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An Empirical Analysis Of Pakistan's Trade Balance

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Abstract

This research has mainly focused upon trade balance for the time period 1980 to 2020. The time series data is used for said period. Here data is found stationary on the basis of Augmented Dicky Fuller (ADF) test, and Philips Peron (PP) unit root test. The trade balance is impacted positively by GDP and infrastructure while it is negatively impacted by domestic consumption, exchange rate and inflation. The short run and long run analysis is done on the basis of ECM and co-integration. Error Correction Mechanism (ECM) is applied to analyze short run relationship. The lagged value of the Error Correction Term (ECMt-1) is negative and significant at 1% level of significance. The co-integration tells that all the variables are integrated.

Key words: Trade Balance, Exchange rate, Inflation, Consumption.

1. Introduction:

The trade of any economy is base for development in the terms of globalization. The fundamental changes are unavoidable for growth of any country. It depends on nature and volume of any country's trade that how it gets rid of the trap of its deficit in terms of trade and payments. The trade liberalization is considered very important element for economic integration of different economies of the world. For welfare of world economy International Monetary Fund (IMF), World Trade Organization (WTO) and World Bank are considered to be the main pillars. The economic integration and free trade agreements are very important for economic growth and economic development. No county of the world can save itself without it's active role from the international competition. The twin gaps of world economy in the context of developing and developed countries has reminded the national governments to play their due role for development and sustainability. The competition of world major economic players has created tough strategies for developing

and under developed world. The international trade theorists as: Classical Smith, Ricardo, Mill and others favored the trade liberalization and recommended that it will improve world GDP and overall world economy's welfare. The factor proportion theory given by neo-classical economists also supported the same phenomenon. Salvatore in 1987 also suggested that mercantilism existed in the 21st century which tried to eliminate over protection (as tariffs and quotas) on few selected products for the support of globalization and due to strong argumentation of World Trade Organization (WTO) in favor of free trade. The late comers like Pakistan in the wake of globalization are needed to focuson more active policies to resolve the problem of trade deficit. The developing countries like Pakistan are more clear on the arguments of mercantilism that for economic development and economic integration selected trade policies are the need of hour (Irwin, 2002). Sometimes the internal and external impacts positively or negatively on the overall performance of economy then macro-economic policy rationality is applied accordingly. The domestic ups and downs of economy are also impacted by these shocks. In this situation the rational trade policies are only the solution to trade deficit problem. The trade policy challenge also depends upon internal and external stake holders of the world economy. For the proper economic integration of world some regional associations are the good examples as: South Asian Association for Regional Cooperation (SAARC), Economic Cooperation Organization (ECO), North American Free Trade Agreement (NAFTA), and Association of Southeast Asian Nations (ASEAN). The policy mix of different factors is required to resolve the issue of trade deficit.

1) Lower current account deficits

2) To promote infrastructure in the country

3) To increase goods and services in the economy

4) To prepare rational trade policies

5) To focus on proper trade openness strategies

6) To work on proper Exchange Rate (ER)

7) Proper policies to control inflation.

It is strongly argued that without rational political leadership it's impossible for any economy to go for trade liberalization and trade protectionism (Douglas Nelson 1989). The effects of trade policy are also suggested by intertemporal models of trade which are responsible for effects/benefits/losses of trade and payments (Chen and Deveureux 1997). The trade policy is very important base of any country which promotes trade deals at national and international level (Litan, 1990). The trade policy of developing countries like

Pakistan has gotten many important bases of interest sincere last few decades because of the quick deterioration of income and commodity terms on the basis of increasing gap of payments. The serious problem of less developed countries is that their economy depends upon exports of major raw materials and weaker base of their trade competitive behavior. In Pakistan the formulation of trade policy in 80's was reaction of separation of east wing of country which brought major changes in the economic performance of economy, which resulted devaluation of local currency at major level. The researchers between 1972 to 1977 found that Pakistan lacked proper, organized and formal trade policy in this time period. There was a large gap in decisions and implementation of proper policy on the basis of economic incentive system and disincentive system during the decade (Adam and Iqbal, 1987). After that period county formulated a liberal trade policy by lifting bans on many goods and removed many tariffs and increased a lengthy free list. Under structural adjustment program (SAP) trade liberal policy was applied by improving a better tariff structure in addition to a set of rational export incentives. Around 1988 world bank applied NTBs, a lot of tax exemptions, custom duty from 30% to 10%, removal of extra and license fee by elimination of export taxes. In this decade the World Bank also referred the Mexico trade reforms program of 1985 to 1999. In 1993 world bank also suggested a detailed and extra policy changes and continued NTBs onward. The policy makers suggested the removal of weaknesses and recommended supply side incentives as: price relief, tax cuts, subsidies on inputs to promote export led growth in the economy (Zaidi, 2006). The devaluation of Pakistani rupee couldn't promote export structure of Pakistan unfortunately (Sherani, 2000).

The liberalization strategy is applied for Pakistan's trade policy since last few decades as currently South Asian countries have more open trade regimes even low bound rates than the WTO agreement. Fiscal concessions and duty free strategies are applied for many firms which are included in Export Processing Zone (EPZ) especially in Karachi, Risalpur and Sialkot. Government of Pakistan has taken rational steps to improve trade competitiveness on the basis of diversification of exports, development in groups system, improvement in technically advanced products and by focusing on foreign direct investment. Economies of the world are determined on the basis of nature and pattern of trade for proper direction in the context of trade agreements. The comparative advantage is base of international trade for any country to invest on certain products and exporting goods or services.

One of the main problems with Pakistani economy to be in the dilemma of trade deficit is trade openness policy which has created more proportion of imports (Babar and Chaudhary). The trade liberal policies are not in the favour of developing countries like Pakistan. The real effective exchange rate is main tool for promotion of international competitiveness which can decrease the serious problem of trade deficit for economy of

Pakistan. No doubt, Pakistani economy possess many opportunities to compete the global market for getting maximum benefit which can provide welfare to the economy of Pakistan on the basis of export competitiveness (Ishrat 2003). The developing countries cannot depend on the forces of demand and supply openly but they can combat this situation strategically. Many economists of the modern world like Smith, Ricardo and Mill etc who favored liberal trade policies and suggested that the world economy will be improved in this way on the basis of globalization failed in this situation when developing world is facing very huge problem of trade deficit.

Most of the researchers are of view that balance of trade relies upon infrastructure which advances the standard of markets and promotion of trade. On the other hand, the poor infrastructure facilities would create the massive difference in development and comparative advantage of economies specifically in trade (Ahmed at al 2015; Anderson and Wincoop 2003).The countries having better infrastructure facilities as Singapore and Hong Kong are performing well as compare to countries which lack infrastructure as Pakistan and Bhutan. It is very important to note that better infrastructure effects positively on lowering cost of production and improving balance of trade (Clark at al. 2004). The south Asian countries contribute poor on external world because of lack of skilled labour, lower foreign direct investment, shortage of proper capital etc. However, most of the studies ignored focus on the provision of infrastructure even though its prominent contribution in balance of trade and business opportunities (Andres at al. 2014, Bhattacharyay 2014).This study is highly important as it aims to fill the gap in the Literature. It fills the gap in numerous ways. First, this study provides relatively more comprehensive measures of trade balance in scope and methodology. Second, this study uses a most appropriate estimation methodology to quantify the linkages among exchange rate, GDP, domestic consumption, infrastructure, inflation and trade balance bycointegration and ECM measurement.

2. Research Questions

(i) Is there any impact of inflation on trade balance of Pakistan?
(ii) What is the relationship of exchange rate and trade balance in Pakistan?
(iii) Is there any influence of infrastructure on trade balance in Pakistan?
(iv) What is impact of domestic consumption on trade balance in Pakistan?

3. Literature Review:

Rehman et al. (2020) this study investigates the short- and long-run impact of infrastructure on export and trade defcit in selected South Asian countries during 1990–2017 by using Pooled Mean Group (PMG) estimator and co-integration techniques like Pedroni and Kao test. The empirical results of PMG approach confirmed

the existence of significant long-run impact of aggregate and sub-indices of infrastructure (i.e., transport, telecommunication, energy and financial sector) on export and trade deficit. The findings suggested that infrastructure positively promotes exports while negatively affecting trade deficit. The relationship between infrastructure and export is worthy bulletin for South Asian economies to encourage the quantity of exports and catch-up on established economies. The control variables of exchange rate, human capital, per capita GDP and institutional quality enhance exports and retard trade deficit significantly in the long run. Furthermore, the Pedroni and Kao test indicates strong evidence of co-integration in selected variables. Fully modified ordinary least square (FMOLS) and dynamic ordinary least square (DOLS) support robust and consistent results to the main model of this study. Furthermore, the study recommended that in long run aggregate and sub-indices of infrastructure promote exports and decrease trade defcit in selected South Asian economies.

Campi and Duenas (2019): showed the debates and discussions on trade for creating favorable environrnent to international competitiveness. They evaluated that exports and imports subject should be main focus of current time for trade growth. This research is also the main indication for future policy making with regard to trade competitiveness.

Balavac and Pugh (2016): analyzed the different sectorial growth by focusing proper decision making for trade. In this research the time series data sample is used for time 1996 to 2010. This work contributed in different sectors specially agriculture sector, Industrial sector and Services sector for the analysis exports and imports behavior of country.

Muzammal.M and Ahad.M (2015) aimed to examine the relationship between financial development, trade balance, exchange rate and inflation by using time series data from 1972 to 2014 for Pakistan. We have tested the unit root properties of variables by using Augmented Dickey-Fuller, Phillips-Perron and Breakpoint unit root tests. The ARDL approach is applied to examine the co-integration between variables due to mixed orders of integration between series I(0)/I(1). The ARDL findings suggested that long run relationship exists between financial development, trade balance, exchange rate and inflation. Error Correction Mechanism (ECM) is applied to analyze short run relationship. The lagged value of the Error Correction Term (ECMt-1) is negative and significant at 1% level of significance. The value of ECMt-1 is -0.91 which states that digression from the short run towards long run is corrected by almost 91 percent by every year. Financial development, exchange rate and inflation have significant impact on trade balance in the long run. But in the short run, only exchange rate and inflation

have statistically significant impact on trade balance. Diagnostic statistics have confirmed the characteristics of model in the short run as well as in the long run. The causal relationship between variables are examined by VECM Granger causality and robustness of causal analysis is tested by Variance Decomposition Approach (VDA). The results of VECM have predicted that unidirectional causality from financial development to trade balance exist in the long run. The results of Variance Decomposition Approach explained that 19 percent of trade balance is explained by shocks stimulating in financial development. Government should enhance financial development by managing lending interest rates to improve trade balance.

Abbas and Raza (2013): assessed the association between the economic development and deficit of trade by considering the trade deficit as core variable. The yearly data was covering time period of 1988 to 2011 for this research. The histogram and OLS method were used in this study. Above approaches indicated that rupee against US dollar has continuously decrease over the time.

Chaudhary and Babar (2012): estimated the exports and imports growth to analyze effect of openness of trade and trade deficit of Pakistan. In this research, the data sample was used for the period 1980 to 2008. The numerical results were calculated by ARDL model which illustrated that the openness of trade is directly related to exports and imports promotions but the share of trade was greater to imports than exports which impacted negatively on trade deficit.

Kiendrebeogo, (2012) investigated the impact of financial sector development on the manufacturing trade level by incorporating the role of institutions for 75 countries. The panel and cross sectional data from 1971 to 2010 have used to analyze OLS and GMM method. They concluded that financial development has a strong positive impact on the manufacturing export after controlling banking crises and institutional quality has a positive role in the growth of the trade by improving financial development. Similarly, Samba and Yan, (2009) probed the relationship between international trade in the presence of comparative advantage and financial development for East Asian seven countries in which Thailand, Indonesia, Singapore, Philippines, Malaysia, Korea and China are included. The VAR approach has applied to the time period from 1978-2001. The results suggested that in most of the countries for manufacturing goods, international trade enhances the financial development of a country.

Alberto and Wilson (2010): worked on the developing countries on the basis of infrastructure by dividing it in hard and soft values of infrastructure. They concluded that the infrastructure impacts greatly on the export competitiveness of developing countries which minimizes the trade deficit directly or indirectly. This research covered

the data sample for years 2004 to 2007. The important indication of this study remained that the trade facilities will boost the export competitiveness which will mitigate the trade deficit. The infrastructure which is calculated physically in this study having significant impact improves the environment for business activities for promotion of exports. The growth of exports for developing world is significant for richer regions of the world. For the analysis of Egypt, they noticed 10.8% which becomes half the level of Tunisia. This value was almost equal to 7.4% cut in tariff rate managed by Egyptians economists in the import markets.

Muhammad (2010): analyzed the short run and long run impacts of trade deficit for the Pakistani economy. The data sample used in this study was 1975 to 2008. The Johnson co-integration method was used in this analysis for long-run estimation and VEC estimation method applied for the short-run approach. The study incorporated the list of variables as Foreign Income (F.I), Domestic Consumption (DC), real effective exchange rate (RER) and foreign direct investment (FDI). The outcomes of this study clearly indicated that there is positive relationship of all variables with trade deficit.

Rehman. S at al. (2010): this study showed the importance of performance of overall economy to promote economic growth by controlling trade deficit. Here the interaction of economic development and trade deficit for various selected countries has been analyzed. The random effects estimation technique is applied in this study which suggested that the deficit of trade has impacted negatively towards economic development as well as economic growth. The countries which are rational to minimize trade deficit will compete in efficient and effective way for positive results.

Uzma (2007): examined the performance of trade by dividing trading and non-trading economies of Pakistan. It was calculated that competitiveness is dependent on export performance. The sample size used in this analysis is from 1960 to 2005. The overall performance of trade is based upon all the working partners of government as; business community, industrial investors and bureaucracy to develop the technologically advanced products. The recommendations suggested for the Pakistan are considered mainly to capture larger markets for international competitiveness which will result in overall trade performance.

Vergil, (2002) investigated the impact of real exchange rate changes on export movements for Turkey and US by incorporating their majour trading partners such as France, Italy and Germany. Error Correction Mechanism, Johansen cointegration and Juselius approach have been used over the period of 1990:1-2000:12. The results

showed that change in real exchange rate has significant negative impact on the real export.

Wilamoski and Tinkler (1999) explored the impact of FDI on import and export of U.S. and Mexico. The OLS, VAR and Granger causality have used to analysis the relationship over the period 1977 to 1994. The results suggested that at first, that FDI explains a substantial portion of the rapid increase in trade between the two nations and, second, small positive effect on the U.S. trade balance with Mexico resulting from new FDI will diminish over time. Aurangzeb and Asif, (2012) compared Asian and European current account balance income, inflation, export, import, exchange rate and GDP) using data from 1980 to 2010. By using Grangar causality and cointegration analysis, they concluded that these determinants are not best predictor in the case of European countries but it is more usable in case of Bangladesh, India and Pakistan. Similarly, Onafowora, (2003) analyzed the short run and long run impact of exchange rate on trade balances for three ASEAN countries (Thailand, Malaysia and Indonesia) that have bilateral trade with Japan and US. The VECM and cointegration approaches have used over the period 1980:1- 2001:4. The finding suggested that depreciation of currencies in East Asia against Japan and US helps to improve balance of trade with Japan and US.

Faini at al. (1992): worked on the policy of developing countries to assess the imports demand. In this study, he divided research into two parts one quantitative side that focused on moveable pattern among various economies of the globe. On other side, the qualitative pattern was utilized for socio-political variables. The income elasticities of different variables remained different for various variables of the economies. The important outcome of the study was that shortage of real effective exchange rate impacted negatively on the trade deficit. The research concluded that special focus is needed on the price and income elasticities for imports demand on the basis of nature of products and gains of trade.

4. DATA AND METHODOLOGY

In this study we have used secondary data, covering the sample size covering the time period 1980 to 2020. The data is used in natural log form for variables used in this study. The Johansen co-integration technique is used for connection of different variables. The short term analysis is done on the basis of vector error correction model (VECM).

4.1 DATA AND SOURCES

- Trade Balance: Economic Survey of Pakistan

- ER: (IFS-IMF) various issues
- GDP: Economic Survey of Pakistan
- INF: PBS
- INFRA: (Authors calculations by using Principle component method)
- DC: (State Bank of Pakistan)

4.2 Model Specification

$TB = \alpha 1 + \beta 1ER + \beta 2INF + \beta 3GDP + \beta 4INFRA + \beta 6DC + \sum t$

TB = Trade Balance
ER = Exchange Rate
GDP = Gross Domestic Product
INF = Inflation
INFRA = Infrastructure
DC = Domestic Consumption

5. RESULTS

All the variables are found non stationary if regression is done it will be overestimated. Therefore, it is very necessary to make data stationary for the meaningful and rational results.

Table:01 Augmented Dicky Fuller/ Unit Root (All variables in natural Log)

Variables	Level (with intercepts & Trend)	First Difference (with intercepts & Trend)
ER (Exchange Rate)	-3.256(0)	-4.63425* (2)
GDP (Gross Domestic Product)	-2.361(1)	-4.27541* (1)
INFRA (Infrastructure)	-6.69 (2)	-3.24498* (1)
DC (Domestic Consumption)	-0.246(2)	-6.0817*(2)
INF (Inflation)	-0.361(2)	-5.231*(2)

*Significant at 5% Level

Above table shows that the ADF/ Unit Root results are non-stationary at level but first differencing made them stationary in the analysis. Here, when we use H0that means non-stationary and if HA is used that shows data is stationary. Here, the parenthesis shows the lag length of variables and all the variables are integrated at order 1.

Table 2 Johansen Co-Integration Test (Maximum trace value)

Null Hypothesis	Alternative Hypothesis	Maximum trace Statistics	Critical value at 5%
r =0	r = 1	71.162	46.231
r = 1	r = 2	52.26	40.077
r = 2	r = 3	35.039	33.87
r = 3	r = 4	25.0304	27.584
r = 4	r = 5	14.92	21.13
r = 5	r = 6	10.66	14.26

*Significant at 5% level

The Johansen co-integration tests results are shown in six vectors Model according to maximum trace value. On the criteria of akike criterion optimal too lack length parameter is used on the basis of short listing approach which clearly indicates that there is strong association of variables used in the study.

Table 3 first Vector of Normalized equation

Variables	ER	GDP	INFRA	DC	INF
Co-efficient	-2.675*	9.535*	6.670*	5.29	-7.38*
t-value	2.50	10.531	10.45	8.32	3.69

*Significant at 5% level

The co-efficient of the variables clearly shows that there is positive impact of GDP, and INFRA , while there is negative impact of ER, INF and DC on the trade deficit of Pakistan.

Table 4 Error Correction Model

Variables	ER	GDP	INFRA	INF	DC	C	ECM
Co-	-3.322	4.306	2.952	-1.566	-2.88	-44.58	-0.42

efficient							
S.E	1.50	0.891	2.36	1.91	1.21	0.1570	-0.085
T. Statistics	1.65	2.30	1.99	0.461	0.88	0.32	-4.22
Probab.	0.0039	0.0367	0.031	0.0462	0.02	0.829	0.0004

*Significant at 5% level

The ECM results are clearly showing that the results given in above table are desirable as suggested by co-efficient of error correction model.

6. FINDINGS AND DISCUSSIONS

We briefly discuss the findings of our study in the following:

The coefficient of foreign direct GDP (market size) and INFRA (infrastructure) have positive effect on dependent variable that is trade trade balance in both conditions as in long run and short run. It means when the market size increases in a country the deficit in trade tends to be reduced. In the same line when infrastructure improves in the country then trade balance gets better accordingly. On other handthe coefficients of exchange rate, domestic consumption and inflation show the negative effect on dependent variable in short run while it ER as well as in long run. The exchange rate is over estimated that's why it has negative impact on balance of trade. The value of R square is 0.79 which indicates that model is good. The value of Durbin Watson is 1.9 which shows there is no auto correlation among variables.

7. CONCLUSION AND POLICY RECOMMENDATIONS

The analysis is done to make the rational policy making for the economy of Pakistan. The trade balance is dependent variable while the independent variables are exchange rate, infrastructure, domestic consumption, gross domestic product, and inflation. The short run and long run analysis is done on the basis of Error Correction Model (ECM) and Co-integration.

The contribution of this paper will be that it will tell the core problems of trade balance by adding exchange rate, infrastructure, market size, domestic consumption and inflation for the time period 1980 to 2020. We have utilized the ADF test, PP test and Break point unit root tests to check that either the data is stationary or non-stationary.

Our calculations clearly indicated that there is short run as well as long run association among the variables. The negative equilibrium value existed which suggested that there is

convergence in the economy. The exchange rate is overvalued, the infrastructure facilities are very low which are not fruitful for the agricultural, industrial and services access.

On other hand the inflation is at large stage in the economy which is the basic problem for maximum cost of production in the country. The country is imports oriented which is creating the more demand supply gap and increasing trade deficit in the same line. The larger market size and better infrastructure can minimize the imports exports gap.

There is a dire need for proper policy making, there should be standard for international competitiveness in national and international markets. The inflation should be controlled, there should be a limit on domestic consumption, proper infrastructure facilities should be given for the promotion of exports and rational imports substitution policies.

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