics like GDP and the nation's exports and imports.

2.2. Data

The researcher collected the most recent data available from Pakistan in order to take into account the variables of the current study. The current research utilized secondary data to deploy a series of data that spans the years 2000 through 2019. The data is collected from the Pakistan Bureau of Statistics. The purpose of this study was to ascertain the relationship between Pakistan's imports, exports, gross domestic product, and currency volatility.

After the data was gathered, it was tabulated for simple analysis and then classified, coded, and structured. The STATA statistical software was utilized in the present study. The time series data included in this study must be analyzed in order to determine whether unit roots exist in the data. Regression analysis and descriptive statistics were the two testing techniques used in this investigation.

2.3. Variables of the Study

2.3.1. Dependent Variable

- **Gross Domestic Product**

The total market value, or the values of all completed goods and/or services produced inside an economy of any country during a given period of time, is known as the gross domestic product. Produce from locals that is processed outside of the nation's borders is not counted against GDP. Economic growth is defined as the degree to which a nation's economy advances as shown by the consumer price index (CPI) or by spending patterns.

2.3.2. Independent Variable

- **Exchange Rate Fluctuation**

The foreign exchange rates have a pivotal role in dictating the economic movements of any given country. The financers' investment behavior is most affected by changes in currency. Exchange rates were used by Ibrahim and Aziz (2003) as an in-dependent variable in their research, and they found a substantial negative correlation between the equities and foreign exchanges market (forex).

$$rt = \ln (Er)_t - \ln (ER)_{t-1}$$

ER = Exchange Rate

INF = Inflation Rate
INT = Interest Rate
ε = Error Term

2.3.3. **Control Variable**

- **Interest Rate**

The interest rate is a significant factor affecting stock returns. Stock values decline when interest rates rise because investors are enticed to switch to bonds or savings accounts. Conversely, a decrease in interest rates motivates investors to allocate their funds into the stock market. This is used by Taulbee (2005) and Nicolas Moumni (2006).
Simple interest= (P×R×T/100)

- **Inflation Rate**

Inflation is one of the most important macroeconomic indicators. Liu and Shrestha (2008) conclude that there is a negative correlation between inflation and stock prices. During times of growing inflation, investors expect disrupted profit patterns of listed businesses, which results in a falling trend in stock returns. which is used by Hatemi J, Bahamani (2016), and Iran Doust (2002).
Inflation Rate =Current year price – base year price/ base year price×100

2.4. Model Specification

To examine the impact of exchange rate on economic growth, the model is given as:

$$GDP = \alpha + \beta_1 ER + \beta_2 INF + \beta_3 INT + \varepsilon \quad (1)$$

Were
α = Intercept of the model
β = Slop of Coefficient

3. Results and Discussion

This section presents the findings from the several approaches used in the current study. First, descriptive statistical techniques are applied to the acquired data. To ascertain whether the data are stationar, the ADF test is then run on the unit roots. Finally, STATA software is used to apply a regression model.
A time series data set is deemed non-stationary if variations are seen in both the means and variances over the course of the study period. The utilization of said data in the analysis may add ambiguity into the research. Thus, the stationarity of the data is tested using the improved Dickey-Fullers unit roots technique. The above table shows the examination outcomes. Every series is evaluated collectively for data at the level and initial differences. Although exchange rates are found to be steady in the early differences, the analysis's conclusions show that they are not at the level. This suggests that, theoretically, ER equals I (1). The gross domestic product, imports, and exports—the study's selected dependent variables—show that while none of them are stable

at the levels, they will all become stationary at the first disparities. Table 1 presents the results of ADF unit root test.

Table 1: Results of ADF Unit Root Test

Variable	At Level	At first Difference
GDP	3.55	-2.952**
EX	2.69	-3.634*
INF	2.23	-3.421*
INT	4.45	-3.634**

Note: *, ** and * show significant at 1%, 5% and 10% respectively.**

Table 2 displays the findings of the regression model that was employed in this investigation. The GDP is regarded as the dependent variable, while the exchange rates (EXC) are selected as the in-dependent variable. On the other hand, inflation (INF) and interest rates (INTR) serve as the study's control variables. The exchange rates in the previous table's t-statistics value of 0.597 suggests that there is no significant correlation between the dependent variable, GDP, and the independent variable, exchange rate. Using common sense, we can conclude that there is no meaningful association between the GDP and exchange rates because the t-statistics value is smaller than the normal value of 2. The significance score of 0.597 for the p-test indicates that the values of probability will yield findings that are equivalent to the 5%. Moreover, the exchange rate in the current model explains 30% of the variations in the dependent variable of choice, GDP, according to the preceding table's R2 value of 30%. The model does not sufficiently match the selected variables, as indicated by the 30% score.

Table 2: Regression Results (Dependent Variable: GDP)

Variable	Coefficient of Model 1
EX	0.036**
INF	-1.902***
INT	0.031**
Constant	2.043**

Note: *, ** and * show significant at 1%, 5% and 10% respectively.**

4. Conclusion

The current body of study tries to investigate the relationship between chosen economic variables and fluctuations in currency values. The analysis of economic variables included the variables of Gross Domestic Product, Pakistani exports and imports, and the exchange rate as an independent variable. From 2000 to 2019, information for this study was gathered from the Pakistan Bureau of Statistics, the World Bank, and the State Bank of Pakistan's website. For data stationarity, augmented Dickeys Fullers (ADF) approaches are used. A statistical summary is used to describe the chosen data, and a multivariate model is used to look for any kind of relationship between the exchange rate and the chosen economic factors. STATA software is used for analysis of the current study.

Initially, the ADF test is used to verify the data stationarity of the chosen variables. The chosen data does not exhibit stationarity at the levels, but it does exhibit stationarity at the initial differences, according to the results of the ADF tests. Nonetheless, the results of the regression analysis indicate that there is a considerable correlation between imports and exchange rates, as indicated by the t-statistics value of 2.76 for the independent variable, which is exchange rates.

The aforementioned findings also show that there is no significant correlation between GDP and exchange rates, as indicated by the independent variable's t-statistics value of 0.54. However, as the p-test result in this test is likewise bigger than the normal value of 5%, we can conclude that there are no clear or positive correlations between the exchange rates and economic growth.

More studies that incorporate a variety of variables are advised in order to highlight the phenomena in more detail and produce clearer images. The importance of the exchange rate in the foreign exchange model demonstrates that devaluations in accordance with export competitiveness strategies are not the best way to address the issue. because it has a detrimental effect on the economy as a whole. The government ought to update its policies, emphasizing the actual economy.

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