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ANALYZING THE FACTORS AFFECTING THE TRADE BALANCE: EMPIRICAL STUDY OF PAKISTAN'S ECONOMY

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ABSTRACT

By analyzing Pakistan's Balance of payment from 1980 to 2019, the study aims to analyze the effect of various factors exchange rate, trade barriers and money supply on balance of trade. The empirical analysis investigated the SR and LR effect. A statistically significant LR relationship between the study variables is verified by the results except for foreign trade policy. The study found that in Pakistan, both monetarist and absorption approaches have insignificant foundation. Furthermore, the ER is insignificant in the short run at level and lag, while all other variables are statistically significant in SR. Thus, results provide significant information in reaching the desired conclusion. Based on findings this study suggests that the State bank is needed to play its role in fixing the balance of the trade problem by using money supply as a policy tool. Moreover, the authorities should focus upon the income rather than ER policy as a tool for correcting the Balance of the Payment.

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INTRODUCTION

Pakistan is regarded as one of developing countries in South Asia. The country faces significant trade gap yearly because of negative net exports, trade deficit. Since 1982 currency of Pakistan is following managed floating exchange rate (ER), and country's financial structure has been based on a floating rate from 2000 to date. However, front-of-debate question persists about whether the depreciation of a currency leads to a viable trade balance? Thus, the present paper has multiple objectives. Firstly, paper examines competing international economics theories in the case of Pakistan's economy. Secondly, the paper aims to explore the underline forces in the case of Pakistan's balance of payment (BOP) and an effort to identify potential policy measures. International economics theories explain the BOP by offering several approaches. The baseline theory observes the currency's real depreciation and the resulting effects on a country's current

account balance (Robinson, 1937). According to literature Marshal Learner's condition postulates that effects of county's currency depreciation are conditional. Alexander (1959) by considering country's national income introduced another approach to study how real depreciation affects current account. Similarly, Polak (1957) suggested a monetary approach and chalked up the BOP as monetary phenomenon. He mentioned importance of supply of money and demand for money.

The empirical significance of the monetarist approach and absorption approach is investigated by researcher both in short run (SR) and long run (LR). The key driver for achieving external balance and economic growth is sustainable trade growth. The ER can best assess a country's trading position and international competitiveness. According to ER theory, an appreciation in the ER will cause the price of imported goods to fall while the price of the exported goods rises. This will result in a reduction in a demand for country's exported goods in the foreign market. In the present era of fast-tracked progress of the world economy and the growing international trade, the effect of ER fluctuation arises as a significant concern for policymakers. Investors can have good opportunities to earn better yields because of the ER fluctuations, which in turn strengthen the foreign exchange toward the domestic currency, significantly impacting country import and export prices. An unstable ER is a favorable situation for risk-taker investors, so the variation in the ER positively affects exports while inversely affect imports for the risk-takers and vice versa (Roy & Gupta, 2013). In words of Michael and Emeka (2017) it is not easy to conclude how the ER affects balance of the trade because these effects are mixed. In order to control the ER fluctuation, policymakers, as well as exporters, need to analyze the ER pattern carefully.

According to Yeo and Deng, (2019) it well recommended for the developing nations to have a deeper understanding of the relation between import, exports and ER. However, International trade of Pakistan has not been studied much by the previous researchers to analyze the effect of amendments in the ER (Akbostanci, 2004). The new global condition requires detail in depth analysis of various factors affecting the foreign trade balance of a country. Being a developing country Pakistan normally faces annual trade gap. Since 2000, the country follows floating rate financial structure, but whether depreciation of a currency can be a useful tool in maintaining the trade balances. All analyses aimed to show how ER fluctuations affect the trade balance. All previous trade balance analyses have included the money supply, international revenue, and domestic production. ERs, trade policy, and demand affect a country's trade balance, but not as much. Much of the previous literature, including Ali et al. (2022) analyzed export and import data for Pakistan's bilateral trade with top 10 strategic partners. Ishtiaq et al. (2016), and Bano et al. (2014), used various statistical methodologies to find relationship between variations in ER, export, and imports in the long run concerning Pakistan and arrived at different outcomes. But the direction of the relationship between BOT and ER is not exactly identified by the earlier studies.

The econometric models used by previous studies overlooked certain variables like supply of money, domestic income and foreign trade policy while analyzing the LR and SR relationship using ARDL model. Additionally, impacts of ER fluctuations on international trade have been studied using accurate nominal ERs. Because ER management and choice of ER policies are linked to the country's intentions to regulate trade flows; thus, real or nominal ER cannot be regarded as a suitable measure in this context. By keeping in view, the above-discussed points, the current study contributes to the literature by considering foreign trade policy (TR), supply

of money (MS), and domestic income (GDP) as independent variables in model. In the present era of fast-tracked progress of world economy and the growing international trade, the effect of ER fluctuation arises as a significant concern for policymakers. This attempt would contribute to the practical importance and legitimacy of the monetarist and absorption approach and help bridge unexplainable differences that remain over exchange model. Rest of paper is organized in the following manners, second part narrates the reviews of previous literature, in third part methodology used in study is described and in final section results discussion and conclusion are given by the authors. At the end recommendations are suggested on the basis of results and conclusions.

LITERATURE REVIEW

The conceptual background provides three main approaches for studying association between the ER and the BOP. These are the Marshall-Lerner theory, the monetary approach, and the absorption approach. Alfred Marshall and Abba Lerner originated the Marshall-Learner theory in early 20th century and were the first to observe the linkage between ER and trade balance of a country. This theory postulates that trade balances will improve because of the devaluation of the real ER. The rationale behind this lies in the changes in the relative price of imports and export. As devaluation makes the exported goods cheaper while imported goods are expensive, the export volume will increase, causing the trade balance to improve. However, improvement in the current account depends upon the import and export price elasticity. The BOP will be in surplus when the sum of import and export price elasticity is greater than one. Alfred Marshall, 1842-1924. In contrast, the J-curve hypothesis argues that improvement in the trade balances cannot be achieved immediately, and that devaluation initially deteriorates the trade balances in the SR and improves in the LR. Thus, the rationale behind this phenomenon is that price effect dominates the volume effect in the SR but the situation is opposite for the LR (Domac, 1993).

The monetary approach postulates that BOP is monetary phenomenon. This approach considers the amount of money demanded and amount of money in circulation to explain BOP position. An excess amount of money in circulation will result in money outflow to the rest of the world and worsen the BOP accounts (Matlasedi, 2016). The new global condition requires detail in depth analysis of various factors affecting foreign trade balance of a country. The absorption approach examines the effect of depreciation in the ER on expenditure. The rationale behind this approach lies in the idea that improvement in current account resulting from depreciation is only possible if production of goods and services is greater than the absorption (Bahmani, 2001). All analyses aimed to show how ER fluctuations affect the trade balance. All previous trade balance analyses have included the money supply, international revenue, and domestic production. ER can best assess country trading position and international competitiveness. The above approaches follow different assumptions and methodologies for BOP analysis. These approaches have been empirically investigated in various countries and regions; however, one or two approaches have always prevailed. Consequently, empirical literature fails to regard any one approach as dominant approach and suitable for specific country or region (Bošnjak et al., 2018).

Several researchers have studied the association between ER and trade balance. Recent studies in this area include (Meniago & Eita, 2017; Bekeru, 2017; Bussière et al., 2020; Dzanan & Masih, 2017; Bari et al., 2017, Genemo, 2017). Most studies support the LR relationship between ER

and TB. Along with these results, few studies attempted to investigate the J-curve hypothesis but failed. Nevertheless, most of the studies for the multiple economies around the world have verified a positive association between ER depreciation and trade balance (Cardoso & Duarte, 2017; Michael & Emeka, 2017; Tunaer, 2016; Begović & Kreso, 2017). In contrast, the negative relationship is also reported by (Bakhromov & Head, 2011), (Petrović & Gligorić, 2010), (Clark et al., 2004) and (Broda & Romalis, 2011). These studies suggest that economies with unstable exchange rates face slow international trade mechanisms, loss of the investors' trust, and low capital flows, resulting in a significant slowdown in the trade process. While (Kemal, 2005) and (Bristy, 2013) found that the ER to be insignificant in affecting trade balance for Pakistan and Bangladesh, respectively. In the words of Meniago and Hinaunye (2017), ER fluctuation plays a significant role in trade balance and import export, but the response in Sub-Saharan Africa is deficient.

Kovačević (2017) analyzed the factors effecting the current account balance and their impact by using panel data for nine Southeast European (SEE) countries. Findings revealed a persistent current account deficit resulting from ER appreciation. However, impact of net FDI is found to be positive. A significant association between trade deficit, credit expansion and asset price are reported by Ozgur and Memis (2017) for eleven Eurozone – countries, while findings are found insignificant for trade surplus countries. For economy of Pakistan, the relationship between ER and BOT has been studied by (Hassan et al., 2017; Rehman & Afzal, 2003; Khan et al., 2014; Sana, 2012; Khan et al., 2016; Mahmood et al., 2011; Aftab and Khan, 2008; Shaheen, 2013; Ali et al, 2022). Most of these studies found a significant LR association among the variables. The previous literature shows that various econometric techniques and variables have been used to study the relationship between ER and TB. However, REER has not been used to analyze the effect of the ER as it is the most appropriate measure relative to the nominal or real exchange rate. In addition, bivariate analysis is commonly applied by most studies, while multivariate analysis is adopted by fewer. Considering these points, it is a dire need to investigate whether the Marshal Learner condition is valid under nose of the monetarist and absorption approach. This study applies suitable econometric methodologies for long term data to fill the literature gap.

Hypothesis

H01: The REER has no significant effect on the trade balance & **H1**: The REER has significant influence on the trade balance

H02: Economic Performance has no significant effect on Trade Balance & **H2**: The Economic Performance has significant effect on Trade Balance.

H03: Supply of money has no significant effect on Trade Balance & **H3**: The Supply of money has significant effect on Trade Balance.

H04: Trade Barriers has no significant effect on Trade Balance & **H4**: The Trade Barriers has significant effect on Trade Balance.

RESEARCH METHODOLOGY

The current study aims to conduct an empirical analysis exploring the validity of the marshal learner condition focusing on Pakistan trade balance. Moreover, researcher examines Pakistan current account balance in the light of the monetarist and absorption approach. The current study utilized yearly data for time span of 40 years, i.e., from 1981 to 2020. Study includes GDP, real effective exchange rate index, tariff, and money supply as determinants of Trade balance for

Pakistan. The sources of data include: Handbook of Pakistan economy, international financial statistics (IFS), Pakistan economic survey, SBP database as well as the World development indicators.

Table 1
Description of Variables

Variable	Description	Literature support
Trade Balance	Dependent variable. Measured in US$	(Fasanya & Olayem, 2018)
Real Effective Exchange Rate	Independent variable. Measure index relative to b-period	(Muhammad, 2010)
Real Gross Domestic Product	Independent variable. Measured in constant US$ (2010)	(Alawin & Maghareez, 2013)
Money supply.	M2 as a proxy for money supply	(Duasa, 2007)
Trade policy	Average tariff rate.	(Olper & Raimondi, 2006)

The structural methodology of the study outlines various econometric techniques applied for analysis. At first ADF and PP tests (Dickey & Fuller, 1979), (Phillips & Perron, 1998) are applied for unit root and stationarity. Results of unit root test allow for ARDL model for investigation of the LR and SR co-integration. The study also conducted various diagnostic tests including the Breusch-Pagan Godfrey Heteroscedasticity test for testing heteroscedasticity, Jarque-Bera Normality Test for testing normality, for testing serial correlation The Breusch-Godfrey Serial Correlation LM Test is applied as well as CUSUM and CUSUM of square test for the dynamic stability. The LR relationship between variables is analyzed by using bound testing approach of ARDL model. This approach is most appropriate for small sample size and the most reliable approach compared to Johansen and Juselius's co-integration approach for investigating the long-run relationship given small sample size (Kakar & Khalil, 2011); and (Boutabba, 2014). The Pesaran-Shin model (Pesaran & Shin, 1999; Pesaran et al., 2001) is used to achieve the objectives:

$$\boldsymbol{ln(T.B)_t = \alpha_1 + \alpha_2 ln(RER)_t + \alpha_3 ln(GDP)_t + \alpha_4 ln(MS)_t + \alpha_5 ln(TR)_t + \epsilon_t} \quad \dots (1)$$

This model is more beneficial than the conventional co-integration method (Engle & Granger, 1987, Narayan, 2005). ARDL model is capable of estimating both SR as well as LR coefficients. This model is statistically efficient if integrated at level or combination of first-order and level (Meo et al., 2018) and (Ibrahim, 2015). Literature assumed that the presence of second-order integration of variable ARDL is inappropriate (Ilyas et al., 2010). Given equation reserves the parametric form of ARDL:

$$\begin{aligned}\Delta \boldsymbol{T.B_t} = \quad & \boldsymbol{\alpha_1} + \sum_{h=1}^{n} \boldsymbol{\alpha_i \Delta T.B_{t-h}} + \sum_{h=1}^{n} \boldsymbol{\alpha_i \Delta RER_{t-h}} + \sum_{h=1}^{n} \boldsymbol{\alpha_i \Delta GDP_{t-h}} + \sum_{h=1}^{n} \boldsymbol{\alpha_i \Delta MS_{t-h}} \\ & + \sum_{h=1}^{n} \boldsymbol{\alpha_i \Delta TR_{t-h}} + \boldsymbol{\beta_1 T.B_{t-1}} + \boldsymbol{\beta_2 RER_{t-1}} + \boldsymbol{\beta_3 GDP_{t-1}} + \boldsymbol{\beta_4 MS_{t-1}} \\ & + \boldsymbol{\beta_5 TR_{t-1} + \beta_6 ERCM + \varepsilon_t} \quad \dots\dots\dots (2)\end{aligned}$$

Above equation 2 provides short run coefficients i.e. α the slpoe of the function and the long run coefficients β by applying error correction mechanism, while drift term is represented α_0

and white-noise byε_t. To approximate the SR dynamics of the variables the ECM equation can be given as

$$\Delta T.B_t = \alpha_0 + \sum_{i=0}^{n} \alpha_j \Delta T.B_{th} + \sum_{i=0}^{n} \alpha_j \Delta RER_{t-h} + \sum_{i=0}^{n} \alpha_j \Delta GDP_{t-h} + \sum_{i=0}^{n} \alpha_j \Delta MS_{t-h} + \sum_{i=0}^{n} \alpha_j TR_{t-h} + \theta ERCM_{t-1} + \varepsilon_t \quad \dots (3)$$

Where
θ = Adjustment speed of dependent variable toward equilibrium. ERCM = residual obtained from equation (2).

RESULTS AND DISCUSSION

Unit root problem is a common feature of most of time series. Analyzing two non-stationary series using OLS produces spurious regression (Gujarati, 2022). Therefore, Table 2 shows that stationary of variables were checked by ADF and PP tests. ADF tests show that all variables except TAR are non-stationary at level and become stationary at first. PP show that all variables become stationary at first difference. Based on PP test, ARDL was selected as right technique for estimation.

Table 2
Presenting Unit Root Test Results

At level		
	ADF	
VAR	intercept	Intercept and Trend
T.B	-2.330885	-1.125284
GDP	1.128970	-1.529999
MS	-1.124604	-3.176626
RER	-2.001893	-3.106952
TR	-1.193771	-1.904442
	PP	
T.B	-0.692321	-1.911183
GDP	1.144588	-1.529999
MS	-1.141967	-2.754808
RER	-1.981060	-1.371728
TR	-0.545675	-1.700054
At first Difference		

Table 2a
Presenting Unit Root Test Results

	ADF	
T.B	-5.361758***	-6.116224***
GDP	-3.598205**	-4.133854**
MS	-5.424601***	-5.362377***
RER	-5.841693***	-6.879451***
TR	-2.379905	-2.308039
	PP	
T.B	-0.692321	-3.853550**

GDP	1.144588	-3.739629**
MS	-1.141967	-7.197963***
RER	-1.981060	-6.810988***
TR	-0.545675	-5.095512**

Bound test results are given in table no three. The results verify long-run relationship among research variables. Afterwards, F-statistics of Bound test are greater than 1 % of significance level.

Table 3
Bound Test Results

Test Statistics	Value	Significance	Lower Bound	Upper Bound	Conclusion
F-statistics	5.370886	10%	2.2	3.09	There is LR relationship
		5%	2.56	3.49	
		2.5%	2.88	3.87	
		1%	3.29	4.37	

LR results of ARDL are presented in table 4. The results provide significant information and show that GDP and REER significantly adversely affect the trade balance (Mohammad, 2010; Alawin & Maghareez, 2013; Khattak, 2021). Table shows that GDP, REER, and money supply has significant impact on trade balance, while average tariff rate has negative but insignificant effect.

Table 4
Long-run results of ARDL

Var	βs	S.E	t-value	P-value.
LOG(GDP)	-9.70	3.02	-3.211369	0.0039
LOG(RER)	-13.50	5.18	-2.604657	0.0158
LOG(TR)	-4.48	3.18	-1.410155	0.1719
LOG(MS)	-8.47	4.12	-0.996803	0.04292

Table presents SR results of ARDL. According to results all short-run coefficients are significant. ERCM term is significantly negative, representing high adjustment speed from disequilibrium to equilibrium.

Table 5
Short-run results of ARDL

Var	βs	S.E	t-value	P-value.
C	359	95.10	0.000000	0.0000
D(T.B(-1))	0.751906	0.188228	3.994649	0.0006
D(T.B(-2))	0.452998	0.193748	2.338080	0.0284
D(T.B(-3))	0.646785	0.21949	2.946768	0.0072
DLOG(GDP)	-31.20	11.00	0.000000	0.0000
DLOG(GDP(-1))	-18.70	10.30	0.000000	0.0000
DLOG(GDP(-2))	-21.30	11.20	0.000000	0.0000
DLOG(RER)	25.80	15.90	0.000000	0.0000
CointEq(-1)*	-1.017280	0.162415	-6.263451	0.0000

Various diagnostic tests results are presented in Tables 6 and 7. The results of F-test verify the overall significance of model. Normality of error term is verified by the Jarque-Bera P-value >0.05. The (BG) Serial Correlation (LM) Test results show that error terms are serially uncorrelated. Stability of the model is verified by the result of the Cusum test.

Table 6
Diagnostic Test

R2	0.91
Adjusted R2	0.86
Log likelihood	-832.8941
F-test	19.11330
P-Value (F-test)	0.000000
Jarque-Bera	2.74
Jarque-Bera(P.Value)	0.25

Table 7
Serial Correlation Test

Test-statistic	Calculated value	P.Value	
F-statistic	2.026763	Prob. F(4,19)	0.1313
Obs*R2	10.76672	Prob. Chi-Square(4)	0.0293

Figure 1
Cusum Test

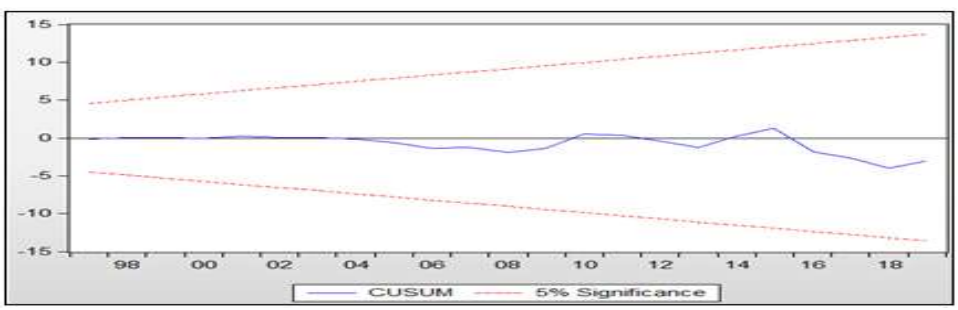
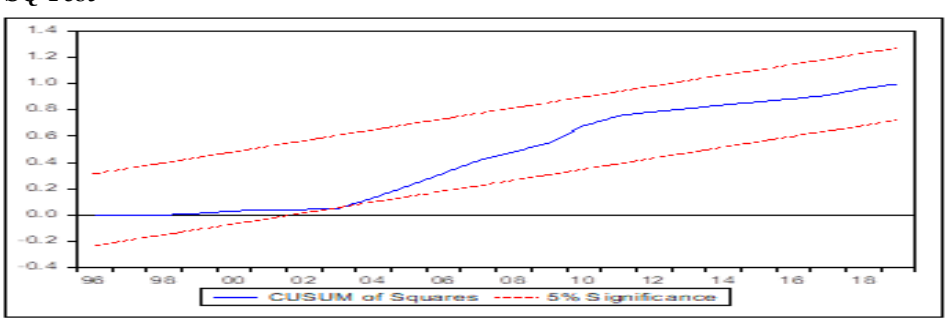


Figure 2
Cusum SQ Test



CONCLUSION

The study used Unit root tests and concluded that all variables are stationary at first difference, which allows the study to use the ARDL model to investigate the LR and SR impact between the dependent and independent variables. Results show that GDP and REER significantly adversely affect the trade balance (Mohammad, 2010; Alawin & Maghareez, 2013). The average tariff rate has an insignificantly negative effect on TB. The results show that all short-run coefficients are significant. The lagged variable of trade balance hurts its current value. ERCM term is negative and statistically significant, indicating the high speed of adjustment from the disequilibrium to equilibrium. The study showed that Marshal Learner condition is not valid in case of Pakistan since long run effective exchange rate is found to have negative significant effect on Pakistan BOP. Furthermore, in the context of Pakistan, both the monetarist and absorption approaches have insignificant foundation. The study also found that the expansion of money supply has a negative but significant relation with Pakistan Balance of trade. It is also found that Pakistan's balance of trade decreases as a result enlargement on the gap between GDP and the spending capacity of GDP. The foreign trade policy is found to have adverse effect on Pakistan BOT in SR while found insignificant in LR. Thus, on the basis of findings, the research suggests following recommendations:

1. It is needed from the government to revise the devaluation policy of REER and export import demand elasticity.
2. It is also suggested to enhance the domestic income in order to correct the problems of Balance of trade.
3. Finally, State bank is needed to play its role in fixing the balance of trade problem by using money supply as a policy tool.

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