ANALYSIS OF EXCHANGE RATE EFFECT ON TRADE BALANCE IN PAKISTAN

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Abstract
Exchange rate is becoming one the major issues in trade balance of Pakistan. This study has studied the liaison between trade and exchange rate, income variables for 1990-2016. The Empirical investigation I applied Auto regression (AR) Model used in order to find the correlation between trade balance and other selected variables, this results suggest that trade is significantly positive related to rate of exchange, and inversely related to income during the selected sample period. The negative sign with income showing the relationship between the determinants is negative or inverse with Trade balance. On the other hand positive sign with exchange rate showing direct relationship with Trade balance.
Keywords: Trade Balance, Exchange rate, Income, Auto Regression Model

INTRODUCTION

Devaluation means correcting a trade deficit and balance of payments deficit. It increases the domestic price of imports and lowers the foreign export price. According to Bahmani and Alse (1995) study suggests against of the system of devaluation. According to Hyder and Mehboob (2006), the government and policymakers are trying different currency rates in Pakistan. In the 1980s, $real\ effective\ exchange\ rates\ (REER)$ increased mainly due to the US dollar's estimates of major currencies and higher domestic inflation. According to Zaiby (2009), Pakistan's imports are higher than the trade deficit. After 2006, the country is facing a constant depreciation in the rupee against the dollar. Rashid and Asif (2010) examine the impact of devaluation on the trade balance in Pakistan. The study uses the $Auto\ Regressive\ Distributed\ Lag\ model\ (ARDL)$. The estimated period is from (1981-2008). The study results that devaluation improves the trade balance. It is recommended to increase the trade balance. The result also shows that the devaluation in trade and equilibrium is effective.

According to Halicioglu and Ferda (2008) finding the long term connection between effective real exchange rates and trade balance. According to Bicudo and Azu (2018) the effect of real bilateral exchange rate on china-Nigeria bilateral trade between countries and the volatility and third country bilateral exchange rate. The effects are determined on export and imports are separately in short and long run. The Nigeria imports from china are negatively to real bilateral exchange rate increase due to volatility and her exports to china are positively in bilateral exchange rate mostly in short run. The japan is integrated as third country in Nigeria market. The third country play negatively role in China-Nigeria trade.

In this study the problem is the Pakistan Economy has been facing the big problem of trade deficit since from 1947. In Pakistan there is also political instability, corruption, money lend ring Which is the main problem of Pakistan due to which money id devalue after 1982 the country is undergoing a constant devaluation in the rupee contrary to dollar (Zaiby, 2009)

Research Questions

- What's the impact of real exchange rate on trade balance?
- Is there any positive or negative impact of income (GDP) on trade balance?

Objectives of the study

Trade has big effect on country economy. The countries are developed in the result of better trade balance so data are collected from WDI in the order of analysis the exchange rate effect on trade balance in Pakistan. Thus, this study aim to investigate for the impact of real exchange rate on trade balance in Pakistan. Most of the researchers and the economists have been worked on exchange rate effect on trade but due to the different time period and the different study area, the results are not the same. The present work is important because it studding the factors that are responsible in Pakistan for exchange rate effect on trade for the year 1990-2016.

This study uses such pattern as follow. Section 1 discusses introduction of the study. Section 2 contains literature review. Data and Variables are discussed in section 3 tests of the data; results and conclusion are discussed in sections 4, and 5 respectively

LITERATURE REVIEW

Literatures in General

The study of Siddiqui and Akhtar (1999) examines the influence of changes in exchange rates on prices. This study uses the stationary co-integrating vector model for the estimated time period (1972-1998). The impact of changes in foreign and monetary terms. The study didn't detect any momentous un-directional or bi-directional causal liaison between changes in the rates of exchange and domestic prices. I try to find the money supply and level of activity that affect the domestic prices. This suggestion argues that the major determinants of domestic prices are not available. In order to accept or refute this argument, I need to disaggregate. Choudhri and Khan (2002) this study examine the Exchange rate and Consumer price in Pakistan. The studies use the simple Vector Auto-regression (VAR) for the estimated time period (1982-2001).

Shafiq and Razi (2012) examine the determinants of rate of exchange and its influence on Pakistan's economy. This study uses multiple regressions for the estimated time period (2001-2011). The study results show that that the exchange rate and factor of economics of country have robust association. Khan and Ali (2016) found inverse coefficient of effective exchange rate suggest the absence of J-curve in case of Pakistan. Masih and Pervez (2018) examine the relationship between the exchange rate and trade balance in China. This study uses the J-curve and Marshall-Lerner condition. The full-sample data tests are examine the $TB\ and\ REER$ causal rapport but the $TB\ and\ REER$ having no long run relationship. The time-varying rolling window methods to examine the dynamic fundamental relationship which show the REER have both negative and positive impact on trade. The china has faced structural changes and economics transition in the exchange rate policy. Bicudo and Azu (2018) examine the special effects of bilateral real rate of exchange on Sino-Nigeria. This study uses $ARDL$ model. This is conduct on the real bilateral exchange rate on china-Nigeria bilateral trade, taking the volatility and third country bilateral exchange rate. The effects are determined on export and imports are separately in short and long run. The Nigeria imports from china are negatively to real bilateral exchange rate increase due to volatility and her exports to china are positively in bilateral exchange rate mostly

in short run. The japan is integrated as third country in Nigeria market. The third country play negatively role in China-Nigeria trade.

METHODOLOGY

The following chapter consists of empirical model and methodology, data and data source.

Data Sources

The data sources are time series data are used for time period of 1990 to 2016 to finding the effect of rate of exchange on $trade\ balance$ in Pakistan. All the variables data is collected from $World\ Development\ Indicators$ (WDI). (2018).

Variables of study

In this study I am using three variables for finding the exchange rate effect on trade balance in Pakistan. In this study in hand, trade balance is used as the response variable, while the explanatory variables are exchange rate, income (GDP).
The constructive form of the model is as:

Tb= f (REER, GDP).

Econometric Model

In this study I use such model which is given below as

$$y = \alpha + \beta x1 + \beta 2x2 + \epsilon t \quad \ldots\ldots\ldots \qquad (1)$$

Where y = trade balance, X1 = exchange rate, X2 = gross domestic products,
α β = parameters, εt = Error term

RESULTS AND DISCUSSION

In this section I include Descriptive statistics, Tables and interpretation of the tables. In this section I conduct the $Augmented\ Dickey\ Fuller$ (ADF) test to find the stationary of the variables through unit root test. In most of time series data, the common assumption is stationary. In case of no stationary in the time series data, t-distribution result will be not valid. Therefore, to check whether the data has unit root or stationary I used ADF test for current study for the stationary of data. In this chapter I also run the model such Auto Regression and also interpretation of tables of the model.

Unit root test

$A\ unit\ root\ test\ is\ defined\ that\ if\ a\ time\ series\ variable\ is\ non - stationary\ then\ I\ possesses\ a\ unit\ root\ test.\ It\ is\ also\ called\ a\ unit\ root\ process\ or\ differences\ stationary\ process.\ If\ a\ time\ series\ has\ a\ unit\ root,\ it\ shows\ a\ systematic\ pattern\ that\ is\ unpredictable.$

Testing for Stationary

In most of time series data, the common assumption is stationary. In case of no stationary in the time series data, t-distribution result will be not valid. Therefore, to check whether the data has unit root or stationary I used ADF test for current study for the stationary of data.

The table 4.1 represents the result of regression model used for analysis.

R-Squared: in the given table I can also see the value of R-squared which is (0.74) meaning that 74% are X-variables have been explain during the study or estimated, the R-squared of the study is gone be greater than 60% meaning that I can accept the model and I happy about that because if the R-squared less than 60% than I reject the model but in this case R-squared more than 60% which is green signal so I accept the model.

P-value: The P-value is also less than (0.05%) which is (0.0000) meaning that I cannot reject the model rather I accept the model.

Durbin Watson Stat: the AR model the table also show that the Durbin Watson are more than (2) meaning that we accept the model because I know that if the Durbin Watson value are close more than (2) I accept the model rather less than (2) than I reject the model.

The co-efficient value and T- value show the relationship between income and REER with Trade balance. According to results REER has positive impact on trade while the income impact is negative as show in the sign.

As Durbin Watson stat value is 0.71 which shows that there is no auto correlation problem. Overall significant of model can be tested by T-statistics and its probability value.

Table 4.1 Result Auto Regression

Variable	*Coefficient*	*Std. Error*	*t − Statistic*	*Prob.*
C	-2.13E+10	9.26E+09	2.296175	0.0307
REER	1.60E+08	88197315	1.813659	0.0823
INCOME	-1.236633	0.147168	-8.402857	0.0000
Adj.R^2	0.725191			
S.E. of regression	4.08E+09			
F-statistic	35.30553			
Durbin-Watson stat	0.716498			

Table 4.2 Variables Test of Descriptive Statistics

1		Trade	Exchange rate	income
2	Mean	-9.28E+09	105.9502	4.01E+09
3	Median	-5.10E+09	104.4697	2.16E+09
4	Maximum	-4.08E+08	122.8127	1.71E+10
5	minimum	-2.48E+10	93.48988	-9.36E+08
6	Std. Dev.	7.77E+09	9.295286	5.57E+09
7	Skewness	-0.55247	0.21369	1.223493
8	Kutosis	1.820391	1.739528	3.128842
9	Jarque-Bera	2.938937	1.992875	6.75488
10	Probability	0.230048	0.369192	0.034135
11	Sum	-2.51E+11	2860.656	1.08E+11
12	Sum Sq. Dev.	1.57E+21	2246.461	8.07E+20

13	Observations	27	27	27

In the Table 4.1 where the value of R-squared is 74% which is mean the X-variable are explain in this study which is value is greater than 60% due to which I accept the model. The P-value if this is (0.05%) or greater than it I will be reject the model but this is 0.0000 here in such case I accept the model. The Durbin Watson value "2" or more than it I will reject the model but here in the table our result value is 0.71 which is mean I accept the model. According to the result the negative sign with income showing the relationship between the determinants is negative or inverse with Trade balance. Which mean there is negative relation between Trade balance and income (GDP). There is negative impact of Trade on GDP of the country in case of Pakistan. The positive sign with real effective exchange rate which showing the green signal for as which is meaning there is positive relation between rate of exchange and balance of trade of the country. The rate of exchange and balance of trade have direct relation each other. Results of the present study are in line with the results of Siddiqui and Akhtar (1999), Rashid and Asif (2010), Haseeb et al (2014), Prabhakar et al. (2015), Irwan et al. (2015), Sani et al. (2016), Khan et al. (2016), Khan and Ali (2016), Yien et al. (2017), Shah et al. (2016), Muhammad & Khan (2017), Masih and Pervez (2018) and Bicudo and Azu (2018).

CONCLUSION AND RECOMMENDATION

The purpose of the present study was to know about the impact of rate of exchange on balance of for Pakistan during1990 to 2016, and data are collected from different sources including WDI. Additionally, the test of stationarity of variables is conduct and performed $unit\ root\ test$. The trade balance, exchange rate is stationary on 1^{st} difference and income is stationary on 2^{nd} difference. The Trade Balance is taking as dependent variable and independent are Exchange rate, income (GDP). According to the result the negative sign with income showing the relationship between the determinants is negative or inverse with Trade balance. On the other hand positive sign with exchange rate showing direct relationship with Trade balance. Pakistan growth rate is not satisfactory due to factors like political instability, terrorism, energy crisis, security situation and unsuitable policies. Our imports are mostly machinery, medicines, petrol and exports are agriculture product due to balance of payments miss unfavorable.

Policy of Recommendation

On the basis of above findings it is recommended by the researcher that in order to control the trade balance and exchange rate of Pakistan. To improve economic growth of the country, support the private sector and remove instability from country.

It is recommended for the people who are making policies for the country to keep in mind that inter relationship of all these variable as they can bring trade balance in Pakistan. On the basis of result of the study it is recommended to have a combination of fiscal and monetary policy that brings improvement in the trade as well.

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