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A COMPARISON OF AGRICULTURAL, INDUSTRIAL AND SERVICES SECTOR IMPACT ON TRADE BALANCE:

A CASE STUDY OF PAKISTAN

Muhammad Muzammil¹

Abstract

This paper aims to examine the impact of agricultural, services and industrial sector on trade balance of Pakistan and its comparison. For this purpose, we will take time series data from 1980 to 2018. In this study exchange rate, inflation and financial development are taking as a control variable while agricultural, services and industrial value addition variable change according to the model to compare the impact. For the basic analysis we will use descriptive statistics and correlation. To check the stationarity of the variable we will use Augmented-Dickey-fuller and Philips-Perron test. However, to estimate the short and long run relationship between the above model's variable we will use Auto-Regressive-Distributor-Lag (ARDL) model. Furthermore, to check the short and long run causal relationship we can use VECM granger causality and to check the direction and magnitude of causal relationship we will use impulse response function and variance decomposition analysis. This study can provide recommendations to researchers and policy makers to reduce the range of trade deficit and move towards trade surplus. Furthermore, it also helps Government to focus on the most appropriate sector for trade balance.

Keywords: Trade balance, Agricultural, Services and Industrial Sector, ARDL Cointegration, Causality.

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Introduction:

A country Trade balance plays a vital role for its healthy economic conditions. It is the gap between imports and exports values of a country for a specific time period and is the largest element of balance of payments. A country that import less services and goods then its export in terms of value has a trade surplus while a country that export less services and goods then its imports has a trade deficit.

The trade deficit and a country's long-term economic growth cannot go together. The country facing trade deficit needs borrowings (loans) from International Monetary Funds (IMF) or World Bank to finance country's trade balance (Ahad 2017). By reason of high level interest rate on credits, country finds less funds to invest in the new projects that exert pressure on the country's economic development (Samirkaş 2014). In another way, at what time current account faces deficit, this deficit could be overcome by financing from multinational financing corporations and it might be probable that a country's valuable assets could be controlled and claimed by foreign lenders in future. There may be number of chances of occurrence of sovereign default and this causes investor's confidence and these investors can remove their investment from the country (Panizza, Sturzenegger et al. 2009). Further, it depreciates currency that decreases the standard life style and opportunities of new investment and reduces the level of income for a long time (Nazeer, Shafi et al. 2015). In similar way, if the trade deficit of a country's trade balance follow due to deficit in country's current account balance, there is no other way for a country to depend on consumer spending (Mann 2002). The export sector's growth is decreased due to low competitiveness of the goods and services. It will destroy the industry of a country that will restrict the country's economic growth (Maskell and Malmberg 1999).

Pakistan is an emerging economy in the world and is continuously facing Trade deficit from the last few decade (Ahad 2017). According to WDI and PBS reports Pakistan trade balance was in trade deficit from period 1976 to 2003 with amount 1.20 billion to 1.10 billion dollar respectively and after the year 2003 there was a tremendous trade deficit. There was trade deficit with amount 24.70 billion dollars and in with some improvements in country's trade balance, the country's trade deficit was 14.00 billion dollars in 2009 but it was with amount 22.30 in 2010 and in 2014 it was with amount 32.5 billion dollars. Pakistan's Trade Balance recorded a deficit of 1.5 USD billions in Mar 2020, compared with a deficit (SBP, 2020).

The Pakistan's trade deficit is highly dangerous for economy. Economists and policymakers need to take some important and viable actions to solve this problem (Muhammad 2010). The country's trade deficit or country's current account deficit can be minimized by raising the country's export Aurangzeb and Asif (2012). The country's exchange rate plays vital role to find country's trade balance and the reason behind this is the exchange rate depreciation increase the value of country' exports (Nazeer, Shafi et al. 2015).

The main determinants, in case of Pakistan, that impact the nature of trade balance are income and money supply in short and long run and devaluation of exchange rate has weak impact on balance of trade and then monetary policy (Kakar, Kakar et al. 2010). Similarly in Pakistan, exchange rate does not support to manage trade balance (Khan and Aftab 1995). The exchange rate exerts positive impact on Trade balance and has strong relationship by deprecating exchange rate and trade balance may goes toward the surplus (Muhammad 2010). The trade balance of Pakistan is significantly effected by exchange rate in comparison with other determinants of trade balance like money supply , domestic consumption, and foreign direct investment (Shah 2015).

This study aims to provide the sectoral impact on trade balance and the comparison of sectoral impact to identify the sector that can play vital role in the improvement of trade balance. Through this study we can attain comprehensive knowledge and profound understanding of the sector wise impact on trade balance. This study can provide recommendations to researchers and policy makers to reduce the range of trade deficit and move towards trade surplus. Furthermore, it also helps Government to focus on the most appropriate sector for trade balance. Moreover, this study helps to develop the growing body of trade balance literature and provide new dimension for further research.

Literature Review:

Number of studies are available that examine the trade balance determinant such as Ademe (2016) investigate the major determinants of the balance of trade by considering the export and import ratio to balance of trade in Ethiopia. The time series were used from 1981 to 2011 and by using Error correction model we analyze relationship between the variables. The finding shows the negative relationship between trade balance and domestic inflation, trade dependency and

GNI per capita and world oil price has significant positive effect the ratio. Shawa and Shen (2013), Analysis of the major determinants which affect trade balance. This study emphasizes on the main reason of Trade deficit in case Tanzania by analyzing the impact of Foreign Direct Investment, Household Consumption Expenditure, Human Capital Development, Government Expenditure, Inflation, Real Exchange Rate and Foreign Income, Natural Resources Availability and Trade Linearization. Ray (2012) study various determinants of trade balance like real exchange rate, domestic consumption, foreign direct investment and foreign income have been investigated though different methods like Augmented Dickey Fuller test, Johansen Co-integration test and VECM to determine the long and short run behavior of trade balance from 1972 to 2011. These results indicate that there is short run and long run impact of macro-economic variables on country's trade balance.

Kennedy (2013) examines the main determinants of the country's trade balance and annual data from the period 1963 to 2012 has been used for investigation. The Johansen co-integration approach and the other technique Error correction modeling have been applied to investigate the long as well as short determinants of country's trade balance. The investigated findings indicate that coefficient of country's trade balance positively correlated with exchange rate, foreign direct investment and budget deficit. Foreign direct investment has positive impact on trade balance and real exchange rate depreciations improve trade balance significantly. Olczyk and Kordalska (2018) main objective of this study to make a good comparison of the main determinants of international competitiveness which is measured by net export of manufacturing sector in Czech and Polish nations. Data from 1995 to 2011 of 13 manufacturing sub sectors has been used. Error correction model and SUR model is used in this study. The positive trade balance is investigated for manufacturing sub sector and the significant factor is labor cost and that has greater impact on net export.

Akoto and Sakyi (2019) examines the main determinants of trade balance in Ghana. Data from 1985-2015 is has been used. The two approaches bound testing approach and the error correction model within autoregressive distributed lag (ARDL) model is used for estimation. The study finds that household consumption expenditure, government consumption expenditure and domestic prices are negative and significant in the long and short run. The major finding of this study suggests that Ghana' currency depreciation is not and good step for improvement in the

trade balance position in Ghana. Taşseven, Saracel et al. (2019) explore the main determinants of trade balance in turkey are real exchange rate, gross domestic product (national income), gross domestic product (foreign income) with an additional variable of oil price. These determinants are examined by using quarterly data for the period 1998-2018. The trade balance is affected by gross domestic in long run, which is examined by using autoregressive distributed lag (ARDL) model. The turkey's trade balance and the European Union countries is affected by gross domestic product in a positive and significant way.

Kakar, Kakar et al. (2010) investigate the short and long run relationship between the trade balance and income, money supply and real exchange rate in the case of Pakistan economy. The annual data for the period 1970 to 2005 is used in this study to investigate whether a long run equilibrium relationship exists between trade balance and its determinants. The results indicate that there is a long and significant relationship between trade balance and money supply, income and exchange rate variables. Hassan and Zaman (2012) examine the long-run and short-run impact of oil prices on trade deficit along with determination of the causality direction between trade balance and oil price shocks in Pakistan. By ARDL model on annual data from 1975 to 2010, the results are quite significant. The relationship between trade balance and oil prices is negative and significant in long and short run. In short run exchange rate has positive relation and in long run exchange has negative relation.

Shahbaz, Jalil et al. (2012) investigate the relationship between the real exchange rate changes and trade balance of Pakistan. To examine the existence of long run relationship, quarterly data for the period from July 1988 to June 2006 and Autoregressive Distributed Lag (ARDL) model is used. The depreciation of real exchange rate for the improvement of trade balance may worsen the situation. Ahad (2017) aims to investigate the impact of the financial development, balance of trade, real exchange rate and the inflation on trade balance by taking data from 1972 to 2014 in Pakistan. In long run inflation, financial development and exchange rate have a significant and important impact on the country's trade balance but the financial development and the real exchange rate have impact on trade balance in short run.

Research Gap:

The growing body of literature review provides the extensive knowledge related to the determinant of trade balance nationally and internationally in which exchange rate (Akoto and Sakyi 2019, Taşseven, Saracel et al. 2019, Weerasinghe and Perera 2019), inflation (Mili 2019,

Weerasinghe and Perera 2019, Sujianto and Azmi 2020), financial development (Ahad 2017, Farzanegan and Hassan 2019), FDI (Shawa and Shen 2013, Weerasinghe and Perera 2019), GDP (Kakar, Kakar et al. 2010, Khan and Hossain 2012), domestic and national consumption expenditure (Ray 2012, Sujianto and Azmi 2020), money supply (Kakar, Kakar et al. 2010) interest rate (Mili 2019) and Manufacturing value addition (Olczyk and Kordalska 2018) etc., variable included. While the Olczyk and Kordalska (2018) check the impact of manufacturing sector on trade balance Czech and recommend about the future research about the individual sector wise impact on trade balance. However, the growing body of literature does not provide any evidence related to sector level impact on trade balance in Pakistan and its comparison even. Because of industrialization era it is hypothesized that industry (manufacturing) sector boosts the productivity level, increase export as well as improve trade balance (Olczyk and Kordalska 2018) but Pakistan is considered to be mainly agriculture country (Awan and Aslam 2015). So, it is important to check the impact of these different sector on trade balance to highlight the most efficient sector to improve trade balance of Pakistan.

Problem of the Statement:

Most of the developing countries face the problem of country's trade deficit in country's trade balance. While the number of factors available that can improve trade balance (exchange rate, inflation, financial development, interest rate etc.). But knowing these facts some countries including Pakistan continuously face trade deficit problem that capture the attention of the researcher to find the basic roots of deterioration of trade balance.

To find out the basic reason we need to focus on the basic question is that why every country needs to import and export? In this globalization era a country cannot be specialized in all of the product need in this company. So, it only can specialize in in some products that it can efficiently produce at low cost beyond the country need and export it to other countries and earn profit. On the other hand, it also produces other product that a country produces costly while other country produces costly. So, investors import this cheap product as compare to earn profit as compare to produce it domestically. In this way every country depends on export and import that lead to create trade surplus and deficit. A country can efficiently produce those products in which firstly labor or capital intensively available and secondly in which labor are skilled to produce efficiently product. However, at macro level this skilled intensive labor force divides according

to sector wise such as agriculture, services and industry that further lead to improve productivity of these sector through value addition process. So, at macro level value addition in these sectors can provide the clear picture of the skilled intensive labor force. In the mean while to improve the trade balance it is important to highlight the sectors that can efficiently improve it.

Objectives of the Study:

A country's trade balance plays a vital role for its healthy economic conditions. There are number of determinants which impact a country's trade balance. The prominent focus point of this important study is to explore and examine the impact of agricultural, industrial and services sector on trade balance and investigate their comparison in presence of the exchange rate (ER), inflation and financial development. On the basis of systematic observation, this study will give strong comparison of agricultural, Industrial and service sector impact on trade balance and it will help to identify that which sector has strong impact on trade balance. Following are the major objectives of this case study.

- 1) To examine the impact of agricultural sector on the balance of trade
- 2) To examine the impact of services sector on the balance of trade
- 3) To examine the impact of industrial sector on the balance of trade
- 4) To examine the comparison of agricultural, services and industrial sector impact on the balance trade

Research Question:

Based on the research objectives, the study will answer the following questions.

- 1) Does agricultural sector impact on trade balance?
- 2) Does industrial sector impact on trade balance?
- 3) Does service sector impact on trade balance?
- 4) Does there is any difference between the impact of these sector on trade balance?

Research Hypothesis:

On the basis research objectives and research questions following null hypothesis and alternative hypothesis have been constructed.

- 1) H₀: Agriculture sector does not impact on trade balance
H₁: Agriculture sector does impact on trade balance
- 2) H₀: Services sector does not impact on trade balance
H₁: Services sector does impact on trade balance
- 3) H₀: Industrial sector does not impact on trade balance
H₁: Industrial sector does impact on trade balance
- 4) H₀: Agriculture, services and Industrial sector have same impact on trade balance
H₁: Agriculture, services and Industrial sector have different impact on trade balance

Theoretical Framework

There are too many factors that effect trade balance while Exchange rate is one of the most important factors that can affect trade balance in various way. According to Muhammad (2010) because of the devaluation of Exchange rate of a country the product of this country looks cheap for the other countries while the international product for this country looks costly that force country to make more exports and less imports that further leads to improve the trade balance of the country and vice versa. However, on the other hand, Kakar, Kakar et al. (2010) it is arguing that the stabilization of exchange rate improves the risk sentiments of investors and convince to invest more for long term. The improvement in the investment lead to improve the production level of the country that further lead to more export and less imports that consequently improve the trade balance of the country and vice versa.

Inflation is also having important implication to improve the trade balance of the country. Explain that the rise in inflation in a country cause domestic product of the country costly as compare to foreign product (Muzammil, Amir-ud-Din et al. 2018). So, the investor focus on to import that good and earn more profit from it as compare to domestically produce earn more profit from it (Gylfason 1999). The increase in imports cause to deterioration of trade balance. Inflation reduce the productivity level of the that further worsen trade balance through less export level because federal reserve not adjust growth of the nominal income in response to productivity implies an acceleration trend in productivity growth (Kiley 2003).

Financial development is also another factor that had major implication to improve the trade balance of the country. Ahad (2017) explain that financial sector development provides increase

the security of borrowed and lender and movement of money from one person to another person. Financial development provides the increase the investment in the country that increase the productivity of the country that further lead to increase the export of the country (Beck 2003). In other high export shares and better trade balance has been observe where better financial development system available (Kiendrebeogo 2012).

Model Specification and Variable Description:

In this study we will adopt model of Ahad (2017) to explore the impact of agricultural, services and industrial sector on country's balance of trade in short run as well as long run. In this scientific research paper we will use time series data from 1980 to 2018 of Pakistan. For the comparison of sectoral impact in short and long run we create separate model for each sector. The empirical form of models in the form of natural logarithmic function are as following:

$$\text{Ln TB} = \beta_{10} + \beta_{11} \text{Ln ER} + \beta_{12} \text{Ln FD} + \beta_{13} \text{Ln CPI} + \beta_{14} \text{Ln Agr} + e_{t1} \text{-----}(1)$$

In model 1 Ln TB represent the natural logarithmic of trade balance, Ln ER represent the natural logarithmic of real exchange rate, Ln FD represent the natural logarithmic of domestic credit to private sector in real term for financial development, Ln CPI represent the natural logarithmic of consumer price index used for inflation and Ln Agr represent the natural logarithmic of agriculture value addition. β_{10} represent intercept while β_{11} , β_{12} , β_{13} and β_{14} represent coefficient of exchange rate, financial development, inflation and agriculture sector respectively for model 1. e_{t1} represent error term of this model.

$$\text{Ln TB} = \beta_{20} + \beta_{21} \text{Ln ER} + \beta_{22} \text{Ln FD} + \beta_{23} \text{Ln CPI} + \beta_{24} \text{Ln Ser} + e_{t2} \text{-----}(2)$$

In model 2 all of the variables are same while Ln Ser represent the services value addition. β_{20} represent intercept while β_{21} , β_{22} , β_{23} and β_{24} represent coefficient of real exchange rate, financial development, inflation and services value addition respectively for model 2. e_{t1} represent error term of this model.

$$\text{Ln TB} = \beta_{30} + \beta_{31} \text{Ln ER} + \beta_{32} \text{Ln FD} + \beta_{33} \text{Ln CPI} + \beta_{34} \text{Ln Ind} + e_{t3} \text{-----}(3)$$

In model 3 all of the variables are same while Ln Ind represent the industrial value addition. β_{30} represent intercept while β_{31} , β_{32} , β_{33} and β_{34} represent coefficient of real exchange rate, financial

development, inflation and industrial value addition respectively for model 2. e_{3t} represent error term of this model. The data of all of the variable collect from world development indicator website.

Methodology:

For the basic analysis we will use descriptive statistics and correlation. To check the stationarity of the variable we will use Augmented-Dickey-fuller (Dickey and Fuller 1981) and Phillips-Perron test (Phillips and Ouliaris 1990). However, to estimate the short and long run relationship between the above model's variable we will use Auto-Regressive-Distributor-Lag (ARDL) model (Pesaran, Shin et al. 2001). We will use ARDL model because it can run if all the variables are stationary on level or on first difference or either some variables are integrated at level and some variable integrated at first difference. Beside that ARDL model is best model for short data as in this study (Haug 2002). Furthermore to check the short and long run causal relationship we can use vector-error-correction-model (VECM) granger causality and to check the direction and magnitude of causal relationship we will use impulse response function and variance decomposition analysis (Pesaran and Shin 1998).

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