P-ISSN 2664-0422	Pakistan Social Sciences Review	Jan-March 2025, Vol. 9, No. 1
O-ISSN 2664-0430	https://doi.org/10.35484/pssr.2025(9-I)67	[875-893]

Pakistan Social Sciences Review
www.pssr.org.pk

RESEARCH PAPER

The Determinants of Trade Balance in Pakistan: An ARDL Approach

[1]Khadim Hussain*, [2]Rizwana Ayub and [3]Rani Saima Noureen

1. Assistant Professor, Department of Economics, University of Bhimber, Bhimber 10040, AJ&K, Pakistan
2. M.Phil. Scholar, Department of Economics, Allama Iqbal Open University, Islamabad, Pakistan
3. Lecturer, Department of Economics, University of Bhimber, Bhimber 10040, AJ&K, Pakistan

***Corresponding Author:** hussain@ajkuob.edu.pk

ABSTRACT

Trade balance is one of the important indicators that are used to examine the macroeconomic performance and competitiveness of a country in international market. Hence, the determinants of trade balance are considered supportive for investigation of the interactions between the domestic and international trade dynamics. The core objective of this study is to explore the main determinants of trade balance in Pakistan economy under macroeconomic framework. Using Autoregressive Distributive Lag Modeling approach to co-integration and Error Correction Modeling approach over the period of 1980-2017. The study is an endeavor to contribute in the empirical literature as the results reveal that real effective exchange rate shows insignificant results with trade balance. Moreover, money supply and final consumption expenditure have negative and significant relationship with trade balance both in short run and long run. The findings provide specific highlights for the concerned policymakers to consider the money supply, final consumption expenditures and exchange rate while framing the trade strategies in order to achieve the sustainable trade balance.

KEYWORDS Trade Balance, ARDL, Exchange Rate, FDI, Money Supply

Introduction

In this age of globalization and regional connectivity, trade among countries is indispensable and inescapable. In contemporary business environment, the organizations are facing very complex and multidimensional challenges. These challenges are creating lethal threats for the survival, growth and sustainability of the organizations. In a knowledge-based economy the organizations are facing global issues and have tremendous potentials also. Knowledge based organizations can shift the trade balance in favor by capitalizing their intangible resources.

Fundamentally, foreign direct investment can be enhanced by introducing liberal economic policies of countries around the globe. It is very important for any economy as it is a major tool for supply of capital. Capital formation depends on investment by foreigners in any country. Therefore, all these countries work for superlative domestic policies to achieve the benefits of foreign presence in the domestic economy. In developing economies, the invasion of foreign direct investment is the prime source to promote the development and growth of economy. It can contribute in many forms such as GDP, generation of employment, export and import.

For the growth and development of the organizations the volume of trade and balance is considered a significant element of the prevailing economy. Economies try to maintain a high level of the export so that to keep the international trade activities smooth

without risking available financial resources. Whenever, there arises an unfavorable situation deficits curbed down through debt requests from outside world. Additionally, countries that have high trade imbalance are exposed to any minor economic shock or recession. At least, balance of trade is essential for every country if not surplus (Shah, 2015).

Since, the peak of globalization equipped with developed communication networks, and advanced transportation means economic benefits are spreading across borders. Countries depend on each other to bridge the deficits in different sectors of economy. With international trade variety of goods and services are available to the customers and their satisfaction is increased than ever. Countries engage in international trade because it supports economic growth, improves access to goods, and increases efficiency. Trade benefits society by boosting productivity and lowering costs through affordable imported inputs (Syed, Ahmed & Hussain, 2016).

The trade account is a core account placed in current account (a category of balance of payments) hence plays a significant role to balance the payments. Balance of payments summarize total set of dealings/transactions a specific country with rest of the World during a particular time. Usually, trade account is referred to as the total exports less total imports of a particular country over a period of time. When exports are more than imports country has trade surplus while conflicting situation is a trade imbalance. Nonetheless, trade imbalance does not always present a terrible situation it may be helpful for the economic situation during the development of business cycle which confines inflation, present goods away from the country's ability to meet supply (Murshed et al, 2014).

A trade surplus arises when exports surpass imports, and while it might improve national resources and jobs, economists remain divided on whether trade imbalances ultimately strengthen or hurt an economy owing to worries regarding foreign dependency and home output. Trade imbalance (unfavorable) is considered as a sign of economic weakness of the country and indicates an extreme foreign dependence, which is at the cost of domestic production and jobs. Enormous trade imbalances are causing the hyper financial crises which could destroy the economy. The trade imbalance is destructive to the long economic development (Ahad & Muzammil, 2015). A trade imbalance indicates an unfavorable trade account (Malik et al, 2015).

Therefore, deficit or surplus itself does not indicate betterment but are meaningful under certain circumstances where their strength is vivid. The deficits are boon when they are in line with improving job creation and infrastructure development (Kennedy, 2013). Apparently, when a country fails to produce according to its need trade imbalance is caused. Trade imbalance rises in the country when other countries agree for the provision of loans to materialize the imports. Thus, the trade imbalance is concerned with current account deficit.

Pakistan's economy is continuously facing an unfavorable trade account since the globalization of economies. The trade deficit is detrimental for the economic state of affairs of Pakistan. Some important steps should have to be taken by the macroeconomic policy makers of the economy to solve this issue. (Mohammad, 2010). The rise in exports will reduce both the deficit in trade as well as deficit in current account balance. (Aurangzeb & Asif, 2014). The devaluation in currency conversion rate indicates an increase in exports value it also helps in an imperative way to balance the trade account (Nazeer et al., 2015).

The rate of exchange significantly impacts the trade activities of any country. It also reduces or increases the level of earnings, rate of inflation and control the level of trade. Conversion rate is normally used as a key tool to manage the trade volume along with ease or strictness in tariff policies. Exchange rate can be defined as the conversion of local currency into foreign currency. In addition to rate of exchange, income and money supply had a significant influence on trade balance of Pakistan both in short-run and long-run, hence, currency conversion rate depreciation had thin effect on the balance of trade (Waliullah, Kakar, Kakar, & Khan, 2010).

The countries like China and Japan produce capital goods and both enhanced their export level by 30 percent after recovery from the crisis. On the contrary, developing countries in which Pakistan is also included the export level is comparatively low because they produce primary products. Elasticity of demand for food products is comparatively low because of countercyclical pattern has been perceived in inventories because importer took advantage of cheap prices of merchandise (Syed et al, 2016). Majority of the developed and industrialized nations are also facing the problem of trade imbalance; such as USA, UK, Australia and Portugal etc. Since independence, Pakistan has been experiencing the period of trade imbalance except three years and this trade imbalance reflects the increasing trend over the period of time. A persistent continuity in trade imbalance (Mohammad, 2010).

Determining trade of the country, the trade policy plays an important role. If a country followed the import substitution policies, then imports level declined in the country. On the contrary, trade openness could hamper and increase the exports in short and long run respectively. Decline in imports may deteriorate the exports due to reduction in production, and likewise reduction in exports may depreciate the imports because of lack in foreign exchange. Hence, developing countries would acquire a more knowhow to understand the relationship between imports, exports and real currency conversion rate (Kemal & Qadir, 2005). Pakistan is also one of those countries suffering from trade as well as balance of payment deficits. In order to reduce this deficit several initiatives have been taken by government; of which; firstly, government has tried to use currency conversion rate as tool to enhance exports; secondly, government took several steps to increase foreign investment in Pakistan; and thirdly govt. imposed some barriers in terms of tariffs to reduce level of imports.

Conventionally Pakistan is pretended as investment region which is controlled by British corporation's about two hundred existences. In 70s, during the era of Zulfiqar Ali Bhutto, Pakistan was ongoing the progression of nationalization. However, in the upcoming periods, it has been esteemed to demonstrate the concern about privatization to nearby globalization procedure. Pakistan too belongs to such economy which is not as advanced to performance in globalization to get benefits at great level, and consequently Pakistan economy is incrustation crises (Ali, Naz & Yaqub, 2015). Sometimes to improve export it is necessary for the economies to adopt the option of devaluation. Most of the researchers determined positive and long-run relationship between devaluation and balance of trade (Aurangzeb & Asif, 2014). Costly import of necessities like wheat, fertilizers, oil also fall in the export of textile sector of the country are the major factors which are causing trade imbalance in country. (Abbas & Raza, 2013).

Historically, Pakistan has to deal with deficit in trade balance and balance of payment. Various policies were adopted to tackle with this problem but all in vein. Currency conversion rate is linked with trade balance by economist by theory called J-Curve theory. Trade balance is initially worsened by fall in currency conversion rate i.e.

devaluation of currency while in long run it is improved. Trade balance instantly deteriorates as the currency devaluation because of high prices of imports because they are paid in foreign currency. And due to devaluation exports become cheaper. In short run this instant price effect deteriorates the trade balance, however, the response of national and overseas manufacturer and buyer, in long run, with value changes thus, the charges are adjusted which improves the trade equilibrium (Hussain & Bashir, 2013).

Initially, current literature on trade account and its theoretical models tended to emphasis on single economic factor to explain trade imbalance issues. Besides, some other factors may also affect trade balance. In order to overcome deficiency of inadequate information due to single economic factor, a broader approach is essential to analyze Pakistan's trade imbalances and is anticipated in this study. The relationship of trade balance and its determinants have been discussed in literature but in case of Pakistan, in the purview of rapidly changing international trade scenario, this topic has gained huge importance. Due to changes in international political and economic scenario, economy of Pakistan is facing huge pressure.

There is need to explore the said relationship for Pakistan Economy in the purview of current trade policies being exercised. The policy analysis in current challenging situation has an impact on the policy makers positively. There is no doubt that the Pakistan economy is facing many challenges to create a vibrant national economy. In Pakistan the GDP is very low as compared to the set standards. Unemployment, poverty and unrest in the society are increasing exponentially. Balance of payment and balance of trade is also not in favor of Pakistani economy. Subsequently, the economy of Pakistan is under high pressure.

In spite of these challenges, there is a vacuum to address these issues. Lack of empirical studies motive to address these issues. Moreover, it has an importance for the economy of Pakistan to do a specific analysis by focusing on above-mentioned economic variables. Updated analysis of these variables can help policy makers to review and update trade environment of the country to enhance exports and expand the balance of the trade.

Literature Review

The trade balance and real currency conversion rate relationship was studied by Ling, Mun, & Mei (2008). Data was taken from the year 1955 through 2006. They applied ADF test to check the unit root, Engel Granger and VECM mechanisms were applied to check co-integration. The study concluded long run relationship between variables exists.

Malaysian trade balance was examined by Duasa (2007) for short run and long run determinants. The bound testing approach and ECM are applied to check to co-integration and ARDL approach was also used. Data was taken for the period 1974-2003. He concluded that bound testing approach developed with ARDL model showed the long run equilibrium relationship is found between trade balance, currency conversion rate, income and supply of money.

Most studies show that trade balance is primarily influenced by conversion rates, domestic income and foreign income. As investigated by Kyomukama (2008); Chika, Nanyereugo & Ikechukwu (2012); Khan & Hossain (2012); Ray (2012) and Tran (2012), for India, Vietnam Nigeria, and Uganda. Sharma (2012) estimated the important

determinants of trade and current balances for US economy by using the quarterly data from the period of 1974-2007. This study proved that interest rate measures were also co-integrated with US current account and trade balances. The determinants of Sudan's trade balance have recently been investigated by Ali (2017). Data was taken from 1970 to 2014. Results showed that inflation, real per capita GDP and real currency conversion rate had negative impact in long run.

For Pakistan the short run and long run relationship between trade imbalance and budget deficit was investigated by Aqeel & Nishat (2000). Co-integration analysis and error correction mechanism were employed in this study. Data was taken from 1973 to 1998. Study investigated that in long run trade imbalance of Pakistan is positively and significantly affected by budget deficit. Aftab & Aurangzeb (2002) depicted the both long and short run influence of currency conversion rate devaluation on trade functioning of Pakistan. Johansen's co-integration for long run analysis and for short run analysis and to trace the J-curve. ECM model was used in this paper. Data from 1970 to 2000 was taken quarterly. Results showed that real devaluation may be used to improve trade balances. The role of the trading balance account is also included in the essence of the latest asset-market approach for analyzing exchange rate behavior. Statistically significant adjustments to these exchange rates have been used for the first time to evaluate the importance of trade balance announcements at exchange rates for the first time. It showed that the factors of asset-market exchange rate model are likely to be similar and in line with the study.

The balance of trade is significantly controlled by currency conversion rate. Any movement in currency conversion rate could change the trade balance in either way. The impact of currency devaluation on external debt and the trade balance for Pakistan was investigated by Khan, Ali & Ali (2016). Sample period was spanning from 1980 to 2014. For long run analysis ARDL approach was used and for short run analysis ECM was employed. Results showed that long-run relationship exists between currency devaluation and balance of trade in Pakistan. Empirical findings showed that there was absence of J-Curve approach.

The significance of the currency conversion rate on Pakistan's foreign trade was studied by Janjua (2007). This study used annual data from 1978 to 2008. The Engle Granger co-integration approach was used in this study. Author concluded that real currency conversion rate (RER) had significant relationship with all the variables. ECM shows that movement of currency conversion rate towards the long run equilibrium suggest that currency conversion rate of Pak rupee had not deviated from RER and captures basic economic trends.

Waliullah, Kakar, Kakar, & Khan (2010) argued that the "Auto Regressive Distributed Lag (ARDL)" is usually used to estimate both the short run as well as long run relationship error correction mechanism (ECM). Three alternative theories of balance of trade adjustment were brought into consideration through this study. Elasticity approach, monetary approach and absorption approach are part and parcel of these theories. They identified that income and money supply had a strong influence while real currency conversion rate had a weaker influence on determining the trade balance.

In another study Shahbaz, Jalil & Islam (2010) found that a long run relationship exists between rate of exchange and balance of trade. Impulse response showed that real currency conversion rate shocks leads to deterioration response in trade balance from 4 and continue till 20 time horizons. The devaluation in the conversion rate had positive

effect on trade balance and this strong relationship paves a path for the excess (Mohammed, 2010). This negative relationship indicates increase in exports through devaluation (cheap products & high earnings on translation). Pakistan's rate of exchange has significantly positive relationship with trade balance whereas all other variables like domestic consumption, and money supply had negatively affected the balance of trade (Shah, 2015).

The determinants of trade imbalance both in long and short run of Pakistan were explored by Mohammad (2010). Johansen co-integration approach and ECM modeling was used in this study. Sample period was taken from 1975 to 2008. Author concluded that all variables were positively significant with trade balance. Yasmin (2012) utilized the co-integration approach and error correction mechanism to establish the association between liberalization of trade and trade balance in the long run and short run as well. The data was taken during time period 1970-2008. Author investigated that trade balance is directly related with trade liberalization and real currency conversion rate in long run and inversely related with the gross domestic product (GDP).

Abbas & Raza (2013) conducted a study to observe the impact of trade imbalance in the economy of Pakistan. Annual data for this study was taken from 1988 to 2011. Author used scatter plot matrix and histogram, for estimation of regression equation OLS was applied. Results showed that the trade imbalance, FDI, GDP and currency conversion rate were statistically significant, while there was no relationship found between the trade imbalance and the trade volume. Both the short run and long run relationship between currency conversion rate and trade balance in Pakistan has been explored by Shah & Majeed (2014). Results provided evidence that all the variables had a stronger role in determining Pakistan's balance of trade. In short run income and REER play a stronger significant role as compared to money supply.

The relationship of the balance of payment and its determinants for Pakistan was focused to scrutinize by Batool, Memood & Jadoon (2015). Further Shah (2015) examined the determinants of balance of trade by using the data from 1975 to 2010 and applied multiple regression analysis. Findings of this study reported that only currency conversion rate of Pakistani Rupee had positive influence on trade balance while the others factors were appeared with no effect. The influence of FDI and balance of trade on the economic growth of the Pakistan economy was examined by Ali, Naz & Yaqub (2015). Experimental results showed that foreign direct investment (FDI) and trade balance are significantly associated.

Each country attempt and devise policies that favour inflows of investments. Developing or developed both countries attempt to attract foreign investments to get different types of benefits. Besides, a favorable balance in accounts it also helps in technological, infrastructural and human resource development. Along with other factors FDI also supplements a favorable balance of payments. The relationship between FDI and economic growth in Pakistan has been studied by Dar, Bhatti & Muhammad (2017). This paper utilized the VECM model with panel co-integration methodology. Data was taken from 1997 to 2003. They concluded that panel co-integration showed that in the long run all variables were co-related. The VECM showed that in short run a bidirectional casualty of FDI and domestic investment with economic growth.

In fact, the main effects of direct investment are found outside the economic realm and concern structure and characteristics of basic industrial activities. It is considered an important channel of influence of competition. While there is also evidence that the FDI

has taken advantage of weak competition increasing monopoly rents, compelling evidence pointing to multinational companies. Researchers have found that remittances have a positive effect on poverty transition, education and humanitarian assistance to families receiving remittances and a 1.6% reduction, a 10% increase in remittances makes poverty possible (Falk, 2008). Remittances can also increase foreign reserves and Payment can be a way to balance the account over.

Due to changes in international political and economic scenario, economy of Pakistan is facing huge pressure. There is need to explore the said relationship for Pakistan Economy in the purview of current trade policies being exercised.

Material and Methods

This section describes the multi-channel framework for identifying the major factors which affected the Pakistan's trade balance. For developing countries like Pakistan some important factors are taken into consideration while estimating the probable determinants of trade balance. Trade balance of the country is mainly affected by several channels which are relative price effect, demand side effect and supply side effect respectively. However, existing studies mainly focused on the economic factors only. In many developing countries like Pakistan where trade balance is not only affected by economic factors but many other factors also affected the trade balance. Certainly, measuring the impact of such non-economic factors can be challenging due to data availability and other resource constrictions. However, this framework includes all the perspectives which are economic perspective, social, cultural and political perspectives. An integrated multi-channel framework which is used to explore the major determinants of Pakistan's trade balance are shown in the Figure 1 below:

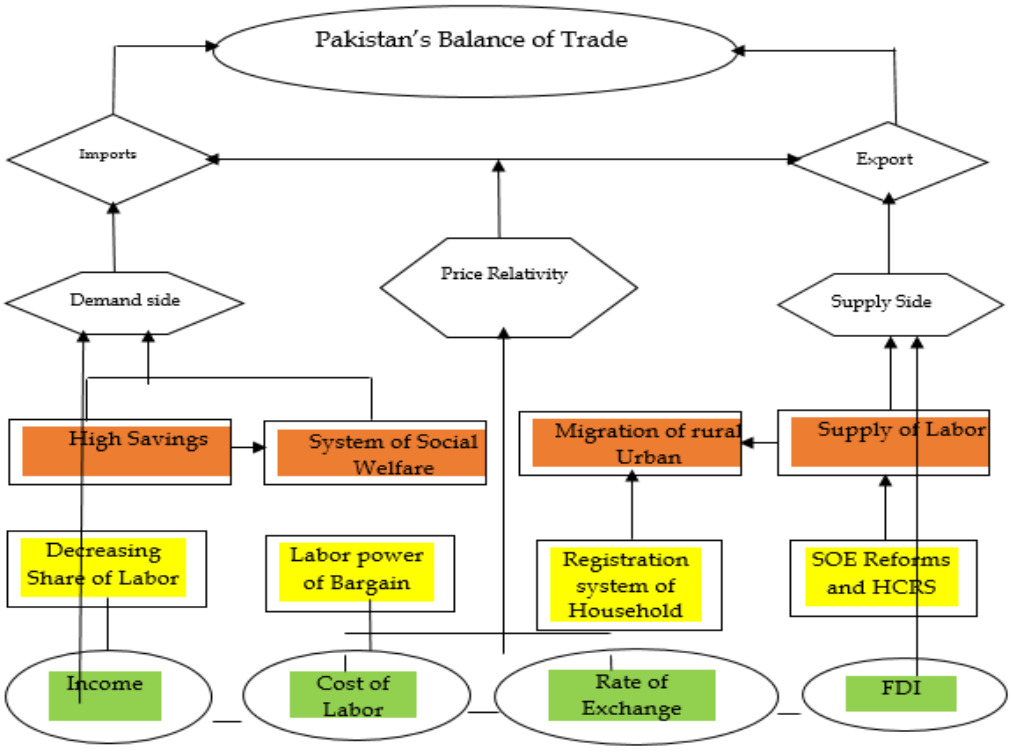

Figure 1: "A multi-perspective framework for exploring the major determinants of Pakistan's trade balance (*Abbreviation HCRS means" "Household Contract Responsibility System and SOE means State Owned Enterprises"

In Figure 1 red color boxes shows the socio-cultural factors, while yellow color boxes show the political-institutional factors and green color boxes shows the economic factors. On supply side factors of production are considered to have a positive effect on exports. "Household Contract Responsibility System (HCRS) and State Owned Enterprises (SOE)" are also assumed to have direct relationship with freeing labor. Economic factor which is "Foreign Direct Investment" (FDI) has also impact on Pakistan's trade. "Foreign Direct Investment" (FDI) is not only source of capital which is invested in Pakistan but also source of modern technologies brought in the country. In general, the rate of currency change has a significant impact on a country's trade balance by measuring the relative value of a country. Unit labor cost is another important factor affecting the country's trade balance. And so, domestic revenue has a positive impact on the demand for foreign goods and services and is negatively related to the country's trade balance.

The Model

On the basis of standard model of trade balance, this study specifies an aggregate model. The estimation of this model uses Pakistan's overall trade balance data.

$$lntb_t = \beta_0 + \beta_1 lnfce_t + \beta_2 lnfdi_t + \beta_3 lngdp_t + \beta_4 lnm1_t + \beta_5 lnreer_t + \beta_6 lnrem_t + \varepsilon_t$$

Where tb_t represent trade balance of the country. Trade balance can be taken as ratio of exports to imports. gdp_t shows the gross domestic product which is used as proxy of income variable. fdi_t represents the FDI inflows in the country, $reer_t$ represent the relative price of the country, as data on unit labor cost is not available, real effective currency conversion rate is used which is based on relative unit labor cost. rem_t shows the personal foreign remittances of the country, fce_t represent the consumption exp. and $m1_t$ indicate the broad money of the country. ε_t is random variable.

Variables

Countries depend on each other to bridge the deficits in different sectors of economy. Basically, to somehow the insufficiency and competitive advantages coerce exchange of goods and services among countries. These exchanges of goods and services multiply the developmental activities across different sector of economy. Besides, economic inefficiencies globalization also helps corporations to explore blue oceans overseas to enrich sales volume as well as market presence. However, this can only be possible in long run to reap the actual benefits. To explore the relationship this study considered a number of variables discussed below. In this study all variables are taken as percentage of GDP. This description is taken as from World Bank (WDI; 2018).

Trade Balance

The trade account is a core account placed in current account (a category of balance of payments) hence plays a significant role to balance the payments. Balance of payments summarize total set of dealings/transactions a specific country with rest of the World during a particular time. Usually, trade account is referred to as the total exports less total imports of a particular country over a period of time.

Real Effective Exchange Rate

The rate of exchange significantly impacts the trade activities of any country. It also reduces or increases the level of earnings, rate of inflation and control the level of

trade. Conversion rate is normally used as a key tool to manage the trade volume along with ease or strictness in tariff policies. A real effective currency conversion rate is nominal effective currency conversion rate index which is the proportion (articulated on the base 2010 = 100) of symbol of a currency's period average currency conversion rate to particular countries a biased geometric average of currency conversion rates for their currencies and euro area.

Foreign Remittances Percentage of GDP

All the Individual transfers either contain the current transfers in form of cash or in kind made or received by the household resident to or from those households, which are nonresident households. The current transfers between residents and nonresidents individuals comprise individual transfers. Advantage of employees denotes seasonal, domestic income, also rest of short-term employee engaged as non-occupant in an economy and of an inhabitant employee by nonresident entity. Data are the summation of two items individual transfers and advantage of employees.

The Gross Domestic Product

Consumer Domestic Product on Consumer Prices (GDP) subsidies taxes and minus any product excluding the gross cost collected by the manufacturers of all inhabitants of the economy. The GDP is actually calculated without making deductions for depletion and deprivation of natural resources and devaluation of fabricated assets. Dollar statistics for GDP are transformed from local currencies using authorized currency conversion rates.

Foreign Direct Investment (FDI)

Foreign direct investment data does not give a broad picture of cross border investment in an economy. Balance of payments (BoPs) data on foreign direct investment does not contain capital raised internally, which is an essential foundation of investment financing in developing economies. In short, foreign direct investment data ignore non-equity international transactions for instance intra-unit flows of goods and services respectively.

Money Supply

The economy provides the total amount of money and all other liquid notes in circulation at a certain time, such as coins, notes, currency papers, checks, etc. The funding is further graded on Ms, M0, M1, M2 and M3. While M0 and M1 are classified as tight money, M2 is a huge amount. Large amount of money refers to the overall savings of foreign currency reserves in various forms, the residential sector, at present, the demand for foreign currency besides the central government and banks. Circulation of money is controlled through monetary policy that also helps to control the inflation. And other financial instruments such as deposit certificates and trade notes and bank and passenger checks.

The Final Consumption Expenditure

The term final consumption expenditure (FCE), formerly known as total consumption refers to the amount of final household consumption (total private consumption). And the costs of general government use (general government consumption)

Data Type and Sources

The annual time series data for all indicators of the study are derived from the Bulletin of the World Bank, World Development Indicator (WDI) (2018) and SBP statistical reports. Sample period covers 1980 to 2017. This sample period (36 years) will be selected due to the data availability of the selected variables.

Results and Discussion

The Augmented Unit Root Test Results

The "Augmented Dickey Fuller Test (ADF)" (Table: 1) shows that, in the estimated model with only intercept, no one variable is stationarity at level. While on level with (Trend and Intercept) except money supply ($lm1_t$) no more variable is stationary, whereas, money supply ($lm1_t$) is stationary at 10% critical value. Order of integration of money supply ($lm1_t$) is I(0). In ADF unit root test at first difference with only intercept all variables which are consumption exp. ($lfce_t$), foreign direct investment ($lfdi_t$), the gross domestic product ($lgdp_t$), money supply ($lm1_t$), real effective currency conversion rate ($lreer_t$) and foreign remittances ($lrem_t$) are integrated at 1% and 10% level of significance with order of integration I(1). Again the first difference with (Trend and Intercept) all variables consumption exp. ($lfce_t$), foreign direct investment ($lfdi_t$), the gross domestic product ($lgdp_t$), money supply ($lm1_t$), real effective currency conversion rate ($lreer_t$) and foreign remittances ($lrem_t$) are integrated at 1% and 10% critical values with order of integration I(1).

Table 1
ADF Unit Root Test

Variables	At Levels		At First Difference	
	Intercept	Trend and Intercept	Intercept	Trend and Intercept
ltb_t	-1.31	-0.93	-5.66^a	-5.99^a
$\lg dp_t$	-0.63	-1.98	-6.05^a	-5.96^a
$lfdi_t$	-1.98	-2.10	-5.45^a	-5.37^a
$lreer_t$	-0.81	-2.46	-6.23^a	-6.14^a
$lrem_t$	-1.58	-1.40	-5.27^a	-5.35^a
$lfce_t$	-1.64	-1.53	-7.04^a	-7.34^a
$lm1_t$	-1.20	-3.66^b	-5.28^a	-5.19^a
10 % CV	**-2.61**	**-3.20**	**-2.61**	**-3.20**
01 % CV	**-3.62**	**-4.22**	**-3.62**	**-4.23**

Note: tb_t, gdp_t, fdi_t, $reer_t$, rem_t, fce_t, $m1_t$represent trade balance, the gross domestic product (which is used as proxy of income), foreign investment, real effective currency conversion rate, personal foreign remittances, final consumption expenditure and money supply respectively. In this table a shows the variables are significant at 1% critical values and b shows the variables are significant at 10 % critical value.

On the basis of the test results obtained from "Augmented Dickey Fuller (ADF) and Phillip-Perron (PP)" shows mix results in term stationarity level. The outcome of these tests reveals the appropriate use of approach. OLS is best method to be applied if one of the important assumption is satisfied that the variables are stationary at levels, while if all the variables are stationary at the first difference i.e. I(1) then co-integration analysis is the best way to obtain results. But if order of integration of variables is not same i.e. some variables are stationary at levels while some variables are stationary at first difference; then we use ARDL modeling approach to estimate the model. On the basis of the results obtained from Philip Peron test and ADF test, variables are integrated of order I(0) and I(1). In the light of this outcome we will use "Auto Regressive Distributed Lag (ARDL)" bounds testing approach to estimate the model.

Estimation of the Lag Length

First step in the estimation of the long run relationship is the selection of lag length. Selection of lag length which is included in error correction model is estimated through Akaike Information Criterion (AIC) and R^2. No of lags are three which maximizes R^2 and minimizes Akaike Information Criteria (AIC).

Table 2
Estimation of the Lag length

Lag Selection Method	Lag 1	Lag2	Lag3
AIC Estimate	-4.29	-4.97	-6.19
R^2 Value	0.93	0.97	0.99

Table 2 which shows lag length criteria by using Akaike Information Criteria (AIC) and R^2 value. In this table by increasing the lag length from 1, 2 and final in the 3 the value of AIC estimates is decreasing by increasing no of lags. Similarly, by increasing the lag length, value of R^2 are increasing which shows the perfect lag length.

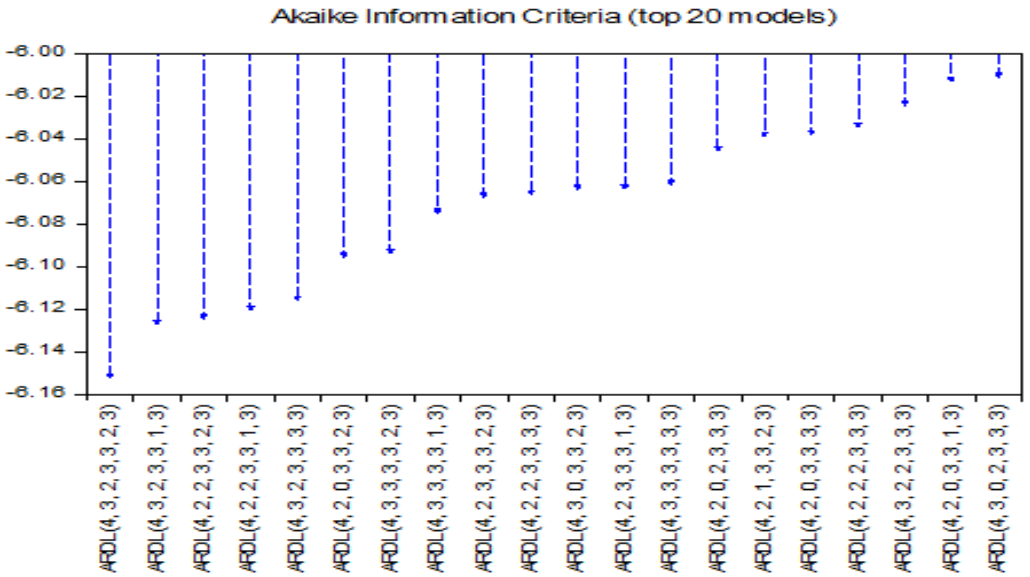

Figure 2 Akaike Information Criteria (AIC)

Figure 2 shows the selection of lag length by using Akaike Information Criteria. This is the automatically adjusted lag length by using the E.Views 10. In this figure

dotted line shows "Auto Regressive Distributed Lag Model" by using the different lags. Maximum length of dotted lines shows the best lag selection. According to the figure ARDL model with (4,3,2,3,3,2,3) lags are selected which is the perfect lag length. In accordance to this selection dependent variable trade balance (tb) has 4 lags, whereas in independent variables final consumption expenditure(fce), the gross domestic product (gdp), foreign remittances (rem) and money supply ($m1$) have 3 lags, whereas foreign direct investment (fdi) and real effective currency conversion rate ($reer$) have 2 lags respectively.

F-Statistic Co-Integration Test

For calculation of co-integration test, Table 3 shows the F-statistics calculation. The critical values which are reported in the table are suggested by Pesaran & Shin (1999). The F-Stats calculation exceeds the upper boundary values of 7.99 1%, 5% and 10% significance values. This shows that the notion of mutual support has not been ruled out, suggesting that there is a correlation between the variables of concern.

Table 3
Results of F-Statistic Calculation

Pesaran & Shin (1999) Calculated F –statistic		**7.99**
Level of Significance	Lower Bound	Upper Bound
1 percent	2.66	4.05
5 percent	2.04	3.24
10 percent	1.75	2.87

Long Run Estimates

Table 4 shows the estimates of trade balance in long run. The findings of the table show the impact of final consumption expenditure (fce) on trade balance is negative and significant both in the long run as well as in the short run. This negative relationship of final consumption expenditure (fce) with trade balance (tb) in long run indicates that by increasing final consumption expenditure one percent leads to decline in trade balance of the country. This negative connection between trade balance and final consumption expenditure is not surprising due to this fact that both local and imported commodities are included in the consumption of goods, that's why native inhabitants' expenditures on consumption increases, which will lead to increase in need for both local and imported goods.

The local market is conquered by the imported goods like second-hand goods, automobiles, electronic utensils and petroleum items and many more. Due to this fact that domestic market does not manufacture these commodities, so demand for these imported goods are high which are imported from alien countries. Certainly, in local market some of these commodities are manufactured, though they are not capable in quantity and quality to meet consumer's desired requirements, thus a lot of replacement of domestically produced goods is available consequently; position of trade balance is deteriorating. Shawa & Shen (2013) and Mohammad (2010) acquire similar conclusion in Tanzania, Pakistan and India respectively.

Table 4
Estimates of Long-run

Variables	**Co-efficient**	**t-Statistic**	**Prob.**
fce	-3.64	-8.0869	0.0000

fdi	0.10	3.2034	0.0125
gdp	-0.00	-0.0666	0.9485
$m1$	-0.30	-2.5097	0.0364
$reer$	-0.01	-0.1866	0.8566
rem	0.03	0.6024	0.5635

Foreign direct investment (fdi) affects trade balance (tb) positively and significantly. The variables of FDI reflects a positive impact on balance of trade as increased flow of FDI leads to increased production of import substitutes domestically by the MNCs which will be helpful in reducing imports and improving the balance of trade. Gross domestic investment (gdp) is insignificant and negative affect trade balance (tb). The Keynesian suggests a negative indicator of competence that increased revenue will encourage citizens to buy more imported goods and reduce exports and thus weaken the trade balance.

Money supply ($m1$) is affecting trade balance (tb) negatively and significantly both in long and short run as well. Hence, the finding is dependable with the previous anticipation. The negative relationship means by increasing money supply balance of trade is deteriorating. The continuous increase in supply of money by the financial experts via effect of rate of interest by the monetary sector, operations of open market, frequent changes in requirements of reserves, comparatively to money demand, leads to increase the money balances of the individuals. Due to this increase balance of money of individual leads to increase expenditures on consumption both on local and imported goods. The local market is conquered by the imported goods which are according to the taste, standard and requirements of the native demand, which results in increase in demand for imported commodities as compare to local ones, and though worsening the balance of trade of country.

Real effective currency conversion rate ($reem$) is insignificant and negative affect trade balance (tb). The Kemal & Qadir (2005) expressed that currency conversion rate volatility does not have any significant impact on exports. These findings support our hypothesis that Pakistan having instable exchange is one of the major of problems that upsets the decision-making process of exporters. Unlikely, the impact on exports, currency conversion rate volatility affects import volume significantly and inversely. As this indicates that importers are risk averter and do not want to take risk even at very low volatility. Hence, the trade balance is improved by the positive aspect of these findings that the insignificant impact of currency conversion rate volatility on exports and hence significant negative impact on imports. This reflects that currency conversion rate volatility is caused by excess devaluation of currency rather than excess appreciation.

The foreign remittances (rem) have also insignificant and positive effect trade balance (tb). Farzanegan & Hassan (2019) put forth that labor abundant Middle East and North African (MENA) countries, to alleviate the persistent trade imbalance. Clearly, the foreign remittances provide an edge to private savings. The latter is known as channel savings. However, the data provide contradictory evidence of this assumption argument, as domestic private savings have not increased during the investigation period, which suggests that these foreign remittances generate consumption costs rather than private savings. Have been and by not being able to compete with the domestic economy to offset the costs of foreign remittances, it is ultimately possible to stimulate the trade balance of

countries in the Middle East and North African countries (MENA) through additional imports. Pressure increases.

There is no proof of LM Test, heteroskedasticity, and "Autoregressive Conditional Heteroskedasticity (ARCH)" influence in model. Jarque-Bera normality test indicates normal distribution of residuals. Value of R^2 indicates the best fit of model. The value of the error correction term (-0.64), which is significant as well as the negative value, also shows that if the variables move out of their long-term equilibrium path over a given year, they will move faster along the equilibrium path. Will be attracted to Table 5 present the estimations of error correction mechanism for determinants of balance of trade.

Table 5
Estimation of Error Correction Mechanism

Variables	Coefficients	t-Statistic	Prob.
d(ltb(-1))	0.5586	4.9049	0.0012
d(lfce)	-3.6441	-18.6883	0.0000
d(lfdi)	0.1009	6.1978	0.0003
d(lgdp)	-0.0030	-0.1070	0.9175
d(lm1)	-0.3047	-3.9513	0.0042
d(lreer)	-0.0150	-0.3161	0.7600
d(lrem)	0.0308	1.2293	0.2539
ect(-1)	-0.6497	-10.5274	0.0000
The Diagnostic Tests:			
F-Statistic (LM Test)	3.0894		0.1196
F-Statistic (ARCH)	0.2215		0.6412
F-Statistic (White Test)	1.2862		0.3883
F-Statistic (Jarque-Bera Test)	1.1650		0.5585
$\mathbf{R^2}$	0.9850		
$\overline{\mathbf{R^2}}$	0.9647		

Diagnostic Tests

Detection of Auto-correlation

In figure 3, if the value of variables touches the dotted line then it shows there is auto-correlation. But in this case these values do not touch the dotted lines which are the indication of no auto-correlation in the variables which are tested.

Stability Test Results

For the assessment of the stability of the estimated model in long and short run "Cumulative sum (CUSUM) and cumulative sum recursive residual square CUSUMSQ)" tests statistics were operationalized. If the aforementioned tests touch critical lines, this is the indication of instability in the statistic. However, in this case according to the figure 4 and 5, estimated CUSUM and CUSUMSQ do not touch the critical lines. In accordance with this conclusion, estimated parameters are in stable position in long run and no structural break in estimated parameter.

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
		1	-0.083	-0.083	0.2582	0.611
		2	-0.128	-0.136	0.8883	0.641
		3	-0.222	-0.252	2.8424	0.417
		4	-0.124	-0.213	3.4673	0.483
		5	0.129	0.011	4.1665	0.526
		6	0.083	-0.007	4.4657	0.614
		7	0.106	0.074	4.9758	0.663
		8	-0.058	0.000	5.1322	0.743
		9	-0.100	-0.033	5.6170	0.778
		10	-0.026	-0.002	5.6507	0.844
		11	-0.005	-0.026	5.6522	0.896
		12	0.138	0.083	6.7132	0.876
		13	-0.113	-0.132	7.4553	0.877
		14	-0.057	-0.083	7.6562	0.906
		15	-0.106	-0.134	8.3734	0.908
		16	-0.052	-0.147	8.5549	0.931

*Probabilities may not be valid for this equation specification.

Figure 3: Results of AC and PAC test with estimated Q-stat

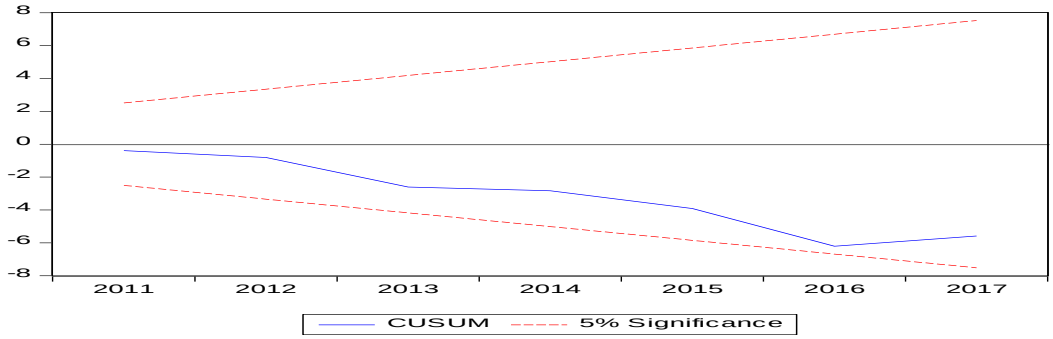

Figure 4: Variables stability using CUSUM

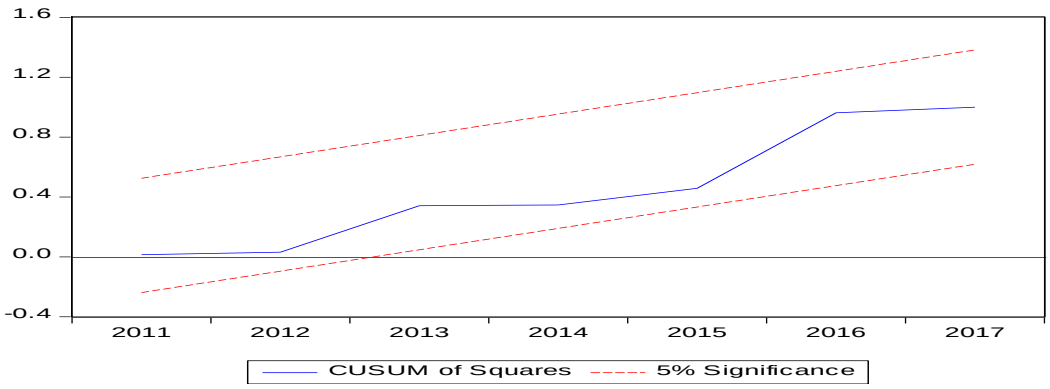

Figure 5: Variables stability using CUSUMQ

Conclusion

The purpose of this study was to find the Automotive Distributor for the synergy between trade balance and real effective currency conversion rates, final consumption costs, gross domestic investment, money supply, foreign investment and foreign remittances. The short and long term relationship was to be evaluated using a league approach. Model of error correction using time series statistics from 1980 to 2017. The study examined whether there was a long-standing relationship between Pakistan's trade balance, gross domestic product, real effective currency conversion rates, FDI

foreign investment, final consumption costs, money supply and foreign remittances or not. The short run dynamics of the model is estimated using the error correction model.

The findings of the study were established by the diagnostic tests which include LM Test, ARCH Test, White Test, Heteroscedasticity, Jarque-Bera Normality Test and stability test. In the time series analysis, it was revealed that real effective currency conversion rate shows insignificant results with trade balance and do not affect trade balance directly. Moreover, in long run and short run, money supply and final consumption expenditure have statistically significant negative relationship with balance of trade. In the short term as well as in the long run, FDI has a very positive functional relationship with trade balance. Gross domestic products have an unusual relationship with trade balance, which means that gross domestic product does not directly affect the balance of trade. Likewise, foreign remittances also have an unusual relationship with trade balance.

By using "Auto Regressive Distributed Lag (ARDL)" only one co-integrated equation is estimated. It reported the existence of long run relationship between trade balance and the gross domestic product, foreign investment, final consumption expenditure, real effective currency conversion rate, money supply and foreign remittances. Similarly, "Error Correction Mechanism (ECM)" also shows the short run and long run relationship among the variables. The value of "Error Correction Term (ECT)" suggests a convergence of higher speed of deviance from their long run equilibrium level within a year. The difficulties in the trade balance and certain other issues must be addressed to the correction through policies for income or growth as well as money supply. The weaker influence of currency conversion rate regime can be improved for trade balance by the monetary policy.

Recommendations

The findings of this study reported that the trading account should be validated through income or economic growth policies. This empirical evidence of this study illustrates that the development and growth of the economy can be achieved through increased exports of goods and services, as well as funding through monetary and fiscal policy measures. In addition, this study suggests to the policy makers to take effective measures to promote and formulate the certain and solid steps to enhance the export products to the developed nations. This study also recommends to decision makers to sign various memorandum of understating with different countries.

Foreign direct investment is the key factor to develop the growth of the national economy of the developing economies. Similarly, the developed economies widely used FDI for the development and growth of the economy. There is no-doubt that the FDI also has a positive and significant effect on trade balance and growth of the economy. It is also clear that FDI is also play very important role to produce products at low cost. This is a competitive advantage for this country in a market and it also enhance the growth of national economy. This study clearly shows that FDI has direct and positive impact on the growth of the national economy in various forms such as export products; enhance GDP, increase employed and poverty eradication. FDI is also a main source to uplift the social status and strengthen the social fabric positively. In addition, FDI is a main source to provide source to move the engine of the national economy with fast momentum. FCE has negative impact on trade balance. FCE is a combination of Government and Domestic consumption and increase in FCE results in decline in trade surplus. So to increase trade surplus Govt. must decrease their final consumption expenditure.

References

Abbas, M., & Raza, H. (2013). Effect of trade deficit on the economy of Pakistan, *Interdisciplinary journal of contemporary research in business, 4(11)*, *176–215.*

Aftab, Z., & Aurangzeb. (2002). The long run and short run impact of exchange rate devaluation on Pakistan's trade performance, *The Pakistan Development Review, 41(3), 277-286.*

Ahad, M., & Muzammil, M. (2015). Impact of financial development on trade balance: an ARDL co integration and causality approach for Pakistan, *Munich personal RePEc archive MRPA, paper no 68545.*

Ali, S, A. (2017). The determinants of Sudan's trade balance: an empirical investigation 1970-2014, *International journal of information technology and business management, 56(1), 1-19.*

Ali, S., Naz, A., & Yaqub, R. M. S. (2015). Impact of FDI and trade balance on economic growth during 1990-2014, a case study of Pakistan, *Historical research letter, 25, 25-29.*

Aqeel, A., & Nishat, M. (2000). The twin deficits phenomenon: evidence from Pakistan, *The Pakistan development review, 39 (4), 535–550.*

Shah, A., & Majeed, M. T. (2014). Real exchange rate and trade balance in Pakistan: An ARDL co-integration approach, *MPRA paper No. 57674, posted 31. July 2014 13:56 UTC.* Retrieved from http://mpra.ub.uni-muenchen.de/57674/

Aurangzeb., & Asif, K. (2014). Determinants of trade balance: a comparison between Pakistan and India, *Business review, 9(1),33-46.*

Batool, S. A., Memood, T., & Jadoon, A. K. (2015). What determines balance of payments: A case of Pakistan, *Sukkur IBA Journal of Management and Business, 2(1), 47-70.*

Chika, O. R., Nanyereugo, E. V., & Ikechukwu,N. C. N. (2012). Foreign direct investment and economic growth in Nigeria: An Empirical Investigation. *IISTE - Journal of Economics and Sustainable Development, 3(13), 34-40.*

Dar, A. A., Bhatti, H. M. A., & Muhammad, T. (2017). FDI and economic growth in Pakistan: a sector wise multivariate co integration analysis, *Pakistan Development Review*, Papers and Proceedings: The 32nd Conference of the Pakistan Society of Development Economists, December 13-15, 2016, Islamabad, 67-88.

Duasa, J. (2007). Determinants of Malaysian trade balance: An ARDL bound testing approach, *Global Economic Review, 36(1), 89-102.*

Engle, R. F., & Granger, C. W. J. (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica,* 55(2), 251-276.

Falk, M. (2008). Determinants of the trade balance in industrialized countries, *FIW research report N° 013 / Foreign Direct Investment.*

Farzanegan, M. R., & Hassan, S. M. (2019). Foreign remittances and Trade Balance: Evidence from the Middle East and North Africa. *Journal of Economic Policy Reform*, DOI: 10.1080/17487870.2019.1609357

Hussain, M., & Bashir, U. (2013). Dynamics of trade balance and the J-curve phenomenon: evidence from Pakistan, *The journal of commerce, 5(2), 16-31.*

Janjua, M. A. (2007). Pakistan's external trade: does exchange rate misalignment matter for Pakistan, *The Lahore journal of economics, special Edition (September 2007), 125-152.*

Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models, *Econometrica*, 59(6), 1551-1580

Kemal, M. A., & Qadir, U. (2005). Real exchange rate, exports, and imports movements: a trivariate analysis, *The Pakistan development review, 44 (2), 177–195.*

Kennedy, O. (2013). Kenya's foreign trade balance: an empirical investigation, *European scientific journal, 9(19), 176-189.*

Khan, M. Z. S., & Hossain, M. I. (2012). Determinants of trade balance of Bangladesh: a dynamic panel data analysis, *Bangladesh development studies, 35(2), 45-65.*

Khan, Z., Ali, A., & Ali, S. (2016). Impact of devaluation on balance of trade: a case study of Pakistan economy, *Asian journal of economic modelling, 4(2), 90-94.*

Kyomukama, J. (2018). *Macro Economic Determinants of Balance of Trade: The Case of Uganda* (Doctoral dissertation, Makerere University).

Ling, N. U., Mun, H. W., & Mei, T. G. (2008). Real exchange rate and trade balance relationship: An empirical study on Malaysia, *International journal of business and management, 3(8), 130-137.*

Malik, U., Noor, S., Jahangir, S., Tariq, N., Ramzan, A., & Fatima, R. (2015). The trade balance of Pakistan and its impact on exchange rate of Pakistan: a research report, *Journal of economics and sustainable development, 6(15), 113-121.*

Mohammed, S. D. (2010). Determinant of balance of trade: case study of Pakistan, *European journal of scientific research, 41(1),13-20.*

Murshed, C. M. N., Sharmina, K., Shamima, E., Samim, U., & Poly, F. (2014). Relationship between the exchange rate and trade balance in Bangladesh from year 1973 to 2011: An econometric analysis, *International journal of economics, commerce and management, 2 (11), 1-26.*

Nazeer, A., Shafi, K., Idrees, Z., & Hua, L. (2015). Exchange rate and determinants of balance of trade, its impact on balance of payment, *American journal of business, economics and management, 3(1), 14-18*.

Pesaran, M.H. & Shin, Y. (1999). An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis In: Strom, S., Holly, A., Diamond, P. (Eds.), *Centennial Volume of Rangar Frisch, Cambridge University Press,* Cambridge

Ray, S. (2012). An analysis of determinants of balance of trade in India, *Research journal of finance and accounting, 3(1), 73-84.*

Shah, A. Q. (2015). Trade balance of Pakistan and its determinants, *International journal of information, business and management, 7(4).*

Shahbaz, M., Jalil, A., & Islam, F. (2010). Real exchange rate changes and trade balance in Pakistan, a revisit. *Munich personal RePEc Archive. MPRA Paper, University Library of Munich, Germany, number 27631*

Sharma, A. (2012). The long run determinants of the U.S. trade balance: a reexamination using bi and multivariate co integration approach, *Research in applied economics, 4(1), 16-32*

Shawa, M. J., & Shen, Y. (2013). Analysis of the determinants of trade balance: case study of Tanzania, *International journal of business and economics research, 2(6), 134-141.*

Syed, A., Ahmed, Z., & Hussain, M. (2016). Impact of macro-economic factors on trade balance in South Asian region, *Proceedings of 2nd international multi-disciplinary conference 19-20 December 2016 Gujrat, Pakistan.*

Tran, M. U. T. (2012). The factors affecting trade balance in Vietnam, *University of the Thai chamber of commerce.*

Waliullah., Kakar, M. K., Kakar, R., & Khan, W. (2010). The determinants of Pakistan's trade balance: an ARDL co integration approach, *The Lahore journal of economics, 15 (1), 1-26.*

Yasmin, B. (2012). Impact of trade liberalization on trade balance in Pakistan: co integration and error correction mechanism, *Zagreb international review of economics and business, 15(1), 73-88.*