

The Dynamic Behavior of Exchange Rate and Balance of Payment: An Empirical Study for Pakistan

Zaheer Abbas¹ and Aroosa Nasir²

Abstract

The exchange rate is an essential macroeconomic variable that gives investors the best way to beat a balance between their business activities. The exchange rate implies the price of the domestic currency in terms of the foreign currency. In this regard, current study analyzed the impacts of exchange rate on BOP from the duration of 1991 to 2010. Increase in the ratio of exports and decrease the ratio of imports. Invent the import substitutes in home country rather than importing from other country. ARDL includes the lagged values of dependent variable and current and lagged values of independent variable. ARDL model is used when dependent variable is non stationary. Our dependent variable that is Balance of Payment is non stationary because that rejects the null hypothesis. Our null hypothesis is “BOP affects the Exchange Rate”. It means BOP has no effect on exchange rate. R Square value supports our theory that is 99%. F Statistics value is also significant.

1. Introduction

The exchange rate is an essential macroeconomic variable that gives investors the best way to beat a balance between their business activities (Odili, 2007). The exchange rate implies the price of the domestic currency in terms of the foreign currency. On the other hand, the balance of payment is an economic situation of a country in international trade (Beatrice, 2001). A relationship between exchange rate and balance of payment exists as a result since there cannot be international trade if a country's currency is not priced in another country to allow trade across borders. But Nations in the detection of microeconomic goals of strong external balances as reflected in their balance of payment positions find it essential to pronounce an exchange rate policy (Oladipupo and Onotaniyohuwo, 2011).

The “Exchange rate between two currencies is the rate at which one currency will be exchanged for another.” Exchange rates have an important role in the profits of international management. The fluctuations in the exchange rate also influenced the worth of overseas investments apprehended by individual investors. If the Pakistan exchange rate is 100 rupees to 1 \$, afterwards it gets 100 rupees to buy a dollar or a dollar's cost of goods and services. From the other point of view, a dollar buys 100 Rupees used to pay for Pakistani goods and services. A nation is more disposed to have a shortfall in its accessible description the prominent it's cost level, the higher its GNP the superiority's interest rate, the easier its boundaries to trade in, and the more tempting its assumptions opportunity all contrast and conditions in different nations and the higher its exchange rate. The impact of these factors can be changed the current account balance and it cannot be predicted without presuming the impact on the other casual elements. If the regime increases duties, the public will purchase fewer imports, then reduce the current account deficit. Yet this will happen just if one of the opposite factors changes to gain a reduction in the capital account surplus. If no changes in these factors, the pointed imports from the duty increment will cause a decrease in the demand for abroad currency, which explain the worth of the dollar. The worth of the dollar will make export more expensive and imports cheaper, offsetting the impact of duty augmentation (G.M and Smith, 2011).

“Balance of Payment it records and summarizes international financial transactions for a particular period. It first and foremost encircles of three accounts: current account, capital account and reserve account. It also tells us how many goods and services the country has been

¹ Assistant Professor of Economics, GIFT Business School, Gujranwala

² MPhil Economics Scholar, GIFT University Gujranwala.

exporting and importing and whether the country has been borrowing from or lending money to the rest of the world. Balance of payment keeps the complete record of a country's trade, net foreign asset, imports and exports of goods, financial transfer, and financial capital. The balance of payments is one of the most important statistical statements for any country. The balance of payments was anticipated to measure a nation's ability to reach its declaration to exchange its currency for other currency or for gold at fixed exchange rates." A country supported a load of Federal Reserve as gold on other currencies forms that they could use to help their currency. A decrease in the stock resulted in a significant balance of payment shortage because it diluted the capability of the country to reach its responsibility (Akpansung, 2013).

2. Literature Review

Much research has been conducted on the relationship between exchange rate and balance of payment. Despite the many empirical studies, on the subject shows the uncertain impact of exchange rate on the balance of payment.

Yoon (2009) explain different behaviour patterns of real exchange rate depending on the exchange rate regime in place. This study shows that the real exchange rate series perform as a stationary process during the fixed exchange rate regime. The study recognized the fact that more stationary periods were found during a gold standard and the Bretton Woods periods than during the flexible exchange rate periods.

Chen (2003) described an increase in price rigidity in the outcome of the uncertainty caused by exchange rate volatility (i.e. firms become unwilling to change their prices due to the possibility of later version to exchange rate). From this study, instability will account for much of the inability of purchasing power parity (PPP) in other country analyses. During this decrease the speed of mean adjustment towards PPP. This study determines that there is a positive significant coefficient of exchange rate volatility.

Dutta and Ahmed (2006), applying Co going to Russian integration and error correction model approaches to analyze the behaviour of Indian aggregated import demand in the period of 1971-1995. The results indicated that the volume of imports is Co-integrated with the relative import price and real GDP. The productivity of the import demand in India is described by the real GDP and is normally less sensitive to import price changes.

Oladipupo and Onotaniyohuwo (2011), Explored the effect of the exchange rate on the Nigerian external sector by using the ordinary least square (OLS) method for getting better result in the period of 1970 to 2008. The results covered that the exchange rate has an impact on the balance of payment.

Imoisi (2012), Analyzed the situation of the balance of payments in Nigeria during the period of 1970-2010 by using econometric analysis. In this study multiple regression analysis using the ordinary least square method for both linear and nonlinear form. The researcher emerged the variables with the correct sign but the relationship between the balance of payments and inflation rate was not significant. On the other hand, the relationship between the balance of payments, exchange rate and the interest rate were significant.

Rasaq (2013), Investigated the influence of exchange rate volatility in macroeconomic variables. The researcher used a correlation matrix, ordinary least square (OLS) and Granger causality test. The results should that exchange rate volatility has a positive impact on gross domestic product, foreign direct investment and trade openness, but it has a negative influence on the inflationary rate in the country.

Umoru and Odjegba (2013), examined the relationship between exchange rate misalignment and balance of payment maladjustment in Nigeria. The researcher used the sample period of 1973- 2012, applied tests are the vector error correction econometric modelling technique and Granger causality. The study disclosed the exchange rate misalignment has a positive impact

on Nigeria's balance of payments position. The Granger causality test showed unidirectional causality from exchange rate misalignment to balance of payments adjustment in Nigeria at the 1% level.

Ahmed (1992) described the stability in export is identified in external trade marketplace in a position where the external change of demand and supply is compared. Currency demand arrives at grid trade where the supply of money attains from grid external investment. Demand and supply of currency impact their worth the same on a well-known industry but order for currency improved its worth export will be improved. The supply of currency will decrease its worth of exchange rate in the external exchange marketplace.

Liew et al (2013), Organize a study in five different countries to examine the relationship between exchange rate and trade balance. the result of this study shows nominal exchange rate is not affecting the trade balance but real money influencing the trade balance. The role of the exchange rate is determining the trade balance is exaggerated.

Duasa (2007), Examines the relationship between the trade balances. RERS, income and money supply for the economy of Malaysia. The researcher used the ARDL co-integration approach. But getting the results of monetary and absorption approaches to the balance of payment, he integrates income and money variables with the conventional elasticity approach. The relationship between exchange rate and trade balance is insignificant but money supply causes a negative impact on the trade balance which is reliable with the monetary approach. On the other hand, domestic income shows a positive impact on the trade balance that is reliable with the absorption approach.

Research Gap

The aim of this research is to find out whether exchange rates have an impact on the balance of payment or not. If we would find out that the exchange rate has a significant impact on the balance of payment researcher must investigate that how it would happen the role of exchange rate and balance of payment in long run. This study is limited to some extent due to the researcher's attempts, or great effort. It includes the time period ranging from 1991 to 2010. Consequently, this study investigates the role of exchange rate and balance of payment in the long run of Pakistan.

Objectives of the study

The general objective of this study is to examine the exchange rate on the balance of payment of a country with specific reference to Pakistan. The specific objectives are:

The general objective of this examination is to inspect the collision of exchange rate on the balance of payment of a country with particular reference to Pakistan. The specific objectives are to:

- To investigate the reasons, those effects the exchange rate.
- To analyze the impact of export on BOP.
- To investigate the effect of the dynamic behavior of exchange rate and balance of payment in long run.
- To find out the conduct of improving Pakistan balance of payment positions.

Research Questions

- Is there a significant impact of export on BOP?
- How do exchange rates impact the balance of payment in Pakistan?
- How can we maintain the exchange rate?

Hypothesis

The hypothesis is basically a cautious proposition that is subject to proof through subsequent investigation. On different occasions, the researcher tries to detect the relationship between the scale in items and subject. It therefore can be stated that hypothesis is an assertion of relationships between and its variables and give support to the researcher of how natural

instinct might be tested. The following are some of the hypotheses that will be tested in our research.

H1: There is a significant relationship between the balance of payment and the exchange rate.

H2: Exchange rate affects the Balance of Payment.

Variables

There are two main variables in our research i.e., exchange rate balance of payment in which exchange rate is independent variable and balance of payment is a dependent variable.

Exchange rate

Exchange rate is a rate at which home currency will be converted in to foreign currency and the value that we use is known as exchange rate. (Odili, 2007).

Balance of payment

“Balance of Payment basically records and summarizes global financial transactions for a particular period. The balance of payment on the other hand is the country’s situation in global trade. The balance of payment on the other hand is a country’s situation in international trade (Beatrice, 2001).

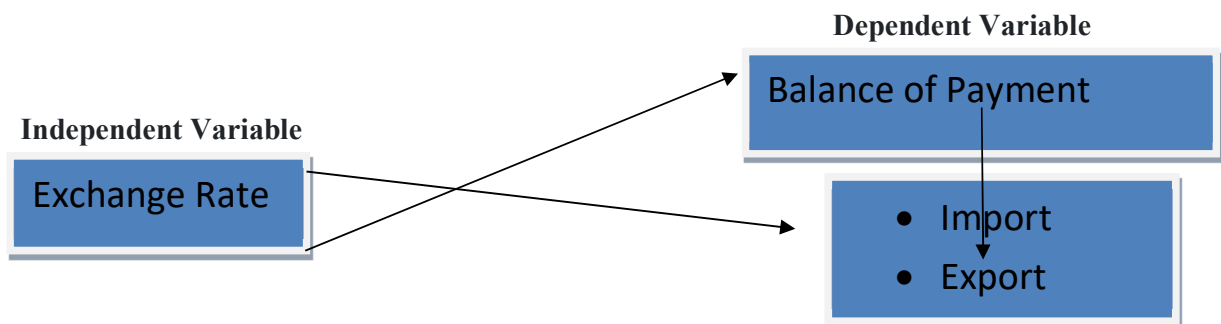
Imports

Goods that come into the home country are known as imports. Import of a country basically depends upon the home production ability. If the local producers are not competent to produce sufficient goods to assure home country demand, as a result, the imports increases are necessary to fill this lack. Absorption of imports on capital products and high volume of imports are some of the main causes for the current account deficit. Odjegba (2013)

Exports

Basically, the exports of products play a very important role in the economic development of Pakistan and are considered one of the considerable sources of foreign exchange income. Exports not only straightforwardness the pressure on the balance of payment but also construct employment opportunities. The graph of employment goes up. Exports can increase intra industry trade; help the country to incorporate in the international market and diminish the impact of external shocks on the domestic economy. An increase in the volume of exports always supports the current account balance. However, this increase must be greater than the volume of imports. If the volume of exports and imports both increases with the same proportion then this increase will not be favourable and not support the current account balance. Vaicious (2003).

Framework



The primary purpose of this research is to analyze the long-term relationship between the exchange rate and the balance of payment in Pakistan. In this study, yearly time series data set has been taken for the period of 1991 to 2010. State bank of Pakistan and World development indicator are the sources of data. Exchange rate and Balance of payment are the variables on which the data that has been used in this paper is based.

Data Collection

Data from the secondary source has been used in this study. Secondary data is the one, that has already been used and worked on by some person or organization. Data from the official website of the State bank of Pakistan has been taken for this research. It is comprised of 20 years ranging from 1991 to 2010.

Data Analysis

When data is collected and finalized, it normally involves the analysis of the selected data. An econometric technique has been used for the study to analyze the ARDL analysis as an analytical technique for parameter estimation. For the calculation of the result, Eviews software has been used.

Model Estimation Technique

Unit root tests can be used to determine if trending data should be first difference or regressed on deterministic functions of time to render the data stationary. Moreover, economic and finance theory often suggests the existence of long-run equilibrium relationships among non-stationary time series variables.

Unit root test

The relationship between the balance of payment and exchange rate is long run and importantly depends on the exports and imports and also show their co-integration and stationary properties of time series data. This study employed two-unit root tests the first one is the ADF test apply and the 2nd one is the stationary test by Kwiatkowski. The augmented Dickey-Fuller (ADF) test tells the stationarity of the null hypothesis accepted or rather rejected.

Unit Root Test

Null hypothesis: BOP has a unit root

Exogenous: Constant

		t-statistic	Prob.*
The augmented dickey fuller test statistic		3.905127	1.0000
Total critical values	1%level	-3.857386	
	5% level	-3.040391	
	10%level	-2.660551	

The unit roots and the stationary test shows the significance at levels 10, 5 and 1 per cent level of significance respectively. **Source:** this results compliance from E-views 11.

Augmented Dickey-Fuller test equation

Dependent variable: D(BOP)

Method: least square

Variable	Coefficient	Std. error	t-statistic	Prob.
BOP(-1)	0.232885	0.059	3.905	0.0014
D(BOP(-1))	-0.847910	0.256	-3.310	0.0048
C	-3.07E+08	1.00E+09	-0.306	0.7636

Null Hypothesis: BOP is stationary

		LM-STAT.
Kwiatkowski-Phillips-Schmidt-shin test statistic		0.576583
Asymptotic critical values*:	1%level	0.739000
	2%level	0.463000
	10%level	0.347000

KPSS test Equation:

Variable	coefficient	Std.error	t-statistics	Prob.
C	1.74E+10	2.49E+09	6.987903	0.00006.987903
Durbin-Watson stat	0.093487			

Further ARDL model analyzed the data to support the study in long run estimations.

Method: ARDL

Variable	Coefficient	Std.error	t-statistic	Prob.*
Bop(-1)	-0.080913	0.178782	-0.452577	0.6605
BOP(-2)	1.729824	0.195592	8.844062	0.0000
ER	7692534	89494327	0.085956	0.9332
ER (-1)	-6.12E+08	1.27E+08	-4.799388	0.0007
ER (-2)	179E+08	1.55E+08	1.153204	0.2756
ER (-3)	2.45E+08	1.15E+08	2.135040	0.0585
C	5-46E+09	1.28E+09	4.271079	0.0016

Interpretation and Results

ARDL stands for Autoregressive Distribution Lag model which is used for non-stationary time series data and different order of integration. ARDL includes the lagged values of dependent variable and current and lagged values of independent variable. ARDL model is used when dependent variable is non stationary. Our dependent variable that is Balance of Payment is non stationary because that rejects the null hypothesis. Our null hypothesis is “BOP affects the Exchange Rate”. It means BOP has no effect on exchange rate. R Square value supports our theory that is 99%. F Statistics value is significant.

Recommendations:

The study analyzed the impacts of exchange rate on BOP from the duration of 1991 to 2010. It is advised to focus on the Balance of Payment. Increase the ratio of exports and decrease the ratio of imports. Invent the import substitutes in home country rather than importing from other country. Export goods should be greater and those things which help us to earn the higher exchange rate. To decrease the extreme Balance of Payment deficit, the use of imported goods should be highly discouraged and the promotion of domestic exports should always be encouraged. This can only happen if the economies of both countries follow the above recommendations. Promote diversified and entrepreneurial development opportunities and provide subsidies to entrepreneurs for the production of import substitute and export goods. Improve the sustainable economic growth for the stability of exchange rate and Balance of Payment.

References

- Akpansung, A.O. (2013), „A Review of Empirical Literature on Balance of Payment as a Monetary Phenomenon“. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 4(2): 124-132.
- Ardalan, K. (2003), „The Monetary Approach to Balance of Payments. A Review of the Seminal on Short-Run Empirical; Research, Proceedings of the Academy of Economics and Economic Education, 6(2): 9-24.
- Beatrice, K.M. (2001), „Long-Run and Short-Run Determinants of the Real Exchange Rate in Zambia“, Working Papers No. 40.
- Boyd, D., Caporal, G.M. and Smith, R. (2001), „Real Exchange Rate Effects on the Balance of Trade: Co-integration and the Marshall-Lerner condition: *International Journal of finance and Economics*, 6:187-200.
- Caves, R.E. and Jones, R.W. (1981), „World Trade and Payments“: An Introduction, Canada. Litter Brown and Company Inc, pp 112.
- Central Bank of Nigeria (2005), <http://www.cenbank.org/intops/fxmarket.asp>„The Foreign exchange Market in Nigeria“.
- Chen, S.S. (2003), Revisiting the Interest Rate-Exchange Rate Nexus: A Markov Switching Approach, *International Finance* 0303002, econ WPA Revised.
- Duasa, J. (2005), „The Malaysian Balance of Payments: Keynesian Approach Versus Monetary approach“, up 20550. 1075841570.
- Dutta, D. and Ahmed, M. (2006), „An Aggregate Import Demand Function for India: A Co-integration Analysis“. School of Economics and Political Science, University of Sydney NSW 2006 Australia.
- Engel, R.F. and Granger, C.W. (1987), “co-integration and Error Correction: Representation, estimation, and testing”, *Econometrical* Vol. 50, 987-276.
- HO, W.S. (2004), „Estimating Macao’s Import demand functions“ Monetary Authority of Macao.
- Imoisi, A.I. (2012),“ Trends in Nigeria’s Balance of Payments: An Empirical Analysis from 1970-2010“, *European Journal of Business and Management*, Vol. 4, No. 21; 210-217.
- Johansen, S. and Jesulius, K. (1990), „Maximum Likelihood Estimation and Inference on Co-integration: With Application to the Demand for Money“. *Oxford Bulletin of Economics and Statistics* 52, 169-210.
- Johnson, H.G. (1976), „The Monetary Approach to Balance of Payments Theory“, *Journal of Finance and Quantitative Analysis*, Vol. 2, No. 3, Pp. 129-143.
- Kwiatkowski, D., Phillips, P.C.B., Schmidt, P. and Shin, Y. (1992), „Testing the Null of Stationarity against the Alternative of a Unit Root“, How Sure are we that Economic Time Series have a Unit Root? *Journal of Economics*, 54, 159-178.
- Lerner, A.P. (1944), „Economics of Control: Principles of Welfare Economics“. The Macmillian Company. N.Y.
- Levacic, R., and Rebmann, A. (1982), „Macroeconomics; London, Macmillian Publishers Ltd, Pp. 89-100.
- Oladipupo and Onotaniyohuwo, (2011). Exchange rate an balance of payment.A case study of Bangladesh.
- Odjegba (2013), *International Monetary and exchange rate*, New Work: Jarper Collins Publishers.
- Ndiomu, A.M. (1993), „Applied Economics in Banking and Finance for Nigeria students, Port Harcourt; Pan Unique publishers, Pp.77-79.

- Odili, O. (2007), „Exchange Rate Dynamics and Macroeconomic Instability in emerging Market Economics: The Nigerian experience (1980-2003). Unpublished M.Sc. (International Economics and Finance) Thesis, Rivers state university of Science and Technology, Port Harcourt, Nigeria.
- Akpansung, A.O. (2013), „A Review of Empirical Literature on Balance of Payment as a Monetary Phenomenon“. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)* 4(2): 124-132.
- Pesaran, M.H. and Shin, Y. (1995), „An Autoregressive distributed Lag Modeling Approach to Co-integration Analysis. DAE working Paper, No. 9514.
- Rasaq, A.D. (2013), „The Impact of Exchange Rate Volatility on the Macro- Economic Variables in Nigeria. *European Scientific Journal*, Vol. 9, No. 7, 152-165.
- Rose, A.K. (1990), „Exchange Rates and Trade Balance“. *Some Evidence from Developing Countries*“, *Economic letters*, 34, 271-275.
- Salasevicius, R. and Vaicius, P. (2003), „exchange rate Relationship: Testing the Marshall-Lerner Condition in the Baltic States. SSE Riga Working Papers 2003: 13(48). Stockholm School of Economics in Riga.
- Umoru, D. and Eboime, M.I. (2013), „The J-curve Hypothesis and the Nigerian Oil Sector“, *The ARDL Bounds Testing*.
- Approach. *European Scientific Journal London, United kingdom* Vol. 9, No 4: 314-332.
- Umoru, D. and Odegba, O.P (2013), exchange Rate Misalignment and Balance of Payment Adjustment in Nigeria. *European Scientific Journal*, Vol. 9, No. 13, 260-273.
- Vega, C.A. (2011), *Open economy Macroeconomics in Developing Countries*.
- Yoon, G. (2009), „Are Real Exchange Rates more likely to be Stationary during the Fixed Nominal Exchange Rate Regime? “*Applied Economic Letters*, Vol., 16, Pp. 17-22.