

The Exchange Rate and Its Impact on Pakistani Exports: An ARDL Approach

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Abstract

Export is the backbone of healthy economies and Pakistan is the emerging economies of the South Asian region. This study examines the impact of the exchange rate on Pakistani exports using time series data from the period 1980 to 2018. Secondary data are taken from the central bank (State Bank of Pakistan) and WDI (World Development Indicators). Unit root and Phillips Peron test were used to check the stationarity of the variables while the ARDL model was applied to verify the relations between variables. The findings of the study demonstrated that the exchange rate has negative and insignificant relations with Pakistani exports. Exchange rate appreciation hurts the trade balance of Pakistan. The policy implication based on our findings is that heavy fluctuations in the exchange rate have limited importance, The trade balance is always a deficit in Pakistan because our exports are the primary product due to this market price charges are low. It indicates that only the exchange rate is not a fruitful option to boost the trade balance.

Keywords: Exchange rate, ADF test, ARDL, Exports.

1. Introduction

The role of exports of any economy cannot be ignored in the process of economic growth or development and a key factor that signifying the strength of those economies. In South Asian countries, Pakistan is one of the emerging economies. So it is important to study the performance of Pakistani exports. Pakistani exports increased substantially during the period 1980-2004 which made a handsome contribution to the trade balance of Pakistan. Total exports of Pakistan in the year 1980 were 2.79 billion dollars, Pakistan's total exports in 1980 were 2.79 billion US dollars, which increased to 14.40 billion US dollars from 2004 to 2005. Exporting goods including 44% primary commodities, semi-manufactured commodities 11%, and manufactured commodities 45% (Economic Survey of Pakistan, 2013-14). Since it indicates that Pakistani exports have improved enormously and reached 25.35 billion US dollars in the year 2010 to 2011. Export composition change also overtime in the year 2013-14. The primary commodities share in exports were 16%, semi-manufactured commodities 14%, and manufactured commodities 70%. (Govt. of Pakistan, Ministry of Commerce National Tariff commission report, 2015).

Hasan & Khan (1994) found that currency devaluation improves the balance of payment but does not improve the balance of trade. If we see that there is no any country in the whole world which produced all commodities of its needs. All countries in the world are interdependent upon on its products. If one country Like Japan has rich in the latest technology and produced automobiles while the other country like Pakistan has rich in a labor-intensive commodity like cotton. So, both the countries exchange their products through international currency and then gain from international trade. In less developing countries mostly their exports are primary product so the values of their product in the international market is very low while their imports are normally final goods and their prices are very high. So, their exports are normally less than their imports then their trade is always in deficit.

Kemal (2005) did research work on exchange rate instability and trade; therefore they concluded that the impact of exchange rate on imports is negative & significant while exports are a positive but insignificant impact. According to Edwards (1987), that variation in the exchange rate in its impact on the welfare of the society has been reported negatively and also affected the investment choices, economic growth, and reduce the volume of international trade. Due to the appreciation of the exchange rate, a huge capital is shifted abroad due to low prices in a country

so, international trade is also adversely affected (Baldwin and Krugman, 1989). Gognon (1993) & Bayoumi (1996) find out that the exchange rate changes have a direct impact that is very small on trade. Lastraps (1989) concluded that volatility of exchange rate tend to reduce imports and expand exports of a country. Freund & Warnock (2007) noticed that the main reason behind the current account deficits is the unadjusted exchange rate. Hayseed and Rabani (2014) negative relationship found between the exchange rate & export of meat, petroleum products, grapes, and food processing equipment but steel bars and iron is adjusted in long run. Esquivel et al. (2002) evaluated that in less developing countries exchange rate volatility decreasing their exports and raising their imports.

According to the Economic Survey of Pakistan 2015-16, the major contribution in export is carpets, Bed wear and rugs 8%, Rice 8%, cotton & Knitwear 28% while the other products including fish, sports goods, vegetable, leather, and fruits, etc. The major exporting partners of Pakistan are US 15%, UAE 10%, Germany 2%, United Kingdom 3%, China 9%, and Afghanistan 9.5%. Rajkovic, M., (2019) concluded that those economies that use their currency and cannot adjust their deficit in trade through depreciation of currency during the economic crisis. The role of the exchange rate cannot be ignored in international trade. Its role is very important in international trade and also the exports of many countries are affected. In the initial stage rate of exchange and export have an inverse relationship but after the agreement of Breton Wood, it is decided by the central government that the floating exchange rate should be followed. The exports of Pakistan have faced very bad conditions in the year 1998 because of nuclear weapons tests & the majority of the world economies imposed trade restrictions on Pakistan. But all these restrictions come to end in the year 2000 and exports of Pakistan have increased. Doganlar (2002) studied that the impact of the exchange rate on selected Asian countries like Malaysia, South Korea, Turkey, Indonesia, and Pakistan. Their conclusion shows that a long-run association exists between exports, foreign activity, exchange rate volatility, and relative prices. The objective of the study is to explore the impact of the exchange rate on the exports of Pakistan & also to explore that exchange rate instability affects the trade balance of Pakistan.

2. Data and Methodology

To investigate the impact of exchange rate on Pakistani exports, for this purpose taken time-series data from the period 1980 to 2018. The variable used in this model is export (X), a real exchange rate (RER) & GDP. The variables real exchange rate and GDP are independent while exports are the dependent variable. The central bank (State Bank of Pakistan) and WDI (world development indicators) are the main data source from these sources data has been taken for analysis. Estimation runs through simple OLS method and also applied stationarity tests (PP and ADF) & also used Autoregressive Distributed Lag Model (ARDL) model.

Econometric model as follow:

$$Export(X) = a_0 + a_1(GDP) + a_2(EXR) + \epsilon_i$$

Taking the log of the data

$$LnExport(X) = a_0 + Lna_1(GDP) + Lna_2(EXR) + \epsilon_i$$

X variable denotes Pakistani exports

GDP denotes Gross domestic product

EXR denotes the Real exchange rate

3. Results and Discussions

Table-1 explains the stationarity of the variables through Phillip-Perron (PP) test and ADF (Augmented Dickey-Fuller) test. We found that variable export (X), Gross Domestic Product (GDP) shows stationarity at a level whereas exchange rate shows stationarity at the first difference in both Phillip-Peron (PP) and Augmented Dickey-Fuller test (ADF).

Table-1: Unit Root test analysis

Repressors	(PP test)		(ADF test)	
	Level	First Difference	Level	First Difference
Export (X)	-5.891*		-5.44*	
GDP	-3.214*		-5.89*	
EXR	-5.792*	-17.181*	-4.12	-4.754*

Source: E-views

After the checking of the stationarity of the variables under consideration, then we apply the ARDL model to check the relationship between variables. Table-2 explained the results of the ARDL model, and for the confirmation of the long-run relationship among the variables using this ARDL model. Generally, we have evaluated the F-statistics values of the lower bound and upper bound values, and based on these we have decided that the long-run relationship exists or not. Here the F-statistic values are smaller than lower and upper bound values, so it indicates that no long-run relationship exists among these variables.

Table-2: Autoregressive Distributed Lag Model

F-statistic	90% level of confidence		95% level of confidence	
	Lover bound	Upper bound	Lover bound	Upper bound
2.235	3.271	4.851	3.092	4.583

Source: E-views

For the short run analysis using ECM model, the value of the Error Correction model should be negative and its range between 0 and 1 for the analysis of the short-run relationship. Table-3 indicates the results of the ECM value are negative and its range is between 0 and 1. So the evidence shows that there is a short-run relationship between variables are exist.

Table-3: ECM (Error Correction Model)

Error Correction model (-1)	-0.691
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Table-4 demonstrates the regression result of the model where the exchange rate shows a negative and statistically insignificant relationship with exports, while the gross domestic product has a significant & positive relationship with the exports of Pakistan. The same results were also reported in the literature of Medhora, (1990) and Arize, 2003.

Table-4: Statistical Results of the Regression Analysis

Repressors	Coefficients	Standard error	Probability
GDP	0.0864	0.0513	2.82[0.08]
EXR	-0.91600	146200	-0.741 [0.52]
R-square	0.341	Adj. R-square	0.213
DW statistic	2.12	F-statistic	2.791[0.027]

Source: E-views

4. Conclusion and Policy Implications

In the South Asian Region, Pakistan is one of the emerging economies, it is very important to analyze the performance of the export. Pakistan's exports increased substantially in the period 1980 to 2004 made a huge contribution to the balance of payment. Pakistan's exports are based on few items namely, cotton, textile, rice, chemicals, leather, sports goods, and Pharma products. In the recent research, the study objective is to investigate the impact of the exchange rate on exports of Pakistan. Past studies supported that the exchange rate effect on Pakistani exports is positive while others argue that its effects are negatively reported on Pakistani exports. The conclusion of the entire study explores the positive and significant impact of GDP on exports of Pakistan while insignificant and negative effects of changes in the exchange rate on exports of Pakistan. The policy implication based on our findings is that heavy variation in the exchange rate has limited importance and the policy implication based on Pakistan's perspective, the exports of Pakistan are less than the imports due to this trade is a deficit. It indicates that only the exchange rate is not a fruitful option to boost the trade balance

References

- Ahmed, A., Ahmed, N., & Ali (2013). Exchange rate & Economic growth in Pakistan (1975-2011). *Journal of Basic and Applied Scientific Research*, 3 (B): 740-746.
- Arize, A. C., Malindretos, J., and Kasibhatla, K. M. (2003). Does Exchange-Rate Volatility Depress Export. *IAER*, 9(1), 30-40.
- Arize, A. C. (1996) The Effect of Exchange Rate Uncertainty on Export Growth Evidence from Korean Data. *International Economic Journal* 10:3, 49–60.
- Ahmad, K., et al., (2017). Impact of exchange rate on exports in case of Pakistan. *Bulletin of Business and Economics*, 6(2): 98-102.
- Esquivel.G., (2002), the impact of Ca -3 exchange rate volatility on developing countries. United Nations conference on trade and development, No.16, G-24 Discussion paper series, Center for International Development Harvard University (2002).
- Economic Survey of Pakistan, 2013-14.
- Economic Survey of Pakistan, 2015-16.
- Mujahid. N, & Zaib.A., (2014). Impact of devaluation on GDP of Pakistan. *International Journal of Economics Empirical Research*. 2(8), 345-349.
- Razi.A., Shafiq.A ., Ali.S and Khan.Huda (2012). Determinants of exchange rate and its impact on Pakistani economy. *Global Journal of Management and business research*. Vol. 12(16).

Khan.I., Ali H., Baz.K., Zhang. Q., Khan.A and Huo. X (2020). The impact of agriculture trade and exchange rate on the economic growth of Pakistan (An NARDL & asymmetric analysis approach. *Cienc.Rued*, Vol. so (4).

Khan and Sajjid.M., (2005). The exchange rates and monetary dynamics in Pakistan: An Autoregressive Distributed Lag (ARDL) approach. *The Journal of Economics*, 10(2): 87-99.S

Javed and Farooq (2009). Economic growth and exchange rate volatility in the case of Pakistan. *Pakistan Journal of life and social sciences*, 7 (2); 112-118.

Naveed.A (2011). Is devaluation contractionary? Empirical evidence for Pakistan. Munich Personal Repec Archive MPRA paper 32520.

Dognalar.M (2002).Estimating the impact of exchange rate volatility on exports: Evidence from Asian countries. *Journal of Applied Economics*: 859-863

Haseeb, M., and Ghulam R. (2014). Exchange rate instability and Sectorial exports: Evidence from Pakistan. *A Research Journal of Commerce, Economics and Social sciences*, 8(1); 26-40.

Baldwin, R., and P. Krugman (1989). Persistent Trade Effects of Large Exchange Rate Shocks. *Quarterly Journal of Economics* 104:4, 635–654.

Bayoumi, T. (1996). International Trade and Real Exchange Rates. Exchange Rate Movements and Their Impact on Trade and Investment in APEC Region. (IMF Occasional Paper 145.)

Edwards, S. (1987). Real Exchange Rate Variability: An Empirical Analysis of the Developing Countries Case. *International Economic Journal* 1:1, 91– 106.

Gagnon, J. E. (1993). Exchange Rate Variability and the Level of International Trade. *Journal of International Economics* 34, 269–87.

Freund, C., & Warnock, F. (2007). Current account deficits in industrial countries: The bigger they are, the harder they fall? In R. Clarida (Ed.), *G7 current account imbalances sustainability and adjustment* (pp. 69–204). Chicago, IL: University of Chicago Press. [[Crossref](#)], [[Google Scholar](#)]

Kemal, M., (2005). Exchange rate instability and trade: the case of Pakistan. Research report No. 186, PIDE Pakistan.

Rajkovic, M., Bjelic, P., & Verbic, M., (2019). The impact of the exchange rate on the foreign trade imbalance during the economic crisis in the new EU member states and the Western Balkan countries. *Economic Research-Ekonomska Istrazivanja*, 33(1).

Cushman, D. O. (1983) The Effects of Real Exchange Rate Risk on International Trade. *Journal of International Economics* 15, 45–65.

Persson, T. and L. E. O. Svensson (1989) Exchange-rate Variability and Asset-Trade. *Journal of Monetary Economics* 23, 485–509.

Rogoff, K. (1998) Perspectives on Exchange Rate Volatility. In Martin Feldstein (ed.) *International Capital Flows*. Chicago: University of Chicago Press.

Kenen, P. B., and D. Rodrik (1986) Measuring and Analysing the Effects of Short-term Volatility in Real Exchange Rates. *Review of Economics and Statistics* 68, 311–15.

Ahmad S., Ali M., Hussain I. U. (2021). The Exchange Rate and Its Impact on Pakistani Exports: An ARDL Approach, *Journal of Management, Economics, and Industrial Organization*, 5(3), 62-69. <http://doi.org/10.31039/jomeino.2021.5.3.5>

Hasan, M., & Khan, A., (1994). Impact of devaluation on Pakistan's external trade: An econometric approach. *The Pakistan Development Review*, 33(4): 1205-1215.

Medhora, R. (1990). The Effect of Exchange Rate Variability on Trade: The Case of the West African Monetary Union's Imports. *World Development*, 18, 313-324.